# Application for Risk Based Disposal of PCB-Containing Dredged Sediments at Indiana Harbor and Canal

Submitted pursuant to 40 CFR Section 761.61

Submitted to:

U.S. Environmental Protection Agency
Region 5
77 W. Jackson Boulevard
Chicago, Illinois 60604

and

Indiana Department of Environmental Management
100 N. Senate Avenue
Indianapolis, Indiana 46204

Prepared by:

U.S. Army Corps of Engineers
Chicago District
Hydraulics and Environmental Engineering Section
231 S. LaSalle St, Suite 1500
Chicago, Illinois 60604

March 2014
updated figures December 2016

**DEPARTMENT OF THE ARMY**
**CHICAGO DISTRICT, U.S. ARMY CORPS OF ENGINEERS**
**111 NORTH CANAL STREET**
**CHICAGO IL 60606-7206**

REPLY TO
ATTENTION OF

Planning, Programs & Project Management Division
Programs and Project Management Branch

AUG 2 9 2008

Mr. Stephen West
Watershed Specialist, Coastal Zone
Office of Water Quality (MC 65-42)
Indiana Department of Environmental Management
100 North Senate Avenue
Indianapolis, Indiana 46204

Dear Mr. West,

The U.S. Army Corps of Engineers (USACE), Chicago District, is submitting for your review, the Construction Documentation Report (CDR) for the Slurry Wall Gaps Construction Project. A hard copy of the CDR and a compact disk with the documents in portable document file (*.pdf) format has been enclosed with this letter. This project is component of the Indiana Harbor and Canal (IHC) Dredging and Disposal Project, which includes the construction, operation, and closure of the IHC Confined Disposal Facility (CDF).

For background information on the Slurry Wall Gaps Construction Project, it would be beneficial to refer to the CDR for the subsurface investigation and cutoff wall, dated July 2005, which the Chicago District submitted for your review in August 2005. This previously submitted CDR for the initial slurry wall contract included a brief background discussion of the IHC Dredging and Disposal Project as well as a compilation of construction specification documents, drawings, test results, and quality assurance records for the installation of the initial slurry wall along the eastern, northern, and western sides of the IHC CDF site. In the plans and diagrams section, the CDR for the initial slurry wall explains that two sections of the wall could not be installed because the Chicago District was unable to obtain the right-of-way to a portion of the property owned by a railway company. The right-of-way to this property was subsequently acquired, and the purpose of the Slurry Wall Gaps Construction Project was to complete the slurry wall along the sections (gaps) of the property that could not be accessed earlier when the initial slurry wall was installed. One gap in the slurry wall was located along the eastern side and the other gap was located along the western side of the CDF site. The eastern and western gaps were approximately 130 and 850 lineal feet, respectively.

The procedures used to construct the slurry wall gaps were similar to the procedures used for the initial slurry wall construction, and the contract for the slurry wall gaps was awarded to the same Contractor, Environmental Quality Management, Inc, that constructed the initial slurry wall. The construction procedures included dewatering, subsurface investigation and inspection, obstruction removal, installation of line plugs and caps, and well decommissioning, prior to the construction of the vertical barrier/soil bentonite slurry wall. The slurry wall gaps extend a minimum of ten (10) feet laterally into the existing, initially constructed slurry wall. In

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addition, as with the initial slurry wall, the bottom of the slurry wall gaps extend a minimum of three (3) feet into a relatively impermeable clay stratum. The top of this clay stratum is at a depth of approximately thirty (30) feet below the ground surface. It should be noted that the slurry wall gaps were constructed using a DeWind One-Pass Trencher. Appendix C of the CDR contains the Final Soil Bentonite Slurry Trench Cutoff Wall Implementation Plan, and this plan provides a description and the Contractor's justification for using this construction method.

Following your technical and regulatory assessment of CDR, the Chicago District respectfully requests any comments within 45 days from the date on this letter. If you have any questions or concerns, or feel that more time may be required to complete your review, please contact the undersigned at (312) 846-5522. If the Chicago District does not receive a response within 45 days from the date on this letter, the Chicago District will interpret the lack of response to be equivalent to the Indiana Department of Environmental Management's acceptance of the Slurry Wall Gaps CDR. Technical comments or questions may be addressed to Richard Saichek, Hydraulics and Environmental Engineering Section, at (312) 846-5507, or by e-mail to richard.e.saichek@usace.army.mil.

Sincerely,

David M. Wethington, P.E.
Project Manager

Enclosures

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DEPARTMENT OF THE ARMY
CHICAGO DISTRICT, U.S. ARMY CORPS OF ENGINEERS
111 NORTH CANAL STREET
CHICAGO IL 60606-7206

REPLY TO
ATTENTION OF

Planning, Programs & Project Management Division
Programs and Project Management Branch

Ms. Laura L. Lodisio
Land and Chemicals Division
U.S. Environmental Protection Agency
Region 5, Mail Code L-8J
77 West Jackson Boulevard
Chicago, Illinois 60604

AUG 2 9 2008

Dear Ms. Lodisio,

The U.S. Army Corps of Engineers (USACE), Chicago District, is submitting for your review, the Construction Documentation Report (CDR) for the Slurry Wall Gaps Construction Project. A hard copy of the CDR and a compact disk with the documents in portable document file (*.pdf) format has been enclosed with this letter. This project is component of the Indiana Harbor and Canal (IHC) Dredging and Disposal Project, which includes the construction, operation, and closure of the IHC Confined Disposal Facility (CDF).

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addition, as with the initial slurry wall, the bottom of the slurry wall gaps extends a minimum of three (3) feet into a relatively impermeable clay stratum. The top of this clay stratum is at a depth of approximately thirty (30) feet below the ground surface. It should be noted that the slurry wall gaps were constructed using a DeWind One-Pass Trencher. Appendix C of the CDR contains the Final Soil Bentonite Slurry Trench Cutoff Wall Implementation Plan, and this plan provides a description and the Contractor's justification for using this construction method.

Following your technical and regulatory assessment of CDR, the Chicago District respectfully requests any comments within 45 days from the date on this letter. If you have any questions or concerns, or feel that more time may be required to complete your review, please contact the undersigned at (312) 846-5522. If the Chicago District does not receive a response within 45 days from the date on this letter, the Chicago District will interpret the lack of response to be equivalent to the U.S. Environmental Protection Agency's acceptance of the Slurry Wall Gaps CDR. Technical comments or questions may be addressed to Richard Saichek, Hydraulics and Environmental Engineering Section, at (312) 846-5507, or by e-mail to richard.e.saichek@usace.army.mil.

Sincerely,

David M. Wethington, P.E.
Project Manager

Enclosures

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# CONSTRUCTION DOCUMENTATION REPORT

*Contract No.: W912P6-06-C-0003*
*Submittal No.: 01100-18 Item 5*

*Prepared for:*

**U.S. Army Corps of Engineers**
Indiana Harbor & Canal Confined Disposal Facility
Slurry Walls Gaps

*Prepared by:*

**Environmental Quality Management, Inc.**
1800 Carillon Boulevard
Cincinnati, Ohio 45251

**August 2007**

# CONSTRUCTION DOCUMENTATION REPORT

Prepared for:

U.S. Army Corps of Engineers
Indiana Harbor & Canal Confined Disposal Facility
Slurry Wall Gaps

Contract No. W912P6-06-C-0003
Submittal No. 01100-18 Item 5

Prepared by:

Environmental Quality Management, Inc.
1800 Carillon Boulevard
Cincinnati, Ohio 45240

August 2007

**CONSTRUCTION DOCUMENTATION REPORT**

**Contract No. W912P6-06-C-0003**
Submittal No. 01100-18 Item 5

I certify that this submittal has been reviewed in detail and is correct and in strict conformance with the contract drawings and specifications except as otherwise stated.

John Wentz 8/2/07
Date

Noted exceptions:

None

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# SECTION 1

# INTRODUCTION

The primary purpose of this project was the installation of approximately 990 linear feet of soil bentonite slurry wall (slurry wall). The slurry wall was installed in two segments. One segment was on the west side of the property between about Stations 78+50 to 87+10 (860 feet), and the other segment was on the east side between about Stations 43+30 and 44+60 (130 feet). Please note that the construction specifications identified one end point on the west side to be at about station 86+90, but field conditions and the previous as-built drawings located the actual end point at about station 87+10. The remaining end points were accurate. These segments represented gaps in the west and east sides of the slurry wall surrounding the site. The gaps existed because of right-of-way issues with the CSX Railroad that were recently resolved. Prior to the installation of the slurry wall, all obstructions along its path were removed, including 350 linear feet of the former CSX rail spurs.

## 1.1 Site Location

The Energy Cooperative Incorporated (ECI) property is located in Lake County Indiana (Northwest Indiana), 20 miles southeast of downtown Chicago, Illinois and 1.5 miles northwest of the City of East Chicago, Indiana. A location map is provided as Figure 1. The overall size of the property is approximately 160 acres. The project site is bordered by Lake George Canal to the south, Indianapolis Boulevard to the east, Cline Avenue to the north, and the Amoco Oil Company Refinery to the west. A railroad track owned by CSX Railroad runs parallel to the entire length of the west property line between the ECI property and the Amoco Oil Company Refinery. A portion of these railroad tracks also diverges and bisects the ECI property into a northern and a southern zone. The size of the northern zone is approximately 50 acres, and the southern zone is approximately 110 acres. The northern zone is connected to the southern zone via a right-of-way that crosses the bisecting railroad track near the eastern edge of the ECI property.

## 1.2 Site Description

The information presented in this section is reproduced from Section 00800B-1.2 and the construction drawings of the Construction Specifications for this project.

The ECI property was the location of a petroleum products refinery from 1918 to 1981. Peak production was approximately 140,000 barrels per day. The project parcel, termed the main refinery, contained the principal production area and also included storage, a marine loading area, rail loading areas, insecticide manufacturing, truck docking facilities, and an American Petroleum Institute (API) separator. The refinery operations included the production of mineral spirits, propane, leaded and unleaded gasoline, fuel oil, kerosene, asphalt and asphalt products, liquefied petroleum gas, grease, lubricating oils, paraffin wax, phenols, and sulfur. Between 1940 and 1958, pyrethrum extract consisting of dried heads of certain varieties of chrysanthemums was filtered on site. The filtered extract was combined with kerosene and used as an insecticide base to produce insecticide. The maximum annual production of insecticide base occurred in 1944 when 49,359 barrels were produced. This accounted for 0.26 percent of the total plant throughput.

Former owners of the project site include Sinclair from 1918 to 1968, Atlantic Richfield Company (ARCO) from 1968 to 1976, and ECI from 1976 to 1981. Figure 2 shows the layout of the project site during ECI's ownership in 1977 while it operated as a refinery. In 1981, ECI filed for bankruptcy; in the late 1980s, all buildings and aboveground structures were razed in response to a court order. Several inches of clean topsoil were graded to cover the site. In 1989, the City of East Chicago became the owner of the site as payment for back taxes owed by ECI.

The site has open Resource Conservation and Recovery Act (RCRA) status because the court-approved closure of the facility was not comparable to a RCRA-approved closure. In addition, the site requires RCRA corrective action due to the contamination of soil and groundwater on site from past industrial activities.

# SECTION 2

# AS-BUILT DRAWINGS

Full-size and an electronic copy of as-built drawings for each day of production and the final product were submitted to USACE separately. The Dewind process does not involve a typical excavation and backfill slope. Rather, the excavation is vertical and is only for the depth of the trencher cutter bar. Therefore, the requirements for depicting excavation slope and backfill slope are not applicable. Survey data was obtained prior to and at the conclusion of the installation of the slurry wall. The total depth of the wall was determined by measuring the depth of the cut from the trencher bar. This was 39 feet deep on the east segment and 36 to 39 feet on the west (from grade). The final placement of the slurry wall was determined by surveying the inside and outside edges and the centerline on 20-foot intervals along the length of the newly installed slurry wall.

Appendix A provides an 11-inch x 17-inch copy of as-built drawings of the areas affected by the construction performed under this contract.

# SECTION 3

# FIELD AND LABORATORY TEST DATA

## 3.1 Final Disposal Report

The only wastes produced during this project were non-contaminated construction debris (e.g., empty bentonite bags, office refuse, etc.). No hazardous, free product, or oil wastes were generated from any construction activity (including the oil water separator, dewatering, or decontamination operations). This section is therefore not applicable.

## 3.2 Closure Reports and Records

No underground storage tanks were encountered or removed. This section is therefore not applicable.

## 3.3 Final Excavation, Handling, and Obstruction Removal Work Plan

The final Excavation, Handling, and Obstruction Removal Work Plan is presented in Appendix B. No significant changes were made from the approved plan.

## 3.4 Final Cutoff Wall Implementation Plan

The final Soil Bentonite Slurry Trench Cutoff Wall Implementation Plan is presented in Appendix C. The final plan differs from the original Construction Specifications and the initially approved plan in that the Dewind process does not use a conventional slurry to maintain an open trench. A bentonite slurry is prepared and is directly mixed with the soil. There is therefore no slurry testing. Quality control was determined by permeability testing of the mixed material from the surface and through core samples taken every 100 feet at various depths determined by USACE. The results were previously submitted to USACE and are provided again in the next section.

## 3.5 Project Records (Related to Slurry Wall Installation)

### 3.5.1 Test Results

Initially the slurry wall was to be installed by a conventional open trench method that would have utilized a conventional slurry and slurry testing of the fresh slurry even though in-trench slurry testing was required. USACE approved the alternate one-pass trenching method, however, that does not use a conventional slurry. Therefore, no slurry testing was performed. Verification testing of the wall was performed with two types of tests, both of which were based on ASTM D5084 Flexible Wall Permeameter methodology. The first tests were run on disturbed surface samples collected at 100-foot intervals along the wall (10 locations). USACE did not split these samples. EQ's results showed compliance with the permeability goal of $1.0 \times 10^{-7}$ cm/sec for all samples, as shown in Appendix D Initial backfill Samples. These samples were collected with a small "gardening" type shovel (new for each sample). The samples were placed in double, gallon size "zip loc" bags and transported to the laboratory. They were compacted and analyzed in accordance with ASTM D5084 Flexible Wall procedures.

The second set of samples consisted of undisturbed samples collected with a drill rig and Osterberg piston-type sampler. This sampling device is a hydraulically driven piston that forces a 3" diameter sampling tube into undisturbed soil. The sampling methodology was developed by USACE and is presented in Appendix E (K&S Sampling Procedures) of Appendix C (Final Soil Bentonite Slurry Trench Cutoff Wall Implementation Plan). The sampling method collected 3" diameter by 30" long tubes. These were wax sealed, taped, labeled and transported to the lab upright and in core boxes. Once at the lab, the tubes were cut with an abrasive wheel saw (since the hydraulic ram device would not support the entire tube). Twelve inches was cut from the bottom of the tube in all cases. The longer section was then placed in the hydraulic ram (bottom end extracted first). Approximately 2-3 inches of material was extracted, cut off, and disposed of. If there were any abnormalities in the visible end of the sample (such as major fractures or large stones) the tube was extracted further until a normal sample was evident. The flexible wall membrane/support apparatus was then placed directly adjacent to the tube and the sample was extruded directly into the membrane. The sample was saw cut from the tube with a piece of dental floss. Both ends of the sample were then inspected. Minor abnormalities were patched

with wasted material from the tube. If any major abnormalities were present the entire sample was discarded and an additional sample from the next interval from the tube was collected.

USACE split three of these samples. EQ's results showed five failing results and six passing results. USACE results showed two failing and one passing result. The split results were consistent in two locations and inconsistent in one. A summary table showing the initial sampling results and the lab reports for EQ's samples is presented in Appendix D.

The slurry wall was reworked by the addition of more bentonite in all locations where at least one sample showed non-compliance (six locations). Only undisturbed subsurface samples were collected (no surface samples). USACE split the samples from two of these locations. All six of EQ's samples showed compliance; one of USACE's samples passed and the other failed (Station 43+50). EQ again reworked the slurry wall with additional bentonite and resampled at the station 43+50 location. The resampling produced a passing result. A table summarizing the final data for all locations is presented in Appendix D along with EQ's final verification reports.

Bentonite certificates are presented in Appendix D.

### 3.5.2 Construction Log

The Construction Log is presented in Appendix D.

# SECTION 4

# CONSTRUCTION QUALITY ASSURANCE PLAN

## 4.1 Final Construction Quality Control Plan

The final Construction Quality Control Plan in presented in Appendix E. This document has been revised to reflect the approved use of the Dewind process.

## 4.2 Daily Construction Quality Control Reports and Checklists

The daily construction quality control reports are presented in Appendix F.

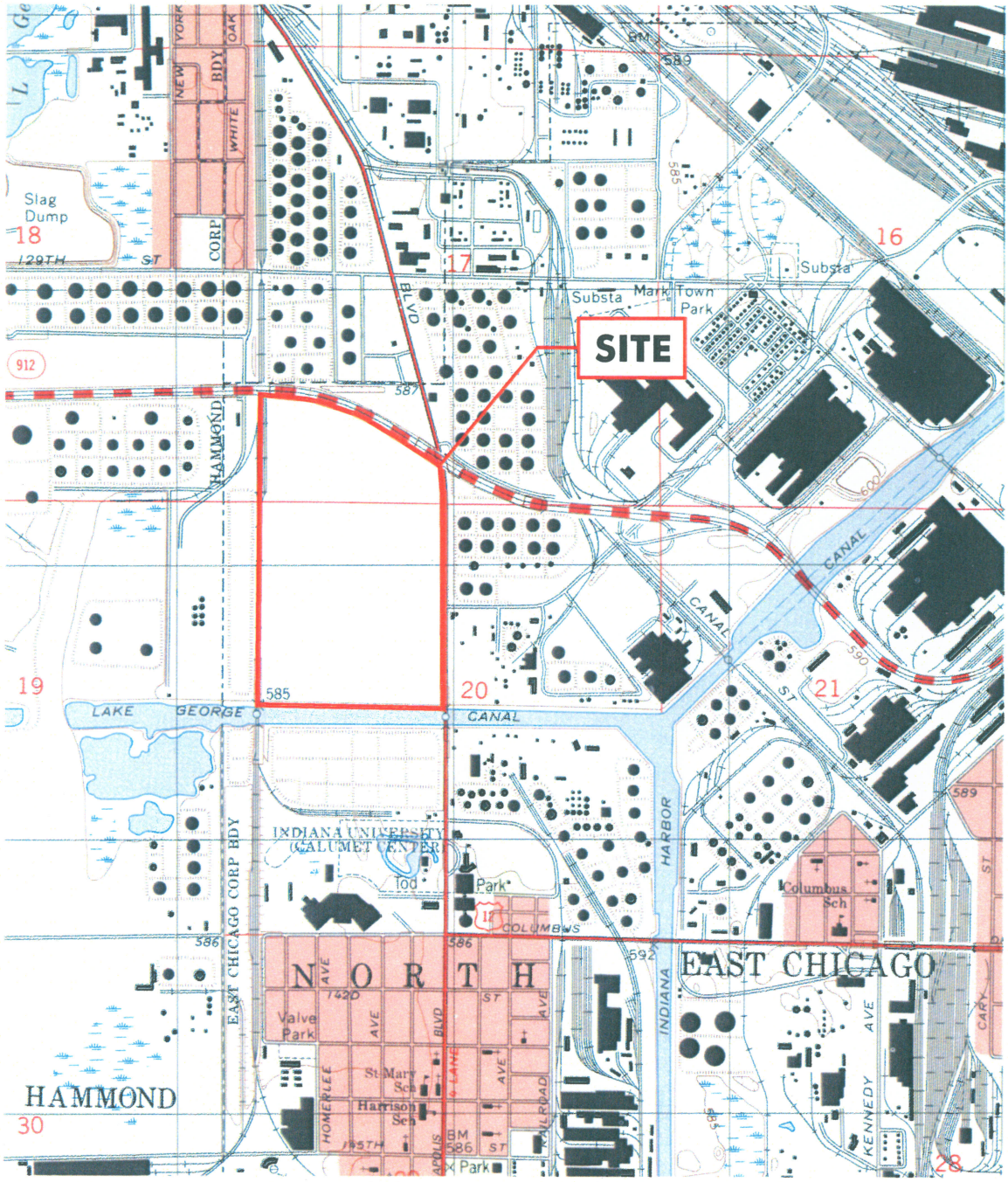
# SECTION 5

# AIR MONITORING SUMMARY

Monthly air monitoring summaries with the raw monitoring data and sample location maps are presented in Appendix G. No ambient air monitoring data was collected until June 2006. This was based on a determination by EQ's SSHO that the extensive existing air monitoring database made this sampling unnecessary. USACE disagreed with this determination and sampling began in June 2006 and continued through December 2006. Air monitoring was performed during dust-producing construction activities. Monitoring was not performed in other periods or when extremely cold conditions would not permit effective operation of the equipment.

The results of ambient air monitoring showed no exceedances of applicable limits. As an additional safety precaution, personal air monitoring was conducted on the bentonite mixing operators and trencher operator on September 8, 2006. The results of one sample showed an exceedance of the OSHA PEL for respirable dust. However, this exceedance did not change the PPE protection being utilized because the PEL did not exceed the protection factor for the half-face respirator being used.

# FIGURES




Scale 1:24000

1 ½ 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 .5 0 1 KILOMETER

QUADRANGLE LOCATION

N

**Reference:**
IN Harbor & Canal CDF
Subsurface Investigation & Cutoff Wall
3500 Indianapolis Boulevard
East Chicago, IN 46312
Contract No. DACW 27-02-C-0003

**Date:** February 2006

**BASE MAP SOURCE:**
USGS 7 1/2 minute topographic quadrangle map. Whiting, Indiana 1998.


Environmental Quality Management, Inc.
1800 Carillon Boulevard
Cincinnati, Ohio 45240
Phone: (513) 825-7500
Fax: (513) 825-7495

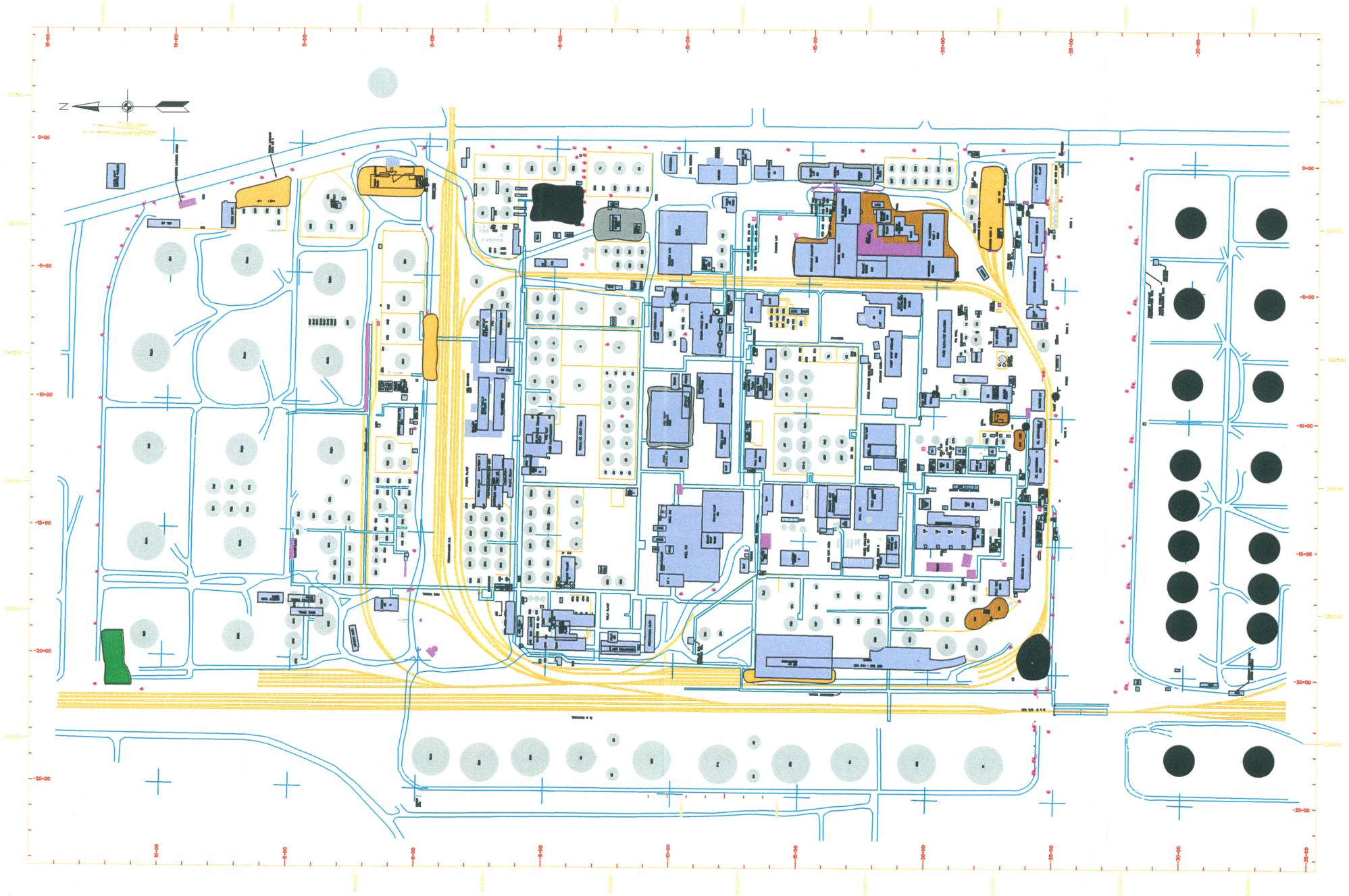

| | | |
|---|---|---|
| DRAWN | SRL | 3/12/02 |
| CHECKED | JAW | 3/12/02 |
| APPROVED | FDH | 3/12/02 |

SCALE: 1:24000

# Site Location Map

ICH CDF Slurry Wall Gaps

| ORIGINAL SIZE | PROJECT NO. | DWG NO. | REV |
|---|---|---|---|
| A | 030249 | FIGURE 1 | |



0 100' 300' 800'
50' 200' 400'

| REV | DESCRIPTION | DATE | APPROVED |
|---|---|---|---|
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

REVISIONS

ENVIRONMENTAL QUALITY MANAGEMENT, INC.
1800 CARILLON BLVD.
CINCINNATI, OHIO 45240
P (513)825-7500
F (513)825-7495

| | | |
|---|---|---|
| DRAWN | D.TOMO | 12/07/06 |
| CHECKED | E.WISE | 12/07/06 |
| APPROVED | J.WENTZ | 12/07/06 |
| SCALE: | AS NOTED | |

# IHC CDF OBSTRUCTION REMOVAL
## ECI SITE PLAN
## 1977

| ORIGINAL SIZE | PROJECT NO. | DWG NO. | REV |
|---|---|---|---|
| B | 030249 | FIGURE 2 | 0 |

# APPENDIX A

# AS-BUILT DRAWINGS

## John Wentz

**From:** Mills, Natalie R LRC [Natalie.R.Mills@usace.army.mil]
**Sent:** Friday, October 26, 2007 11:45 AM
**To:** John Wentz
**Cc:** dtomo@eqm.com
**Subject:** RE: QCS Update (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

John,

Please submit 2 full size drawings and disc.

As far as the drawings for the CDR, we will include them once we get the signature on the drawings.

Thanks,
Natalie

-----Original Message-----
From: John Wentz [mailto:jwentz@eqm.com]
Sent: Friday, October 26, 2007 8:17 AM
To: Mills, Natalie R LRC
Cc: dtomo@eqm.com
Subject: RE: QCS Update (UNCLASSIFIED)

Natalie,
We have discussed changes in the quantity and type of as-built submittals.
Before I send a package that does not contain the correct amount, few questions.

As built drawings, we are planning on sending 2 paper sets at full size plus one disc. No mylar anymore. Correct???

The CDR will eventually require as-builts. One set of drawings is about 95 sheets. What size drawings do you want attached to the CDR??? My recommendation would be 11x17. Please advise.

John

John Wentz, P.E.
Environmental Quality Management, Inc.
1800 Carillon Boulevard
Cincinnati, Ohio 45240
513-825-7500 Voice
513-673-4050 Mobile
513-825-7495 Fax

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-----Original Message-----
From: Mills, Natalie R LRC [mailto:Natalie.R.Mills@usace.army.mil]
Sent: Thursday, October 25, 2007 3:53 PM
To: John Wentz
Subject: QCS Update (UNCLASSIFIED)

# APPENDIX B

# FINAL EXCAVATION, HANDLING, AND OBSTRUCTION REMOVAL WORK PLAN

# EXCAVATION, HANDLING, AND OBSTRUCTION REMOVAL WORK PLAN

Prepared for:

U.S. Army Corps of Engineers
Indiana Harbor & Canal Confined Disposal Facility
Slurry Wall Gaps

Contract No. W912P6-06-C-0003
Submittal No. 02215-1.1

Prepared by:

Environmental Quality Management, Inc.
1800 Carillon Boulevard
Cincinnati, Ohio 45240

June 2006

**EXCAVATION, HANDLING, AND OBSTRUCTION REMOVAL WORK PLAN**

**Contract No. W912P6-06-C-0003**
Submittal No. 02215-1.1

I certify that this submittal has been reviewed in detail and is correct and in strict conformance with the contract drawings and specifications except as otherwise stated.

Ed Wise, P.E. 6/6/6
Date

Noted exceptions:

1) EQ has not identified the specific trench box to be used for this project. Once it is identified, EQ will provide a certification that is stamped by a registered professional engineer for the specific trench box.

2) The construction specifications require that all pipes 6 inches in diameter and less use mechanical plugs. However, EQ believes that this type of plug is not suitable for non-metallic or plastic lines (e.g., concrete, clay tile); these types of pipes may fracture when the pressure of the plug is applied. We are therefore requesting a deviation from the construction specifications to permit non-metallic or plastic pipes under 6 inches in diameter and less to be sealed with cement or grout. For pipes over 4 inches in diameter, the opening will be sealed with concrete (the same as with the metallic and plastic pipes). The crew will fabricate two plywood blanks to place inside the two pipeline ends. These blanks will serve two purposes: they will hold back residual liquid from the pipelines, and they will act as forms to fill the pipe end with concrete. The pipe ends will be filled with concrete to a minimum thickness equivalent to the diameter of the pipe. For pipes under 4 inches in diameter, concrete or grout will be inserted into the pipe such that at least 4 inches of material will fill the end.

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# SECTION 1

# INTRODUCTION

The primary purpose of this project is the installation of approximately 970 linear feet of slurry wall. This slurry wall will be installed in two segments. One segment is on the west side of the property between about Stations 78+50 to 86+90 (840 feet), and the other segment is on the east side between about Stations 43+30 and 44+60 (130 feet). These segments represent gaps in the west and east sides of the slurry wall surrounding the site. These gaps exist because of right-of-way issues with the CSX Railroad that have recently been resolved. Prior to installation of the slurry wall, all obstructions along its path will be removed. Because the site was formerly used as a refinery, numerous pipes, conduits, and other obstructions may exist in the path of the cutoff wall.

# SECTION 2

# SITE LOCATION AND DESCRIPTION

## 2.1 Site Location

The Energy Cooperative Incorporated (ECI) property is located in Lake County Indiana (Northwest Indiana), 20 miles southeast of downtown Chicago, Illinois and 1.5 miles northwest of the City of East Chicago, Indiana. A location map is provided as Figure 1. The overall size of the property is approximately 160 acres. The project site is bordered by Lake George Canal to the south, Indianapolis Boulevard to the east, Cline Avenue to the north, and the Amoco Oil Company Refinery to the west. A railroad track owned by CSX Railroad runs parallel to the entire length of the west property line between the ECI property and the Amoco Oil Company Refinery. A portion of these railroad tracks also diverges and bisects the ECI property into a northern and a southern zone. The size of the northern zone is approximately 50 acres, and the southern zone is approximately 110 acres. The northern zone is connected to the southern zone via a right-of-way that crosses the bisecting railroad track near the eastern edge of the ECI property.

## 2.2 Site Description

The ECI property was the location of a petroleum products refinery from 1918 to 1981. Peak production was approximately 140,000 barrels per day. The project parcel, termed the main refinery, contained the principal production area and also included storage, a marine loading area, rail loading areas, insecticide manufacturing, truck docking facilities, and an American Petroleum Institute (API) separator. The refinery operations included the production of mineral spirits, propane, leaded and unleaded gasoline, fuel oil, kerosene, asphalt and asphalt products, liquefied petroleum gas, grease, lubricating oils, paraffin wax, phenols, and sulfur. Between 1940 and 1958, pyrethrum extract consisting of dried heads of certain varieties of chrysanthemums was filtered on site. The filtered extract was combined with kerosene and used

as an insecticide base to produce insecticide. The maximum annual production of insecticide base occurred in 1944 when 49,359 barrels were produced. This accounted for 0.26 percent of the total plant throughput.

Former owners of the project site include Sinclair from 1918 to 1968, Atlantic Richfield Company (ARCO) from 1968 to 1976, and ECI from 1976 to 1981. Figure 2 shows the layout of the project site during ECI's ownership in 1977 while it operated as a refinery. In 1981, ECI filed for bankruptcy; in the late 1980s, all buildings and aboveground structures were razed in response to a court order. Several inches of clean topsoil were graded to cover the site. In 1989, the City of East Chicago became the owner of the site as payment for back taxes owed by ECI.

The site has open Resource Conservation and Recovery Act (RCRA) status because the court-approved closure of the facility was not comparable to a RCRA-approved closure. In addition, the site requires RCRA corrective action due to the contamination of soil and groundwater on site from past industrial activities.

# SECTION 3

## APPLICABLE ENVIRONMENTAL LAWS, REGULATIONS, AND PERMITS

Regulations relevant to this task are 29 CFR 1926.650, 651, and 652; 29 CFR 1926 Subpart P Appendices A, B, C and F; and 29 CFR 1910.120 (copies of these regulations are included in Appendix A).

# SECTION 4

# PREPARATORY TASKS

This section briefly describes the project work that must be completed prior to mobilization of construction personnel, equipment, and materials for trench inspection and obstruction removal activities. Site preparation work must be completed, to the extent necessary, before this construction work begins. Thus, the existing fencing will have been repaired and additional fencing installed, where necessary, to secure and control access to the site. Work zones (i.e., exclusion, contamination reduction, and support zones) will have been established. Decontamination facilities will have been set up and be operational. The necessary procedures and practices to control and monitor water pollution, air pollution (i.e., fugitive dust), erosion and sediment runoff, and noise control will be in place, in force, and in effect. Work roads will have been constructed on site to allow for on-site transport of construction personnel, equipment, and materials. Waste and borrow stockpile areas will have been established. The centerline of the inspection trench and all known/identified utilities and obstructions along the first segments of the inspection trench completed will have been surveyed and marked. The utility survey will have been completed and all known utilities will have been surveyed, located, and marked. This will include the utilities identified by the USACE in the Construction Specifications and through contact of relevant companies in the area. A header pipe will have been installed to convey groundwater/oil from the dewatering well points. The oil water separator (OWS) system will be operational for treating recovered groundwater.

# SECTION 5

# DEWATERING

Dewatering will be provided to support the excavation of the inspection trench and removal of obstructions. Dewatering will be performed by installing well points, a well point pump system, and a header pipe to convey the groundwater to the OWS system. PVC well points will be driven to a depth of approximately 20 to 23 feet. These well points will be screened in the lower 2 to 10 feet dependant upon site conditions. In cases where there is free product on the aquifer, EQ will consider driving the well points deeper and screening in a lower and narrower zone. Deeper well points will be installed, the lowermost end will be screened, and the pumping rate will be controlled to allow groundwater to be depressed sufficiently to enable the trench to be inspected without removing substantial amounts of free product from the aquifer.

The well points will be installed by the Hydro-Jet method. One row of well points will be installed at an off-set of approximately 10 feet to the outside of the center line of the proposed cutoff wall for the western segment, and 10 feet to the inside of the cutoff wall for the eastern segment. Well points will be installed on centers of approximately 6 feet. The inspection trench is anticipated to proceed at a rate of 100 to 125 feet per day, depending upon the quantity and type of obstructions encountered. As a result, approximately 350 to 500 feet of trench will be used in the dewatering operation at any given time, including 20 to 50 feet of just completed trench behind the open trench, 100 to 125 feet of trench for a typical production day, and 2 to 3 days worth of trench for future day's work. As a trench segment is completed, the well point pump system header piping will be "leap frogged" to the next set of already installed well points. Several trench segments must be dewatered ahead of the open trench segment to allow for adequate time to dewater the area in advance of excavation. When the inspection trench, obstruction removal, and backfilling have been completed in an area, the well points will be removed and reused for the next section to be installed. Dewatering will be performed 16 hours per day. The dewatering system will be started approximately 16 hours prior to excavation and obstruction removal.

Recovered water will be routed to the OWS. Piping from the western segment will be routed over the existing dike. Steel plates will be installed on the top of the dike to facilitate unrestricted vehicle movement. For the eastern segment, a steel culvert will be used to allow vehicle traffic at the road crossing. Figure 3 shows the approximate locations of the dewatering piping, road crossing plates, and culvert.

# SECTION 6

# EXCAVATION PROCEDURES AND EQUIPMENT

The existing railroad tracks crossing the path of the cutoff wall on the west and east sides will be removed prior to the start of inspection trenching. The inspection trench will be excavated by using standard tracked hydraulic excavators that are sized appropriately for the work as it progresses (i.e., Daewoo 330SL, Daewoo 200 series, Cat 220, Cat 330, or equivalent). Based on prior experience with the site, EQ expects most (if not all) of the obstructions to be present in the upper 6 feet of material. This upper material is heavily mixed with construction debris from the refinery demolition. The lower 6 to 15 feet interval is relatively free of debris and obstructions. No obstructions are expected deeper than 15 feet.

In order to ensure that the material remaining after obstruction removal is free of unacceptable debris, the entire upper 6 feet of material will be excavated, transported to the screener, screened of debris, placed back in the excavation, and recompacted. The width of the excavation will be 10 feet (5 feet to each side of the cutoff wall centerline). This measurement complies with the obstruction removal requirements found in Section 02215.3.1.1, and will allow the excavators to work in the excavation for the deeper inspections. The sidewalls of the upper trench will be sloped in accordance with the requirements of 29 CFR 1926 Subpart P, Appendix B. (See Appendix A of this document.) Sloping will be approved by the Site Safety and Health officer (SSHO) prior to any personnel entering the excavation. Once the upper 6 feet of material has been removed, the deeper 6- to 15-foot section will be inspected.

The deeper section will be inspected with two excavators. One excavator will be fitted with a 24-inch-wide bucket to perform the actual excavation. Excavated soil will be placed toward the front end of the open excavation. A second excavator will be fitted with a vibratory plate compactor to recompact soil as it is placed by the first excavator. Trench box(es) will be used to hold the side walls open as the deeper excavation proceeds. No recompaction testing will be performed on the deeper excavation.

The shallow trench section will be backfilled with satisfactory material from the stockpiles located near the screener. (The screener will be fitted with 2-inch screens.) Based on prior experience with the site, EQ expects about a 25 to 35% reject ratio from the screener. This means an equivalent amount of additional material must be provided. EQ will collect this additional material from an expansion of the existing infiltration gallery. This material will also be screened of debris. Screened debris from the inspection trench will be transported to the debris stockpile, weighed for payment, and disposed of. Screened refuse from the infiltration gallery expansion will also be disposed of in the debris stockpile, but it will not be weighed for payment.

Screened backfill will be transported to the shallow excavation (under 6 feet) from the stockpiles with trucks. It will be spread in the excavation with a front-end loader or bull dozer. The shallow excavation will be backfilled in lifts with a maximum loose thickness of 8 inches and will be compacted to 95 percent of maximum dry density per ASTM 698. The trench will be kept dewatered during placement and compaction. Soil will be compacted by a roller compactor, vibratory plate compactor attachment fitted on the hydraulic excavator, or equivalent. Compaction will be tested at a frequency of once per 500 square feet per lift or once per lift, at a minimum, if less than 500 square feet. Field in-place dry density will be determined in accordance with ASTM D 1556, ASTM D 2167, or ASTM D2922. If ASTM D 2922 is used, a minimum of 1 in 10 tests will be checked by using ASTM D 1556 or ASTM D 2167. Test results from ASTM D 1556 or ASTM D 2167 will govern if there is a discrepancy with the ASTM D 2922 test results. At least one ASTM D 698 test will be performed for every 2,000 cubic yards of backfill tested. Areas that fail will be re-compacted and tested.

Installation of the inspection trench will begin on the west side of the site at the south end (approximately Station 86+90) and proceed northward. Installation of the east segment will begin at about station 44+60 and proceed south. The trench will be excavated in 150- to 225-foot intervals, depending on the number, type, and nature of obstructions encountered or known to be present in the excavation area. This will include 50 to 75 feet for the crew performing the shallow excavation, 50 to 75 feet for the crew performing the deeper inspection, and 50 to 75 feet for the replacement and recompaction crew. A spotter will be used on the ground to provide vision assistance for the excavator operators.

# SECTION 7

## SHEETING, SHORING, SLOPING, BRACING, AND TRENCH BOXES

EQ expects to use sloping to stabilize most excavations. The excavation will be stabilized by sloping, and the requirements of 29 CFR 1926 Subpart P, Appendix B, will be followed. (See Appendix A of this document.)

Trench boxes will be needed for the lower excavation (6 to 15 feet), however, and (in some cases) may be needed to stabilize the shallow excavation. EQ has not identified the specific trench box to be used for this project. Once it is identified, EQ will provide a certification that is stamped by a registered professional engineer for the specific trench box. We expect that either 8-ft by 20-ft- 4-in. 4M820 GME steel trench boxes or 10-ft by 20 ft- 4-in. double-wall 4M1020 GME trench boxes will be used. Appendix B presents example tabulated data, with an example Professional Engineer certification for these trench boxes. It should be noted that the construction specifications require the trench box to be certified by an Indiana licensed Professional Structural Engineer. We are requesting a deviation from this requirement for the trench boxes in order to permit the boxes to be certified by a licensed professional engineer from the state of manufacture. EQ will not use any trench boxes until a Professional Engineer's certification for the trench box is transmitted to USACE and approved.

# SECTION 8

## STORAGE METHODS FOR STOCKPILED SOIL AND DEBRIS

Materials excavated from the inspection trench will be transported by dump trucks to the screener. Excavated unsatisfactory soils not suitable for use as backfill include (but are not limited to) those materials classified in ASTM D 2487 as PT, OH, OL, or those containing organic matter, frozen materials, or building/construction debris from the razing of previous on-site facilities. Debris will be removed with the screener, and separate piles will be created for debris and cleaned backfill. Based on prior experience with the site, EQ expects about a 25 to 35% reject ratio from the screener. This means an equivalent amount of additional material must be provided. EQ will collect this additional material, which will also be screened of debris, from an expansion of the existing infiltration gallery. Screened debris from the inspection trench will be transported to the debris stockpile, weighed for payment, and disposed of. Screened refuse from the infiltration gallery expansion will also be disposed of in the debris stockpile, but it will not be weighed for payment. A front-end loader will supply material to the screener and remove cleaned material and debris. A laborer will assist the loader operator and inspect the cleaned material pile. He will manually remove any unsuitable materials not removed with the screener.

A front-end loader will be used to maintain the stockpiled soils in a neat and well-drained condition; the equipment used will also assist in backfilling operations. Fill materials will be protected from conditions that may affect the quality and fitness of the soils. At the conclusion of the project, any satisfactory soils not used will be stockpiled at a location approved by the Contracting Officer (CO).

The truck will be weighed on a certified scale. The scale will be certified after installation, and copies of the scale certification will be provided to the CO prior to the start of inspection trenching. Copies of the scale tickets will be given to the CO.

# SECTION 9

# OBSTRUCTION REMOVAL

Five primary classifications of obstacles may be encountered during excavation of the inspection trench. These classifications are metallic/plastic pipelines, other non-metallic pipelines, electrical obstructions, construction debris (railroad ties, concrete foundations, etc.), and underground storage tanks. They will be removed in a similar manner with variations appropriate to each classification. Obstructions will be removed to a minimum distance of one foot from each exterior face of the cutoff wall, and to a distance not greater than 5 feet on either side of the cut-off wall centerline. Specific information regarding removal procedures for each classification of obstruction is presented in the following subsections.

## 9.1 Metallic and Plastic Pipelines

Metallic and plastic (e.g., PVC) pipes may contain hazardous or non-hazardous materials. Construction drawings are available that identify many of these lines. Based on the long period of time the site was operated and the complexity of the operations, EQ will conservatively treat each line as an unknown. Therefore, tapping procedures for each metallic and plastic pipelines will be handled as if the line contained a pressurized, hazardous, flammable material. As pipelines are identified through the excavation and inspection means described earlier, the excavator will remove material to expose the pipeline(s). The sides of the excavation will be sloped, or trench boxes will be lowered into place on both sides of the pipeline(s). Trench boxes may be stacked to provide protection to the appropriate depth. Excavations in excess of 4 feet deep will require confined space entry procedures (but not a confined space entry permit, because trenches are exempted by OSHA). Additional ventilation will be provided as needed (determined by the SSHO).

The crew will begin to perform a cold tapping operation to open the line in a controlled manner and thus limit the release of material and minimize fire and explosion potential. Entrants

to the trench will use shovels to completely expose the pipe for access to the entire circumference. A pipe saddle of appropriate size will be affixed to the pipeline. Appendix C presents vendor literature regarding a typical pipe saddle. A TDW model T-101/T or T-101b-XL drilling machine (or equivalent) will then be used to penetrate the pipe. Appendix D contains a description of this typical drilling machine along with its operation and maintenance procedures. The initial penetration will be near the bottom of the pipe (preferred) to remove free liquids. The aforementioned drill will be utilized to penetrate the pipe wall through the valve and saddle attachment over a catch pan with absorbent materials to contain liquids. Once the line has been penetrated, the contents of the pipe will be evaluated, including the pressure of the line, presence of free liquids, Lower Explosive Limit (LEL) and Volatile Organic Carbon (VOC) determination, and a visual/olfactory assessment of the contained material. Subject to how the line was abandoned, air may not penetrate from other locations and the line may vapor lock with contents in place. In this event, the line will be allowed to drain into the catch pan and liquid will be removed from there. A Vac Truck with a cam lock fitting and vacuum hose will be used to remove pipe contents from the catch pan.

The SSHO will determine if purging is necessary prior to any further pipeline activity. This may include pipelines that are suspected to contain flammable or combustible materials. If deemed necessary, purging/rinsing will involve flushing with water applied by a pressure washer equipped with a flex line and jetting nozzle. In these cases, a flexible hose with the jetter nozzle will be fed through the valve assembly and into the pipeline. Rinse water will be contained and removed. The SSHO will then evaluate if the pipeline should be purged or inerted before breaking if flammable vapor levels are greater than 10 percent of the lower explosion limit (LEL). The pipelines may be purged of flammable vapors mechanically by using compressed-air driven venturi-type eductors connected to top fittings on the tank. Exhaust from the eductor will be discharged a minimum of 12 feet above ground surface. Alternately, the lines may be inerted with nitrogen gas. In this case, the gas will be fed into the pipe through adapted fittings on the valve assembly. Once the line is made ready for breaking, the crew will utilize an air-driven reciprocating saw or other suitable means to break the line at each end. Air will be monitored during the operation to protect workers from flammable or oxygen-deficient atmospheres. Liquids removed from the pipe will be collected. Liquids suitable for processing through the

OWS will be transferred to one of the tanks for intermittent streams and processed through the OWS. Liquids not suitable for processing through the OWS will be containerized, characterized, and disposed of accordingly.

Once the appropriate span of pipe has been removed, a plug of appropriate size will be inserted into the two pipeline ends. For metallic pipes 12 inches in diameter and less, mechanical plugs will be used. At a minimum, the mechanical plug will have a natural rubber "O" ring that can be expanded to the inside diameter of the pipe by using a wing nut. For metallic pipes over 12 inches in diameter and all plastic pipes equal to or greater than 4 inches in diameter, the opening will be sealed with concrete. The crew will fabricate two plywood blanks to place inside the two pipeline ends. These blanks will serve two purposes: 1) they will hold back residual liquid from the pipelines, and 2) they will act as forms to fill the pipe end with concrete. The pipe ends will be filled with concrete to a minimum thickness equivalent to the diameter of the pipe. For plastic pipe less than 4 inches in diameter, concrete or grout will be inserted into the pipe such that at least 4 inches of material will fill the end. EQ believes that mechanical plugs for plastic pipe may not be suitable because this type of pipe may fracture when outward pressure is applied to the plug. We are therefore requesting a deviation from the construction specifications to allow plastic pipe to be sealed with cement or grout. Details regarding the plugs and concrete bulkheads are presented in Appendix E.

## 9.2 Other Non-Metallic Pipes

Other non-metallic pipes include asphalt pipe, clay tile, and concrete pipe/tile. These lines will most likely contain sewer or storm/sewer water. Therefore, the tapping procedures will not be as extensive. The trench will be prepared for entry and entered in a similar manner as described in Section 9.1. The lines will be exposed with shovels for accessibility. A reciprocating abrasive wheel or equivalent saw will be used to cut out the pipeline section targeted for removal, or the pipe may simply be broken with sledge hammers or the excavator. A collection pan will be placed under the line to contain residual contents in a manner similar to that used for metallic and plastic pipes. Liquids suitable for processing through the OWS will be transferred to one of the tanks for intermittent streams and processed through the OWS. Liquids

not suitable for processing through the OWS will be containerized, characterized, and disposed of accordingly.

Once the appropriate span of pipe has been removed, a plug of appropriate size will be inserted into the two pipeline ends. The construction specifications require that pipes 12 inches in diameter and less use mechanical plugs. EQ believes that this type of plug is not suitable for these types of pipes, however, and may fracture the pipe when the pressure of the plug is applied. We are therefore requesting a deviation from the construction specifications to permit non-metallic pipes to be sealed with cement or grout. For pipes over 4 inches in diameter, the opening will be sealed with concrete, as is done with metallic and plastic pipes. The crew will fabricate two plywood blanks to place inside the two pipeline ends. These blanks will serve two purposes: 1) they will hold back residual liquid from the pipelines, and 2) they will act as forms to fill the pipe end with concrete. The pipe ends will be filled with concrete to a minimum thickness equivalent to the diameter of the pipe. Details regarding the plugs and concrete bulkheads are presented in Appendix E. For pipes under 4 inches in diameter, concrete or grout will be inserted into the pipe such that at least 4 inches of material will fill the end.

### 9.3 Electrical Obstructions

Electrical cable, phone lines, miscellaneous wire, and conduit will be removed in a similar manner as piping. When electrical cable is encountered, caution must be used to prevent possible electrocution. Although all electrical lines are presumed to be de-energized, past experience has shown that buried electrical cables have a potential to still be energized even though they are present in a demolished facility. If the wire or conduit is encased in concrete, it will be exposed by means of a small electric or pneumatic chipping hammer (or equivalent). If the wire or cable is enclosed in a conduit, a hole saw, drill, hack saw, or equivalent means will be used to make a small penetration in the conduit. A current detector will then be used to determine if the line is energized. When active utilities are encountered, the appropriate utility officials and adjacent owners/operators of active operations will be contacted to determine if the utility is associated with any active, ongoing businesses. If the utility is still in use, arrangements will be made to relocate it or to make other temporary utility supply arrangements. Work will proceed in other areas as the active utility line(s) is being addressed so that the overall schedule

is not adversely impacted. Once they are confirmed to be inactive, cables, conduit, and wires will be cut with appropriate tools.

## 9.4 Construction Debris

Construction debris will include abandoned concrete (foundations, footers, construction debris, etc.), steel (structural, pipe, sheet, piling, etc.), and lumber (railroad ties, dimensional lumber, etc). These types of obstacles may not have been previously identified. These obstacles make it necessary to complete excavation of the investigation/observation trench because they cannot necessarily be identified from surface investigations. The removal of these objects will require evaluation on a case-by-case basis. The size of these objects could be massive and their removal could extend well beyond the specified expanse of trench dimensions. These objects may require sectioning to only remove material that lies within 5 feet of the centerline of the cutoff wall. Sectioned concrete objects will be saw cut with abrasive wheel saws (or equivalent), and pneumatic breakers may be used for further cutting once the object has been scored for controlled size removal. Sectioned steel objects will be cut with abrasive saws, torches, or equivalent hot permit. Sectioned objects will be extracted from the trench with the excavator bucket and thumb attachment or other means as appropriate.

## 9.5 Underground Storage Tanks

The final type of obstacle that may be encountered is an underground storage tank that will require complete removal regardless of tank dimensions and the relationship to the foot print of the trench. Specific procedures for UST removal are presented in the Tank Removal Work Plan. The upper surface of the tank will be exposed with an excavator. Access will be gained to the tank interior by removing piping or plugs or making a cold cut into the top of the tank. The tank will be sampled to determine the nature and volume of its contents. Arrangements will be made to evacuate the tank contents and transfer it into a temporary storage tank. The tank will be purged or inerted, and extracted from the ground. The tank will then be taken to an area remote from trenching operations, where it will be decontaminated and dismantled. If necessary, trench boxes will be utilized to protect personnel in the trench. Additional information regarding

UST removal can be found in the Underground Storage Tank removal Work Plan presented under separate cover in accordance with Section 02115 of the Construction Specifications.

# SECTION 10

# SAFETY

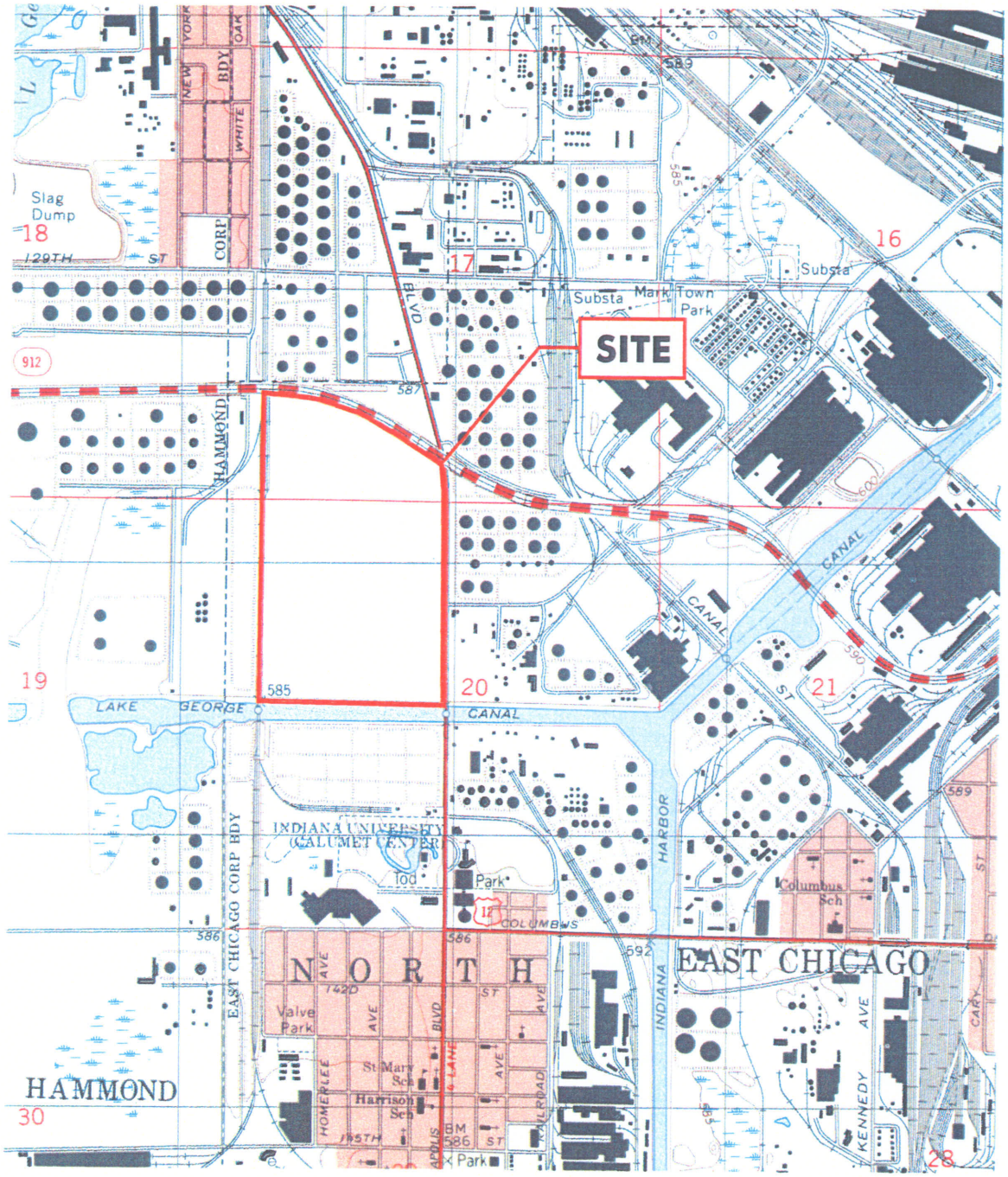
This task presents very serious safety and health risks. EQ will maintain necessary safety equipment to be utilized in this operation. To perform obstacle removal operations, we will prepare for the following hazards: excavation and excavation entry (confined space entry), working around heavy equipment, chemical inhalation and dermal exposure, and cutting into potentially flammable vessels (including pipelines). Activity Hazard Analyses (AHAs) for these tasks have been prepared and are included in the Accident Prevention Plan. EQ will keep an adequate number of trench boxes for the work anticipated and will provide additional boxes if needed. EQ will provide organic vapor monitors, LEL/$O_2$ meters, carbon monoxide meters, and hydrogen sulfide monotox units for air monitoring inside the trench and in the work areas. EQ will also utilize appropriate ladders, safety harness, winch, ventilation fans, vacuum truck, and absorbent materials for spill containment. Specific information on the safety aspects of the project are included in the Accident Prevention Plan.

# SECTION 11

# SCHEDULE

Several tasks must be completed prior to implementation of this plan. These items are summarized in Section 4, Preparatory Tasks, and Section 5, Dewatering. The critical tasks regarding the installation of the inspection trench involve the completion of the dewatering system, transfer pipe, and OWS. Specific information relating to the construction schedule can be found in Appendix F.

# FIGURES




Scale 1:24000

1 ½ 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 .5 0 1 KILOMETER

QUADRANGLE LOCATION

N

**Reference:**
IN Harbor & Canal CDF
Subsurface Investigation & Cutoff Wall
3500 Indianapolis Boulevard
East Chicago, IN 46312
Contract No. DACW 27-02-C-0003

**Date:** February 2006

**BASE MAP SOURCE:**
USGS 7 1/2 minute topographic quadrangle map. Whiting, Indiana 1998.

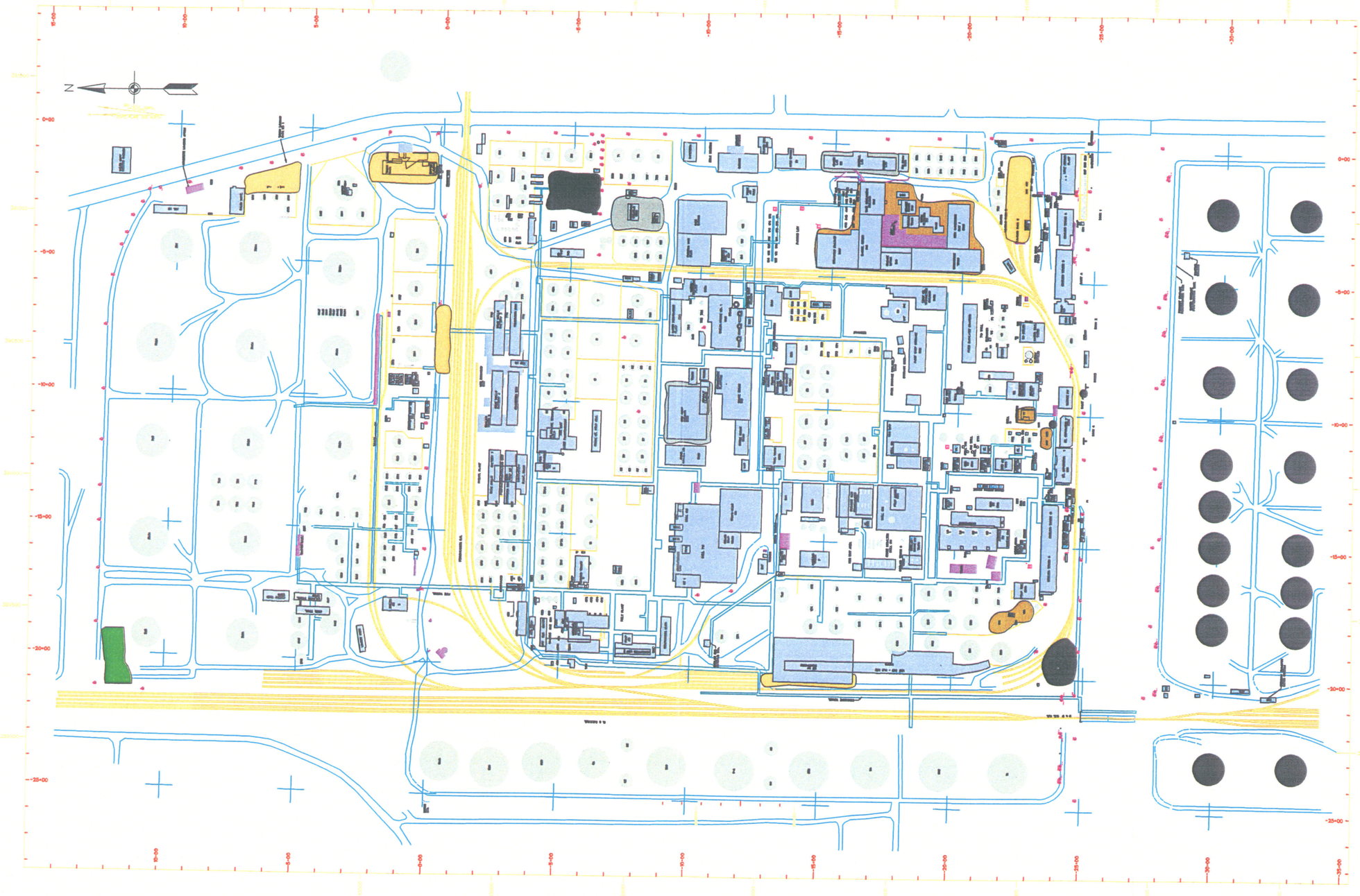

Environmental Quality Management, Inc.
1800 Carillon Boulevard
Cincinnati, Ohio 45240
Phone: (513) 825-7500
Fax: (513) 825-7495


| | | |
|---|---|---|
| DRAWN | SRL | 3/12/02 |
| CHECKED | JAW | 3/12/02 |
| APPROVED | FDH | 3/12/02 |

SCALE: 1:24000

# Site Location Map
ICH CDF Slurry Wall Gaps

| ORIGINAL SIZE | PROJECT NO. | DWG NO. | REV |
|---|---|---|---|
| A | 030249 | FIGURE 1 | |




0 100' 300' 800'
50' 200' 400'

| REV | DESCRIPTION | DATE | APPROVED |
|---|---|---|---|
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

REVISIONS

ENVIRONMENTAL QUALITY MANAGEMENT, INC.
1800 CARILLON BLVD.
CINCINNATI, OHIO 45240
P (513)825-7500

| | | |
|---|---|---|
| DRAWN | D.TOMO | 12/07/06 |
| CHECKED | E.WISE | 12/07/06 |
| APPROVED | J.WENTZ | 12/07/06 |
| | | |
| | | |
| SCALE: | AS NOTED | |

# IHC CDF OBSTRUCTION REMOVAL
# ECI SITE PLAN
# 1977

| ORIGINAL SIZE | PROJECT NO. | DWG NO. | REV |
|---|---|---|---|
| B | 020240 | FIGURE 2 | 0 |

OFFICE TRAILER
LAB CONEX BOX
WORKER LUNCH CONEX BOX
TOOL AND SUPPLY CONEX BOX
OIL WATER SEPARATOR
ROLL OFF BOX FOR MISC. NON-CONTAMINATED CONSTRUCTION WASTE
SEGMENT OF SLURRY WALL GAP TO BE INSTALLED APPROX. STA. 43+20 TO 44+60
PORTABLE RESTROOM W/ WASH STATION (FIXED LOCATION)
ROLLOFF BOXES FOR SPENT SORBANT PADS, OIL BOOM, & PPE
PIPE SLEEVE
INDIANAPOLIS BOULEVARD
HS/BM-IND-15 EL. 596.36
CANAL LEVEL GUAGE
IND-97-002 EL. 609.96
CLEAR 350' OF RAILROAD
EQUIPMENT DECONAMINATION PAD
LIQUID WASTE STORAGE TANKS & DRUMS
SUPPLY & EQUIPMENT LAYDOWN AREA
SLURRY LINE
EXISTING BORROW AREA AND LEACH FIELD
PIPE SLEEVE
100'x400'EXPANSION OF BORROW AREA AND LEACH FIELD
EMPLOYEE PARKING
WATER LINE
TEST CUT-OFF WALL AREA
INDIANA HARBOR CANAL
EXISTING BP/AMOCO RCRA PIPING
EXISTING CULVERT
MAKEUP STOCKPILE
BENTONITE SLURRY BATCH PLANT
YELOMINE GROUNDWATER CONVEYENCE PIPE LINE
SLURRY LINE
VIBRATORY SCREEN
PIPE SLEEVE
SILT FENCE
TRUCK SCALE
DEBRIS STOCKPILE AREA
EXISTING BP/AMOCO RCRA OWS
EXISTING BP/AMOCO RCRA PIPING
EXISTING BP/AMOCO RCRA SHED
TAR PIT
STEEL PLATE
STEEL PLATE
IND-97-001 EL. 614.96
BALTIMORE OHIO C.T. R.R. CO.
HS/BM-IND-16 EL. 592.10
SEGMENT OF SLURRY WALL GAP TO BE INSTALLED APPROX. STA. 78+50 TO 86+90
PORTABLE RESTROOM W/ WASH STATION

SLURRY WALL AREAS
WORK AREAS FOR 2006 SLURRY WALL GAPS WORK
POTENTIALLY CONTAMINATED HAUL ROADS
UNCONTAMINATED VEHICLE ROADS

0 100' 300' 800'
50' 200' 400'

N

| REV | DESCRIPTION | DATE | APPROVED |
|---|---|---|---|
| | | | |

ENVIRONMENTAL QUALITY MANAGEMENT, INC.
1800 CARILLON BLVD.
CINCINNATI, OHIO 45240
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| | | |
|---|---|---|
| DRAWN | D.TOMO | 2/07/06 |
| CHECKED | | |
| APPROVED | | |
| SCALE: | NONE | |

INDIANA HARBOR SLURRY WALL GAPS
EROSION CONTROL MEASURES DURING CONSTRUCTION ACTIVITY

| ORIGINAL SIZE | PROJECT NO. | DWG NO. | REV |
|---|---|---|---|
| D | [illegible] | FIGURE 2 | 0 |

# APPENDIX A

# RELEVANT REGULATIONS

[Code of Federal Regulations]
[Title 29, Volume 8, Part 1926]
[Revised as of July 1, 1999]
From the U.S. Government Printing Office via GPO Access
[CITE: 29CFR1926.650]

[Page 372-374]

TITLE 29--LABOR

CHAPTER XVII--OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION, DEPARTMENT OF LABOR--(Continued)

PART 1926--SAFETY AND HEALTH REGULATIONS FOR CONSTRUCTION--Table of Contents

Subpart P--Excavations

Sec. 1926.650 Scope, application, and definitions applicable to this subpart.

Authority: Sec. 107, Contract Worker Hours and Safety Standards Act (Construction Safety Act) (40 U.S.C. 333); Secs. 4, 6, 8, Occupational Safety and Health Act of 1970 (29 U.S.C. 653, 655, 657); Secretary of Labor's Order No. 12-71 (36 FR 8754), 8-76 (41 FR 25059), or 9-83 (48 FR 35736), as applicable, and 29 CFR part 1911.

Source: 54 FR 45959, Oct. 31, 1989, unless otherwise noted.

(a) Scope and application. This subpart applies to all open excavations made in the earth's surface. Excavations are defined to include trenches.

(b) Definitions applicable to this subpart.

Accepted engineering practices means those requirements which are compatible with standards of practice required by a registered professional engineer.

Aluminum Hydraulic Shoring means a pre-engineered shoring system comprised of aluminum hydraulic cylinders (crossbraces) used in conjunction with vertical rails (uprights) or horizontal rails (walers). Such system is designed, specifically to support the sidewalls of an excavation and prevent cave-ins.

Bell-bottom pier hole means a type of shaft or footing excavation, the bottom of which is made larger than the cross section above to form a belled shape.

Benching (Benching system) means a method of protecting employees from cave-ins by excavating the sides of an excavation to form one or a series of horizontal levels or steps, usually with vertical or near-vertical surfaces between levels.

Cave-in means the separation of a mass of soil or rock material from the side of an excavation, or the loss of soil from under a trench shield or support system, and its sudden movement into the excavation, either by falling or sliding, in sufficient quantity so that it could entrap, bury, or otherwise injure and immobilize a person.

Competent person means one who is capable of identifying existing and predictable hazards in the surroundings, or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them.

Cross braces mean the horizontal members of a shoring system installed perpendicular to the sides of the excavation, the ends of which bear against either uprights or wales.

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Excavation means any man-made cut, cavity, trench, or depression in an earth surface, formed by earth removal.

Faces or sides means the vertical or inclined earth surfaces formed as a result of excavation work.

Failure means the breakage, displacement, or permanent deformation of a structural member or connection so as to reduce its structural integrity and its supportive capabilities.

Hazardous atmosphere means an atmosphere which by reason of being explosive, flammable, poisonous, corrosive, oxidizing, irritating, oxygen deficient, toxic, or otherwise harmful, may cause death, illness, or injury.

Kickout means the accidental release or failure of a cross brace.

Protective system means a method of protecting employees from cave-

ins, from material that could fall or roll from an excavation face or into an excavation, or from the collapse of adjacent structures. Protective systems include support systems, sloping and benching systems, shield systems, and other systems that provide the necessary protection.

Ramp means an inclined walking or working surface that is used to gain access to one point from another, and is constructed from earth or from structural materials such as steel or wood.

Registered Professional Engineer means a person who is registered as a professional engineer in the state where the work is to be performed. However, a professional engineer, registered in any state is deemed to be a ``registered professional engineer'' within the meaning of this standard when approving designs for ``manufactured protective systems'' or ``tabulated data'' to be used in interstate commerce.

Sheeting means the members of a shoring system that retain the earth in position and in turn are supported by other members of the shoring system.

Shield (Shield system) means a structure that is able to withstand the forces imposed on it by a cave-in and thereby protect employees within the structure. Shields can be permanent structures or can be designed to be portable and moved along as work progresses. Additionally, shields can be either premanufactured or job-built in accordance with Sec. 1926.652 (c)(3) or (c)(4). Shields used in trenches are usually referred to as ``trench boxes'' or ``trench shields.''

Shoring (Shoring system) means a structure such as a metal hydraulic, mechanical or timber shoring system that supports the sides of an excavation and which is designed to prevent cave-ins.

Sides. See ``Faces.''

Sloping (Sloping system) means a method of protecting employees from cave-ins by excavating to form sides of an excavation that are inclined away from the excavation so as to prevent cave-ins. The angle of incline required to prevent a cave-in varies with differences in such factors as the soil type, environmental conditions of exposure, and application of surcharge loads.

Stable rock means natural solid mineral material that can be excavated with vertical sides and will remain intact while exposed. Unstable rock is considered to be stable when the rock material on the side or sides of the excavation is secured against caving-in or movement by rock bolts or by another protective system that has been designed by a registered professional engineer.

Structural ramp means a ramp built of steel or wood, usually used for vehicle access. Ramps made of soil or rock are not considered structural ramps.

Support system means a structure such as underpinning, bracing, or shoring, which provides support to an adjacent structure, underground installation, or the sides of an excavation.

Tabulated data means tables and charts approved by a registered professional engineer and used to design and construct a protective system.

Trench (Trench excavation) means a narrow excavation (in relation to its length) made below the surface of the ground. In general, the depth is greater than the width, but the width of a trench (measured at the bottom) is not greater than 15 feet (4.6 m). If forms or other structures are installed or constructed in an excavation so as to reduce the dimension measured from the forms or structure to the side of the excavation to 15 feet (4.6 m) or less

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(measured at the bottom of the excavation), the excavation is also considered to be a trench.

Trench box. See ``Shield.''

Trench shield. See ``Shield.''

Uprights means the vertical members of a trench shoring system placed in contact with the earth and usually positioned so that individual members do not contact each other. Uprights placed so that individual members are closely spaced, in contact with or interconnected to each other, are often called ``sheeting.''

Wales means horizontal members of a shoring system placed parallel to the excavation face whose sides bear against the vertical members of the shoring system or earth.

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TITLE 29--LABOR

CHAPTER XVII--OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION, DEPARTMENT OF LABOR--(Continued)

PART 1926--SAFETY AND HEALTH REGULATIONS FOR CONSTRUCTION--Table of Contents

Subpart P--Excavations

Sec. 1926.651 Specific excavation requirements.

(a) Surface encumbrances. All surface encumbrances that are located so as to create a hazard to employees shall be removed or supported, as necessary, to safeguard employees.

(b) Underground installations. (1) The estimated location of utility installations, such as sewer, telephone, fuel, electric, water lines, or any other underground installations that reasonably may be expected to be encountered during excavation work, shall be determined prior to opening an excavation.

(2) Utility companies or owners shall be contacted within established or customary local response times, advised of the proposed work, and asked to establish the location of the utility underground installations prior to the start of actual excavation. When utility companies or owners cannot respond to a request to locate underground utility installations within 24 hours (unless a longer period is required by state or local law), or cannot establish the exact location of these installations, the employer may proceed, provided the employer does so with caution, and provided detection equipment or other acceptable means to locate utility installations are used.

(3) When excavation operations approach the estimated location of underground installations, the exact location of the installations shall be determined by safe and acceptable means.

(4) While the excavation is open, underground installations shall be protected, supported or removed as necessary to safeguard employees.

(c) Access and egress--(1) Structural ramps. (i) Structural ramps that are used solely by employees as a means of access or egress from excavations shall be designed by a competent person. Structural ramps used for access or egress of equipment shall be designed by a competent person qualified in structural design, and shall be constructed in accordance with the design.

(ii) Ramps and runways constructed of two or more structural members shall have the structural members connected together to prevent displacement.

(iii) Structural members used for ramps and runways shall be of uniform thickness.

(iv) Cleats or other appropriate means used to connect runway structural members shall be attached to the bottom of the runway or shall be attached in a manner to prevent tripping.

(v) Structural ramps used in lieu of steps shall be provided with cleats or other surface treatments on the top surface to prevent slipping.

(2) Means of egress from trench excavations. A stairway, ladder, ramp or other safe means of egress shall be located in trench excavations that are 4 feet (1.22 m) or more in depth so as to require no more than 25 feet (7.62 m) of lateral travel for employees.

(d) Exposure to vehicular traffic. Employees exposed to public vehicular traffic shall be provided with, and shall wear, warning vests or other suitable garments marked with or made of reflectorized or high-visibility material.

(e) Exposure to falling loads. No employee shall be permitted underneath loads handled by lifting or digging equipment. Employees shall be required to stand away from any vehicle being loaded or unloaded to avoid being struck by any spillage or falling materials. Operators may remain in the cabs of vehicles being loaded or unloaded when the vehicles are equipped, in accordance with Sec. 1926.601(b)(6), to provide adequate protection for the operator during loading and unloading operations.

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(f) Warning system for mobile equipment. When mobile equipment is operated adjacent to an excavation, or when such equipment is required to approach the edge of an excavation, and the operator does not have a clear and direct view of the edge of the excavation, a warning system shall be utilized such as barricades, hand or mechanical signals, or stop logs. If possible, the grade should be away from the excavation.

(g) Hazardous atmospheres--(1) Testing and controls. In addition to the requirements set forth in subparts D and E of this part (29 CFR 1926.50-1926.107) to prevent exposure to harmful levels of atmospheric contaminants and to assure acceptable atmospheric conditions, the following requirements shall apply:

(i) Where oxygen deficiency (atmospheres containing less than 19.5 percent oxygen) or a hazardous atmosphere exists or could reasonably be expected to exist, such as in excavations in landfill areas or excavations in areas where hazardous substances are stored nearby, the atmospheres in the excavation shall be tested before employees enter excavations greater than 4 feet (1.22 m) in depth.

(ii) Adequate precautions shall be taken to prevent employee exposure to atmospheres containing less than 19.5 percent oxygen and other hazardous atmospheres. These precautions include providing proper respiratory protection or ventilation in accordance with subparts D and E of this part respectively.

(iii) Adequate precaution shall be taken such as providing ventilation, to prevent employee exposure to an atmosphere containing a concentration of a flammable gas in excess of 20 percent of the lower flammable limit of the gas.

(iv) When controls are used that are intended to reduce the level of atmospheric contaminants to acceptable levels, testing shall be conducted as often as necessary to ensure that the atmosphere remains safe.

(2) Emergency rescue equipment. (i) Emergency rescue equipment, such as breathing apparatus, a safety harness and line, or a basket stretcher, shall be readily available where hazardous atmospheric conditions exist or may reasonably be expected to develop during work in an excavation. This equipment shall be attended when in use.

(ii) Employees entering bell-bottom pier holes, or other similar deep and confined footing excavations, shall wear a harness with a life-line securely attached to it. The lifeline shall be separate from any line used to handle materials, and shall be individually attended at all times while the employee wearing the lifeline is in the excavation.

(h) Protection from hazards associated with water accumulation. (1) Employees shall not work in excavations in which there is accumulated water, or in excavations in which water is accumulating, unless adequate precautions have been taken to protect employees against the hazards posed by water accumulation. The precautions necessary to protect employees adequately vary with each situation, but could include special support or shield systems to protect from cave-ins, water removal to control the level of accumulating water, or use of a safety harness and lifeline.

(2) If water is controlled or prevented from accumulating by the use of water removal equipment, the water removal equipment and operations shall be monitored by a competent person to ensure proper operation.

(3) If excavation work interrupts the natural drainage of surface water (such as streams), diversion ditches, dikes, or other suitable means shall be used to prevent surface water from entering the excavation and to provide adequate drainage of the area adjacent to the excavation. Excavations subject to runoff from heavy rains will require an inspection by a competent person and compliance with paragraphs (h)(1) and (h)(2) of this section.

(i) Stability of adjacent structures. (1) Where the stability of adjoining buildings, walls, or other structures is endangered by excavation operations, support systems such as shoring, bracing, or underpinning shall be provided to ensure the stability of such structures for the protection of employees.

(2) Excavation below the level of the base or footing of any foundation or retaining wall that could be reasonably

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expected to pose a hazard to employees shall not be permitted except when:

(i) A support system, such as underpinning, is provided to ensure

the safety of employees and the stability of the structure; or

(ii) The excavation is in stable rock; or

(iii) A registered professional engineer has approved the determination that the structure is sufficently removed from the excavation so as to be unaffected by the excavation activity; or

(iv) A registered professional engineer has approved the determination that such excavation work will not pose a hazard to employees.

(3) Sidewalks, pavements, and appurtenant structure shall not be undermined unless a support system or another method of protection is provided to protect employees from the possible collapse of such structures.

(j) Protection of employees from loose rock or soil. (1) Adequate protection shall be provided to protect employees from loose rock or soil that could pose a hazard by falling or rolling from an excavation face. Such protection shall consist of scaling to remove loose material; installation of protective barricades at intervals as necessary on the face to stop and contain falling material; or other means that provide equivalent protection.

(2) Employees shall be protected from excavated or other materials or equipment that could pose a hazard by falling or rolling into excavations. Protection shall be provided by placing and keeping such materials or equipment at least 2 feet (.61 m) from the edge of excavations, or by the use of retaining devices that are sufficient to prevent materials or equipment from falling or rolling into excavations, or by a combination of both if necessary.

(k) Inspections. (1) Daily inspections of excavations, the adjacent areas, and protective systems shall be made by a competent person for evidence of a situation that could result in possible cave-ins, indications of failure of protective systems, hazardous atmospheres, or other hazardous conditions. An inspection shall be conducted by the competent person prior to the start of work and as needed throughout the shift. Inspections shall also be made after every rainstorm or other hazard increasing occurrence. These inspections are only required when employee exposure can be reasonably anticipated.

(2) Where the competent person finds evidence of a situation that could result in a possible cave-in, indications of failure of protective systems, hazardous atmospheres, or other hazardous conditions, exposed employees shall be removed from the hazardous area until the necessary precautions have been taken to ensure their safety.

(l) Walkways shall be provided where employees or equipment are required or permitted to cross over excavations. Guardrails which comply with Sec. 1926.502(b) shall be provided where walkways are 6 feet (1.8 m) or more above lower levels.

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TITLE 29--LABOR

CHAPTER XVII--OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION, DEPARTMENT OF LABOR--(Continued)

PART 1926--SAFETY AND HEALTH REGULATIONS FOR CONSTRUCTION--Table of Contents

Subpart P--Excavations

Sec. 1926.652 Requirements for protective systems.

(a) Protection of employees in excavations. (1) Each employee in an excavation shall be protected from cave-ins by an adequate protective system designed in accordance with paragraph (b) or (c) of this section except when:

(i) Excavations are made entirely in stable rock; or

(ii) Excavations are less than 5 feet (1.52m) in depth and examination of the ground by a competent person provides no indication of a potential cave-in.

(2) Protective systems shall have the capacity to resist without failure all loads that are intended or could reasonably be expected to be applied or transmitted to the system.

(b) Design of sloping and benching systems. The slopes and configurations of sloping and benching systems shall be selected and constructed by the employer or his designee and shall be in accordance with the requirements of paragraph (b)(1); or, in the alternative, paragraph (b)(2); or, in the alternative, paragraph (b)(3), or, in the alternative, paragraph (b)(4), as follows:

(1) Option (1)--Allowable configurations and slopes. (i) Excavations shall be sloped at an angle not steeper than one and one-half horizontal to one vertical

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(34 degrees measured from the horizontal), unless the employer uses one of the other options listed below.

(ii) Slopes specified in paragraph (b)(1)(i) of this section, shall be excavated to form configurations that are in accordance with the slopes shown for Type C soil in Appendix B to this subpart.

(2) Option (2)--Determination of slopes and configurations using Appendices A and B. Maximum allowable slopes, and allowable configurations for sloping and benching systems, shall be determined in accordance with the conditions and requirements set forth in appendices A and B to this subpart.

(3) Option (3)--Designs using other tabulated data. (i) Designs of sloping or benching systems shall be selected from and be in accordance with tabulated data, such as tables and charts.

(ii) The tabulated data shall be in written form and shall include all of the following:

(A) Identification of the parameters that affect the selection of a sloping or benching system drawn from such data;

(B) Identification of the limits of use of the data, to include the magnitude and configuration of slopes determined to be safe;

(C) Explanatory information as may be necessary to aid the user in making a correct selection of a protective system from the data.

(iii) At least one copy of the tabulated data which identifies the registered professional engineer who approved the data, shall be maintained at the jobsite during construction of the protective system. After that time the data may be stored off the jobsite, but a copy of the data shall be made available to the Secretary upon request.

(4) Option (4)--Design by a registered professional engineer. (i) Sloping and benching systems not utilizing Option (1) or Option (2) or Option (3) under paragraph (b) of this section shall be approved by a registered professional engineer.

(ii) Designs shall be in written form and shall include at least the following:

(A) The magnitude of the slopes that were determined to be safe for

the particular project;

(B) The configurations that were determined to be safe for the particular project; and

(C) The identity of the registered professional engineer approving the design.

(iii) At least one copy of the design shall be maintained at the jobsite while the slope is being constructed. After that time the design need not be at the jobsite, but a copy shall be made available to the Secretary upon request.

(c) Design of support systems, shield systems, and other protective systems. Designs of support systems shield systems, and other protective systems shall be selected and constructed by the employer or his designee and shall be in accordance with the requirements of paragraph (c)(1); or, in the alternative, paragraph (c)(2); or, in the alternative, paragraph (c)(3); or, in the alternative, paragraph (c)(4) as follows:

(1) Option (1)--Designs using appendices A, C and D. Designs for timber shoring in trenches shall be determined in accordance with the conditions and requirements set forth in appendices A and C to this subpart. Designs for aluminum hydraulic shoring shall be in accordance with paragraph (c)(2) of this section, but if manufacturer's tabulated data cannot be utilized, designs shall be in accordance with appendix D.

(2) Option (2)--Designs Using Manufacturer's Tabulated Data. (i) Design of support systems, shield systems, or other protective systems that are drawn from manufacturer's tabulated data shall be in accordance with all specifications, recommendations, and limitations issued or made by the manufacturer.

(ii) Deviation from the specifications, recommendations, and limitations issued or made by the manufacturer shall only be allowed after the manufacturer issues specific written approval.

(iii) Manufacturer's specifications, recommendations, and limitations, and manufacturer's approval to deviate from the specifications, recommendations, and limitations shall be in written form at the jobsite during construction of the protective system. After that time this data may be stored off the jobsite, but a copy shall

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be made available to the Secretary upon request.

(3) Option (3)--Designs using other tabulated data. (i) Designs of support systems, shield systems, or other protective systems shall be selected from and be in accordance with tabulated data, such as tables and charts.

(ii) The tabulated data shall be in written form and include all of the following:

(A) Identification of the parameters that affect the selection of a protective system drawn from such data;

(B) Identification of the limits of use of the data;

(C) Explanatory information as may be necessary to aid the user in making a correct selection of a protective system from the data.

(iii) At least one copy of the tabulated data, which identifies the registered professional engineer who approved the data, shall be maintained at the jobsite during construction of the protective system. After that time the data may be stored off the jobsite, but a copy of the data shall be made available to the Secretary upon request.

(4) Option (4)--Design by a registered professional engineer. (i) Support systems, shield systems, and other protective systems not utilizing Option 1, Option 2 or Option 3, above, shall be approved by a registered professional engineer.

(ii) Designs shall be in written form and shall include the following:

(A) A plan indicating the sizes, types, and configurations of the materials to be used in the protective system; and

(B) The identity of the registered professional engineer approving the design.

(iii) At least one copy of the design shall be maintained at the jobsite during construction of the protective system. After that time, the design may be stored off the jobsite, but a copy of the design shall be made available to the Secretary upon request.

(d) Materials and equipment. (1) Materials and equipment used for protective systems shall be free from damage or defects that might impair their proper function.

(2) Manufactured materials and equipment used for protective systems shall be used and maintained in a manner that is consistent with the recommendations of the manufacturer, and in a manner that will prevent

employee exposure to hazards.

(3) When material or equipment that is used for protective systems is damaged, a competent person shall examine the material or equipment and evaluate its suitability for continued use. If the competent person cannot assure the material or equipment is able to support the intended loads or is otherwise suitable for safe use, then such material or equipment shall be removed from service, and shall be evaluated and approved by a registered professional engineer before being returned to service.

(e) Installation and removal of support--(1) General. (i) Members of support systems shall be securely connected together to prevent sliding, falling, kickouts, or other predictable failure.

(ii) Support systems shall be installed and removed in a manner that protects employees from cave-ins, structural collapses, or from being struck by members of the support system.

(iii) Individual members of support systems shall not be subjected to loads exceeding those which those members were designed to withstand.

(iv) Before temporary removal of individual members begins, additional precautions shall be taken to ensure the safety of employees, such as installing other structural members to carry the loads imposed on the support system.

(v) Removal shall begin at, and progress from, the bottom of the excavation. Members shall be released slowly so as to note any indication of possible failure of the remaining members of the structure or possible cave-in of the sides of the excavation.

(vi) Backfilling shall progress together with the removal of support systems from excavations.

(2) Additional requirements for support systems for trench excavations. (i) Excavation of material to a level no greater than 2 feet (.61 m) below the bottom of the members of a support system shall be permitted, but only if the system is designed to resist the forces calculated for the full depth of the trench, and

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there are no indications while the trench is open of a possible loss of soil from behind or below the bottom of the support system.

(ii) Installation of a support system shall be closely coordinated with the excavation of trenches.

(f) Sloping and benching systems. Employees shall not be permitted to work on the faces of sloped or benched excavations at levels above other employees except when employees at the lower levels are adequately protected from the hazard of falling, rolling, or sliding material or equipment.

(g) Shield systems--(1) General. (i) Shield systems shall not be subjected to loads exceeding those which the system was designed to withstand.

(ii) Shields shall be installed in a manner to restrict lateral or other hazardous movement of the shield in the event of the application of sudden lateral loads.

(iii) Employees shall be protected from the hazard of cave-ins when entering or exiting the areas protected by shields.

(iv) Employees shall not be allowed in shields when shields are being installed, removed, or moved vertically.

(2) Additional requirement for shield systems used in trench excavations. Excavations of earth material to a level not greater than 2 feet (.61 m) below the bottom of a shield shall be permitted, but only if the shield is designed to resist the forces calculated for the full depth of the trench, and there are no indications while the trench is open of a possible loss of soil from behind or below the bottom of the shield.

## Appendix A to Subpart P--Soil Classification

(a) Scope and application--(1) Scope. This appendix describes a method of classifying soil and rock deposits based on site and environmental conditions, and on the structure and composition of the earth deposits. The appendix contains definitions, sets forth requirements, and describes acceptable visual and manual tests for use in classifying soils.

(2) Application. This appendix applies when a sloping or benching system is designed in accordance with the requirements set forth in Sec. 1926.**652**(b)(2) as a method of protection for employees from cave-ins. This appendix also applies when timber shoring for excavations is designed as a method of protection from cave-ins in accordance with

appendix C to subpart P of part 1926, and when aluminum hydraulic shoring is designed in accordance with appendix D. This Appendix also applies if other protective systems are designed and selected for use from data prepared in accordance with the requirements set forth in Sec. 1926.652(c), and the use of the data is predicated on the use of the soil classification system set forth in this appendix.

(b) Definitions. The definitions and examples given below are based on, in whole or in part, the following: American Society for Testing Materials (ASTM) Standards D653-85 and D2488; The Unified Soils Classification System, The U.S. Department of Agriculture (USDA) Textural Classification Scheme; and The National Bureau of Standards Report BSS-121.

Cemented soil means a soil in which the particles are held together by a chemical agent, such as calcium carbonate, such that a hand-size sample cannot be crushed into powder or individual soil particles by finger pressure.

Cohesive soil means clay (fine grained soil), or soil with a high clay content, which has cohesive strength. Cohesive soil does not crumble, can be excavated with vertical sideslopes, and is plastic when moist. Cohesive soil is hard to break up when dry, and exhibits significant cohesion when submerged. Cohesive soils include clayey silt, sandy clay, silty clay, clay and organic clay.

Dry soil means soil that does not exhibit visible signs of moisture content.

Fissured means a soil material that has a tendency to break along definite planes of fracture with little resistance, or a material that exhibits open cracks, such as tension cracks, in an exposed surface.

Granular soil means gravel, sand, or silt, (coarse grained soil) with little or no clay content. Granular soil has no cohesive strength. Some moist granular soils exhibit apparent cohesion. Granular soil cannot be molded when moist and crumbles easily when dry.

Layered system means two or more distinctly different soil or rock types arranged in layers. Micaceous seams or weakened planes in rock or shale are considered layered.

Moist soil means a condition in which a soil looks and feels damp. Moist cohesive soil can easily be shaped into a ball and rolled into small diameter threads before crumbling. Moist granular soil that contains some cohesive material will exhibit signs of cohesion between particles.

Plastic means a property of a soil which allows the soil to be deformed or molded without cracking, or appreciable volume change.

Saturated soil means a soil in which the voids are filled with water. Saturation does not require flow. Saturation, or near saturation, is necessary for the proper use of instruments such as a pocket penetrometer or sheer vane.

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Soil classification system means, for the purpose of this subpart, a method of categorizing soil and rock deposits in a hierarchy of Stable Rock, Type A, Type B, and Type C, in decreasing order of stability. The categories are determined based on an analysis of the properties and performance characteristics of the deposits and the environmental conditions of exposure.

Stable rock means natural solid mineral matter that can be excavated with vertical sides and remain intact while exposed.

Submerged soil means soil which is underwater or is free seeping.

Type A means cohesive soils with an unconfined compressive strength of 1.5 ton per square foot (tsf) (144 kPa) or greater. Examples of cohesive soils are: clay, silty clay, sandy clay, clay loam and, in some cases, silty clay loam and sandy clay loam. Cemented soils such as caliche and hardpan are also considered Type A. However, no soil is Type A if:

(i) The soil is fissured; or

(ii) The soil is subject to vibration from heavy traffic, pile driving, or similar effects; or

(iii) The soil has been previously disturbed; or

(iv) The soil is part of a sloped, layered system where the layers dip into the excavation on a slope of four horizontal to one vertical (4H:1V) or greater; or

(v) The material is subject to other factors that would require it be classified as a less stable material.

Type B means:

(i) Cohesive soil with an unconfined compressive strength greater than 0.5 tsf (48 kPa) but less than 1.5 tsf (144 kPa); or

(ii) Granular cohesionless soils including: angular gravel (similar to crushed rock), silt, silt loam, sandy loam and, in some cases, silty clay loam and sandy clay loam.

(iii) Previously disturbed soils except those which would otherwise be classed as Type C soil.

(iv) Soil that meets the unconfined compressive strength or cementation requirements for Type A, but is fissured or subject to vibration; or

(v) Dry rock that is not stable; or

(vi) Material that is part of a sloped, layered system where the layers dip into the excavation on a slope less steep than four horizontal to one vertical (4H:1V), but only if the material would otherwise be classified as Type B.

Type C means:

(i) Cohesive soil with an unconfined compressive strength of 0.5 tsf (48 kPa) or less; or

(ii) Granular soils including gravel, sand, and loamy sand; or

(iii) Submerged soil or soil from which water is freely seeping; or

(iv) Submerged rock that is not stable, or

(v) Material in a sloped, layered system where the layers dip into the excavation or a slope of four horizontal to one vertical (4H:1V) or steeper.

Unconfined compressive strength means the load per unit area at which a soil will fail in compression. It can be determined by laboratory testing, or estimated in the field using a pocket penetrometer, by thumb penetration tests, and other methods.

Wet soil means soil that contains significantly more moisture than moist soil, but in such a range of values that cohesive material will slump or begin to flow when vibrated. Granular material that would exhibit cohesive properties when moist will lose those cohesive properties when wet.

(c) Requirements--(1) Classification of soil and rock deposits. Each soil and rock deposit shall be classified by a competent person as Stable Rock, Type A, Type B, or Type C in accordance with the definitions set forth in paragraph (b) of this appendix.

(2) Basis of classification. The classification of the deposits shall be made based on the results of at least one visual and at least one manual analysis. Such analyses shall be conducted by a competent person using tests described in paragraph (d) below, or in other recognized methods of soil classification and testing such as those adopted by the America Society for Testing Materials, or the U.S. Department of Agriculture textural classification system.

(3) Visual and manual analyses. The visual and manual analyses, such as those noted as being acceptable in paragraph (d) of this appendix, shall be designed and conducted to provide sufficient quantitative and qualitative information as may be necessary to identify properly the properties, factors, and conditions affecting the classification of the deposits.

(4) Layered systems. In a layered system, the system shall be classified in accordance with its weakest layer. However, each layer may be classified individually where a more stable layer lies under a less stable layer.

(5) Reclassification. If, after classifying a deposit, the properties, factors, or conditions affecting its classification change in any way, the changes shall be evaluated by a competent person. The deposit shall be reclassified as necessary to reflect the changed circumstances.

(d) Acceptable visual and manual tests.--(1) Visual tests. Visual analysis is conducted to determine qualitative information regarding the excavation site in general, the soil adjacent to the excavation, the soil forming the sides of the open excavation, and the soil taken as samples from excavated material.

(i) Observe samples of soil that are excavated and soil in the sides of the excavation. Estimate the range of particle sizes and the relative amounts of the particle sizes. Soil that is primarily composed of fine-grained

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material is cohesive material. Soil composed primarily of coarse-grained sand or gravel is granular material.

(ii) Observe soil as it is excavated. Soil that remains in clumps when excavated is cohesive. Soil that breaks up easily and does not stay in clumps is granular.

(iii) Observe the side of the opened excavation and the surface area

adjacent to the excavation. Crack-like openings such as tension cracks could indicate fissured material. If chunks of soil spall off a vertical side, the soil could be fissured. Small spalls are evidence of moving ground and are indications of potentially hazardous situations.

(iv) Observe the area adjacent to the excavation and the excavation itself for evidence of existing utility and other underground structures, and to identify previously disturbed soil.

(v) Observe the opened side of the excavation to identify layered systems. Examine layered systems to identify if the layers slope toward the excavation. Estimate the degree of slope of the layers.

(vi) Observe the area adjacent to the excavation and the sides of the opened excavation for evidence of surface water, water seeping from the sides of the excavation, or the location of the level of the water table.

(vii) Observe the area adjacent to the excavation and the area within the excavation for sources of vibration that may affect the stability of the excavation face.

(2) Manual tests. Manual analysis of soil samples is conducted to determine quantitative as well as qualitative properties of soil and to provide more information in order to classify soil properly.

(i) Plasticity. Mold a moist or wet sample of soil into a ball and attempt to roll it into threads as thin as \1/8\-inch in diameter. Cohesive material can be successfully rolled into threads without crumbling. For example, if at least a two inch (50 mm) length of \1/8\-inch thread can be held on one end without tearing, the soil is cohesive.

(ii) Dry strength. If the soil is dry and crumbles on its own or with moderate pressure into individual grains or fine powder, it is granular (any combination of gravel, sand, or silt). If the soil is dry and falls into clumps which break up into smaller clumps, but the smaller clumps can only be broken up with difficulty, it may be clay in any combination with gravel, sand or silt. If the dry soil breaks into clumps which do not break up into small clumps and which can only be broken with difficulty, and there is no visual indication the soil is fissured, the soil may be considered unfissured.

(iii) Thumb penetration. The thumb penetration test can be used to estimate the unconfined compressive strength of cohesive soils. (This test is based on the thumb penetration test described in American Society for Testing and Materials (ASTM) Standard designation D2488--``Standard Recommended Practice for Description of Soils (Visual--Manual Procedure).'') Type A soils with an unconfined compressive strength of 1.5 tsf can be readily indented by the thumb; however, they can be penetrated by the thumb only with very great effort. Type C soils with an unconfined compressive strength of 0.5 tsf can be easily penetrated several inches by the thumb, and can be molded by light finger pressure. This test should be conducted on an undisturbed soil sample, such as a large clump of spoil, as soon as practicable after excavation to keep to a miminum the effects of exposure to drying influences. If the excavation is later exposed to wetting influences (rain, flooding), the classification of the soil must be changed accordingly.

(iv) Other strength tests. Estimates of unconfined compressive strength of soils can also be obtained by use of a pocket penetrometer or by using a hand-operated shearvane.

(v) Drying test. The basic purpose of the drying test is to differentiate between cohesive material with fissures, unfissured cohesive material, and granular material. The procedure for the drying test involves drying a sample of soil that is approximately one inch thick (2.54 cm) and six inches (15.24 cm) in diameter until it is thoroughly dry:

(A) If the sample develops cracks as it dries, significant fissures are indicated.

(B) Samples that dry without cracking are to be broken by hand. If considerable force is necessary to break a sample, the soil has significant cohesive material content. The soil can be classified as a unfissured cohesive material and the unconfined compressive strength should be determined.

(C) If a sample breaks easily by hand, it is either a fissured cohesive material or a granular material. To distinguish between the two, pulverize the dried clumps of the sample by hand or by stepping on them. If the clumps do not pulverize easily, the material is cohesive with fissures. If they pulverize easily into very small fragments, the material is granular.

Appendix B to Subpart P--Sloping and Benching

(a) Scope and application. This appendix contains specifications for sloping and benching when used as methods of protecting employees working in excavations from cave-ins. The requirements of this appendix apply when the design of sloping and benching protective systems is to be performed in accordance with the requirements set forth in Sec. 1926.652(b)(2).

(b) Definitions.

Actual slope means the slope to which an excavation face is excavated.

Distress means that the soil is in a condition where a cave-in is imminent or is likely

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to occur. Distress is evidenced by such phenomena as the development of fissures in the face of or adjacent to an open excavation; the subsidence of the edge of an excavation; the slumping of material from the face or the bulging or heaving of material from the bottom of an excavation; the spalling of material from the face of an excavation; and ravelling, i.e., small amounts of material such as pebbles or little clumps of material suddenly separating from the face of an excavation and trickling or rolling down into the excavation.

Maximum allowable slope means the steepest incline of an excavation face that is acceptable for the most favorable site conditions as protection against cave-ins, and is expressed as the ratio of horizontal distance to vertical rise (H:V).

Short term exposure means a period of time less than or equal to 24 hours that an excavation is open.

(c) Requirements--(1) Soil classification. Soil and rock deposits shall be classified in accordance with appendix A to subpart P of part 1926.

(2) Maximum allowable slope. The maximum allowable slope for a soil or rock deposit shall be determined from Table B-1 of this appendix.

(3) Actual slope. (i) The actual slope shall not be steeper than the maximum allowable slope.

(ii) The actual slope shall be less steep than the maximum allowable slope, when there are signs of distress. If that situation occurs, the slope shall be cut back to an actual slope which is at least \1/2\ horizontal to one vertical (\1/2\H:1V) less steep than the maximum allowable slope.

(iii) When surcharge loads from stored material or equipment, operating equipment, or traffic are present, a competent person shall determine the degree to which the actual slope must be reduced below the maximum allowable slope, and shall assure that such reduction is achieved. Surcharge loads from adjacent structures shall be evaluated in accordance with Sec. 1926.651(i).

(4) Configurations. Configurations of sloping and benching systems shall be in accordance with Figure B-1.

[GRAPHIC] [TIFF OMITTED] TC30OC91.016

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Figure B-1

Slope Configurations

(All slopes stated below are in the horizontal to vertical ratio)

B-1.1 Excavations made in Type A soil.

1. All simple slope excavation 20 feet or less in depth shall have a maximum allowable slope of \3/4\:1.

[GRAPHIC] [TIFF OMITTED] TC30OC91.017

Simple Slope--General

Exception: Simple slope excavations which are open 24 hours or less (short term) and which are 12 feet or less in depth shall have a maximum allowable slope of \1/2\:1.

[GRAPHIC] [TIFF OMITTED] TC30OC91.018

Simple Slope--Short Term

2. All benched excavations 20 feet or less in depth shall have a maximum allowable slope of \3/4\ to 1 and maximum bench dimensions as follows:
[GRAPHIC] [TIFF OMITTED] TC30OC91.019

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Simple Bench
[GRAPHIC] [TIFF OMITTED] TC30OC91.020

Multiple Bench

3. All excavations 8 feet or less in depth which have unsupported vertically sided lower portions shall have a maximum vertical side of 3\1/2\ feet.
[GRAPHIC] [TIFF OMITTED] TC30OC91.021

Unsupported Vertically Sided Lower Portion--Maximum 8 Feet in Depth

All excavations more than 8 feet but not more than 12 feet in depth which unsupported vertically sided lower portions shall have a maximum allowable slope of 1:1 and a maximum vertical side of 3\1/2\ feet.
[GRAPHIC] [TIFF OMITTED] TC30OC91.022

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Unsupported Vertically Sided Lower Portion--Maximum 12 Feet in Depth

All excavations 20 feet or less in depth which have vertically sided lower portions that are supported or shielded shall have a maximum allowable slope of \3/4\:1. The support or shield system must extend at least 18 inches above the top of the vertical side.
[GRAPHIC] [TIFF OMITTED] TC30OC91.023

Supported or Shielded Vertically Sided Lower Portion

4. All other simple slope, compound slope, and vertically sided lower portion excavations shall be in accordance with the other options permitted under Sec. 1926.652(b).

B-1.2 Excavations Made in Type B Soil

1. All simple slope excavations 20 feet or less in depth shall have a maximum allowable slope of 1:1.
[GRAPHIC] [TIFF OMITTED] TC30OC91.024

Simple Slope

2. All benched excavations 20 feet or less in depth shall have a maximum allowable slope of 1:1 and maximum bench dimensions as follows:

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[GRAPHIC] [TIFF OMITTED] TC30OC91.025

Single Bench
[GRAPHIC] [TIFF OMITTED] TC30OC91.026

Multiple Bench

3. All excavations 20 feet or less in depth which have vertically sided lower portions shall be shielded or supported to a height at least 18 inches above the top of the vertical side. All such excavations shall have a maximum allowable slope of 1:1.
[GRAPHIC] [TIFF OMITTED] TC30OC91.027

Vertically Sided Lower Portion

4. All other sloped excavations shall be in accordance with the other options permitted in Sec. 1926.652(b).

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B-1.3 Excavations Made in Type C Soil

1. All simple slope excavations 20 feet or less in depth shall have a maximum allowable slope of 1\1/2\:1.
[GRAPHIC] [TIFF OMITTED] TC30OC91.028

Simple Slope

2. All excavations 20 feet or less in depth which have vertically sided lower portions shall be shielded or supported to a height at least 18 inches above the top of the vertical side. All such excavations shall have a maximum allowable slope of 1\1/2\:1.
[GRAPHIC] [TIFF OMITTED] TC30OC91.029

Vertical Sided Lower Portion

3. All other sloped excavations shall be in accordance with the other options permitted in Sec. 1926.652(b).

B-1.4 Excavations Made in Layered Soils

1. All excavations 20 feet or less in depth made in layered soils shall have a maximum allowable slope for each layer as set forth below.

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[GRAPHIC] [TIFF OMITTED] TC30OC91.030

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[GRAPHIC] [TIFF OMITTED] TC30OC91.031

2. All other sloped excavations shall be in accordance with the other options permitted in Sec. 1926.652(b).

Appendix C to Subpart P--Timber Shoring for Trenches

(a) Scope. This appendix contains information that can be used timber shoring is provided as a method of protection from cave-ins in trenches that do not exceed 20 feet (6.1 m) in depth. This appendix must be used when design of timber shoring protective systems is to be performed in accordance with Sec. 1926.652(c)(1). Other timber shoring configurations; other systems of support such as hydraulic and pneumatic systems; and other protective systems such as sloping, benching, shielding, and freezing systems must be designed in accordance with the requirements set forth in Sec. 1926.652(b) and Sec. 1926.652(c).

(b) Soil Classification. In order to use the data presented in this appendix, the soil type or types in which the excavation is made must first be determined using the soil classification method set forth in appendix A of subpart P of this part.

(c) Presentation of Information. Information is presented in several forms as follows:

(1) Information is presented in tabular form in Tables C-1.1, C-1.2, and C-1.3, and Tables C-2.1, C-2.2 and C-2.3 following paragraph (g) of the appendix. Each table presents the minimum sizes of timber members to use in a shoring system, and each table contains data only for the particular soil type in which the excavation or portion of

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the excavation is made. The data are arranged to allow the user the flexibility to select from among several acceptable configurations of members based on varying the horizontal spacing of the crossbraces. Stable rock is exempt from shoring requirements and therefore, no data are presented for this condition.

(2) Information concerning the basis of the tabular data and the limitations of the data is presented in paragraph (d) of this appendix, and on the tables themselves.

(3) Information explaining the use of the tabular data is presented in paragraph (e) of this appendix.

(4) Information illustrating the use of the tabular data is presented in paragraph (f) of this appendix.

(5) Miscellaneous notations regarding Tables C-1.1 through C-1.3 and Tables C-2.1 through C-2.3 are presented in paragraph (g) of this Appendix.

(d) Basis and limitations of the data.--(1) Dimensions of timber members. (i) The sizes of the timber members listed in Tables C-1.1 through C-1.3 are taken from the National Bureau of Standards (NBS) report, ``Recommended Technical Provisions for Construction Practice in Shoring and Sloping of Trenches and Excavations.'' In addition, where NBS did not recommend specific sizes of members, member sizes are based on an analysis of the sizes required for use by existing codes and on empirical practice.

(ii) The required dimensions of the members listed in Tables C-1.1 through C-1.3 refer to actual dimensions and not nominal dimensions of the timber. Employers wanting to use nominal size shoring are directed to Tables C-2.1 through C-2.3, or have this choice under Sec. 1926.652(c)(3), and are referred to The Corps of Engineers, The Bureau of Reclamation or data from other acceptable sources.

(2) Limitation of application. (i) It is not intended that the timber shoring specification apply to every situation that may be experienced in the field. These data were developed to apply to the situations that are most commonly experienced in current trenching practice. Shoring systems for use in situations that are not covered by the data in this appendix must be designed as specified in Sec. 1926.652(c).

(ii) When any of the following conditions are present, the members specified in the tables are not considered adequate. Either an alternate timber shoring system must be designed or another type of protective system designed in accordance with Sec. 1926.652.

(A) When loads imposed by structures or by stored material adjacent to the trench weigh in excess of the load imposed by a two-foot soil surcharge. The term ``adjacent'' as used here means the area within a horizontal distance from the edge of the trench equal to the depth of the trench.

(B) When vertical loads imposed on cross braces exceed a 240-pound gravity load distributed on a one-foot section of the center of the crossbrace.

(C) When surcharge loads are present from equipment weighing in excess of 20,000 pounds.

(D) When only the lower portion of a trench is shored and the remaining portion of the trench is sloped or benched unless: The sloped portion is sloped at an angle less steep than three horizontal to one vertical; or the members are selected from the tables for use at a depth which is determined from the top of the overall trench, and not from the toe of the sloped portion.

(e) Use of Tables. The members of the shoring system that are to be selected using this information are the cross braces, the uprights, and the wales, where wales are required. Minimum sizes of members are specified for use in different types of soil. There are six tables of information, two for each soil type. The soil type must first be determined in accordance with the soil classification system described in appendix A to subpart P of part 1926. Using the appropriate table, the selection of the size and spacing of the members is then made. The selection is based on the depth and width of the trench where the members are to be installed and, in most instances, the selection is also based on the horizontal spacing of the crossbraces. Instances where a choice of horizontal spacing of crossbracing is available, the horizontal spacing of the crossbraces must be chosen by the user before the size of any member can be determined. When the soil type, the width and depth of the trench, and the horizontal spacing of the crossbraces are known, the size and vertical spacing of the crossbraces, the size and vertical spacing of the wales, and the size and horizontal spacing of the uprights can be read from the appropriate table.

(f) Examples to Illustrate the Use of Tables C-1.1 through C-1.3.

(1) Example 1.

A trench dug in Type A soil is 13 feet deep and five feet wide. From Table C-1.1, for acceptable arrangements of timber can be used.

Arrangement B1

Space 4 x 4 crossbraces at six feet horizontally and four feet vertically.

Wales are not required.
Space 3 x 8 uprights at six feet horizontally. This arrangement is commonly called ``skip shoring.''

Arrangement □B2

Space 4 x 6 crossbraces at eight feet horizontally and four feet vertically.
Space 8 x 8 wales at four feet vertically.

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Space 2 x 6 uprights at four feet horizontally.

Arrangement □B3

Space 6 x 6 crossbraces at 10 feet horizontally and four feet vertically.
Space 8 x 10 wales at four feet vertically.
Space 2 x 6 uprights at five feet horizontally.

Arrangement □B4

Space 6 x 6 crossbraces at 12 feet horizontally and four feet vertically.
Space 10 x 10 wales at four feet vertically.
Spaces 3 x 8 uprights at six feet horizontally.
(2) Example 2.
A trench dug in Type B soil in 13 feet deep and five feet wide. From Table C-1.2 three acceptable arrangements of members are listed.

Arrangement □B1

Space 6 x 6 crossbraces at six feet horizontally and five feet vertically.
Space 8 x 8 wales at five feet vertically.
Space 2 x 6 uprights at two feet horizontally.

Arrangement □B2

Space 6 x 8 crossbraces at eight feet horizontally and five feet vertically.
Space 10 x 10 wales at five feet vertically.
Space 2 x 6 uprights at two feet horizontally.

Arrangement □B3

Space 8 x 8 crossbraces at 10 feet horizontally and five feet vertically.
Space 10 x 12 wales at five feet vertically.
Space 2 x 6 uprights at two feet vertically.
(3) Example 3.
A trench dug in Type C soil is 13 feet deep and five feet wide.
From Table C-1.3 two acceptable arrangements of members can be used.

Arrangement □B1

Space 8 x 8 crossbraces at six feet horizontally and five feet vertically.
Space 10 x 12 wales at five feet vertically.
Position 2 x 6 uprights as closely together as possible.
If water must be retained use special tongue and groove uprights to form tight sheeting.

Arrangement □B2

Space 8 x 10 crossbraces at eight feet horizontally and five feet vertically.
Space 12 x 12 wales at five feet vertically.
Position 2 x 6 uprights in a close sheeting configuration unless water pressure must be resisted. Tight sheeting must be used where water must be retained.
(4) Example 4.
A trench dug in Type C soil is 20 feet deep and 11 feet wide. The size and spacing of members for the section of trench that is over 15

feet in depth is determined using Table C-1.3. Only one arrangement of members is provided.

Space 8 x 10 crossbraces at six feet horizontally and five feet vertically.

Space 12 x 12 wales at five feet vertically.

Use 3 x 6 tight sheeting.

Use of Tables C-2.1 through C-2.3 would follow the same procedures.

(g) Notes for all Tables.

1. Member sizes at spacings other than indicated are to be determined as specified in Sec. 1926.652(c), ``Design of Protective Systems.''

2. When conditions are saturated or submerged use Tight Sheeting. Tight Sheeting refers to the use of specially-edged timber planks (e.g., tongue and groove) at least three inches thick, steel sheet piling, or similar construction that when driven or placed in position provide a tight wall to resist the lateral pressure of water and to prevent the loss of backfill material. Close Sheeting refers to the placement of planks side-by-side allowing as little space as possible between them.

3. All spacing indicated is measured center to center.

4. Wales to be installed with greater dimension horizontal.

5. If the vertical distance from the center of the lowest crossbrace to the bottom of the trench exceeds two and one-half feet, uprights shall be firmly embedded or a mudsill shall be used. Where uprights are embedded, the vertical distance from the center of the lowest crossbrace to the bottom of the trench shall not exceed 36 inches. When mudsills are used, the vertical distance shall not exceed 42 inches. Mudsills are wales that are installed at the toe of the trench side.

6. Trench jacks may be used in lieu of or in combination with timber crossbraces.

7. Placement cf crossbraces. When the vertical spacing of crossbraces is four feet, place the top crossbrace no more than two feet below the top of the trench. When the vertical spacing of crossbraces is five feet, place the top crossbrace no more than 2.5 feet below the top of the trench.

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[GRAPHIC] [TIFF OMITTED] TC30OC91.032

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[GRAPHIC] [TIFF OMITTED] TC30OC91.036

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[GRAPHIC] [TIFF OMITTED] TC30OC91.037

Appendix D to Subpart P--Aluminum Hydraulic Shoring for Trenches

(a) Scope. This appendix contains information that can be used when aluminum hydraulic shoring is provided as a method of protection against cave-ins in trenches that do not exceed 20 feet (6.1m) in depth. This appendix must be used when design of the aluminum hydraulic protective

system cannot be performed in accordance with Sec. 1926.652(c)(2).

(b) Soil Classification. In order to use data presented in this appendix, the soil type or types in which the excavation is made must

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first be determined using the soil classification method set forth in appendix A of subpart P of part 1926.

(c) Presentation of Information. Information is presented in several forms as follows:

(1) Information is presented in tabular form in Tables D-1.1, D-1.2, D-1.3 and E-1.4. Each table presents the maximum vertical and horizontal spacings that may be used with various aluminum member sizes and various hydraulic cylinder sizes. Each table contains data only for the particular soil type in which the excavation or portion of the excavation is made. Tables D-1.1 and D-1.2 are for vertical shores in Types A and B soil. Tables D-1.3 and D1.4 are for horizontal waler systems in Types B and C soil.

(2) Information concerning the basis of the tabular data and the limitations of the data is presented in paragraph (d) of this appendix.

(3) Information explaining the use of the tabular data is presented in paragraph (e) of this appendix.

(4) Information illustrating the use of the tabular data is presented in paragraph (f) of this appendix.

(5) Miscellaneous notations (footnotes) regarding Table D-1.1 through D-1.4 are presented in paragraph (g) of this appendix.

(6) Figures, illustrating typical installations of hydraulic shoring, are included just prior to the Tables. The illustrations page is entitled ``Aluminum Hydraulic Shoring; Typical Installations.''

(d) Basis and limitations of the data.

(1) Vertical shore rails and horizontal wales are those that meet the Section Modulus requirements in the D-1 Tables. Aluminum material is 6061-T6 or material of equivalent strength and properties.

(2) Hydraulic cylinders specifications. (i) 2-inch cylinders shall be a minimum 2-inch inside diameter with a minimum safe working capacity of no less than 18,000 pounds axial compressive load at maximum extension. Maximum extension is to include full range of cylinder extensions as recommended by product manufaturer.

(ii) 3-inch cylinders shall be a minimum 3-inch inside diameter with a safe working capacity of not less than 30,000 pounds axial compressive load at extensions as recommended by product manufacturer.

(3) Limitation of application.

(i) It is not intended that the aluminum hydraulic specification apply to every situation that may be experienced in the field. These data were developed to apply to the situations that are most commonly experienced in current trenching practice. Shoring systems for use in situations that are not covered by the data in this appendix must be otherwise designed as specified in Sec. 1926.652(c).

(ii) When any of the following conditions are present, the members specified in the Tables are not considered adequate. In this case, an alternative aluminum hydraulic shoring system or other type of protective system must be designed in accordance with Sec. 1926.652.

(A) When vertical loads imposed on cross braces exceed a 100 Pound gravity load distributed on a one foot section of the center of the hydraulic cylinder.

(B) When surcharge loads are present from equipment weighing in excess of 20,000 pounds.

(C) When only the lower portion or a trench is shored and the remaining portion of the trench is sloped or benched unless: The sloped portion is sloped at an angle less steep than three horizontal to one vertical; or the members are selected from the tables for use at a depth which is determined from the top of the overall trench, and not from the toe of the sloped portion.

(e) Use of Tables D-1.1, D-1.2, D-1.3 and D-1.4. The members of the shoring system that are to be selected using this information are the hydraulic cylinders, and either the vertical shores or the horizontal wales. When a waler system is used the vertical timber sheeting to be used is also selected from these tables. The Tables D-1.1 and D-1.2 for vertical shores are used in Type A and B soils that do not require sheeting. Type B soils that may require sheeting, and Type C soils that always require sheeting are found in the horizontal wale Tables D-1.3 and D-1.4. The soil type must first be determined in accordance with the soil classification system described in appendix A to subpart P of part 1926. Using the appropriate table, the selection of the size and spacing of the members is made. The selection is based on the depth and width of

the trench where the members are to be installed. In these tables the vertical spacing is held constant at four feet on center. The tables show the maximum horizontal spacing of cylinders allowed for each size of wale in the waler system tables, and in the vertical shore tables, the hydraulic cylinder horizontal spacing is the same as the vertical shore spacing.

(f) Example to Illustrate the Use of the Tables:

(1) Example 1:

A trench dug in Type A soil is 6 feet deep and 3 feet wide. From Table D-1.1: Find vertical shores and 2 inch diameter cylinders spaced 8 feet on center (o.c.) horizontally and 4 feet on center (o.c.) vertically. (See Figures 1 & 3 for typical installations.)

(2) Example 2:

A trench is dug in Type B soil that does not require sheeting, 13 feet deep and 5 feet wide. From Table D-1.2: Find vertical shores and 2 inch diameter cylinders spaced 6.5 feet o.c. horizontally and 4 feet o.c. vertically. (See Figures 1 & 3 for typical installations.)

(3) A trench is dug in Type B soil that does not require sheeting, but does experience some minor raveling of the trench face. The

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trench is 16 feet deep and 9 feet wide. From Table D-1.2: Find vertical shores and 2 inch diameter cylinder (with special oversleeves as designated by footnote □B2) spaced 5.5 feet o.c. horizontally and 4 feet o.c. vertically, plywood (per footnote (g)(7) to the D-1 Table) should be used behind the shores. (See Figures 2 & 3 for typical installations.)

(4) Example 4: A trench is dug in previously disturbed Type B soil, with characteristics of a Type C soil, and will require sheeting. The trench is 18 feet deep and 12 feet wide. 8 foot horizontal spacing between cylinders is desired for working space. From Table D-1.3: Find horizontal wale with a section modulus of 14.0 spaced at 4 feet o.c. vertically and 3 inch diameter cylinder spaced at 9 feet maximum o.c. horizontally. 3 x 12 timber sheeting is required at close spacing vertically. (See Figure 4 for typical installation.)

(5) Example 5: A trench is dug in Type C soil, 9 feet deep and 4 feet wide. Horizontal cylinder spacing in excess of 6 feet is desired for working space. From Table D-1.4: Find horizontal wale with a section modulus of 7.0 and 2 inch diameter cylinders spaced at 6.5 feet o.c. horizontally. Or, find horizontal wale with a 14.0 section modulus and 3 inch diameter cylinder spaced at 10 feet o.c. horizontally. Both wales are spaced 4 feet o.c. vertically. 3 x 12 timber sheeting is required at close spacing vertically. (See Figure 4 for typical installation.)

(g) Footnotes, and general notes, for Tables D-1.1, D-1.2, D-1.3, and D-1.4.

(1) For applications other than those listed in the tables, refer to Sec. 1926.652(c)(2) for use of manufacturer's tabulated data. For trench depths in excess of 20 feet, refer to Sec. 1926.652(c)(2) and Sec. 1926.652(c)(3).

(2) 2 inch diameter cylinders, at this width, shall have structural steel tube (3.5 x 3.5 x 0.1875) oversleeves, or structural oversleeves of manufacturer's specification, extending the full, collapsed length.

(3) Hydraulic cylinders capacities. (i) 2 inch cylinders shall be a minimum 2-inch inside diameter with a safe working capacity of not less than 18,000 pounds axial compressive load at maximum extension. Maximum extension is to include full range of cylinder extensions as recommended by product manufacturer.

(ii) 3-inch cylinders shall be a minimum 3-inch inside diameter with a safe work capacity of not less than 30,000 pounds axial compressive load at maximum extension. Maximum extension is to include full range of cylinder extensions as recommended by product manufacturer.

(4) All spacing indicated is measured center to center.

(5) Vertical shoring rails shall have a minimum section modulus of 0.40 inch.

(6) When vertical shores are used, there must be a minimum of three shores spaced equally, horizontally, in a group.

(7) Plywood shall be 1.125 in. thick softwood or 0.75 inch. thick, 14 ply, arctic white birch (Finland form). Please note that plywood is not intended as a structural member, but only for prevention of local raveling (sloughing of the trench face) between shores.

(8) See appendix C for timber specifications.

(9) Wales are calculated for simple span conditions.

(10) See appendix D, item (d), for basis and limitations of the data.

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[GRAPHIC] [TIFF OMITTED] TC30OC91.038

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[GRAPHIC] [TIFF OMITTED] TC30OC91.039

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[GRAPHIC] [TIFF OMITTED] TC30OC91.040

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[GRAPHIC] [TIFF OMITTED] TC30OC91.042

Appendix E to Subpart P--Alternatives to Timber Shoring

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TITLE 29--LABOR

PART 1910--OCCUPATIONAL SAFETY AND HEALTH STANDARDS--Table of Contents

Subpart H--Hazardous Materials

Sec. 1910.**120** Hazardous waste operations and emergency response.

(a) Scope, application, and definitions--(1) Scope. This section covers the following operations, unless the employer can demonstrate that the operation does not involve employee exposure or the reasonable possibility for employee exposure to safety or health hazards:

(i) Clean-up operations required by a governmental body, whether Federal, state, local or other involving hazardous substances that are conducted at uncontrolled hazardous waste sites (including, but not limited to, the EPA's National Priority Site List (NPL), state priority site lists, sites recommended for the EPA NPL, and initial investigations of government identified sites which are conducted before the presence or absence of hazardous substances has been ascertained);

(ii) Corrective actions involving clean-up operations at sites covered by the Resource Conservation and Recovery Act of 1976 (RCRA) as amended (42 U.S.C. 6901 et seq.);

(iii) Voluntary clean-up operations at sites recognized by Federal, state, local or other governmental bodies as uncontrolled hazardous waste sites;

(iv) Operations involving hazardous wastes that are conducted at treatment, storage, and disposal (TSD) facilities regulated by 40 CFR parts 264 and 265 pursuant to RCRA; or by agencies under agreement with U.S.E.P.A. to implement RCRA regulations; and

(v) Emergency response operations for releases of, or substantial threats of releases of, hazardous substances without regard to the location of the hazard.

(2) Application. (i) All requirements of part 1910 and part 1926 of title 29 of the Code of Federal Regulations apply pursuant to their terms to hazardous waste and emergency response operations whether covered by this section or not. If there is a conflict or overlap, the provision more protective of employee safety and health shall apply without regard to 29 CFR 1910.5(c)(1).

(ii) Hazardous substance clean-up operations within the scope of paragraphs (a)(1)(i) through (a)(1)(iii) of this section must comply with all paragraphs of this section except paragraphs (p) and (q).

(iii) Operations within the scope of paragraph (a)(1)(iv) of this section must comply only with the requirements of paragraph (p) of this section.

Notes and Exceptions: (A) All provisions of paragraph (p) of this section cover any treatment, storage or disposal (TSD) operation regulated by 40 CFR parts 264 and 265 or by state law authorized under RCRA, and required to have a permit or interim status from EPA pursuant to 40 CFR 270.1 or from a state agency pursuant to RCRA.

(B) Employers who are not required to have a permit or interim status because they are conditionally exempt small quantity generators under 40 CFR 261.5 or are generators who qualify under 40 CFR 262.34 for exemptions from regulation under 40 CFR parts 264, 265 and 270 (``excepted employers'') are not covered by paragraphs (p)(1) through (p)(7) of this section. Excepted employers who are required by the EPA or state agency

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to have their employees engage in emergency response or who direct their employees to engage in emergency response are covered by paragraph (p)(8) of this section, and cannot be exempted by (p)(8)(i) of this section. Excepted employers who are not required to have employees engage in emergency response, who direct their employees to evacuate in the case of such emergencies and who meet the requirements of paragraph (p)(8)(i) of this section are exempt from the balance of paragraph

(p)(8) of this section.

(C) If an area is used primarily for treatment, storage or disposal, any emergency response operations in that area shall comply with paragraph (p)(8) of this section. In other areas not used primarily for treatment, storage, or disposal, any emergency response operations shall comply with paragraph (q) of this section. Compliance with the requirements of paragraph (q) of this section shall be deemed to be in compliance with the requirements of paragraph (p)(8) of this section.

(iv) Emergency response operations for releases of, or substantial threats of releases of, hazardous substances which are not covered by paragraphs (a)(1)(i) through (a)(1)(iv) of this section must only comply with the requirements of paragraph (q) of this section.

(3) Definitions--Buddy system means a system of organizing employees into work groups in such a manner that each employee of the work group is designated to be observed by at least one other employee in the work group. The purpose of the buddy system is to provide rapid assistance to employees in the event of an emergency.

Clean-up operation means an operation where hazardous substances are removed, contained, incinerated, neutralized, stabilized, cleared-up, or in any other manner processed or handled with the ultimate goal of making the site safer for people or the environment.

Decontamination means the removal of hazardous substances from employees and their equipment to the extent necessary to preclude the occurrence of foreseeable adverse health affects.

Emergency response orresponding to emergencies means a response effort by employees from outside the immediate release area or by other designated responders (i.e., mutual-aid groups, local fire departments, etc.) to an occurrence which results, or is likely to result, in an uncontrolled release of a hazardous substance. Responses to incidental releases of hazardous substances where the substance can be absorbed, neutralized, or otherwise controlled at the time of release by employees in the immediate release area, or by maintenance personnel are not considered to be emergency responses within the scope of this standard. Responses to releases of hazardous substances where there is no potential safety or health hazard (i.e., fire, explosion, or chemical exposure) are not considered to be emergency responses.

Facility means (A) any building, structure, installation, equipment, pipe or pipeline (including any pipe into a sewer or publicly owned treatment works), well, pit, pond, lagoon, impoundment, ditch, storage container, motor vehicle, rolling stock, or aircraft, or (B) any site or area where a hazardous substance has been deposited, stored, disposed of, or placed, or otherwise come to be located; but does not include any consumer product in consumer use or any water-borne vessel.

Hazardous materials response (HAZMAT) team means an organized group of employees, designated by the employer, who are expected to perform work to handle and control actual or potential leaks or spills of hazardous substances requiring possible close approach to the substance. The team members perform responses to releases or potential releases of hazardous substances for the purpose of control or stabilization of the incident. A HAZMAT team is not a fire brigade nor is a typical fire brigade a HAZMAT team. A HAZMAT team, however, may be a separate component of a fire brigade or fire department.

Hazardous substance means any substance designated or listed under paragraphs (A) through (D) of this definition, exposure to which results or may result in adverse affects on the health or safety of employees:

(A) Any substance defined under section 101(14) of CERCLA;

(B) Any biological agent and other disease-causing agent which after release into the environment and upon

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exposure, ingestion, inhalation, or assimilation into any person, either directly from the environment or indirectly by ingestion through food chains, will or may reasonably be anticipated to cause death, disease, behavioral abnormalities, cancer, genetic mutation, physiological malfunctions (including malfunctions in reproduction) or physical deformations in such persons or their offspring;

(C) Any substance listed by the U.S. Department of Transportation as hazardous materials under 49 CFR 172.101 and appendices; and

(D) Hazardous waste as herein defined.

Hazardous waste means--

(A) A waste or combination of wastes as defined in 40 CFR 261.3, or

(B) Those substances defined as hazardous wastes in 49 CFR 171.8.

Hazardous waste operation means any operation conducted within the

scope of this standard.

Hazardous waste site or Site means any facility or location within the scope of this standard at which hazardous waste operations take place.

Health hazard means a chemical, mixture of chemicals or a pathogen for which there is statistically significant evidence based on at least one study conducted in accordance with established scientific principles that acute or chronic health effects may occur in exposed employees. The term ``health hazard'' includes chemicals which are carcinogens, toxic or highly toxic agents, reproductive toxins, irritants, corrosives, sensitizers, heptaotoxins, nephrotoxins, neurotoxins, agents which act on the hematopoietic system, and agents which damage the lungs, skin, eyes, or mucous membranes. It also includes stress due to temperature extremes. Further definition of the terms used above can be found in appendix A to 29 CFR 1910.1200.

IDLH orImmediately dangerous to life or health means an atmospheric concentration of any toxic, corrosive or asphyxiant substance that poses an immediate threat to life or would cause irreversible or delayed adverse health effects or would interfere with an individual's ability to escape from a dangerous atmosphere.

Oxygen deficiency means that concentration of oxygen by volume below which atmosphere supplying respiratory protection must be provided. It exists in atmospheres where the percentage of oxygen by volume is less than 19.5 percent oxygen.

Permissible exposure limit means the exposure, inhalation or dermal permissible exposure limit specified in 29 CFR part 1910, subparts G and Z.

Published exposure level means the exposure limits published in ``NIOSH Recommendations for Occupational Health Standards'' dated 1986, which is incorporated by reference as specified in Sec. 1910.6 or if none is specified, the exposure limits published in the standards specified by the American Conference of Governmental Industrial Hygienists in their publication ``Threshold Limit Values and Biological Exposure Indices for 1987-88'' dated 1987, which is incorporated by reference as specified in Sec. 1910.6.

Post emergency response means that portion of an emergency response performed after the immediate threat of a release has been stabilized or eliminated and clean-up of the site has begun. If post emergency response is performed by an employer's own employees who were part of the initial emergency response, it is considered to be part of the initial response and not post emergency response. However, if a group of an employer's own employees, separate from the group providing initial response, performs the clean-up operation, then the separate group of employees would be considered to be performing post-emergency response and subject to paragraph (q)(11) of this section.

Qualified person means a person with specific training, knowledge and experience in the area for which the person has the responsibility and the authority to control.

Site safety and health supervisor (or official) means the individual located on a hazardous waste site who is responsible to the employer and has the authority and knowledge necessary to implement the site safety and health plan and verify compliance with applicable safety and health requirements.

Small quantity generator means a generator of hazardous wastes who in any

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calendar month generates no more than 1,000 kilograms (2,205 pounds) of hazardous waste in that month.

Uncontrolled hazardous waste site, means an area identified as an uncontrolled hazardous waste site by a governmental body, whether Federal, state, local or other where an accumulation of hazardous substances creates a threat to the health and safety of individuals or the environment or both. Some sites are found on public lands such as those created by former municipal, county or state landfills where illegal or poorly managed waste disposal has taken place. Other sites are found on private property, often belonging to generators or former generators of hazardous substance wastes. Examples of such sites include, but are not limited to, surface impoundments, landfills, dumps, and tank or drum farms. Normal operations at TSD sites are not covered by this definition.

(b) Safety and health program.

Note to (b): Safety and health programs developed and implemented to

meet other Federal, state, or local regulations are considered acceptable in meeting this requirement if they cover or are modified to cover the topics required in this paragraph. An additional or separate safety and health program is not required by this paragraph.

(1) General. (i) Employers shall develop and implement a written safety and health program for their employees involved in hazardous waste operations. The program shall be designed to identify, evaluate, and control safety and health hazards, and provide for emergency response for hazardous waste operations.

(ii) The written safety and health program shall incorporate the following:

(A) An organizational structure;

(B) A comprehensive workplan;

(C) A site-specific safety and health plan which need not repeat the employer's standard operating procedures required in paragraph (b)(1)(ii)(F) of this section;

(D) The safety and health training program;

(E) The medical surveillance program;

(F) The employer's standard operating procedures for safety and health; and

(G) Any necessary interface between general program and site specific activities.

(iii) Site excavation. Site excavations created during initial site preparation or during hazardous waste operations shall be shored or sloped as appropriate to prevent accidental collapse in accordance with subpart P of 29 CFR part 1926.

(iv) Contractors and sub-contractors. An employer who retains contractor or sub-contractor services for work in hazardous waste operations shall inform those contractors, sub-contractors, or their representatives of the site emergency response procedures and any potential fire, explosion, health, safety or other hazards of the hazardous waste operation that have been identified by the employer, including those identified in the employer's information program.

(v) Program availability. The written safety and health program shall be made available to any contractor or subcontractor or their representative who will be involved with the hazardous waste operation; to employees; to employee designated representatives; to OSHA personnel, and to personnel of other Federal, state, or local agencies with regulatory authority over the site.

(2) Organizational structure part of the site program--(i) The organizational structure part of the program shall establish the specific chain of command and specify the overall responsibilities of supervisors and employees. It shall include, at a minimum, the following elements:

(A) A general supervisor who has the responsibility and authority to direct all hazardous waste operations.

(B) A site safety and health supervisor who has the responsibility and authority to develop and implement the site safety and health plan and verify compliance.

(C) All other personnel needed for hazardous waste site operations and emergency response and their general functions and responsibilities.

(D) The lines of authority, responsibility, and communication.

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(ii) The organizational structure shall be reviewed and updated as necessary to reflect the current status of waste site operations.

(3) Comprehensive workplan part of the site program. The comprehensive workplan part of the program shall address the tasks and objectives of the site operations and the logistics and resources required to reach those tasks and objectives.

(i) The comprehensive workplan shall address anticipated clean-up activities as well as normal operating procedures which need not repeat the employer's procedures available elsewhere.

(ii) The comprehensive workplan shall define work tasks and objectives and identify the methods for accomplishing those tasks and objectives.

(iii) The comprehensive workplan shall establish personnel requirements for implementing the plan.

(iv) The comprehensive workplan shall provide for the implementation of the training required in paragraph (e) of this section.

(v) The comprehensive workplan shall provide for the implementation of the required informational programs required in paragraph (i) of this section.

(vi) The comprehensive workplan shall provide for the implementation

of the medical surveillance program described in paragraph (f) of this section.

(4) Site-specific safety and health plan part of the program--(i) General. The site safety and health plan, which must be kept on site, shall address the safety and health hazards of each phase of site operation and include the requirements and procedures for employee protection.

(ii) Elements. The site safety and health plan, as a minimum, shall address the following:

(A) A safety and health risk or hazard analysis for each site task and operation found in the workplan.

(B) Employee training assignments to assure compliance with paragraph (e) of this section.

(C) Personal protective equipment to be used by employees for each of the site tasks and operations being conducted as required by the personal protective equipment program in paragraph (g)(5) of this section.

(D) Medical surveillance requirements in accordance with the program in paragraph (f) of this section.

(E) Frequency and types of air monitoring, personnel monitoring, and environmental sampling techniques and instrumentation to be used, including methods of maintenance and calibration of monitoring and sampling equipment to be used.

(F) Site control measures in accordance with the site control program required in paragraph (d) of this section.

(G) Decontamination procedures in accordance with paragraph (k) of this section.

(H) An emergency response plan meeting the requirements of paragraph (l) of this section for safe and effective responses to emergencies, including the necessary PPE and other equipment.

(I) Confined space entry procedures.

(J) A spill containment program meeting the requirements of paragraph (j) of this section.

(iii) Pre-entry briefing. The site specific safety and health plan shall provide for pre-entry briefings to be held prior to initiating any site activity, and at such other times as necessary to ensure that employees are apprised of the site safety and health plan and that this plan is being followed. The information and data obtained from site characterization and analysis work required in paragraph (c) of this section shall be used to prepare and update the site safety and health plan.

(iv) Effectiveness of site safety and health plan. Inspections shall be conducted by the site safety and health supervisor or, in the absence of that individual, another individual who is knowledgeable in occupational safety and health, acting on behalf of the employer as necessary to determine the effectiveness of the site safety and health plan. Any deficiencies in the effectiveness of the site safety and health plan shall be corrected by the employer.

(c) Site characterization and analysis--(1) General. Hazardous waste sites shall be evaluated in accordance with this paragraph to identify specific site hazards and to determine the appropriate safety and health control procedures

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needed to protect employees from the identified hazards.

(2) Preliminary evaluation. A preliminary evaluation of a site's characteristics shall be performed prior to site entry by a qualified person in order to aid in the selection of appropriate employee protection methods prior to site entry. Immediately after initial site entry, a more detailed evaluation of the site's specific characteristics shall be performed by a qualified person in order to further identify existing site hazards and to further aid in the selection of the appropriate engineering controls and personal protective equipment for the tasks to be performed.

(3) Hazard identification. All suspected conditions that may pose inhalation or skin absorption hazards that are immediately dangerous to life or health (IDLH), or other conditions that may cause death or serious harm, shall be identified during the preliminary survey and evaluated during the detailed survey. Examples of such hazards include, but are not limited to, confined space entry, potentially explosive or flammable situations, visible vapor clouds, or areas where biological indicators such as dead animals or vegetation are located.

(4) Required information. The following information to the extent available shall be obtained by the employer prior to allowing employees

to enter a site:

(i) Location and approximate size of the site.

(ii) Description of the response activity and/or the job task to be performed.

(iii) Duration of the planned employee activity.

(iv) Site topography and accessibility by air and roads.

(v) Safety and health hazards expected at the site.

(vi) Pathways for hazardous substance dispersion.

(vii) Present status and capabilities of emergency response teams that would provide assistance to hazardous waste clean-up site employees at the time of an emergency.

(viii) Hazardous substances and health hazards involved or expected at the site, and their chemical and physical properties.

(5) Personal protective equipment. Personal protective equipment (PPE) shall be provided and used during initial site entry in accordance with the following requirements:

(i) Based upon the results of the preliminary site evaluation, an ensemble of PPE shall be selected and used during initial site entry which will provide protection to a level of exposure below permissible exposure limits and published exposure levels for known or suspected hazardous substances and health hazards, and which will provide protection against other known and suspected hazards identified during the preliminary site evaluation. If there is no permissible exposure limit or published exposure level, the employer may use other published studies and information as a guide to appropriate personal protective equipment.

(ii) If positive-pressure self-contained breathing apparatus is not used as part of the entry ensemble, and if respiratory protection is warranted by the potential hazards identified during the preliminary site evaluation, an escape self-contained breathing apparatus of at least five minute's duration shall be carried by employees during initial site entry.

(iii) If the preliminary site evaluation does not produce sufficient information to identify the hazards or suspected hazards of the site, an ensemble providing protection equivalent to Level B PPE shall be provided as minimum protection, and direct reading instruments shall be used as appropriate for identifying IDLH conditions. (See appendix B for a description of Level B hazards and the recommendations for Level B protective equipment.)

(iv) Once the hazards of the site have been identified, the appropriate PPE shall be selected and used in accordance with paragraph (g) of this section.

(6) Monitoring. The following monitoring shall be conducted during initial site entry when the site evaluation produces information that shows the potential for ionizing radiation or IDLH conditions, or when the site information is not sufficient reasonably to eliminate these possible conditions:

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(i) Monitoring with direct reading instruments for hazardous levels of ionizing radiation.

(ii) Monitoring the air with appropriate direct reading test equipment (i.e., combustible gas meters, detector tubes) for IDLH and other conditions that may cause death or serious harm (combustible or explosive atmospheres, oxygen deficiency, toxic substances).

(iii) Visually observing for signs of actual or potential IDLH or other dangerous conditions.

(iv) An ongoing air monitoring program in accordance with paragraph (h) of this section shall be implemented after site characterization has determined the site is safe for the start-up of operations.

(7) Risk identification. Once the presence and concentrations of specific hazardous substances and health hazards have been established, the risks associated with these substances shall be identified. Employees who will be working on the site shall be informed of any risks that have been identified. In situations covered by the Hazard Communication Standard, 29 CFR 1910.1200, training required by that standard need not be duplicated.

Note to paragraph (c)(7).--Risks to consider include, but are not limited to:

(a) Exposures exceeding the permissible exposure limits and published exposure levels.

(b) IDLH concentrations.

(c) Potential skin absorption and irritation sources.

(d) Potential eye irritation sources.

(e) Explosion sensitivity and flammability ranges.

(f) Oxygen deficiency.

(8) Employee notification. Any information concerning the chemical, physical, and toxicologic properties of each substance known or expected to be present on site that is available to the employer and relevant to the duties an employee is expected to perform shall be made available to the affected employees prior to the commencement of their work activities. The employer may utilize information developed for the hazard communication standard for this purpose.

(d) Site control--(1) General. Appropriate site control procedures shall be implemented to control employee exposure to hazardous substances before clean-up work begins.

(2) Site control program. A site control program for protecting employees which is part of the employer's site safety and health program required in paragraph (b) of this section shall be developed during the planning stages of a hazardous waste clean-up operation and modified as necessary as new information becomes available.

(3) Elements of the site control program. The site control program shall, as a minimum, include: A site map; site work zones; the use of a ``buddy system''; site communications including alerting means for emergencies; the standard operating procedures or safe work practices; and, identification of the nearest medical assistance. Where these requirements are covered elsewhere they need not be repeated.

(e) Training--(1) General. (i) All employees working on site (such as but not limited to equipment operators, general laborers and others) exposed to hazardous substances, health hazards, or safety hazards and their supervisors and management responsible for the site shall receive training meeting the requirements of this paragraph before they are permitted to engage in hazardous waste operations that could expose them to hazardous substances, safety, or health hazards, and they shall receive review training as specified in this paragraph.

(ii) Employees shall not be permitted to participate in or supervise field activities until they have been trained to a level required by their job function and responsibility.

(2) Elements to be covered. The training shall thoroughly cover the following:

(i) Names of personnel and alternates responsible for site safety and health;

(ii) Safety, health and other hazards present on the site;

(iii) Use of personal protective equipment;

(iv) Work practices by which the employee can minimize risks from hazards;

(v) Safe use of engineering controls and equipment on the site;

(vi) Medical surveillance requirements, including recognition of symptoms and signs which might indicate overexposure to hazards; and

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(vii) The contents of paragraphs (G) through (J) of the site safety and health plan set forth in paragraph (b)(4)(ii) of this section.

(3) Initial training. (i) General site workers (such as equipment operators, general laborers and supervisory personnel) engaged in hazardous substance removal or other activities which expose or potentially expose workers to hazardous substances and health hazards shall receive a minimum of 40 hours of instruction off the site, and a minimum of three days actual field experience under the direct supervision of a trained, experienced supervisor.

(ii) Workers on site only occasionally for a specific limited task (such as, but not limited to, ground water monitoring, land surveying, or geo-physical surveying) and who are unlikely to be exposed over permissible exposure limits and published exposure limits shall receive a minimum of 24 hours of instruction off the site, and the minimum of one day actual field experience under the direct supervision of a trained, experienced supervisor.

(iii) Workers regularly on site who work in areas which have been monitored and fully characterized indicating that exposures are under permissible exposure limits and published exposure limits where respirators are not necessary, and the characterization indicates that there are no health hazards or the possibility of an emergency developing, shall receive a minimum of 24 hours of instruction off the site and the minimum of one day actual field experience under the direct supervision of a trained, experienced supervisor.

(iv) Workers with 24 hours of training who are covered by paragraphs (e)(3)(ii) and (e)(3)(iii) of this section, and who become general site workers or who are required to wear respirators, shall have the

additional 16 hours and two days of training necessary to total the training specified in paragraph (e)(3)(i).

(4) Management and supervisor training. On-site management and supervisors directly responsible for, or who supervise employees engaged in, hazardous waste operations shall receive 40 hours initial training, and three days of supervised field experience (the training may be reduced to 24 hours and one day if the only area of their responsibility is employees covered by paragraphs (e)(3)(ii) and (e)(3)(iii)) and at least eight additional hours of specialized training at the time of job assignment on such topics as, but not limited to, the employer's safety and health program and the associated employee training program, personal protective equipment program, spill containment program, and health hazard monitoring procedure and techniques.

(5) Qualifications for trainers. Trainers shall be qualified to instruct employees about the subject matter that is being presented in training. Such trainers shall have satisfactorily completed a training program for teaching the subjects they are expected to teach, or they shall have the academic credentials and instructional experience necessary for teaching the subjects. Instructors shall demonstrate competent instructional skills and knowledge of the applicable subject matter.

(6) Training certification. Employees and supervisors that have received and successfully completed the training and field experience specified in paragraphs (e)(1) through (e)(4) of this section shall be certified by their instructor or the head instructor and trained supervisor as having successfully completed the necessary training. A written certificate shall be given to each person so certified. Any person who has not been so certified or who does not meet the requirements of paragraph (e)(9) of this section shall be prohibited from engaging in hazardous waste operations.

(7) Emergency response. Employees who are engaged in responding to hazardous emergency situations at hazardous waste clean-up sites that may expose them to hazardous substances shall be trained in how to respond to such expected emergencies.

(8) Refresher training. Employees specified in paragraph (e)(1) of this section, and managers and supervisors specified in paragraph (e)(4) of this section, shall receive eight hours of refresher training annually on the items specified in paragraph (e)(2) and/or (e)(4) of this section, any critique of incidents that have occurred in the past year that can serve as training examples of related work, and other relevant topics.

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(9) Equivalent training. Employers who can show by documentation or certification that an employee's work experience and/or training has resulted in training equivalent to that training required in paragraphs (e)(1) through (e)(4) of this section shall not be required to provide the initial training requirements of those paragraphs to such employees and shall provide a copy of the certification or documentation to the employee upon request. However, certified employees or employees with equivalent training new to a site shall receive appropriate, site specific training before site entry and have appropriate supervised field experience at the new site. Equivalent training includes any academic training or the training that existing employees might have already received from actual hazardous waste site work experience.

(f) Medical surveillance--(1) General. Employers engaged in operations specified in paragraphs (a)(1)(i) through (a)(1)(iv) of this section and not covered by (a)(2)(iii) exceptions and employers of employees specified in paragraph (g)(9) shall institute a medical surveillance program in accordance with this paragraph.

(2) Employees covered. The medical surveillance program shall be instituted by the employer for the following employees:

(i) All employees who are or may be exposed to hazardous substances or health hazards at or above the permissible exposure limits or, if there is no permissible exposure limit, above the published exposure levels for these substances, without regard to the use of respirators, for 30 days or more a year;

(ii) All employees who wear a respirator for 30 days or more a year or as required by Sec. 1910.134;

(iii) All employees who are injured, become ill or develop signs or symptoms due to possible overexposure involving hazardous substances or health hazards from an emergency response or hazardous waste operation; and

(iv) Members of HAZMAT teams.

(3) Frequency of medical examinations and consultations. Medical examinations and consultations shall be made available by the employer to each employee covered under paragraph (f)(2) of this section on the following schedules:

(i) For employees covered under paragraphs (f)(2)(i), (f)(2)(ii), and (f)(2)(iv):

(A) Prior to assignment;

(B) At least once every twelve months for each employee covered unless the attending physician believes a longer interval (not greater than biennially) is appropriate;

(C) At termination of employment or reassignment to an area where the employee would not be covered if the employee has not had an examination within the last six months;

(D) As soon as possible upon notification by an employee that the employee has developed signs or symptoms indicating possible overexposure to hazardous substances or health hazards, or that the employee has been injured or exposed above the permissible exposure limits or published exposure levels in an emergency situation;

(E) At more frequent times, if the examining physician determines that an increased frequency of examination is medically necessary.

(ii) For employees covered under paragraph (f)(2)(iii) and for all employees including those of employers covered by paragraph (a)(1)(v) who may have been injured, received a health impairment, developed signs or symptoms which may have resulted from exposure to hazardous substances resulting from an emergency incident, or exposed during an emergency incident to hazardous substances at concentrations above the permissible exposure limits or the published exposure levels without the necessary personal protective equipment being used:

(A) As soon as possible following the emergency incident or development of signs or symptoms;

(B) At additional times, if the examining physician determines that follow-up examinations or consultations are medically necessary.

(4) Content of medical examinations and consultations. (i) Medical examinations required by paragraph (f)(3) of this section shall include a medical and work history (or updated history if one is in the employee's file) with special emphasis on symptoms related to the handling of hazardous substances and

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health hazards, and to fitness for duty including the ability to wear any required PPE under conditions (i.e., temperature extremes) that may be expected at the work site.

(ii) The content of medical examinations or consultations made available to employees pursuant to paragraph (f) shall be determined by the attending physician. The guidelines in the Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities (See appendix D, Reference □10) should be consulted.

(5) Examination by a physician and costs. All medical examinations and procedures shall be performed by or under the supervision of a licensed physician, preferably one knowledgeable in occupational medicine, and shall be provided without cost to the employee, without loss of pay, and at a reasonable time and place.

(6) Information provided to the physician. The employer shall provide one copy of this standard and its appendices to the attending physician, and in addition the following for each employee:

(i) A description of the employee's duties as they relate to the employee's exposures.

(ii) The employee's exposure levels or anticipated exposure levels.

(iii) A description of any personal protective equipment used or to be used.

(iv) Information from previous medical examinations of the employee which is not readily available to the examining physician.

(v) Information required by Sec. 1910.134.

(7) Physician's written opinion. (i) The employer shall obtain and furnish the employee with a copy of a written opinion from the attending physician containing the following:

(A) The physician's opinion as to whether the employee has any detected medical conditions which would place the employee at increased risk of material impairment of the employee's health from work in hazardous waste operations or emergency response, or from respirator use.

(B) The physician's recommended limitations upon the employee's assigned work.

(C) The results of the medical examination and tests if requested by

the employee.

(D) A statement that the employee has been informed by the physician of the results of the medical examination and any medical conditions which require further examination or treatment.

(ii) The written opinion obtained by the employer shall not reveal specific findings or diagnoses unrelated to occupational exposures.

(8) Recordkeeping. (i) An accurate record of the medical surveillance required by paragraph (f) of this section shall be retained. This record shall be retained for the period specified and meet the criteria of 29 CFR 1910.20.

(ii) The record required in paragraph (f)(8)(i) of this section shall include at least the following information:

(A) The name and social security number of the employee;

(B) Physician's written opinions, recommended limitations, and results of examinations and tests;

(C) Any employee medical complaints related to exposure to hazardous substances;

(D) A copy of the information provided to the examining physician by the employer, with the exception of the standard and its appendices.

(g) Engineering controls, work practices, and personal protective equipment for employee protection. Engineering controls, work practices, personal protective equipment, or a combination of these shall be implemented in accordance with this paragraph to protect employees from exposure to hazardous substances and safety and health hazards.

(1) Engineering controls, work practices and PPE for substances regulated in subparts G and Z. (i) Engineering controls and work practices shall be instituted to reduce and maintain employee exposure to or below the permissible exposure limits for substances regulated by 29 CFR part 1910, to the extent required by subpart Z, except to the extent that such controls and practices are not feasible.

Note to paragraph (g)(1)(i): Engineering controls which may be feasible include the use of pressurized cabs or control booths on equipment, and/or the use of remotely operated

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material handling equipment. Work practices which may be feasible are removing all non-essential employees from potential exposure during opening of drums, wetting down dusty operations and locating employees upwind of possible hazards.

(ii) Whenever engineering controls and work practices are not feasible or not required, any reasonable combination of engineering controls, work practices and PPE shall be used to reduce and maintain employee exposures to or below the permissible exposure limits or dose limits for substances regulated by 29 CFR part 1910, subpart Z.

(iii) The employer shall not implement a schedule of employee rotation as a means of compliance with permissible exposure limits or dose limits except when there is no other feasible way of complying with the airborne or dermal dose limits for ionizing radiation.

(iv) The provisions of 29 CFR, subpart G, shall be followed.

(2) Engineering controls, work practices, and PPE for substances not regulated in subparts G and Z. An appropriate combination of engineering controls, work practices and personal protective equipment shall be used to reduce and maintain employee exposure to or below published exposure levels for hazardous substances and health hazards not regulated by 29 CFR part 1910, subparts G and Z. The employer may use the published literature and MSDS as a guide in making the employer's determination as to what level of protection the employer believes is appropriate for hazardous substances and health hazards for which there is no permissible exposure limit or published exposure limit.

(3) Personal protective equipment selection. (i) Personal protective equipment (PPE) shall be selected and used which will protect employees from the hazards and potential hazards they are likely to encounter as identified during the site characterization and analysis.

(ii) Personal protective equipment selection shall be based on an evaluation of the performance characteristics of the PPE relative to the requirements and limitations of the site, the task-specific conditions and duration, and the hazards and potential hazards identified at the site.

(iii) Positive pressure self-contained breathing apparatus, or positive pressure air-line respirators equipped with an escape air supply, shall be used when chemical exposure levels present will create a substantial possibility of immediate death, immediate serious illness or injury, or impair the ability to escape.

(iv) Totally-encapsulating chemical protective suits (protection

equivalent to Level A protection as recommended in appendix B) shall be used in conditions where skin absorption of a hazardous substance may result in a substantial possibility of immediate death, immediate serious illness or injury, or impair the ability to escape.

(v) The level of protection provided by PPE selection shall be increased when additional information on site conditions indicates that increased protection is necessary to reduce employee exposures below permissible exposure limits and published exposure levels for hazardous substances and health hazards. (See appendix B for guidance on selecting PPE ensembles.)

Note to (g)(3): The level of employee protection provided may be decreased when additional information or site conditions show that decreased protection will not result in hazardous exposures to employees.

(vi) Personal protective equipment shall be selected and used to meet the requirements of 29 CFR part 1910, subpart I, and additional requirements specified in this section.

(4) Totally-encapsulating chemical protective suits. (i) Totally-encapsulating suits shall protect employees from the particular hazards which are identified during site characterization and analysis.

(ii) Totally-encapsulating suits shall be capable of maintaining positive air pressure. (See appendix A for a test method which may be used to evaluate this requirement.)

(iii) Totally-encapsulating suits shall be capable of preventing inward test gas leakage of more than 0.5 percent. (See appendix A for a test method which may be used to evaluate this requirement.)

(5) Personal protective equipment (PPE) program. A written personal protective equipment program, which is part of the employer's safety and health program required in paragraph (b) of this

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section or required in paragraph (p)(1) of this section and which is also a part of the site-specific safety and health plan shall be established. The PPE program shall address the elements listed below. When elements, such as donning and doffing procedures, are provided by the manufacturer of a piece of equipment and are attached to the plan, they need not be rewritten into the plan as long as they adequately address the procedure or element.

(i) PPE selection based upon site hazards,

(ii) PPE use and limitations of the equipment,

(iii) Work mission duration,

(iv) PPE maintenance and storage,

(v) PPE decontamination and disposal,

(vi) PPE training and proper fitting,

(vii) PPE donning and doffing procedures,

(viii) PPE inspection procedures prior to, during, and after use,

(ix) Evaluation of the effectiveness of the PPE program, and

(x) Limitations during temperature extremes, heat stress, and other appropriate medical considerations.

(h) Monitoring--(1) General. (i) Monitoring shall be performed in accordance with this paragraph where there may be a question of employee exposure to hazardous concentrations of hazardous substances in order to assure proper selection of engineering controls, work practices and personal protective equipment so that employees are not exposed to levels which exceed permissible exposure limits, or published exposure levels if there are no permissible exposure limits, for hazardous substances.

(ii) Air monitoring shall be used to identify and quantify airborne levels of hazardous substances and safety and health hazards in order to determine the appropriate level of employee protection needed on site.

(2) Initial entry. Upon initial entry, representative air monitoring shall be conducted to identify any IDLH condition, exposure over permissible exposure limits or published exposure levels, exposure over a radioactive material's dose limits or other dangerous condition such as the presence of flammable atmospheres or oxygen-deficient environments.

(3) Periodic monitoring. Periodic monitoring shall be conducted when the possibility of an IDLH condition or flammable atmosphere has developed or when there is indication that exposures may have risen over permissible exposure limits or published exposure levels since prior monitoring. Situations where it shall be considered whether the possibility that exposures have risen are as follows:

(i) When work begins on a different portion of the site.

(ii) When contaminants other than those previously identified are

being handled.

(iii) When a different type of operation is initiated (e.g., drum opening as opposed to exploratory well drilling).

(iv) When employees are handling leaking drums or containers or working in areas with obvious liquid contamination (e.g., a spill or lagoon).

(4) Monitoring of high-risk employees. After the actual clean-up phase of any hazardous waste operation commences; for example, when soil, surface water or containers are moved or disturbed; the employer shall monitor those employees likely to have the highest exposures to hazardous substances and health hazards likely to be present above permissible exposure limits or published exposure levels by using personal sampling frequently enough to characterize employee exposures. If the employees likely to have the highest exposure are over permissible exposure limits or published exposure limits, then monitoring shall continue to determine all employees likely to be above those limits. The employer may utilize a representative sampling approach by documenting that the employees and chemicals chosen for monitoring are based on the criteria stated above.

Note to paragraph (h): It is not required to monitor employees engaged in site characterization operations covered by paragraph (c) of this section.

(i) Informational programs. Employers shall develop and implement a program, which is part of the employer's safety and health program required in paragraph (b) of this section, to inform employees, contractors, and subcontractors (or their representative)

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actually engaged in hazardous waste operations of the nature, level and degree of exposure likely as a result of participation in such hazardous waste operations. Employees, contractors and subcontractors working outside of the operations part of a site are not covered by this standard.

(j) Handling drums and containers--(1) General. (i) Hazardous substances and contaminated soils, liquids, and other residues shall be handled, transported, labeled, and disposed of in accordance with this paragraph.

(ii) Drums and containers used during the clean-up shall meet the appropriate DOT, OSHA, and EPA regulations for the wastes that they contain.

(iii) When practical, drums and containers shall be inspected and their integrity shall be assured prior to being moved. Drums or containers that cannot be inspected before being moved because of storage conditions (i.e., buried beneath the earth, stacked behind other drums, stacked several tiers high in a pile, etc.) shall be moved to an accessible location and inspected prior to further handling.

(iv) Unlabelled drums and containers shall be considered to contain hazardous substances and handled accordingly until the contents are positively identified and labeled.

(v) Site operations shall be organized to minimize the amount of drum or container movement.

(vi) Prior to movement of drums or containers, all employees exposed to the transfer operation shall be warned of the potential hazards associated with the contents of the drums or containers.

(vii) U.S. Department of Transportation specified salvage drums or containers and suitable quantities of proper absorbent shall be kept available and used in areas where spills, leaks, or ruptures may occur.

(viii) Where major spills may occur, a spill containment program, which is part of the employer's safety and health program required in paragraph (b) of this section, shall be implemented to contain and isolate the entire volume of the hazardous substance being transferred.

(ix) Drums and containers that cannot be moved without rupture, leakage, or spillage shall be emptied into a sound container using a device classified for the material being transferred.

(x) A ground-penetrating system or other type of detection system or device shall be used to estimate the location and depth of buried drums or containers.

(xi) Soil or covering material shall be removed with caution to prevent drum or container rupture.

(xii) Fire extinguishing equipment meeting the requirements of 29 CFR part 1910, subpart L, shall be on hand and ready for use to control incipient fires.

(2) Opening drums and containers. The following procedures shall be followed in areas where drums or containers are being opened:

(i) Where an airline respirator system is used, connections to the source of air supply shall be protected from contamination and the entire system shall be protected from physical damage.

(ii) Employees not actually involved in opening drums or containers shall be kept a safe distance from the drums or containers being opened.

(iii) If employees must work near or adjacent to drums or containers being opened, a suitable shield that does not interfere with the work operation shall be placed between the employee and the drums or containers being opened to protect the employee in case of accidental explosion.

(iv) Controls for drum or container opening equipment, monitoring equipment, and fire suppression equipment shall be located behind the explosion-resistant barrier.

(v) When there is a reasonable possibility of flammable atmospheres being present, material handling equipment and hand tools shall be of the type to prevent sources of ignition.

(vi) Drums and containers shall be opened in such a manner that excess interior pressure will be safely relieved. If pressure can not be relieved from a remote location, appropriate shielding shall be placed between the employee and the drums or containers to reduce the risk of employee injury.

(vii) Employees shall not stand upon or work from drums or containers.

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(3) Material handling equipment. Material handiing equipment used to transfer drums and containers shall be selected, positioned and operated to minimize sources of ignition related to the equipment from igniting vapors released from ruptured drums or containers.

(4) Radioactive wastes. Drums and containers containing radioactive wastes shall not be handled until such time as their hazard to employees is properly assessed.

(5) Shock sensitive wastes. As a minimum, the following special precautions shall be taken when drums and containers containing or suspected of containing shock-sensitive wastes are handled:

(i) All non-essential employees shall be evacuated from the area of transfer.

(ii) Material handling equipment shall be provided with explosive containment devices or protective shields to protect equipment operators from exploding containers.

(iii) An employee alarm system capable of being perceived above surrounding light and noise conditions shall be used to signal the commencement and completion of explosive waste handling activities.

(iv) Continuous communications (i.e., portable radios, hand signals, telephones, as appropriate) shall be maintained between the employee-in-charge of the immediate handling area and both the site safety and health supervisor and the command post until such time as the handling operation is completed. Communication equipment or methods that could cause shock sensitive materials to explode shall not be used.

(v) Drums and containers under pressure, as evidenced by bulging or swelling, shall not be moved until such time as the cause for excess pressure is determined and appropriate containment procedures have been implemented to protect employees from explosive relief of the drum.

(vi) Drums and containers containing packaged laboratory wastes shall be considered to contain shock-sensitive or explosive materials until they have been characterized.

Caution: Shipping of shock sensitive wastes may be prohibited under U.S. Department of Transportation regulations. Employers and their shippers should refer to 49 CFR 173.21 and 173.50.

(6) Laboratory waste packs. In addition to the requirements of paragraph (j)(5) of this section, the following precautions shall be taken, as a minimum, in handling laboratory waste packs (lab packs):

(i) Lab packs shall be opened only when necessary and then only by an individual knowledgeable in the inspection, classification, and segregation of the containers within the pack according to the hazards of the wastes.

(ii) If crystalline material is noted on any container, the contents shall be handled as a shock-sensitive waste until the contents are identified.

(7) Sampling of drum and container contents. Sampling of containers and drums shall be done in accordance with a sampling procedure which is part of the site safety and health plan developed for and available to

employees and others at the specific worksite.

(8) Shipping and transport. (i) Drums and containers shall be identified and classified prior to packaging for shipment.

(ii) Drum or container staging areas shall be kept to the minimum number necessary to identify and classify materials safely and prepare them for transport.

(iii) Staging areas shall be provided with adequate access and egress routes.

(iv) Bulking of hazardous wastes shall be permitted only after a thorough characterization of the materials has been completed.

(9) Tank and vault procedures. (i) Tanks and vaults containing hazardous substances shall be handled in a manner similar to that for drums and containers, taking into consideration the size of the tank or vault.

(ii) Appropriate tank or vault entry procedures as described in the employer's safety and health plan shall be followed whenever employees must enter a tank or vault.

(k) Decontamination--(1) General. Procedures for all phases of decontamination shall be developed and implemented in accordance with this paragraph.

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(2) Decontamination procedures. (i) A decontamination procedure shall be developed, communicated to employees and implemented before any employees or equipment may enter areas on site where potential for exposure to hazardous substances exists.

(ii) Standard operating procedures shall be developed to minimize employee contact with hazardous substances or with equipment that has contacted hazardous substances.

(iii) All employees leaving a contaminated area shall be appropriately decontaminated; all contaminated clothing and equipment leaving a contaminated area shall be appropriately disposed of or decontaminated.

(iv) Decontamination procedures shall be monitored by the site safety and health supervisor to determine their effectiveness. When such procedures are found to be ineffective, appropriate steps shall be taken to correct any deficiencies.

(3) Location. Decontamination shall be performed in geographical areas that will minimize the exposure of uncontaminated employees or equipment to contaminated employees or equipment.

(4) Equipment and solvents. All equipment and solvents used for decontamination shall be decontaminated or disposed of properly.

(5) Personal protective clothing and equipment. (i) Protective clothing and equipment shall be decontaminated, cleaned, laundered, maintained or replaced as needed to maintain their effectiveness.

(ii) Employees whose non-impermeable clothing becomes wetted with hazardous substances shall immediately remove that clothing and proceed to shower. The clothing shall be disposed of or decontaminated before it is removed from the work zone.

(6) Unauthorized employees. Unauthorized employees shall not remove protective clothing or equipment from change rooms.

(7) Commercial laundries or cleaning establishments. Commercial laundries or cleaning establishments that decontaminate protective clothing or equipment shall be informed of the potentially harmful effects of exposures to hazardous substances.

(8) Showers and change rooms. Where the decontamination procedure indicates a need for regular showers and change rooms outside of a contaminated area, they shall be provided and meet the requirements of 29 CFR 1910.141. If temperature conditions prevent the effective use of water, then other effective means for cleansing shall be provided and used.

(l) Emergency response by employees at uncontrolled hazardous waste sites--(1) Emergency response plan. (i) An emergency response plan shall be developed and implemented by all employers within the scope of paragraphs (a)(1) (i)-(ii) of this section to handle anticipated emergencies prior to the commencement of hazardous waste operations. The plan shall be in writing and available for inspection and copying by employees, their representatives, OSHA personnel and other governmental agencies with relevant responsibilities.

(ii) Employers who will evacuate their employees from the danger area when an emergency occurs, and who do not permit any of their employees to assist in handling the emergency, are exempt from the requirements of this paragraph if they provide an emergency action plan complying with Sec. 1910.38(a) of this part.

(2) Elements of an emergency response plan. The employer shall develop an emergency response plan for emergencies which shall address, as a minimum, the following:

(i) Pre-emergency planning.

(ii) Personnel roles, lines of authority, and communication.

(iii) Emergency recognition and prevention.

(iv) Safe distances and places of refuge.

(v) Site security and control.

(vi) Evacuation routes and procedures.

(vii) Decontamination procedures which are not covered by the site safety and health plan.

(viii) Emergency medical treatment and first aid.

(ix) Emergency alerting and response procedures.

(x) Critique of response and follow-up.

(xi) PPE and emergency equipment.

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(3) Procedures for handling emergency incidents. (i) In addition to the elements for the emergency response plan required in paragraph (l)(2) of this section, the following elements shall be included for emergency response plans:

(A) Site topography, layout, and prevailing weather conditions.

(B) Procedures for reporting incidents to local, state, and federal governmental agencies.

(ii) The emergency response plan shall be a separate section of the Site Safety and Health Plan.

(iii) The emergency response plan shall be compatible and integrated with the disaster, fire and/or emergency response plans of local, state, and federal agencies.

(iv) The emergency response plan shall be rehearsed regularly as part of the overall training program for site operations.

(v) The site emergency response plan shall be reviewed periodically and, as necessary, be amended to keep it current with new or changing site conditions or information.

(vi) An employee alarm system shall be installed in accordance with 29 CFR 1910.165 to notify employees of an emergency situation; to stop work activities if necessary; to lower background noise in order to speed communication; and to begin emergency procedures.

(vii) Based upon the information available at time of the emergency, the employer shall evaluate the incident and the site response capabilities and proceed with the appropriate steps to implement the site emergency response plan.

(m) Illumination. Areas accessible to employees shall be lighted to not less than the minimum illumination intensities listed in the following Table H-120.1 while any work is in progress:

Table H-120.1--Minimum Illumination Intensities in Foot-Candles

| Foot-candles | Area or operations |
|---|---|
| 5 | General site areas. |
| 3 | Excavation and waste areas, accessways, active storage areas, loading platforms, refueling, and field maintenance areas. |
| 5 | Indoors: Warehouses, corridors, hallways, and exitways. |
| 5 | Tunnels, shafts, and general underground work areas. (Exception: Minimum of 10 foot-candles is required at tunnel and shaft heading during drilling mucking, and scaling. Mine Safety and Health Administration approved cap lights shall be acceptable for use in the tunnel heading.) |
| 10 | General shops (e.g., mechanical and electrical equipment rooms, active storerooms, barracks or living quarters, locker or dressing |

| | |
|---|---|
| | rooms, dining areas, and indoor toilets and workrooms.) |
| 30..... | First aid stations, infirmaries, and offices. |

(n) Sanitation at temporary workplaces--(1) Potable water. (i) An adequate supply of potable water shall be provided on the site.

(ii) Portable containers used to dispense drinking water shall be capable of being tightly closed, and equipped with a tap. Water shall not be dipped from containers.

(iii) Any container used to distribute drinking water shall be clearly marked as to the nature of its contents and not used for any other purpose.

(iv) Where single service cups (to be used but once) are supplied, both a sanitary container for the unused cups and a receptacle for disposing of the used cups shall be provided.

(2) Nonpotable water. (i) Outlets for nonpotable water, such as water for firefighting purposes, shall be identified to indicate clearly that the water is unsafe and is not to be used for drinking, washing, or cooking purposes.

(ii) There shall be no cross-connection, open or potential, between a system furnishing potable water and a system furnishing nonpotable water.

(3) Toilet facilities. (i) Toilets shall be provided for employees according to the following Table H-**120**.2.

Table H-**120**.2--Toilet Facilities

| Number of employees | Minimum number of facilities |
|---|---|
| 20 or fewer..... | One. |
| More than 20, fewer than 200..... | One toilet seat and one urinal per 40 employees. |
| More than 200..... | One toilet seat and one urinal per 50 employees. |

(ii) Under temporary field conditions, provisions shall be made to assure that at least one toilet facility is available.

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(iii) Hazardous waste sites not provided with a sanitary sewer shall be provided with the following toilet facilities unless prohibited by local codes:

(A) Chemical toilets;

(B) Recirculating toilets;

(C) Combustion toilets; or

(D) Flush toilets.

(iv) The requirements of this paragraph for sanitation facilities shall not apply to mobile crews having transportation readily available to nearby toilet facilities.

(v) Doors entering toilet facilities shall be provided with entrance locks controlled from inside the facility.

(4) Food handling. All food service facilities and operations for employees shall meet the applicable laws, ordinances, and regulations of the jurisdictions in which they are located.

(5) Temporary sleeping quarters. When temporary sleeping quarters are provided, they shall be heated, ventilated, and lighted.

(6) Washing facilities. The employer shall provide adequate washing facilities for employees engaged in operations where hazardous substances may be harmful to employees. Such facilities shall be in near proximity to the worksite; in areas where exposures are below permissible exposure limits and published exposure levels and which are under the controls of the employer; and shall be so equipped as to enable employees to remove hazardous substances from themselves.

(7) Showers and change rooms. When hazardous waste clean-up or removal operations commence on a site and the duration of the work will require six months or greater time to complete, the employer shall provide showers and change rooms for all employees exposed to hazardous substances and health hazards involved in hazardous waste clean-up or removal operations.

(i) Showers shall be provided and shall meet the requirements of 29

CFR 1910.141(d)(3).

(ii) Change rooms shall be provided and shall meet the requirements of 29 CFR 1910.141(e). Change rooms shall consist of two separate change areas separated by the shower area required in paragraph (n)(7)(i) of this section. One change area, with an exit leading off the worksite, shall provide employees with a clean area where they can remove, store, and put on street clothing. The second area, with an exit to the worksite, shall provide employees with an area where they can put on, remove and store work clothing and personal protective equipment.

(iii) Showers and change rooms shall be located in areas where exposures are below the permissible exposure limits and published exposure levels. If this cannot be accomplished, then a ventilation system shall be provided that will supply air that is below the permissible exposure limits and published exposure levels.

(iv) Employers shall assure that employees shower at the end of their work shift and when leaving the hazardous waste site.

(o) New technology programs. (1) The employer shall develop and implement procedures for the introduction of effective new technologies and equipment developed for the improved protection of employees working with hazardous waste clean-up operations, and the same shall be implemented as part of the site safety and health program to assure that employee protection is being maintained.

(2) New technologies, equipment or control measures available to the industry, such as the use of foams, absorbents, adsorbents, neutralizers, or other means to suppress the level of air contaminates while excavating the site or for spill control, shall be evaluated by employers or their representatives. Such an evaluation shall be done to determine the effectiveness of the new methods, materials, or equipment before implementing their use on a large scale for enhancing employee protection. Information and data from manufacturers or suppliers may be used as part of the employer's evaluation effort. Such evaluations shall be made available to OSHA upon request.

(p) Certain Operations Conducted Under the Resource Conservation and Recovery Act of 1976 (RCRA). Employers conducting operations at treatment, storage and disposal (TSD) facilities specified in paragraph (a)(1)(iv) of this section shall provide and implement the programs specified in this paragraph. See the ``Notes and Exceptions''

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to paragraph (a)(2)(iii) of this section for employers not covered.)''.

(1) Safety and health program. The employer shall develop and implement a written safety and health program for employees involved in hazardous waste operations that shall be available for inspection by employees, their representatives and OSHA personnel. The program shall be designed to identify, evaluate and control safety and health hazards in their facilities for the purpose of employee protection, to provide for emergency response meeting the requirements of paragraph (p)(8) of this section and to address as appropriate site analysis, engineering controls, maximum exposure limits, hazardous waste handling procedures and uses of new technologies.

(2) Hazard communication program. The employer shall implement a hazard communication program meeting the requirements of 29 CFR 1910.1200 as part of the employer's safety and program.

Note to Sec. 1910.**120**: The exemption for hazardous waste provided in Sec. 1910.1200 is applicable to this section.

(3) Medical surveillance program. The employer shall develop and implement a medical surveillance program meeting the requirements of paragraph (f) of this section.

(4) Decontamination program. The employer shall develop and implement a decontamination procedure meeting the requirements of paragraph (k) of this section.

(5) New technology program. The employer shall develop and implement procedures meeting the requirements of paragraph (o) of this section for introducing new and innovative equipment into the workplace.

(6) Material handling program. Where employees will be handling drums or containers, the employer shall develop and implement procedures meeting the requirements of paragraphs (j)(1) (ii) through (viii) and (xi) of this section, as well as (j)(3) and (j)(8) of this section prior to starting such work.

(7) Training program--(i) New employees. The employer shall develop and implement a training program, which is part of the employer's safety and health program, for employees exposed to health hazards or hazardous substances at TSD operations to enable the employees to perform their assigned duties and functions in a safe and healthful manner so as not

endanger themselves or other employees. The initial training shall be for 24 hours and refresher training shall be for eight hours annually. Employees who have received the initial training required by this paragraph shall be given a written certificate attesting that they have successfully completed the necessary training.

(ii) Current employees. Employers who can show by an employee's previous work experience and/or training that the employee has had training equivalent to the initial training required by this paragraph, shall be considered as meeting the initial training requirements of this paragraph as to that employee. Equivalent training includes the training that existing employees might have already received from actual site work experience. Current employees shall receive eight hours of refresher training annually.

(iii) Trainers. Trainers who teach initial training shall have satisfactorily completed a training course for teaching the subjects they are expected to teach or they shall have the academic credentials and instruction experience necessary to demonstrate a good command of the subject matter of the courses and competent instructional skills.

(8) Emergency response program--(i) Emergency response plan. An emergency response plan shall be developed and implemented by all employers. Such plans need not duplicate any of the subjects fully addressed in the employer's contingency planning required by permits, such as those issued by the U.S. Environmental Protection Agency, provided that the contingency plan is made part of the emergency response plan. The emergency response plan shall be a written portion of the employers safety and health program required in paragraph (p)(1) of this section. Employers who will evacuate their employees from the worksite location when an emergency occurs and who do not permit any of their employees to assist in handling the emergency are exempt from the requirements of paragraph (p)(8) if they provide an

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emergency action plan complying with Sec. 1910.38(a) of this part.

(ii) Elements of an emergency response plan. The employer shall develop an emergency response plan for emergencies which shall address, as a minimum, the following areas to the extent that they are not addressed in any specific program required in this paragraph:

(A) Pre-emergency planning and coordination with outside parties.
(B) Personnel roles, lines of authority, and communication.
(C) Emergency recognition and prevention.
(D) Safe distances and places of refuge.
(E) Site security and control.
(F) Evacuation routes and procedures.
(G) Decontamination procedures.
(H) Emergency medical treatment and first aid.
(I) Emergency alerting and response procedures.
(J) Critique of response and follow-up.
(K) PPE and emergency equipment.

(iii) Training. (A) Training for emergency response employees shall be completed before they are called upon to perform in real emergencies. Such training shall include the elements of the emergency response plan, standard operating procedures the employer has established for the job, the personal protective equipment to be worn and procedures for handling emergency incidents.

Exception #1: An employer need not train all employees to the degree specified if the employer divides the work force in a manner such that a sufficient number of employees who have responsibility to control emergencies have the training specified, and all other employees, who may first respond to an emergency incident, have sufficient awareness training to recognize that an emergency response situation exists and that they are instructed in that case to summon the fully trained employees and not attempt control activities for which they are not trained.

Exception #2: An employer need not train all employees to the degree specified if arrangements have been made in advance for an outside fully-trained emergency response team to respond in a reasonable period and all employees, who may come to the incident first, have sufficient awareness training to recognize that an emergency response situation exists and they have been instructed to call the designated outside fully-trained emergency response team for assistance.

(B) Employee members of TSD facility emergency response organizations shall be trained to a level of competence in the

recognition of health and safety hazards to protect themselves and other employees. This would include training in the methods used to minimize the risk from safety and health hazards; in the safe use of control equipment; in the selection and use of appropriate personal protective equipment; in the safe operating procedures to be used at the incident scene; in the techniques of coordination with other employees to minimize risks; in the appropriate response to over exposure from health hazards or injury to themselves and other employees; and in the recognition of subsequent symptoms which may result from over exposures.

(C) The employer shall certify that each covered employee has attended and successfully completed the training required in paragraph (p)(8)(iii) of this section, or shall certify the employee's competency at least yearly. The method used to demonstrate competency for certification of training shall be recorded and maintained by the employer.

(iv) Procedures for handling emergency incidents. (A) In addition to the elements for the emergency response plan required in paragraph (p)(8)(ii) of this section, the following elements shall be included for emergency response plans to the extent that they do not repeat any information already contained in the emergency response plan:

(1) Site topography, layout, and prevailing weather conditions.

(2) Procedures for reporting incidents to local, state, and federal governmental agencies.

(B) The emergency response plan shall be compatible and integrated with the disaster, fire and/or emergency response plans of local, state, and federal agencies.

(C) The emergency response plan shall be rehearsed regularly as part of the overall training program for site operations.

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(D) The site emergency response plan shall be reviewed periodically and, as necessary, be amended to keep it current with new or changing site conditions or information.

(E) An employee alarm system shall be installed in accordance with 29 CFR 1910.165 to notify employees of an emergency situation; to stop work activities if necessary; to lower background noise in order to speed communication; and to begin emergency procedures.

(F) Based upon the information available at time of the emergency, the employer shall evaluate the incident and the site response capabilities and proceed with the appropriate steps to implement the site emergency response plan.

(q) Emergency response to hazardous substance releases. This paragraph covers employers whose employees are engaged in emergency response no matter where it occurs except that it does not cover employees engaged in operations specified in paragraphs (a)(1)(i) through (a)(1)(iv) of this section. Those emergency response organizations who have developed and implemented programs equivalent to this paragraph for handling releases of hazardous substances pursuant to section 303 of the Superfund Amendments and Reauthorization Act of 1986 (Emergency Planning and Community Right-to-Know Act of 1986, 42 U.S.C. 11003) shall be deemed to have met the requirements of this paragraph.

(1) Emergency response plan. An emergency response plan shall be developed and implemented to handle anticipated emergencies prior to the commencement of emergency response operations. The plan shall be in writing and available for inspection and copying by employees, their representatives and OSHA personnel. Employers who will evacuate their employees from the danger area when an emergency occurs, and who do not permit any of their employees to assist in handling the emergency, are exempt from the requirements of this paragraph if they provide an emergency action plan in accordance with Sec. 1910.38(a) of this part.

(2) Elements of an emergency response plan. The employer shall develop an emergency response plan for emergencies which shall address, as a minimum, the following to the extent that they are not addressed elsewhere:

(i) Pre-emergency planning and coordination with outside parties.

(ii) Personnel roles, lines of authority, training, and communication.

(iii) Emergency recognition and prevention.

(iv) Safe distances and places of refuge.

(v) Site security and control.

(vi) Evacuation routes and procedures.

(vii) Decontamination.

(viii) Emergency medical treatment and first aid.

(ix) Emergency alerting and response procedures.

(x) Critique of response and follow-up.

(xi) PPE and emergency equipment.

(xii) Emergency response organizations may use the local emergency response plan or the state emergency response plan or both, as part of their emergency response plan to avoid duplication. Those items of the emergency response plan that are being properly addressed by the SARA Title III plans may be substituted into their emergency plan or otherwise kept together for the employer and employee's use.

(3) Procedures for handling emergency response. (i) The senior emergency response official responding to an emergency shall become the individual in charge of a site-specific Incident Command System (ICS). All emergency responders and their communications shall be coordinated and controlled through the individual in charge of the ICS assisted by the senior official present for each employer.

Note to paragraph (q)(3)(i).--The ``senior official'' at an emergency response is the most senior official on the site who has the responsibility for controlling the operations at the site. Initially it is the senior officer on the first-due piece of responding emergency apparatus to arrive on the incident scene. As more senior officers arrive (i.e., battalion chief, fire chief, state law enforcement official, site coordinator, etc.) the position is passed up the line of authority which has been previously established.

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(ii) The individual in charge of the ICS shall identify, to the extent possible, all hazardous substances or conditions present and shall address as appropriate site analysis, use of engineering controls, maximum exposure limits, hazardous substance handling procedures, and use of any new technologies.

(iii) Based on the hazardous substances and/or conditions present, the individual in charge of the ICS shall implement appropriate emergency operations, and assure that the personal protective equipment worn is appropriate for the hazards to be encountered. However, personal protective equipment shall meet, at a minimum, the criteria contained in 29 CFR 1910.156(e) when worn while performing fire fighting operations beyond the incipient stage for any incident.

(iv) Employees engaged in emergency response and exposed to hazardous substances presenting an inhalation hazard or potential inhalation hazard shall wear positive pressure self-contained breathing apparatus while engaged in emergency response, until such time that the individual in charge of the ICS determines through the use of air monitoring that a decreased level of respiratory protection will not result in hazardous exposures to employees.

(v) The individual in charge of the ICS shall limit the number of emergency response personnel at the emergency site, in those areas of potential or actual exposure to incident or site hazards, to those who are actively performing emergency operations. However, operations in hazardous areas shall be performed using the buddy system in groups of two or more.

(vi) Back-up personnel shall stand by with equipment ready to provide assistance or rescue. Advance first aid support personnel, as a minimum, shall also stand by with medical equipment and transportation capability.

(vii) The individual in charge of the ICS shall designate a safety official, who is knowledgable in the operations being implemented at the emergency response site, with specific responsibility to identify and evaluate hazards and to provide direction with respect to the safety of operations for the emergency at hand.

(viii) When activities are judged by the safety official to be an IDLH condition and/or to involve an imminent danger condition, the safety official shall have the authority to alter, suspend, or terminate those activities. The safety official shall immediately inform the individual in charge of the ICS of any actions needed to be taken to correct these hazards at the emergency scene.

(ix) After emergency operations have terminated, the individual in charge of the ICS shall implement appropriate decontamination procedures.

(x) When deemed necessary for meeting the tasks at hand, approved self-contained compressed air breathing apparatus may be used with approved cylinders from other approved self-contained compressed air breathing apparatus provided that such cylinders are of the same capacity and pressure rating. All compressed air cylinders used with self-contained breathing apparatus shall meet U.S. Department of Transportation and National Institute for Occupational Safety and Health

criteria.

(4) Skilled support personnel. Personnel, not necessarily an employer's own employees, who are skilled in the operation of certain equipment, such as mechanized earth moving or digging equipment or crane and hoisting equipment, and who are needed temporarily to perform immediate emergency support work that cannot reasonably be performed in a timely fashion by an employer's own employees, and who will be or may be exposed to the hazards at an emergency response scene, are not required to meet the training required in this paragraph for the employer's regular employees. However, these personnel shall be given an initial briefing at the site prior to their participation in any emergency response. The initial briefing shall include instruction in the wearing of appropriate personal protective equipment, what chemical hazards are involved, and what duties are to be performed. All other appropriate safety and health precautions provided to the employer's own employees shall be used to assure the safety and health of these personnel.

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(5) Specialist employees. Employees who, in the course of their regular job duties, work with and are trained in the hazards of specific hazardous substances, and who will be called upon to provide technical advice or assistance at a hazardous substance release incident to the individual in charge, shall receive training or demonstrate competency in the area of their specialization annually.

(6) Training. Training shall be based on the duties and function to be performed by each responder of an emergency response organization. The skill and knowledge levels required for all new responders, those hired after the effective date of this standard, shall be conveyed to them through training before they are permitted to take part in actual emergency operations on an incident. Employees who participate, or are expected to participate, in emergency response, shall be given training in accordance with the following paragraphs:

(i) First responder awareness level. First responders at the awareness level are individuals who are likely to witness or discover a hazardous substance release and who have been trained to initiate an emergency response sequence by notifying the proper authorities of the release. They would take no further action beyond notifying the authorities of the release. First responders at the awareness level shall have sufficient training or have had sufficient experience to objectively demonstrate competency in the following areas:

(A) An understanding of what hazardous substances are, and the risks associated with them in an incident.

(B) An understanding of the potential outcomes associated with an emergency created when hazardous substances are present.

(C) The ability to recognize the presence of hazardous substances in an emergency.

(D) The ability to identify the hazardous substances, if possible.

(E) An understanding of the role of the first responder awareness individual in the employer's emergency response plan including site security and control and the U.S. Department of Transportation's Emergency Response Guidebook.

(F) The ability to realize the need for additional resources, and to make appropriate notifications to the communication center.

(ii) First responder operations level. First responders at the operations level are individuals who respond to releases or potential releases of hazardous substances as part of the initial response to the site for the purpose of protecting nearby persons, property, or the environment from the effects of the release. They are trained to respond in a defensive fashion without actually trying to stop the release. Their function is to contain the release from a safe distance, keep it from spreading, and prevent exposures. First responders at the operational level shall have received at least eight hours of training or have had sufficient experience to objectively demonstrate competency in the following areas in addition to those listed for the awareness level and the employer shall so certify:

(A) Knowledge of the basic hazard and risk assessment techniques.

(B) Know how to select and use proper personal protective equipment provided to the first responder operational level.

(C) An understanding of basic hazardous materials terms.

(D) Know how to perform basic control, containment and/or confinement operations within the capabilities of the resources and personal protective equipment available with their unit.

(E) Know how to implement basic decontamination procedures.

(F) An understanding of the relevant standard operating procedures and termination procedures.

(iii) Hazardous materials technician. Hazardous materials technicians are individuals who respond to releases or potential releases for the purpose of stopping the release. They assume a more aggressive role than a first responder at the operations level in that they will approach the point of release in order to plug, patch or otherwise stop the release of a hazardous substance. Hazardous materials technicians shall have received at least 24

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hours of training equal to the first responder operations level and in addition have competency in the following areas and the employer shall so certify:

(A) Know how to implement the employer's emergency response plan.

(B) Know the classification, identification and verification of known and unknown materials by using field survey instruments and equipment.

(C) Be able to function within an assigned role in the Incident Command System.

(D) Know how to select and use proper specialized chemical personal protective equipment provided to the hazardous materials technician.

(E) Understand hazard and risk assessment techniques.

(F) Be able to perform advance control, containment, and/or confinement operations within the capabilities of the resources and personal protective equipment available with the unit.

(G) Understand and implement decontamination procedures.

(H) Understand termination procedures.

(I) Understand basic chemical and toxicological terminology and behavior.

(iv) Hazardous materials specialist. Hazardous materials specialists are individuals who respond with and provide support to hazardous materials technicians. Their duties parallel those of the hazardous materials technician, however, those duties require a more directed or specific knowledge of the various substances they may be called upon to contain. The hazardous materials specialist would also act as the site liaison with Federal, state, local and other government authorities in regards to site activities. Hazardous materials specialists shall have received at least 24 hours of training equal to the technician level and in addition have competency in the following areas and the employer shall so certify:

(A) Know how to implement the local emergency response plan.

(B) Understand classification, identification and verification of known and unknown materials by using advanced survey instruments and equipment.

(C) Know of the state emergency response plan.

(D) Be able to select and use proper specialized chemical personal protective equipment provided to the hazardous materials specialist.

(E) Understand in-depth hazard and risk techniques.

(F) Be able to perform specialized control, containment, and/or confinement operations within the capabilities of the resources and personal protective equipment available.

(G) Be able to determine and implement decontamination procedures.

(H) Have the ability to develop a site safety and control plan.

(I) Understand chemical, radiological and toxicological terminology and behavior.

(v) On scene incident commander. Incident commanders, who will assume control of the incident scene beyond the first responder awareness level, shall receive at least 24 hours of training equal to the first responder operations level and in addition have competency in the following areas and the employer shall so certify:

(A) Know and be able to implement the employer's incident command system.

(B) Know how to implement the employer's emergency response plan.

(C) Know and understand the hazards and risks associated with employees working in chemical protective clothing.

(D) Know how to implement the local emergency response plan.

(E) Know of the state emergency response plan and of the Federal Regional Response Team.

(F) Know and understand the importance of decontamination procedures.

(7) Trainers. Trainers who teach any of the above training subjects shall have satisfactorily completed a training course for teaching the subjects they are expected to teach, such as the courses offered by the

U.S. National Fire Academy, or they shall have the training and/or academic credentials and instructional experience necessary to demonstrate competent instructional skills and a good command of the subject matter of the courses they are to teach.

(8) Refresher training. (i) Those employees who are trained in accordance with paragraph (q)(6) of this section

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shall receive annual refresher training of sufficient content and duration to maintain their competencies, or shall demonstrate competency in those areas at least yearly.

(ii) A statement shall be made of the training or competency, and if a statement of competency is made, the employer shall keep a record of the methodology used to demonstrate competency.

(9) Medical surveillance and consultation. (i) Members of an organized and designated HAZMAT team and hazardous materials specialists shall receive a baseline physical examination and be provided with medical surveillance as required in paragraph (f) of this section.

(ii) Any emergency response employees who exhibits signs or symptoms which may have resulted from exposure to hazardous substances during the course of an emergency incident, either immediately or subsequently, shall be provided with medical consultation as required in paragraph (f)(3)(ii) of this section.

(10) Chemical protective clothing. Chemical protective clothing and equipment to be used by organized and designated HAZMAT team members, or to be used by hazardous materials specialists, shall meet the requirements of paragraphs (g) (3) through (5) of this section.

(11) Post-emergency response operations. Upon completion of the emergency response, if it is determined that it is necessary to remove hazardous substances, health hazards, and materials contaminated with them (such as contaminated soil or other elements of the natural environment) from the site of the incident, the employer conducting the clean-up shall comply with one of the following:

(i) Meet all of the requirements of paragraphs (b) through (o) of this section; or

(ii) Where the clean-up is done on plant property using plant or workplace employees, such employees shall have completed the training requirements of the following: 29 CFR 1910.38(a); 1910.134; 1910.1200, and other appropriate safety and health training made necessary by the tasks that they are expected to be performed such as personal protective equipment and decontamination procedures. All equipment to be used in the performance of the clean-up work shall be in serviceable condition and shall have been inspected prior to use.

APPENDICES TO Sec. 1910.**120**--HAZARDOUS WASTE OPERATIONS AND EMERGENCY RESPONSE

Note: The following appendices serve as non-mandatory guidelines to assist employees and employers in complying with the appropriate requirements of this section. However paragraph 1910.**120**(g) makes mandatory in certain circumstances the use of Level A and Level B PPE protection.

Appendix A to Sec. 1910.**120**--Personal Protective Equipment Test Methods

This appendix sets forth the non-mandatory examples of tests which may be used to evaluate compliance with Sec. 1910.**120** (g)(4) (ii) and (iii). Other tests and other challenge agents may be used to evaluate compliance.

A. Totally-encapsulating chemical protective suit pressure test

1.0--Scope

1.1 This practice measures the ability of a gas tight totally-encapsulating chemical protective suit material, seams, and closures to maintain a fixed positive pressure. The results of this practice allow the gas tight integrity of a totally-encapsulating chemical protective suit to be evaluated.

1.2 Resistance of the suit materials to permeation, penetration, and degradation by specific hazardous substances is not determined by this test method.

2.0--Definition of terms

2.1 Totally-encapsulated chemical protective suit (TECP suit) means a full body garment which is constructed of protective clothing

materials; covers the wearer's torso, head, arms, legs and respirator; may cover the wearer's hands and feet with tightly attached gloves and boots; completely encloses the wearer and respirator by itself or in combination with the wearer's gloves and boots.

2.2 Protective clothing material means any material or combination of materials used in an item of clothing for the purpose of isolating parts of the body from direct contact with a potentially hazardous liquid or gaseous chemicals.

2.3 Gas tight means, for the purpose of this test method, the limited flow of a gas under pressure from the inside of a TECP suit to atmosphere at a prescribed pressure and time interval.

3.0--Summary of test method

3.1 The TECP suit is visually inspected and modified for the test. The test apparatus is

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attached to the suit to permit inflation to the pre-test suit expansion pressure for removal of suit wrinkles and creases. The pressure is lowered to the test pressure and monitored for three minutes. If the pressure drop is excessive, the TECP suit fails the test and is removed from service. The test is repeated after leak location and repair.

4.0--Required Supplies

4.1 Source of compressed air.

4.2 Test apparatus for suit testing, including a pressure measurement device with a sensitivity of at least \1/4\ inch water gauge.

4.3 Vent valve closure plugs or sealing tape.

4.4 Soapy water solution and soft brush.

4.5 Stop watch or appropriate timing device.

5.0--Safety Precautions

5.1 Care shall be taken to provide the correct pressure safety devices required for the source of compressed air used.

6.0--Test Procedure

6.1 Prior to each test, the tester shall perform a visual inspection of the suit. Check the suit for seam integrity by visually examining the seams and gently pulling on the seams. Ensure that all air supply lines, fittings, visor, zippers, and valves are secure and show no signs of deterioration.

6.1.1 Seal off the vent valves along with any other normal inlet or exhaust points (such as umbilical air line fittings or face piece opening) with tape or other appropriate means (caps, plugs, fixture, etc.). Care should be exercised in the sealing process not to damage any of the suit components.

6.1.2 Close all closure assemblies.

6.1.3 Prepare the suit for inflation by providing an improvised connection point on the suit for connecting an airline. Attach the pressure test apparatus to the suit to permit suit inflation from a compressed air source equipped with a pressure indicating regulator. The leak tightness of the pressure test apparatus should be tested before and after each test by closing off the end of the tubing attached to the suit and assuring a pressure of three inches water gauge for three minutes can be maintained. If a component is removed for the test, that component shall be replaced and a second test conducted with another component removed to permit a complete test of the ensemble.

6.1.4 The pre-test expansion pressure (A) and the suit test pressure (B) shall be supplied by the suit manufacturer, but in no case shall they be less than: (A)=three inches water gauge; and (B)=two inches water gauge. The ending suit pressure (C) shall be no less than 80 percent of the test pressure (B); i.e., the pressure drop shall not exceed 20 percent of the test pressure (B).

6.1.5 Inflate the suit until the pressure inside is equal to pressure (A), the pre-test expansion suit pressure. Allow at least one minute to fill out the wrinkles in the suit. Release sufficient air to reduce the suit pressure to pressure (B), the suit test pressure. Begin timing. At the end of three minutes, record the suit pressure as pressure (C), the ending suit pressure. The difference between the suit test pressure and the ending suit test pressure (B-C) shall be defined as the suit pressure drop.

6.1.6 If the suit pressure drop is more than 20 percent of the suit test pressure (B) during the three-minute test period, the suit fails the test and shall be removed from service.

7.0--Retest Procedure

7.1 If the suit fails the test check for leaks by inflating the suit to pressure (A) and brushing or wiping the entire suit (including seams,

closures, lens gaskets, glove-to-sleeve joints, etc.) with a mild soap and water solution. Observe the suit for the formation of soap bubbles, which is an indication of a leak. Repair all identified leaks.

7.2 Retest the TECP suit as outlined in Test procedure 6.0.

8.0--Report

8.1 Each TECP suit tested by this practice shall have the following information recorded:

8.1.1 Unique identification number, identifying brand name, date of purchase, material of construction, and unique fit features, e.g., special breathing apparatus.

8.1.2 The actual values for test pressures (A), (B), and (C) shall be recorded along with the specific observation times. If the ending pressure (C) is less than 80 percent of the test pressure (B), the suit shall be identified as failing the test. When possible, the specific leak location shall be identified in the test records. Retest pressure data shall be recorded as an additional test.

8.1.3 The source of the test apparatus used shall be identified and the sensitivity of the pressure gauge shall be recorded.

8.1.4 Records shall be kept for each pressure test even if repairs are being made at the test location.

Caution

Visually inspect all parts of the suit to be sure they are positioned correctly and secured tightly before putting the suit back into service. Special care should be taken to examine each exhaust valve to make sure it is not blocked.

Care should also be exercised to assure that the inside and outside of the suit is completely dry before it is put into storage.

B. Totally-encapsulating chemical protective suit qualitative leak test

1.0--Scope

1.1 This practice semi-qualitatively tests gas tight totally-encapsulating chemical protective suit integrity by detecting inward leakage of ammonia vapor. Since no modifications are made to the suit to carry out

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this test, the results from this practice provide a realistic test for the integrity of the entire suit.

1.2 Resistance of the suit materials to permeation, penetration, and degradation is not determined by this test method. ASTM test methods are available to test suit materials for these characteristics and the tests are usually conducted by the manufacturers of the suits.

2.0--Definition of terms

2.1 Totally-encapsulated chemical protective suit (TECP suit) means a full body garment which is constructed of protective clothing materials; covers the wearer's torso, head, arms, legs and respirator; may cover the wearer's hands and feet with tightly attached gloves and boots; completely encloses the wearer and respirator by itself or in combination with the wearer's gloves, and boots.

2.2 Protective clothing material means any material or combination of materials used in an item of clothing for the purpose of isolating parts of the body from direct contact with a potentially hazardous liquid or gaseous chemicals.

2.3 Gas tight means, for the purpose of this test method, the limited flow of a gas under pressure from the inside of a TECP suit to atmosphere at a prescribed pressure and time interval.

2.4 Intrusion Coefficient means a number expressing the level of protection provided by a gas tight totally-encapsulating chemical protective suit. The intrusion coefficient is calculated by dividing the test room challenge agent concentration by the concentration of challenge agent found inside the suit. The accuracy of the intrusion coefficient is dependent on the challenge agent monitoring methods. The larger the intrusion coefficient the greater the protection provided by the TECP suit.

3.0--Summary of recommended practice

3.1 The volume of concentrated aqueous ammonia solution (ammonia hydroxide NH<INF>4</INF> OH) required to generate the test atmosphere is determined using the directions outlined in 6.1. The suit is donned by a person wearing the appropriate respiratory equipment (either a positive pressure self-contained breathing apparatus or a positive pressure supplied air respirator) and worn inside the enclosed test room. The

concentrated aqueous ammonia solution is taken by the suited individual into the test room and poured into an open plastic pan. A two-minute evaporation period is observed before the test room concentration is measured, using a high range ammonia length of stain detector tube. When the ammonia vapor reaches a concentration of between 1000 and 1200 ppm, the suited individual starts a standardized exercise protocol to stress and flex the suit. After this protocol is completed, the test room concentration is measured again. The suited individual exits the test room and his stand-by person measures the ammonia concentration inside the suit using a low range ammonia length of stain detector tube or other more sensitive ammonia detector. A stand-by person is required to observe the test individual during the test procedure; aid the person in donning and doffing the TECP suit; and monitor the suit interior. The intrusion coefficient of the suit can be calculated by dividing the average test area concentration by the interior suit concentration. A colorimetric ammonia indicator strip of bromophenol blue or equivalent is placed on the inside of the suit face piece lens so that the suited individual is able to detect a color change and know if the suit has a significant leak. If a color change is observed the individual shall leave the test room immediately.

4.0--Required supplies

4.1 A supply of concentrated aqueous ammonium hydroxide (58% by weight).

4.2 A supply of bromophenol/blue indicating paper or equivalent, sensitive to 5-10 ppm ammonia or greater over a two-minute period of exposure. [pH 3.0 (yellow) to pH 4.6 (blue)]

4.3 A supply of high range (0.5-10 volume percent) and low range (5-700 ppm) detector tubes for ammonia and the corresponding sampling pump. More sensitive ammonia detectors can be substituted for the low range detector tubes to improve the sensitivity of this practice.

4.4 A shallow plastic pan (PVC) at least 12":14":1" and a half pint plastic container (PVC) with tightly closing lid.

4.5 A graduated cylinder or other volumetric measuring device of at least 50 milliliters in volume with an accuracy of at least <plus-minus>1 milliliters.

5.0--Safety precautions

5.1 Concentrated aqueous ammonium hydroxide, NH<INF>4</INF> OH, is a corrosive volatile liquid requiring eye, skin, and respiratory protection. The person conducting the test shall review the MSDS for aqueous ammonia.

5.2 Since the established permissible exposure limit for ammonia is 35 ppm as a 15 minute STEL, only persons wearing a positive pressure self-contained breathing apparatus or a positive pressure supplied air respirator shall be in the chamber. Normally only the person wearing the totally-encapsulating suit will be inside the chamber. A stand-by person shall have a positive pressure self-contained breathing apparatus, or a positive pressure supplied air respirator available to enter the test area should the suited individual need assistance.

5.3 A method to monitor the suited individual must be used during this test. Visual contact is the simplest but other methods using communication devices are acceptable.

5.4 The test room shall be large enough to allow the exercise protocol to be carried out and then to be ventilated to allow for easy

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exhaust of the ammonia test atmosphere after the test(s) are completed.

5.5 Individuals shall be medically screened for the use of respiratory protection and checked for allergies to ammonia before participating in this test procedure.

6.0--Test procedure

6.1.1 Measure the test area to the nearest foot and calculate its volume in cubic feet. Multiply the test area volume by 0.2 milliliters of concentrated aqueous ammonia solution per cubic foot of test area volume to determine the approximate volume of concentrated aqueous ammonia required to generate 1000 ppm in the test area.

6.1.2 Measure this volume from the supply of concentrated aqueous ammonia and place it into a closed plastic container.

6.1.3 Place the container, several high range ammonia detector tubes, and the pump in the clean test pan and locate it near the test area entry door so that the suited individual has easy access to these supplies.

6.2.1 In a non-contaminated atmosphere, open a pre-sealed ammonia indicator strip and fasten one end of the strip to the inside of the suit face shield lens where it can be seen by the wearer. Moisten the

indicator strip with distilled water. Care shall be taken not to contaminate the detector part of the indicator paper by touching it. A small piece of masking tape or equivalent should be used to attach the indicator strip to the interior of the suit face shield.

6.2.2 If problems are encountered with this method of attachment, the indicator strip can be attached to the outside of the respirator face piece lens being used during the test.

6.3 Don the respiratory protective device normally used with the suit, and then don the TECP suit to be tested. Check to be sure all openings which are intended to be sealed (zippers, gloves, etc.) are completely sealed. DO NOT, however, plug off any venting valves.

6.4 Step into the enclosed test room such as a closet, bathroom, or test booth, equipped with an exhaust fan. No air should be exhausted from the chamber during the test because this will dilute the ammonia challenge concentrations.

6.5 Open the container with the pre-measured volume of concentrated aqueous ammonia within the enclosed test room, and pour the liquid into the empty plastic test pan. Wait two minutes to allow for adequate volatilization of the concentrated aqueous ammonia. A small mixing fan can be used near the evaporation pan to increase the evaporation rate of the ammonia solution.

6.6 After two minutes a determination of the ammonia concentration within the chamber should be made using the high range colorimetric detector tube. A concentration of 1000 ppm ammonia or greater shall be generated before the exercises are started.

6.7 To test the integrity of the suit the following four minute exercise protocol should be followed:

6.7.1 Raising the arms above the head with at least 15 raising motions completed in one minute.

6.7.2 Walking in place for one minute with at least 15 raising motions of each leg in a one-minute period.

6.7.3 Touching the toes with a least 10 complete motions of the arms from above the head to touching of the toes in a one-minute period.

6.7.4 Knee bends with at least 10 complete standing and squatting motions in a one-minute period.

6.8 If at any time during the test the colorimetric indicating paper should change colors, the test should be stopped and section 6.10 and 6.12 initiated (See para.4.2).

6.9 After completion of the test exercise, the test area concentration should be measured again using the high range colorimetric detector tube.

6.10 Exit the test area.

6.11 The opening created by the suit zipper or other appropriate suit penetration should be used to determine the ammonia concentration in the suit with the low range length of stain detector tube or other ammonia monitor. The internal TECP suit air should be sampled far enough from the enclosed test area to prevent a false ammonia reading.

6.12 After completion of the measurement of the suit interior ammonia concentration the test is concluded and the suit is doffed and the respirator removed.

6.13 The ventilating fan for the test room should be turned on and allowed to run for enough time to remove the ammonia gas. The fan shall be vented to the outside of the building.

6.14 Any detectable ammonia in the suit interior (five ppm ammonia (NH<INF>3</INF>) or more for the length of stain detector tube) indicates that the suit has failed the test. When other ammonia detectors are used a lower level of detection is possible, and it should be specified as the pass/fail criteria.

6.15 By following this test method, an intrusion coefficient of approximately 200 or more can be measured with the suit in a completely operational condition. If the intrusion coefficient is 200 or more, then the suit is suitable for emergency response and field use.

7.0--Retest procedures

7.1 If the suit fails this test, check for leaks by following the pressure test in test A above.

7.2 Retest the TECP suit as outlined in the test procedure 6.0.

8.0--Report

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8.1 Each gas tight totally-encapsulating chemical protective suit tested by this practice shall have the following information recorded.

8.1.1 Unique identification number, identifying brand name, date of purchase, material of construction, and unique suit features; e.g., special breathing apparatus.

8.1.2 General description of test room used for test.

8.1.3 Brand name and purchase date of ammonia detector strips and color change data.

8.1.4 Brand name, sampling range, and expiration date of the length of stain ammonia detector tubes. The brand name and model of the sampling pump should also be recorded. If another type of ammonia detector is used, it should be identified along with its minimum detection limit for ammonia.

8.1.5 Actual test results shall list the two test area concentrations, their average, the interior suit concentration, and the calculated intrusion coefficient. Retest data shall be recorded as an additional test.

8.2 The evaluation of the data shall be specified as ``suit passed'' or ``suit failed,'' and the date of the test. Any detectable ammonia (five ppm or greater for the length of stain detector tube) in the suit interior indicates the suit has failed this test. When other ammonia detectors are used, a lower level of detection is possible and it should be specified as the pass fail criteria.

Caution

Visually inspect all parts of the suit to be sure they are positioned correctly and secured tightly before putting the suit back into service. Special care should be taken to examine each exhaust valve to make sure it is not blocked.

Care should also be exercised to assure that the inside and outside of the suit is completely dry before it is put into storage.

## Appendix B to Sec. 1910.120--General Description and Discussion of the Levels of Protection and Protective Gear

This appendix sets forth information about personal protective equipment (PPE) protection levels which may be used to assist employers in complying with the PPE requirements of this section.

As required by the standard, PPE must be selected which will protect employees from the specific hazards which they are likely to encounter during their work on-site.

Selection of the appropriate PPE is a complex process which should take into consideration a variety of factors. Key factors involved in this process are identification of the hazards, or suspected hazards; their routes of potential hazard to employees (inhalation, skin absorption, ingestion, and eye or skin contact); and the performance of the PPE materials (and seams) in providing a barrier to these hazards. The amount of protection provided by PPE is material-hazard specific. That is, protective equipment materials will protect well against some hazardous substances and poorly, or not at all, against others. In many instances, protective equipment materials cannot be found which will provide continuous protection from the particular hazardous substance. In these cases the breakthrough time of the protective material should exceed the work durations.

Other factors in this selection process to be considered are matching the PPE to the employee's work requirements and task-specific conditions. The durability of PPE materials, such as tear strength and seam strength, should be considered in relation to the employee's tasks. The effects of PPE in relation to heat stress and task duration are a factor in selecting and using PPE. In some cases layers of PPE may be necessary to provide sufficient protection, or to protect expensive PPE inner garments, suits or equipment.

The more that is known about the hazards at the site, the easier the job of PPE selection becomes. As more information about the hazards and conditions at the site becomes available, the site supervisor can make decisions to up-grade or down-grade the level of PPE protection to match the tasks at hand.

The following are guidelines which an employer can use to begin the selection of the appropriate PPE. As noted above, the site information may suggest the use of combinations of PPE selected from the different protection levels (i.e., A, B, C, or D) as being more suitable to the hazards of the work. It should be cautioned that the listing below does not fully address the performance of the specific PPE material in relation to the specific hazards at the job site, and that PPE selection, evaluation and re-selection is an ongoing process until sufficient information about the hazards and PPE performance is obtained.

Part A. Personal protective equipment is divided into four categories based on the degree of protection afforded. (See Part B of

this appendix for further explanation of Levels A, B, C, and D hazards.)

I. Level A-- To be selected when the greatest level of skin, respiratory, and eye protection is required.

The following constitute Level A equipment; it may be used as appropriate;

1. Positive pressure, full face-piece self-contained breathing apparatus (SCBA), or positive pressure supplied air respirator with escape SCBA, approved by the National Institute for Occupational Safety and Health (NIOSH).

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2. Totally-encapsulating chemical-protective suit.
3. Coveralls.\1\
4. Long underwear.\1\
5. Gloves, outer, chemical-resistant.
6. Gloves, inner, chemical-resistant.
7. Boots, chemical-resistant, steel toe and shank.
8. Hard hat (under suit).\1\
9. Disposable protective suit, gloves and boots (depending on suit construction, may be worn over totally-encapsulating suit).

II. Level B--The highest level of respiratory protection is necessary but a lesser level of skin protection is needed.

The following constitute Level B equipment; it may be used as appropriate.

1. Positive pressure, full-facepiece self-contained breathing apparatus (SCBA), or positive pressure supplied air respirator with escape SCBA (NIOSH approved).
2. Hooded chemical-resistant clothing (overalls and long-sleeved jacket; coveralls; one or two-piece chemical-splash suit; disposable chemical-resistant overalls).
3. Coveralls.\1\
4. Gloves, outer, chemical-resistant.
5. Gloves, inner, chemical-resistant.
6. Boots, outer, chemical-resistant steel toe and shank.
7. Boot-covers, outer, chemical-resistant (disposable).\1\
8. Hard hat.\1\
9. [Reserved]
10. Face shield.\1\

III. Level C--The concentration(s) and type(s) of airborne substance(s) is known and the criteria for using air purifying respirators are met.

The following constitute Level C equipment; it may be used as appropriate.

1. Full-face or half-mask, air purifying respirators (NIOSH approved).
2. Hooded chemical-resistant clothing (overalls; two-piece chemical-splash suit; disposable chemical-resistant overalls).
3. Coveralls.\1\

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\1\ Optional, as applicable.

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4. Gloves, outer, chemical-resistant.
5. Gloves, inner, chemical-resistant.
6. Boots (outer), chemical-resistant steel toe and shank.\1\
7. Boot-covers, outer, chemical-resistant (disposable)\1\.
8. Hard hat.\1\
9. Escape mask.\1\
10. Face shield.\1\

IV. Level D--A work uniform affording minimal protection, used for nuisance contamination only.

The following constitute Level D equipment; it may be used as appropriate:

1. Coveralls.
2. Gloves.\1\
3. Boots/shoes, chemical-resistant steel toe and shank.
4. Boots, outer, chemical-resistant (disposable).\1\
5. Safety glasses or chemical splash goggles*.
6. Hard hat.\1\
7. Escape mask.\1\
8. Face shield.\1\

Part B. The types of hazards for which levels A, B, C, and D protection are appropriate are described below:

I. Level A--Level A protection should be used when:

1. The hazardous substance has been identified and requires the highest level of protection for skin, eyes, and the respiratory system based on either the measured (or potential for) high concentration of atmospheric vapors, gases, or particulates; or the site operations and work functions involve a high potential for splash, immersion, or exposure to unexpected vapors, gases, or particulates of materials that are harmful to skin or capable of being absorbed through the skin;

2. Substances with a high degree of hazard to the skin are known or suspected to be present, and skin contact is possible; or

3. Operations are being conducted in confined, poorly ventilated areas, and the absence of conditions requiring Level A have not yet been determined.

II. Level B--Level B protection should be used when:

1. The type and atmospheric concentration of substances have been identified and require a high level of respiratory protection, but less skin protection;

2. The atmosphere contains less than 19.5 percent oxygen; or

3. The presence of incompletely identified vapors or gases is indicated by a direct-reading organic vapor detection instrument, but vapors and gases are not suspected of containing high levels of chemicals harmful to skin or capable of being absorbed through the skin.

Note: This involves atmospheres with IDLH concentrations of specific substances that present severe inhalation hazards and that do not represent a severe skin hazard; or that do not meet the criteria for use of air-purifying respirators.

III. Level C--Level C protection should be used when:

1. The atmospheric contaminants, liquid splashes, or other direct contact will not adversely affect or be absorbed through any exposed skin;

2. The types of air contaminants have been identified, concentrations measured, and an air-purifying respirator is available that can remove the contaminants; and

3. All criteria for the use of air-purifying respirators are met.

IV. Level D--Level D protection should be used when:

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1. The atmosphere contains no known hazard; and

2. Work functions preclude splashes, immersion, or the potential for unexpected inhalation of or contact with hazardous levels of any chemicals.

Note: As stated before, combinations of personal protective equipment other than those described for Levels A, B, C, and D protection may be more appropriate and may be used to provide the proper level of protection.

As an aid in selecting suitable chemical protective clothing, it should be noted that the National Fire Protection Association (NFPA) has developed standards on chemical protective clothing. The standards that have been adopted by include:

NFPA 1991--Standard on Vapor-Protective Suits for Hazardous Chemical Emergencies (EPA Level A Protective Clothing).

NFPA 1992--Standard on Liquid Splash-Protective Suits for Hazardous Chemical Emergencies (EPA Level B Protective Clothing).

NFPA 1993--Standard on Liquid Splash-Protective Suits for Non-emergency, Non-flammable Hazardous Chemical Situations (EPA Level B Protective Clothing).

These standards apply documentation and performance requirements to the manufacture of chemical protective suits. Chemical protective suits meeting these requirements are labelled as compliant with the appropriate standard. It is recommended that chemical protective suits that meet these standards be used.

## Appendix C to Sec. 1910.120--Compliance Guidelines

1. Occupational Safety and Health Program. Each hazardous waste site clean-up effort will require an occupational safety and health program headed by the site coordinator or the employer's representative. The purpose of the program will be the protection of employees at the site and will be an extension of the employer's overall safety and health program. The program will need to be developed before work begins on the site and implemented as work proceeds as stated in paragraph (b). The program is to facilitate coordination and communication of safety and health issues among personnel responsible for the various activities which will take place at the site. It will provide the overall means for

planning and implementing the needed safety and health training and job orientation of employees who will be working at the site. The program will provide the means for identifying and controlling worksite hazards and the means for monitoring program effectiveness. The program will need to cover the responsibilities and authority of the site coordinator or the employer's manager on the site for the safety and health of employees at the site, and the relationships with contractors or support services as to what each employer's safety and health responsibilities are for their employees on the site. Each contractor on the site needs to have its own safety and health program so structured that it will smoothly interface with the program of the site coordinator or principal contractor.

Also those employers involved with treating, storing or disposal of hazardous waste as covered in paragraph (p) must have implemented a safety and health program for their employees. This program is to include the hazard communication program required in paragraph (p)(1) and the training required in paragraphs (p)(7) and (p)(8) as parts of the employers comprehensive overall safety and health program. This program is to be in writing.

Each site or workplace safety and health program will need to include the following: (1) Policy statements of the line of authority and accountability for implementing the program, the objectives of the program and the role of the site safety and health supervisor or manager and staff; (2) means or methods for the development of procedures for identifying and controlling workplace hazards at the site; (3) means or methods for the development and communication to employees of the various plans, work rules, standard operating procedures and practices that pertain to individual employees and supervisors; (4) means for the training of supervisors and employees to develop the needed skills and knowledge to perform their work in a safe and healthful manner; (5) means to anticipate and prepare for emergency situations; and (6) means for obtaining information feedback to aid in evaluating the program and for improving the effectiveness of the program. The management and employees should be trying continually to improve the effectiveness of the program thereby enhancing the protection being afforded those working on the site.

Accidents on the site or workplace should be investigated to provide information on how such occurrences can be avoided in the future. When injuries or illnesses occur on the site or workplace, they will need to be investigated to determine what needs to be done to prevent this incident from occurring again. Such information will need to be used as feedback on the effectiveness of the program and the information turned into positive steps to prevent any reoccurrence. Receipt of employee suggestions or complaints relating to safety and health issues involved with site or workplace activities is also a feedback mechanism that can be used effectively to improve the program and may serve in part as an evaluative tool(s).

For the development and implementation of the program to be the most effective, professional safety and health personnel should

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be used. Certified Safety Professionals, Board Certified Industrial Hygienists or Registered Professional Safety Engineers are good examples of professional stature for safety and health managers who will administer the employer's program.

2. Training. The training programs for employees subject to the requirements of paragraph (e) of this standard should address: the safety and health hazards employees should expect to find on hazardous waste clean-up sites; what control measures or techniques are effective for those hazards; what monitoring procedures are effective in characterizing exposure levels; what makes an effective employer's safety and health program; what a site safety and health plan should include; hands on training with personal protective equipment and clothing they may be expected to use; the contents of the OSHA standard relevant to the employee's duties and function; and, employee's responsibilities under OSHA and other regulations. Supervisors will need training in their responsibilities under the safety and health program and its subject areas such as the spill containment program, the personal protective equipment program, the medical surveillance program, the emergency response plan and other areas.

The training programs for employees subject to the requirements of paragraph (p) of this standard should address: the employers safety and health program elements impacting employees; the hazard communication program; the medical surveillance program; the hazards and the controls

for such hazards that employees need to know for their job duties and functions. All require annual refresher training.

The training programs for employees covered by the requirements of paragraph (q) of this standard should address those competencies required for the various levels of response such as: the hazards associated with hazardous substances; hazard identification and awareness; notification of appropriate persons; the need for and use of personal protective equipment including respirators; the decontamination procedures to be used; preplanning activities for hazardous substance incidents including the emergency reponse plan; company standard operating procedures for hazardous substance emergency responses; the use of the incident command system and other subjects. Hands-on training should be stressed whenever possible. Critiques done after an incident which include an evaluation of what worked and what did not and how could the incident be better handled the next time may be counted as training time.

For hazardous materials specialists (usually members of hazardous materials teams), the training should address the care, use and/or testing of chemical protective clothing including totally encapsulating suits, the medical surveillance program, the standard operating procedures for the hazardous materials team including the use of plugging and patching equipment and other subject areas.

Officers and leaders who may be expected to be in charge at an incident should be fully knowledgeable of their company's incident command system. They should know where and how to obtain additional assistance and be familiar with the local district's emergency response plan and the state emergency response plan.

Specialist employees such as technical experts, medical experts or environmental experts that work with hazardous materials in their regular jobs, who may be sent to the incident scene by the shipper, manufacturer or governmental agency to advise and assist the person in charge of the incident should have training on an annual basis. Their training should include the care and use of personal protective equipment including respirators; knowledge of the incident command system and how they are to relate to it; and those areas needed to keep them current in their respective field as it relates to safety and health involving specific hazardous substances.

Those skilled support personnel, such as employees who work for public works departments or equipment operators who operate bulldozers, sand trucks, backhoes, etc., who may be called to the incident scene to provide emergency support assistance, should have at least a safety and health briefing before entering the area of potential or actual exposure. These skilled support personnel, who have not been a part of the emergency response plan and do not meet the training requirements, should be made aware of the hazards they face and should be provided all necessary protective clothing and equipment required for their tasks.

There are two National Fire Protection Association standards, NFPA 472--``Standard for Professional Competence of Responders to Hazardous Material Incidents'' and NFPA 471--``Recommended Practice for Responding to Hazardous Material Incidents'', which are excellent resource documents to aid fire departments and other emergency response organizations in developing their training program materials. NFPA 472 provides guidance on the skills and knowledge needed for first responder awareness level, first responder operations level, hazmat technicians, and hazmat specialist. It also offers guidance for the officer corp who will be in charge of hazardous substance incidents.

3. Decontamination. Decontamination procedures should be tailored to the specific hazards of the site, and may vary in complexity and number of steps, depending on the level of hazard and the employee's exposure to the hazard. Decontamination procedures and PPE decontamination methods

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will vary depending upon the specific substance, since one procedure or method may not work for all substances. Evaluation of decontamination methods and procedures should be performed, as necessary, to assure that employees are not exposed to hazards by re-using PPE. References in appendix D may be used for guidance in establishing an effective decontamination program. In addition, the U.S. Coast Guard's Manual, ``Policy Guidance for Response to Hazardous Chemical Releases,'' U.S. Department of Transportation, Washington, DC (COMDTINST M16465.30) is a good reference for establishing an effective decontamination program.

4. Emergency response plans. States, along with designated districts within the states, will be developing or have developed local emergency

response plans. These state and district plans should be utilized in the emergency response plans called for in the standard. Each employer should assure that its emergency response plan is compatible with the local plan. The major reference being used to aid in developing the state and local district plans is the Hazardous Materials Emergency Planning Guide, NRT-1. The current Emergency Response Guidebook from the U.S. Department of Transportation, CMA's CHEMTREC and the Fire Service Emergency Management Handbook may also be used as resources.

Employers involved with treatment, storage, and disposal facilities for hazardous waste, which have the required contingency plan called for by their permit, would not need to duplicate the same planning elements. Those items of the emergency response plan that are properly addressed in the contingency plan may be substituted into the emergency response plan required in 1910.**120** or otherwise kept together for employer and employee use.

5. Personal protective equipment programs. The purpose of personal protective clothing and equipment (PPE) is to shield or isolate individuals from the chemical, physical, and biologic hazards that may be encountered at a hazardous substance site.

As discussed in appendix B, no single combination of protective equipment and clothing is capable of protecting against all hazards. Thus PPE should be used in conjunction with other protective methods and its effectiveness evaluated periodically.

The use of PPE can itself create significant worker hazards, such as heat stress, physical and psychological stress, and impaired vision, mobility, and communication. For any given situation, equipment and clothing should be selected that provide an adequate level of protection. However, over-protection, as well as under-protection, can be hazardous and should be avoided where possible.

Two basic objectives of any PPE program should be to protect the wearer from safety and health hazards, and to prevent injury to the wearer from incorrect use and/or malfunction of the PPE. To accomplish these goals, a comprehensive PPE program should include hazard identification, medical monitoring, environmental surveillance, selection, use, maintenance, and decontamination of PPE and its associated training.

The written PPE program should include policy statements, procedures, and guidelines. Copies should be made available to all employees, and a reference copy should be made available at the worksite. Technical data on equipment, maintenance manuals, relevant regulations, and other essential information should also be collected and maintained.

6. Incident command system (ICS). Paragraph 1910.**120**(q)(3)(ii) requires the implementation of an ICS. The ICS is an organized approach to effectively control and manage operations at an emergency incident. The individual in charge of the ICS is the senior official responding to the incident. The ICS is not much different than the ``command post'' approach used for many years by the fire service. During large complex fires involving several companies and many pieces of apparatus, a command post would be established. This enabled one individual to be in charge of managing the incident, rather than having several officers from different companies making separate, and sometimes conflicting, decisions. The individual in charge of the command post would delegate responsibility for performing various tasks to subordinate officers. Additionally, all communications were routed through the command post to reduce the number of radio transmissions and eliminate confusion. However, strategy, tactics, and all decisions were made by one individual.

The ICS is a very similar system, except it is implemented for emergency response to all incidents, both large and small, that involve hazardous substances.

For a small incident, the individual in charge of the ICS may perform many tasks of the ICS. There may not be any, or little, delegation of tasks to subordinates. For example, in response to a small incident, the individual in charge of the ICS, in addition to normal command activities, may become the safety officer and may designate only one employee (with proper equipment) as a back-up to provide assistance if needed. OSHA does recommend, however, that at least two employees be designated as back-up personnel since the assistance needed may include rescue.

To illustrate the operation of the ICS, the following scenario might develop during a small incident, such as an overturned tank truck with a small leak of flammable liquid.

The first responding senior officer would implement and take command of the ICS. That person would size-up the incident and

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determine if additional personnel and apparatus were necessary; would determine what actions to take to control the leak; and, determine the proper level of personal protective equipment. If additional assistance is not needed, the individual in charge of the ICS would implement actions to stop and control the leak using the fewest number of personnel that can effectively accomplish the tasks. The individual in charge of the ICS then would designate himself as the safety officer and two other employees as a back-up in case rescue may become necessary. In this scenario, decontamination procedures would not be necessary.

A large complex incident may require many employees and difficult, time-consuming efforts to control. In these situations, the individual in charge of the ICS will want to delegate different tasks to subordinates in order to maintain a span of control that will keep the number of subordinates, that are reporting, to a manageable level.

Delegation of task at large incidents may be by location, where the incident scene is divided into sectors, and subordinate officers coordinate activities within the sector that they have been assigned.

Delegation of tasks can also be by function. Some of the functions that the individual in charge of the ICS may want to delegate at a large incident are: medical services; evacuation; water supply; resources (equipment, apparatus); media relations; safety; and, site control (integrate activities with police for crowd and traffic control). Also for a large incident, the individual in charge of the ICS will designate several employees as back-up personnel; and a number of safety officers to monitor conditions and recommend safety precautions.

Therefore, no matter what size or complexity an incident may be, by implementing an ICS there will be one individual in charge who makes the decisions and gives directions; and, all actions, and communications are coordinated through one central point of command. Such a system should reduce confusion, improve safety, organize and coordinate actions, and should facilitate effective management of the incident.

7. Site Safety and Control Plans. The safety and security of response personnel and others in the area of an emergeny response incident site should be of primary concern to the incident commander. The use of a site safety and control plan could greatly assist those in charge of assuring the safety and health of employees on the site.

A comprehensive site safety and control plan should include the following: summary analysis of hazards on the site and a risk analysis of those hazards; site map or sketch; site work zones (clean zone, transition or decontamination zone, work or hot zone); use of the buddy system; site communications; command post or command center; standard operating procedures and safe work practices; medical assistance and triage area; hazard monitoring plan (air contaminate monitoring, etc.); decontamination procedures and area; and other relevant areas. This plan should be a part of the employer's emergency response plan or an extension of it to the specific site.

8. Medical surveillance programs. Workers handling hazardous substances may be exposed to toxic chemicals, safety hazards, biologic hazards, and radiation. Therefore, a medical surveillance program is essential to assess and monitor workers' health and fitness for employment in hazardous waste operations and during the course of work; to provide emergency and other treatment as needed; and to keep accurate records for future reference.

The Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities developed by the National Institute for Occupational Safety and Health (NIOSH), the Occupational Safety and Health Administration (OSHA), the U.S. Coast Guard (USCG), and the Environmental Protection Agency (EPA); October 1985 provides an excellent example of the types of medical testing that should be done as part of a medical surveillance program.

9. New Technology and Spill Containment Programs. Where hazardous substances may be released by spilling from a container that will expose employees to the hazards of the materials, the employer will need to implement a program to contain and control the spilled material. Diking and ditching, as well as use of absorbents like diatomaceous earth, are traditional techniques which have proven to be effective over the years. However, in recent years new products have come into the marketplace, the use of which complement and increase the effectiveness of these traditional methods. These new products also provide emergency responders and others with additional tools or agents to use to reduce the hazards of spilled materials.

These agents can be rapidly applied over a large area and can be

uniformly applied or otherwise can be used to build a small dam, thus improving the workers' ability to control spilled material. These application techniques enhance the intimate contact between the agent and the spilled material allowing for the quickest effect by the agent or quickest control of the spilled material. Agents are available to solidify liquid spilled materials, to suppress vapor generation from spilled materials, and to do both. Some special agents, which when applied as recommended by the manufacturer, will react in a controlle

# APPENDIX B

# TRENCH BOX TABULATED DATA

# TRENCH SHIELD MANUFACTURER'S TABULATED DATA

4M1020

MODEL NO.

SERIAL NO.

DATE SHIPPED

## MAXIMUM DEPTH TABLE

| SOIL TYPE | EFP | MAXIMUM DEPTH (FT) |
|---|---|---|
| A | 25 | 35' |
| B | 45 | 22' |
| C | 60 | 17' |
| C | 80 | 14' |

746 PSF

SHIELD CAPACITY

20 FT

MAX SPREADER LENGTH

8 IN SCH 80

SPREADER SIZE

**CONDITIONS FOR USE OF TABULATED DATA:**

1. This Tabulated Data has been prepared by a registered professional engineer as required to comply with the OSHA standard 29 CFR Part 1926, Subpart P.

2. The Soil Types A - 25, B - 45, and C - 80 are as defined in the OSHA Standard. Soil Type C - 60 is a moist, cohesive soil or a moist dense granular soil, which is not flowing or submerged and has an Equivalent Fluid Pressure (EFP) of 60 PSF per foot of depth. The competent person must monitor the excavation for signs of deterioration that may alter soil pressures and produce the Soil Type C - 80 condition. Such signs are indicated by, but not limited to, freely seeping water or flowing soil entering the excavation around or below the shield.

3. Trench Shields shall be used in accordance with the depth chart. The maximum depth is the distance from the surface of the excavation to the bottom of the trench. Depth ratings shown are based upon examples of homogeneous soil conditions. Soil pressures may vary due to non - homogeneous soils, surcharge loads, and slope of embankment (layback). Actual soil pressures should be verified to be sure that the shield capacity is not exceeded.

4. Surcharge loads are not included in the maximum depth table. Surcharge loads are possible due to heavy equipment, vibrations, or soil piles adjacent to the trench. (Adjacent is defined as within a distance equal to the depth of the trench.)

5. Trench Shields are not intended to provide stability to adjacent buildings or other structures.

6. 2 inch diameter pins furnished by GME shall be placed in all spreader to collar connections.

**GENERAL NOTES FOR TRENCH SHIELD USE:**

1. Any modifications to shields using parts not manufactured by GME will void Tabulated Data unless otherwise specified or allowed in writing by GME.

2. GME Trench Shields may be stacked provided that appropriate connections are made between stacked shields as specified by GME. Each stacked shield shall have a depth rating equal to or greater than the actual depth at which it is used.

3. Maximum depths are based on shields being in structurally sound condition. Trench Shields should be inspected prior to each use for any damage or deterioration. If a shield has sustained major structural damage or permanent deformation of a structural member or connection, the Tabulated Data is void until repairs are made as specified by a registered professional engineer.

4. The use of GME Trench Shields shall be in accordance with this tabulated data and all requirements of the OSHA standard. Trench Shield usage other than specified or required may create unsafe conditions that could cause a cave - in, structural failure, or collapse resulting in a disabling injury or even death. GME shall not be liable for shield usage other than specified.

SAMPLE

STATE OF MICHIGAN
TIMOTHY S. [illegible]
LICENSED PROFESSIONAL ENGINEER

Griswold Machine & Engineering, Inc.
594 W. Highway M - 60
Union City, MI 49094
Phone 517 - 741 - 4300

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# TRENCH SHIELD MANUFACTURER'S TABULATED DATA

4M820

MODEL NO.

SERIAL NO.

DATE SHIPPED

## MAXIMUM DEPTH TABLE

| SOIL TYPE | EFP | MAXIMUM DEPTH (FT) |
|---|---|---|
| A | 25 | 37' |
| B | 45 | 22' |
| C | 60 | 18' |
| C | 80 | 14' |

829 PSF

SHIELD CAPACITY

20 FT

MAX SPREADER LENGTH

8 IN SCH 80

SPREADER SIZE

**CONDITIONS FOR USE OF TABULATED DATA:**

1. This Tabulated Data has been prepared by a registered professional engineer as required to comply with the OSHA standard 29 CFR Part 1926, Subpart P.

2. The Soil Types A - 25, B - 45, and C - 60 are as defined in the OSHA Standard. Soil Type C - 60 is a moist, cohesive soil or a moist dense granular soil, which is not flowing or submerged and has an Equivalent Fluid Pressure (EFP) of 60 PSF per foot of depth. The competent person must monitor the excavation for signs of deterioration that may alter soil pressures and produce the Soil Type C - 80 condition. Such signs are indicated by, but not limited to, freely seeping water or flowing soil entering the excavation around or below the shield.

3. Trench Shields shall be used in accordance with the depth chart. The maximum depth is the distance from the surface of the excavation to the bottom of the trench. Depth ratings shown are based upon examples of homogeneous soil conditions. Soil pressures may vary due to non - homogeneous soils, surcharge loads, and slope of embankment (layback). Actual soil pressures should be verified to be sure that the shield capacity is not exceeded

4. Surcharge loads are not included in the maximum depth table. Surcharge loads are possible due to heavy equipment , vibrations, or soil piles adjacent to the trench. (Adjacent is defined as within a distance equal to the depth of the trench.)

5. Trench Shields are not intended to provide stability to adjacent buildings or other structures.

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3. Maximum depths are based on shields being in structurally sound condition. Trench Shields should be inspected prior to each use for any damage or deterioration. If a shield has sustained major structural damage or permanent deformation of a structural member or connection, the Tabulated Data is void until repairs are made as specified by a registered professional engineer.

4. The use of GME Trench Shields shall be in accordance with this tabulated data and all requirements of the OSHA standard. Trench Shield usage other than specified or required may create unsafe conditions that could cause a cave - in, structural failure, or collapse resulting in a disabling injury or even death. GME shall not be liable for shield usage other than specified.

STATE OF MICHIGAN TIMOTHY S. DEE LICENSED PROFESSIONAL ENGINEER

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Union City, MI 49094
Phone 517 - 741 - 4300

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# APPENDIX C

# PIPE SADDLE VENDOR LITERATURE

Smith-Blair

Clamp and Coupling products

# service saddles

Smith-Blair offers the most complete line of service saddles in the industry for fast, dependable tapping of all types of pipes.

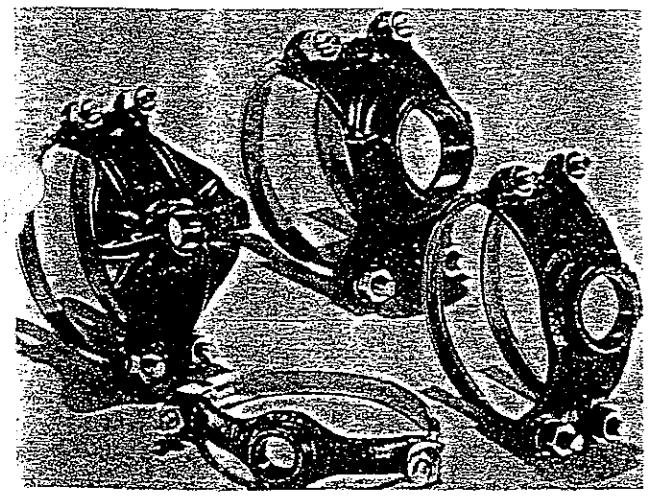
Such outstanding features as the Taper Seal™ gasket, heavy forged bales, and wrap-around design that reinforces and supports the pipe, are combined in superior service saddles to provide low initial cost, ease of installation, and excellent lasting qualities.

Increased protection against corrosion is available with the use of our nylon coated or all stainless steel saddles. These products give you the option to select the degree of corrosion resistance necessary for your application.

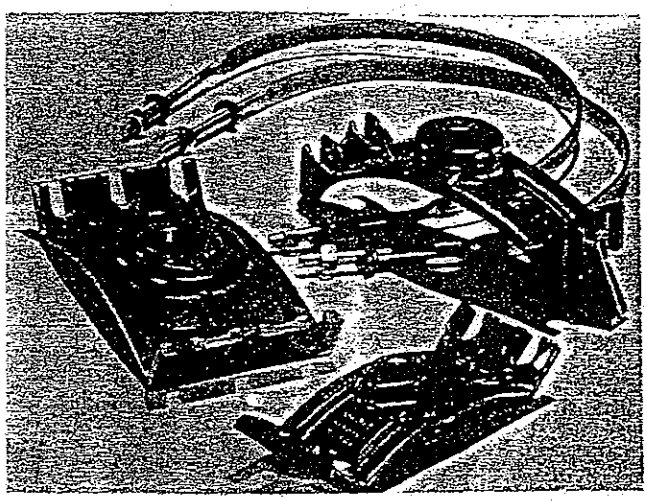
In addition to the primary use, tapping pipe to provide brandch connections, Smith-Blair Service Saddles are widely used for such special applications as installing air and vacuum valves. Pitot tubes and other equipment, and as pipe hangers and sign mounting brackets.

Smith-Blair Service Saddles are available in a wide variety of sizes, configurations and materials for use on all types of pipe, in all types of environmental conditions, to make taps ranging from a 5/8" (15 mm) tap into a 1" (25 mm) pipe, to making a 2" (25 mm) tap into 42" (1.067 mm) pipe.

(For tapping larger outlets and larger pipe, use Smith-Blair Tapping Sleeves.)



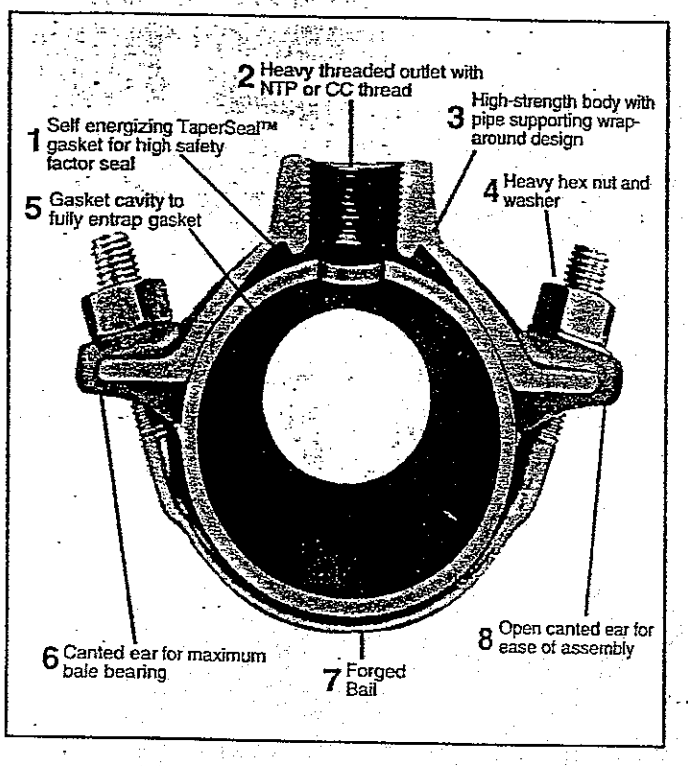
Service Saddles for 1" through 18" pipe.



Service Saddles for 18" through 42" pipe.

Smith-Blair

# clamp and coupling products




Smith-Blair TaperSeal™ Wrap-around Service Saddles are designed to provide maximum support and reinforcement of the pipe as the result of nearly 360° contact. When installed on a pipe with an outside diameter that is equal to or near to the top of the saddle's O.D. range, the saddle body wraps around the pipe approximately 160°. On a pipe that has an O.D. equal to or near to the bottom of the saddle's O.D. range, the saddle body will wrap around the pipe approximately 180°.

As the bale bolts are tightened, tangential pull directs the mechanical forces toward and around the pipe, uniformly distributing pressure around the circumference of the pipe to support and reinforce it.

### sealing qualities

Smith-Blair Service Saddles are designed to hold high pressures with just a few pounds of torque applied to the bale nuts. The unique, pressure-energized TaperSeal™ gasket, which seals as the result of both mechanical and hydrostatic pressures, is contained within a tapered gasket cavity cast into the saddle body. This feature provides a positive hydro-mechanical seal, and prevents the gasket from being blown out along the pipe. At the recommended torque on the bale nuts, Smith-Blair Service Saddles are designed to hold pressures in excess of the working pressure of the pipe.

## 311 & 313 TaperSeal™ service saddles ductile iron

### stability of pipe

The wide skirt on Smith-Blair TaperSeal™ Service Saddle bodies, combined with the wrap-around feature, results in excellent stability of the saddle on the pipe. These two features work together to prevent the saddle from rocking or creeping on the pipe, as might be caused by vibration, pressure or excessive external loading. This makes possible the use of single bale saddles instead of double bale saddles on many installations, resulting in substantial savings.

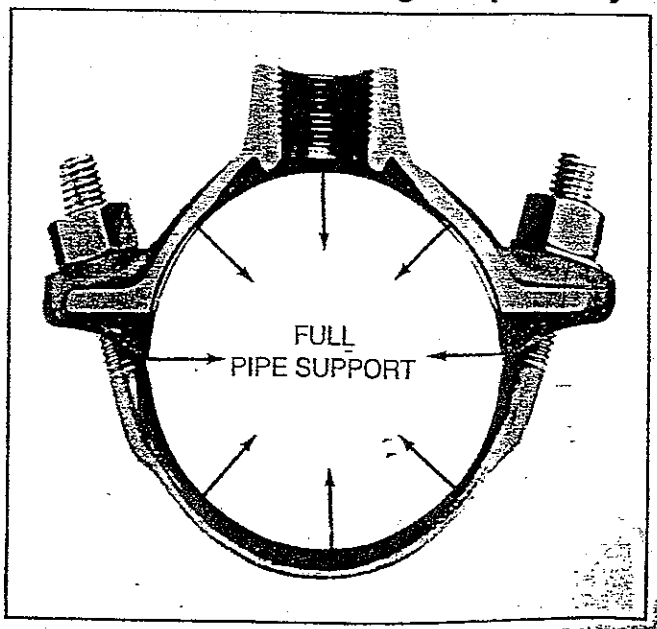
### single or double bale

The optimum number of bales needed is based on two factors: the pipe O.D. and the outlet size. Double straps are necessary to accommodate for larger pipe O.D.'s and to equalize gasket pressure around larger outlets.

### easy to install

For fast, easy installation, Smith-Blair TaperSeal™ Service Saddles feature a closed lug on one side of the body that holds one end of the strap and its nut in place and acts as a hinge. The other side features an open, canted lug into which the other end of the bale and its nut and washer can be slipped. Therefore, there are no loose parts and disassembly is not required.

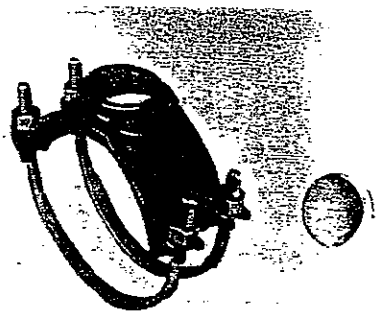
## full pipe support — design superiority



Smith-Blair

Clamp and Coupling products

# 313 service saddles ductile iron double bale



Smith-Blair 313 DOUBLE BALE service saddles have the same important design features as the 311. The 313 is especially recommended where large taps are required and where greater than normal transverse loading on the service line is anticipated.

For unusually corrosive or aggressive environments Smith-Blair 317, 323, 357, 391 or 393 Service Saddles should be used.

**MATERIAL SPECIFICATIONS**

**BODIES:** Ductile Iron ASTM-A536.
**BALES:** Carbon Steel ASTM-A108 (C1018) electro-galvanized with di-chromate seal ASTM-B633.*
**NUTS:** Cold formed semi-finished heavy hex steel A563 electro-galvanized with di-chromate seal ASTM-B633.*
**WASHER:** Carbon steel ASTM-A108, electro-galvanized with a di-chromate seal ASTM-B633.
**GASKETS:** Smith-Blair Grade 60 (Buna N) compounded to resist oil, acids, alkalies, most (aliphatic) hydrocarbon fluids, water and many chemicals. (Contact Smith-Blair engineers for applications involving chemicals.) Temperatures -40°F to +212°F.
**FINISH:** Blue Shopcoat Enamel.

Material specifications subject to change. Optional: stainless steel hardware available upon request.
* Large diameter saddles (15.98-18.88) with 3" & 4" NPT taps have bales made of ASTM-A285, studs ASTM-A325 with Blue Shopcoat and nuts made of carbon steel ASTM-A536.

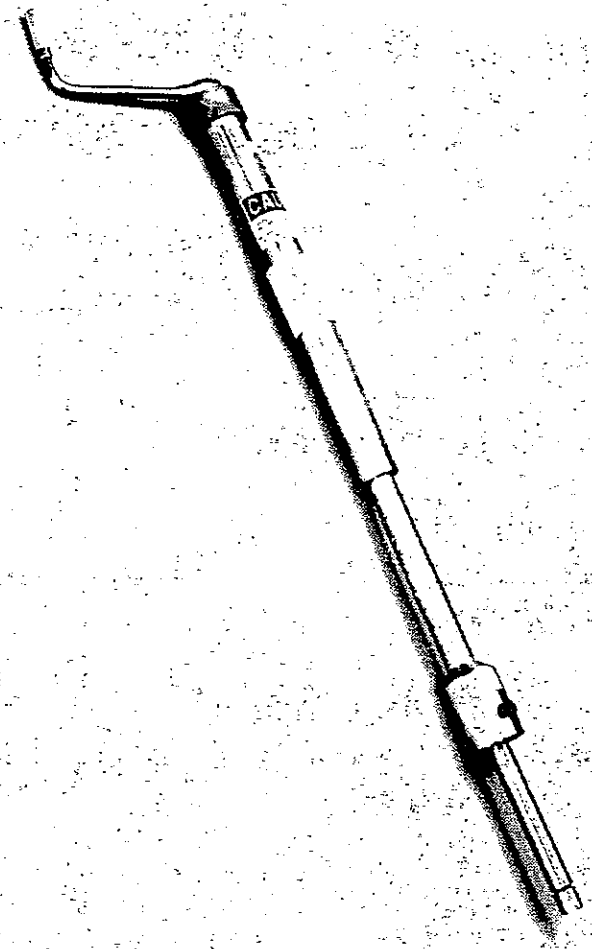
## 313 service saddles, ductile iron, double bale 1-1/4", 1-1/2", 2" and 2-1/2" NPT taps

| U.S. | | | CATALOG NUMBER | | | | METRIC | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| NOM. SIZE INCHES | O.D. RANGE INCHES | WT. EACH LBS. | 1-1/4" NPT/32MM | 1-1/2" NPT/40MM | 2" NPT/50MM | 2-1/2" NPT/65MM | CTN. QTY. | NOM. SIZE MM | O.D. RANGE MM | WT. EACH KG. |
| 2 | 2.35-2.56 | 3.1 | 313-025610-000 | 313-025612-000 | N.A. | N.A. | 6 | 50 | 60-65 | 1.4 |
| 3 | 2.97-3.54 | 5.1 | 313-035410-000 | 313-035412-000 | 313-035414-000 | N.A. | 6 | 80 | 76-89 | 2.3 |
| 3-4 | 3.74-4.13 | 7.5 | 313-041310-000 | 313-041312-000 | 313-041314-000 | 313-041316-000 | 6 | 80-100 | 95-115 | 3.4 |
| *4 | 4.50 | 5.5 | 313-045010-000 | 313-045012-000 | 313-045014-000 | 313-045016-000 | 6 | 100 | 114 | 2.5 |
| *4 | 4.14-4.80 | 5.5 | 313-048010-000 | 313-048012-000 | 313-048014-000 | 313-048016-000 | 6 | 100 | 105-122 | 2.5 |
| 4-5 | 4.74-5.63 | 8.6 | 313-056310-000 | 313-056312-000 | 313-056314-000 | 313-056316-000 | 4 | 100-125 | 121-143 | 3.9 |
| *6 | 5.94-6.70 | 9.2 | 313-066310-000 | 313-066312-000 | 313-066314-000 | 313-066316-000 | 4 | 150 | 151-170 | 4.2 |
| *6 | 5.94-6.90 | 9.2 | 313-069010-000 | 313-069012-000 | 313-069014-000 | 313-069016-000 | 4 | 150 | 151-175 | 4.2 |
| 6 | 6.84-7.60 | 7.2 | 313-076010-000 | 313-076012-000 | 313-076014-000 | 313-076016-000 | 4 | 150 | 174-193 | 3.3 |
| 6-8 | 7.66-8.08 | 7.4 | 313-080810-000 | 313-080812-000 | 313-080814-000 | 313-080816-000 | 4 | 150-200 | 195-205 | 3.4 |
| *6-8 | 7.69-9.05 | 10.5 | 313-087210-000 | 313-087212-000 | 313-087214-000 | 313-087216-000 | 4 | 150-200 | 195-221 | 4.8 |
| 8-10 | 8.54-10.10 | 8.9 | 313-101010-000 | 313-101012-000 | 313-101014-000 | 313-101016-000 | 4 | 200-250 | 217-256 | 4.0 |
| *10 | 10.75-11.10 | 9.6 | 313-111010-000 | 313-111012-000 | 313-111014-000 | 313-111016-000 | 4 | 250 | 273-282 | 4.3 |
| 10-12 | 10.64-12.12 | 11.0 | 313-121210-000 | 313-121212-000 | 313-121214-000 | 313-121216-000 | 4 | 250-300 | 271-307 | 5.0 |
| *12 | 12.75-13.20 | 14.1 | 313-132010-000 | 313-132012-000 | 313-132014-000 | 313-132016-000 | 4 | 300 | 324-355 | 6.5 |
| 12-14 | 12.62-14.32 | 14.1 | 313-143210-000 | 313-143212-000 | 313-143214-000 | 313-143216-000 | 4 | 300-350 | 321-363 | 6.4 |
| 12-14 | 14.73-15.65 | 18.0 | 313-156510-000 | 313-156512-000 | 313-156514-000 | 313-156516-000 | 2 | 300-350 | 375-397 | 8.2 |
| 14-16 | 15.95-17.25 | 18.9 | 313-172510-000 | 313-172512-000 | 313-172514-000 | 313-172516-000 | 2 | 350-400 | 406-438 | 8.6 |
| 16-18 | 17.40-18.88 | 19.2 | 313-188810-000 | 313-188812-000 | 313-188814-000 | 313-188816-000 | 2 | 400-450 | 442-479 | 8.7 |

# APPENDIX D

# PIPE DRILLING MACHINE OPERATION AND MAINTENANCE

TDW Pub. No. 00-3795-0228
September 2000



# T-101b/T-101b-XL Drilling Machine

## Operating and Maintenance Instructions

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T. D. Williamson, Inc.

## NOTICE

Any operation involving work on pipe containing liquids or gases under pressure is potentially hazardous. It is necessary, therefore, that correct procedures be followed in the use of this equipment to maintain a safe working environment.

*No person should use this equipment who is not fully trained in the procedures stated in this manual, and who is not fully aware of the potential hazards connected with work on pipe containing liquids or gases under pressure.*

*The purchaser of this equipment is responsible for the manner in which this equipment is used and the training and competence of the operators.*

Should any difficulty arise at any time in the use of this equipment, please contact TDW immediately.

**For Parts and Service:**
**P. O. Box 3409**
**Tulsa, OK 74101- 3409 USA**
**In the U.S. toll free 1-888-TDWmSon (839-6766)**
**Phone (918) 447-5100**
**Fax (918) 446-6327**
**E-mail: info@tdwilliamson.com**

**Visit TDW's Web site at www.tdwilliamson.com**

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# Section I: Introduction

## 1.0 Introduction

This manual is designed to provide the operator with factory recommended operation and maintenance instructions for safe and effective use of the TDW T-101b/T-101b-XL Drilling Machines.

Learn the capabilities of the equipment. This equipment is designed with adequate safety factors; however, do not exceed the factory recommended specifications under any circumstances.

Practice all safety precautions and procedures to ensure operator safety and satisfactory results.

Read the entire manual before operating the T-101b or T-101b-XL Drilling Machine. Follow the manual for all operation and maintenance procedures.

Make a test tap on a short length of pipe before going into the field for actual operations.

Should any special questions arise concerning the drilling machine or its use, contact T. D. Williamson, Inc., or the nearest factory representative.

The T-101b Drilling Machine is shown in Figure 1.

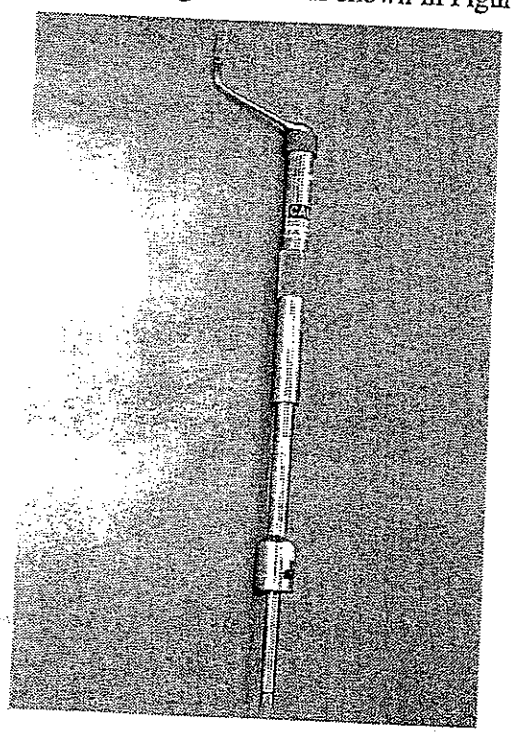


**Figure 1. T-101b Drilling Machine**

**WARNING: Do not attempt a drilling operation which would depart from the procedures described in this manual. Attempting such a departure could present a hazardous situation resulting in personal injury and/or property damage.**

**Do not alter this machine or any of its component parts. Use only TDW adapters, accessories, and replacement parts manufactured or recommended by TDW.**

**Any alteration of this machine or use of adapters, accessories, or parts not manufactured or recommended by TDW could cause the machine to malfunction, resulting in damage to the machine and/or personal injury.**

## 2.0 Purpose of Drilling Machine

The T-101b-series Drilling Machine can be used for several industrial applications:

- Tap both metal pipe and plastic pipe for plugging operations.
- Set completion plug in metal and plastic pipe fittings.
- Tap holes for PIG-SIG® Scraper Passage Indicator installation.
- Set PIG-SIG Indicator assemblies into pipe. Refer to TDW Pub. No. 00-3795-0153, Scraper Passage Indicator Installation Instructions.
- Set gauge adapters and other instrument-monitoring probes.

### 2.1 Specifications

The specifications of the drilling machine are shown in Table 1.

### 2.2 Equipment

Table 2 provides a list of equipment used in performing various options with the T-101b/T-101b-XL Drilling Machines.

**Table 1 Specifications:**
**TDW Model T-101b/T-101b-XL Drilling Machine (Note 1)**

| Description/Function | Size/Rating |
|---|---|
| Maximum operating pressure | 1440 psi at 100°F |
| Maximum operating temperature | 700°F at 700 psi (Note 2) |
| Sizes:<br>Using twist drills<br>Using hole saws | <br>1/2", 3/4", 1", 1 1/4", 1 7/16"<br>1 1/4", 1 1/2", 2", 3", 4", 6" (Note 3) (nom. size). Use only the T-101bXL for 6" taps |
| Maximum boring bar travel | 18" for T-101b; 28" for T-101b-XL |
| Machine weight<br>Machine weight | 32 lbs. for T-101b<br>44 lbs. for T-101b-XL |
| Rate of travel | Manual feed, 1/8" per revolution |
| Operation: Basic machine is manually operated. Can be operated with an optional air motor and socket adapter. | |

**Note 1:** This manual does not cover use of the T-101b/T-101b-XL with *Qualitech®* drills, holesaws, fittings or completion plugs. Consult factory for assistance.
**Note 2:** 700° F (371° C) for intermittent service only. Maximum continuous rating 350° F (177° C) at 1,025 psi (70 bar).
**Note 3:** 6" taps are size-on-size only in carbon steel using special cutter. Consult factory for other conditions.

**Table 2**
**T-101b and T-101b-XL Drilling Machine Equipment**

| Terms & Vocabulary | Description & Function | Sizes Available |
|---|---|---|
| T-101b Drilling Machine | Manual or power driven machine which taps into pipe. Provides means to plug tapped opening in pipe. | |
| Valve Adapter (threaded or flanged) | Extension that attaches drilling machine thread end to tapping valve and houses drills, cutters, and completion plugs. | Threaded: 1", 1 1/4", 1 1/2", 2", 3"<br>Flanged: 2", 3", 4", 6"; Class 150, 300 or 600 |
| Drill | High-speed steel bore bit that cuts entry into pipe. | See chart at end of Appendix I |
| Hole Saw and Holder Pilot | One-piece steel cup with cutting edge that cuts through pipe. Holder pilot retains the coupon. | See chart at end of Appendix I |
| THREAD-O-RING™ Plug Holder | A steel device that holds and guides a completion plug, PIG-SIG® Indicator assembly, or other instrument into the pipe opening. | |
| THREAD-O-RING Fitting | A steel nipple and completion plug used to gain entry into pipelines and tanks. | 2" and 3" (Consult factory for 3" THREAD-O-RING applications.) |
| Special SHORTSTOPP® Plug Holder 08-2120-0000 | Enables user to set 2" and 3" SHORTSTOPP 275 Solid-Steel Completion Plug | |
| Air Motor (optional) | Hose-connected, hand-held power tool which can be used rather than manually operating drilling machine ratchet handle. | Pistol grip or<br>Right angle (recommended for 6" taps) |
| Socket Adapter (optional) | Deep-socket adapter that connects air motor to drilling machine to hex drive. | 3/4" size |

## 3.0 Safety

Learn location and function of all safety features built into the TDW Model T-101b/T-101b-XL Drilling Machines and related equipment. Wear protective clothing.

### 3.1 Bleeder Valve Connection

The bleeder valve connection is located on the drilling machine near bottom of body tube. See Figure 2. The bleeder valve serves to purge air from fitting and serves to bleed off pressure after drilling is completed, the drill retracted and the tapping valve is closed.

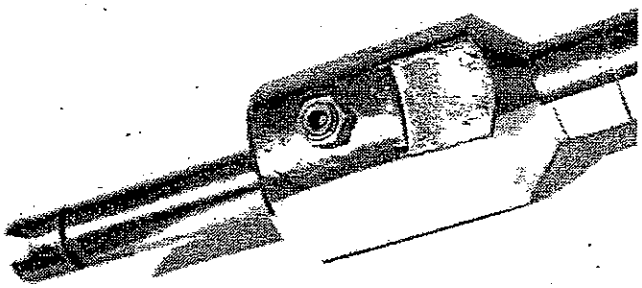


**Figure 2. Bleeder Valve Connection**

### 3.2 Warnings and Cautions

The purpose of **Warnings** and *Cautions* in this manual is to call the operator's attention to possible danger of injury to personnel and/or property damage to equipment and deserves careful attention and understanding.

A. **WARNING:** Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury and damage to equipment.

B. *CAUTION:* Indicates a potentially hazardous situation which, if not avoided, may result in personal injury and damage to equipment. It may also be used to alert against unsafe practices.

### 3.3 Protective Clothing

Protective clothing is recommended whenever working around machinery. Suggestions are: hard hat, gauntlet gloves, safety goggles, safety shoes, garments to cover exposed areas of skins, and breathing apparatus when toxic atmosphere exists.

## 4.0 T-101b Drilling Machine, Equipment, Terms & Vocabulary

### 4.1 T-101b Drilling Machine

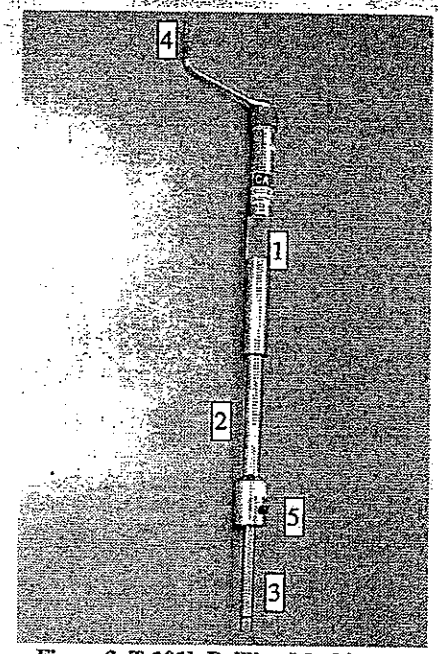



**Figure 3. T-101b Drilling Machine**

1. Feed Tube
2. Body Tube
3. Boring Bar
4. Ratchet Handle
5. Bleeder Valve Connection

### 4.2 Adapters

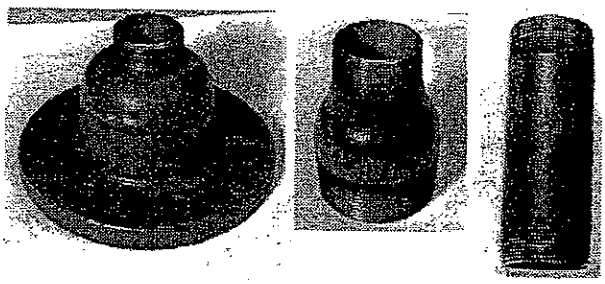


**Figure 4. Adapters**

*CAUTION: Use only TDW valve adapters to assure correct alignment of equipment. Commercial pipe fittings are not machined for concentric alignment. Misalignment can result in equipment damage.*

## 4.3 Hole Saws and Drills

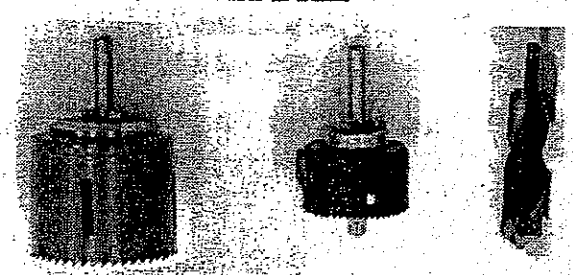
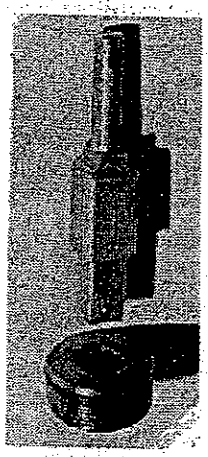


**Figure 5. Hole Saws and Drills**

## 4.4 Completion Plugs and Holders



2" SHORTSTOPP 275/500 Completion Plug and Holder

2" THREAD-O-RING® Plug and Holder

**Figure 6. Plug Holders and Plugs**

## 4.5 Accessories

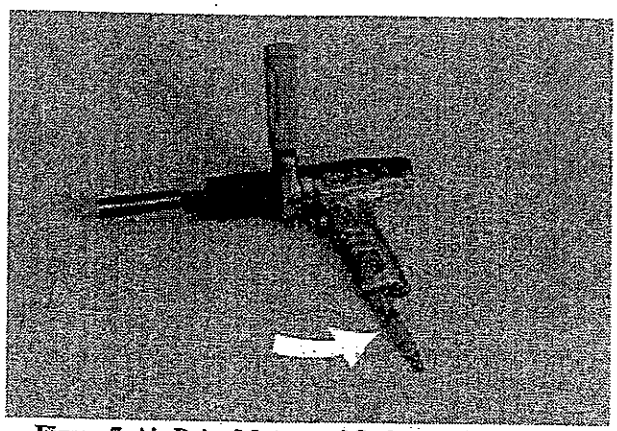


**Figure 7. Air Drive Motor and Socket with Regulator for T-101b Drilling Machine**

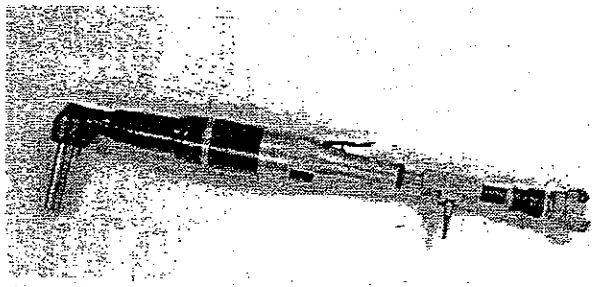


**Figure 7a. Air Drive Motor for T-101b-XL Drilling Machine**

# 5.0 Tapping Valve Requirements

**Table 3**
**Valves to Use with Drills (see Note 1)**

| Drill Diameter | Drill Length | Minimum Valve Size | Minimum Thru-Bore | Notes |
|---|---|---|---|---|
| 1/2" | 6" | 1 1/4" | 1.250" | (2) |
| 1/2" | 22 1/4" | 1" | 1.000" | (3) |
| 3/4" | 6" | 1 1/4" | 1.250" | (2) |
| 3/4" | 22 1/4" | 1" | 1.000" | (3) |
| 1" | 6" | 1 1/4" | 1.250" | (2) |
| 1 1/4" | 6" | 1 1/2" | 1.500" | (4) |
| 1 7/16" | 7 3/8" | 1 1/2" | 1.500" | (4) |

# NOTES:

1. The valve minimum size and minimum thru-bore listed above are the minimum sizes that will accommodate the drill. If a completion plug or other device is to be set in the line at the completion of operations, the valve will have to be of sufficient thru-bore to accommodate the device. See Table 4.
2. A 1.250" minimum bore to allow passage of boring bar.
3. If a 1" threaded valve is used, the longer adapter and drill are required because of boring bar diameter.
4. 1.500" minimum bore required to allow passage of drill diameters.

**Table 4**
**Valves to Use with Hole Saws and Completion Plugs (Size-on-Size)**

| Nominal Size | Valve Size | Thru-Bore Min. ID |
|---|---|---|
| 1 1/4" | 2" threaded | 1-5/16" |
| 1 1/2" | 2" threaded | 1-11/16" |
| 2" | 2" threaded | 2-1/16" |
| 3" | 3" threaded | 3-1/16" |
| 4" | 4" flanged | 4-1/32" |
| 6" | 6" flanged | 6-1/8" |

**Table 5**
**Valves for PIG-SIG Scraper Passage Indicator Installation**

| Part | Valve Size | Thru-Bore Min. ID |
|---|---|---|
| 1 7/16" Shell Cutter | 2" | 2-1/16" |
| 1 7/16" Drill | 2" | 2-1/16" |
| PIG-SIG Plug | 2" | 2-1/16" |

# 6.0 Drilling Machine Operation

To get a better understanding of how the drilling machine operates, the operator should remove drilling machine from its case and try each of the following.

A. Remove the locking cap. See Figure 8. The locking cap locks the feed tube and boring bar together, permitting extension and rotation of the boring bar at the same time. This feature is used only when setting some completion plugs and when retracting the boring bar with the ratchet handle under high pressure. In this latter case, make sure the locking cap remains in place.

**Figure 8. Remove Locking Cap**

B. Hold body tube and rotate feed tube clockwise by hand. Notice that boring bar extends, but does not rotate. See Figure 9.

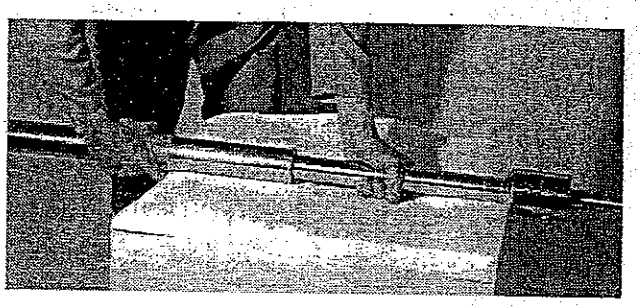


**Figure 9. Turn Feed Tube**

C. Hold feed tube and rotate hex drive clockwise with ratchet handle. Notice that the boring bar rotates, but does not extend or retract. See Figure 10.

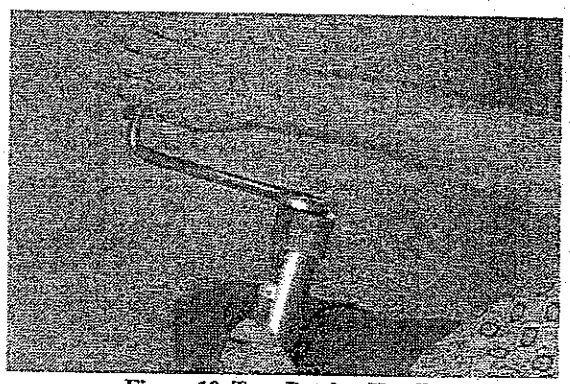


**Figure 10. Turn Ratchet Handle**

D. Hold hex drive and rotate feed tube counterclockwise. The boring bar retracts, but does not rotate.

E. Re-install locking cap (Figure 8). With ratchet handle, rotate hex drive clockwise. Note that boring bar and feed tube rotate and boring bar extends.

F. With ratchet handle, rotate hex drive counterclockwise. Note that boring bar rotates and retracts.

## 6.1 Feed (Manual)

The T-101b/T-101b-XL Drilling Machine is a manual feed machine. Clockwise rotation of the feed tube extends the boring bar and counterclockwise rotation retracts the boring bar. With the locking cap installed, turning the hex drive clockwise both turns and extends the boring bar. One revolution of the hex drive will extend the boring bar 1/8th inch.

**NOTE:** The locking cap is to be used only when setting and removing some completion lugs. Do not tap or drill with the locking cap installed.

*CAUTION: When tapping, be sure you do not overfeed. Overfeeding, and underfeeding also, will damage the drill or hole saw.*

## 6.2 Air Motor

A. Two air-motor drives for the drilling machine are available from the factory, and require a 3/4, 6-point, heavy-duty socket to fit the 3/4 hex drive.

B. Since the air motor has a maximum speed greater than required, an air regulator is provided to regulate the air volume to meet the various size hole saw maximum speed recommendations. RPM of the air motor is controlled by adjusting the slotted screw in the air regulator, as shown in Figure 11, by turning it either clockwise or counterclockwise. Because of the necessity to closely regulate the cutter or drill speed, it is recommended that only the air motor and associated regulator provided by TDW be used with the T-101b and T-101b-XL machines. Because of the danger of sparks, an electric drive motor should never be used.

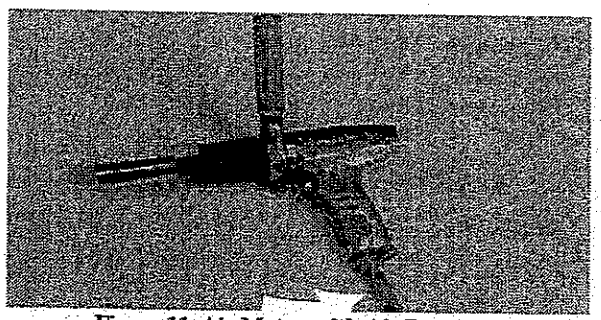


**Figure 11. Air Motor with Air Regulator**

**NOTE:** Hole saw speeds in Table 6 are recommended for mild steel under ideal conditions.

C. When the T-101b-XL Drilling Machine and special cutter are used to make a 6 size-on-size tap, a right angle air motor, TDW Part Number 05-2160-0000, is recommended.

D. The air motor should be held with both hands, with arms extended, as shown in Figure 12.

**Table 6**
**Recommended Tapping Speeds**

| Nominal Hole Size (in.) | Hole Saw Max. rpm | Drill Max. rpm |
|---|---|---|
| 1-1/4, 1-1/2, 2 | 195 | 195 (all sizes) |
| 3 | 120 | |
| 4 | 100 | |
| 6 | 80 | |

**Figure 12. Using Air Motor**

**WARNING: When an air motor is used, two operators are required to run the machine: one to operate the air motor, and one to operate the feed manually by turning feed tube.**

**Do not exceed maximum RPM for any given size. Excessive hole saw wear may result. Do not overfeed, or drill and hole saw will bind during cutting, causing loss of control of air motor and result in possible personal injury and/or equipment damage.**

# Section II Tapping Operations

## 1.0 General Information

It is strongly recommended that the operator become familiar with all drilling machine operation procedures. Practice operating the machine to get "the feel" of the controls before doing an actual tapping job in the field. A test setup should be made on a short length of pipe to practice with the tapping procedure.

## 2.0 Tapping with A Drill

### 2.1 Select Equipment

Select the correct tapping valve by consulting Table 3, Section I, for minimum dimensions.

**NOTE:** Select a tapping valve that will allow drill, boring bar, and completion plug to pass through valve bore without damaging the drill or valve. The bore should be unobstructed by seat ring lugs. Bore minimum inside diameter must correspond to through-bore minimum inside diameter dimension in Table 3, Section I.

To select the correct drill, see Table 3, Section I. For the correct valve adapter, refer to Parts List Section IV. It must be remembered that 18 inches is the maximum travel distance of the T-101b Drilling Machine boring bar, and 28 inches for the T-101b-XL.

### 2.2 Assemble Equipment

A. After nipple has been welded to the pipe, wrap sealing tape or apply sealing compound to nipple threads. Next, thread tapping valve to nipple. See Figure 13. Open valve fully. When a flanged valve is used, the center of the valve through-bore must be concentric with the flanged fitting through-bore.

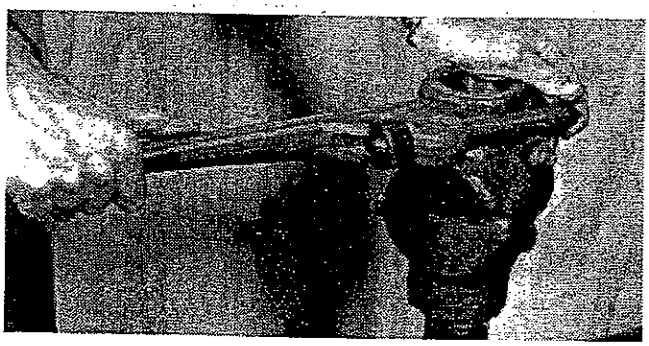


**Figure 13. Install Tapping Valve**

*CAUTION: Do not overtighten valve. Overtightening can swage the nipple or fitting diameter too small to set the completion plug.*

*Test the setup by installing completion plug, with O-ring removed, **before tap is made** to make sure it threads properly. Remove completion plug following test and replace the O-ring.*

B. Hold the T-101 body tube and rotate feed tube clockwise to extend boring bar until retainer spring can be removed. Remove retainer spring. See Figure 14.

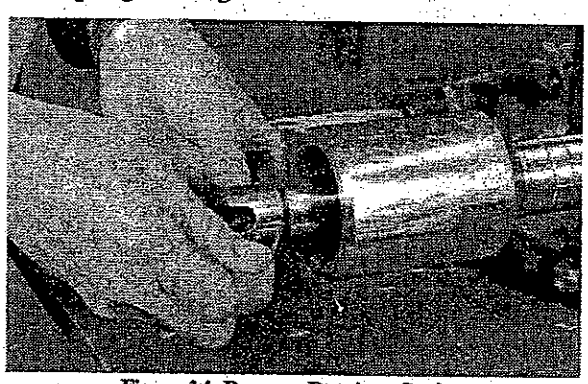


**Figure 14. Remove Retainer Spring**

C. Insert drill into boring bar and reinstall retainer spring. See Figure 15.

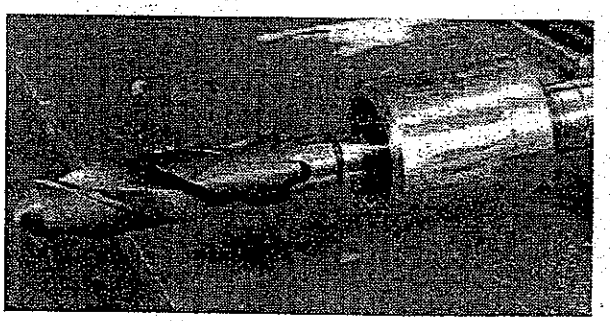


**Figure 15. Insert Drill and Replace Retainer Spring**

D. Install valve adapter. Use sealing tape or compound on threads of valve adapter to assure a tight seal. Thread adapter to drilling machine. See Figure 16.

*CAUTION: Use only TDW valve adapters to assure correct alignment of equipment. Commercial pipe fittings are not machined for concentric alignment. Misalignment can result in equipment damage.*

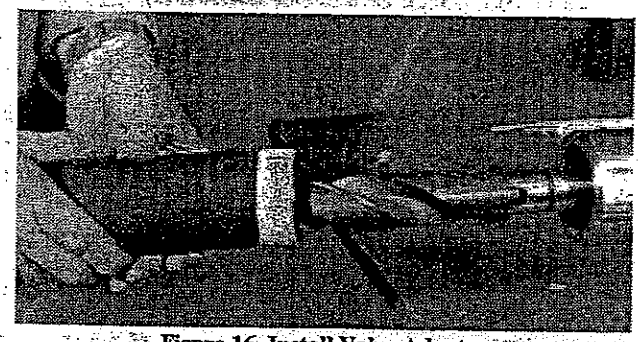


Figure 16. Install Valve Adapter

E. Hold body tube of drilling machine and rotate feed tube counterclockwise until feed tube is at zero mark on body tube. See Figure 17. Drill is completely retracted.

Figure 17. Zero Indicated on Body Tube

## 2.3 Compute Travel Distance

A. Travel distance is that distance the drill must travel from the zero mark on the body tube to the point that the drill has fully penetrated the pipe. It has two components: lower-in distance and drilling distance.

**WARNING: Improper measurements may result in tapping through bottom of pipe.**

B. Calculate lower-in distance required for drill tip to contact pipe. (Boring bar fully retracted and feed tube at zero mark on body tube.) See Figure 18.

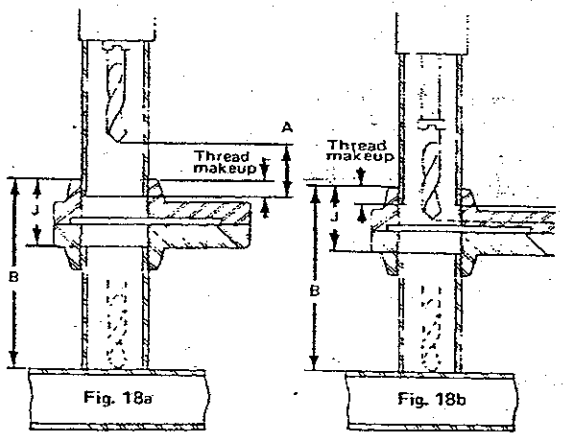



Figure 18. Calculate Distance

C. Measure and record distance "A", tip of drill to valve adapter face. If threaded adapter is used, "A" must be adjusted for thread makeup between adapter and tapping valve. Thread makeup varies and must be measured each time. If:

1. Tip of drill is inside adapter, thread makeup is subtracted from "A" and the result added to "B" in determining lower-in distance. See Figure 18a.

2. Tip of drill extends below valve adapter face, thread makeup is added to "A" and the result subtracted from "B" in determining lower-in distance. See figure 18b.

D. Measure and record distance "B", valve face to top of pipe to be tapped. Valve must be tight on fitting.

E. The sum of these measurements should be the body tube reading when drill contacts the pipe. Mark this measurement on the body tube. See Figure 19.

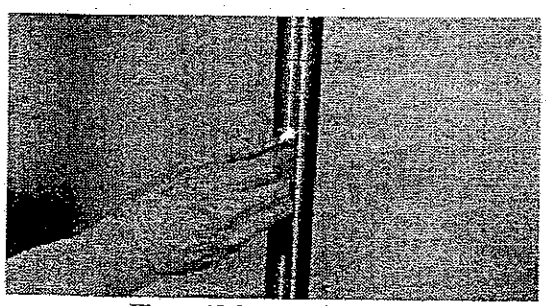


Figure 19. Mark Body Tube

F. Measure and record distance "J", top of valve face to top of fitting. Retain this figure for use when setting completion plug.

G. Examples: assume we are using a TDW threaded adapter.

**Example 1: Figure 18a**

Tip of drill is inside valve adapter face.

- If distance "A" measure 3" with thread makeup subtracted;
- And distance "B": measures 8-1/2"
- Then calculate:

| | |
|---|---|
| Distance "A" | 3" |
| Add Distance "B" | 8-1/2" |
| TOTAL | 11-1/2" |

Feed tube should be at 11-1/2" on body tube as drill tip contacts pipe.

**Example 2: Figure 18b**

Tip of drill extends below valve adapter face.

- If Distance "A" measures 1-1/2" with thread makeup added;
- And Distance "B" measures 8-1/2"
- Then calculate:

| | |
|---|---|
| Distance "A" is minus | (1-1/2") |
| Distance "B" is | 8-1/2" |
| TOTAL | 7" |

Feed tube should be at 7" on body tube, as drill tip contacts pipe.

H. Calculate drilling distance for drill to fully penetrate pipe. Multiply 4/5 (0.8)* times the drill diameter and add the pipe wall thickness. Example: Assume we are drilling 3/4" (.75) hole through a 5/32" (.156) wall thickness pipe.

.8 x .75 = .600 + .156 = .756 or about 3/4".

**0.8 times drill diameter allows full drill diameter into the pipe.*

I. Travel distance (distance required to complete the tap) equals lower-in distance plus drilling distance. Add these figures and mark on body tube.

*CAUTION: If the total of these figures exceeds 18", maximum boring bar travel for the T-101b (or 28" maximum boring bar travel for the T-101b-XL), the tap cannot be completed with the T-101b/T-101b-XL Drilling Machine.*

## 2.4 Install Equipment

A. Attach machine to tapping valve. See Figure 20. Close and open valve to make sure that it works properly and that the drill does not interfere with opening and closing of valve disc. Be sure valve is in full open position before continuing to next step.

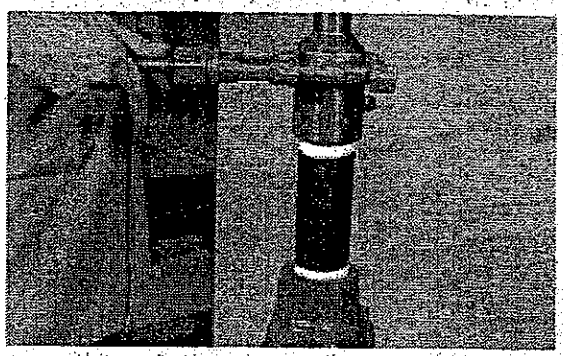


**Figure 20. Install Drilling Machine**

B. Remove pipe plug from drilling machine bleeder valve connection. See Figure 21. Make sure bushing is not removed along with the pipe plug.

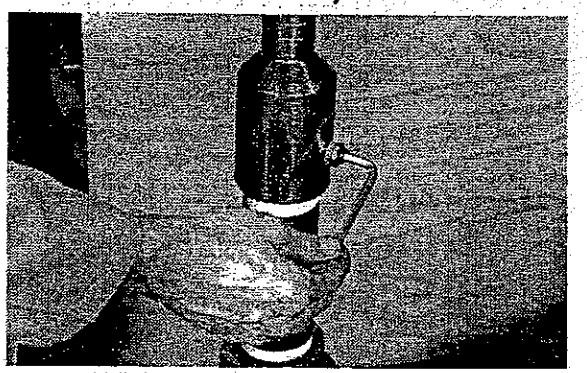


**Figure 21. Remove Pipe Plug**

C. Thread bleeder valve and 1/4" nipple into bushing. See Figure 22.

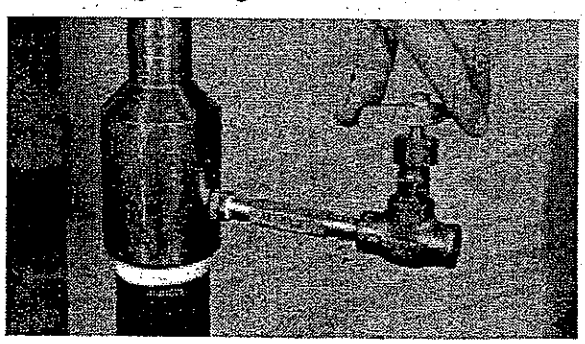


**Figure 22. Install and Open Bleeder Valve**

D. Test setup for pressure tightness by pressuring through bleeder valve on drilling machine. Leave bleeder valve open after test.

*CAUTION: When conducting pressure test, do not exceed internal pipeline pressure.*

## 2.5 Make the Tap

A. By rotating feed tube clockwise, extend drill until it contacts pipe. See Figure 23. The feed tube should be at the first mark on the body tube (lower-in distance). Rotate slowly during the last inch of travel to prevent damage to the drill tip. After the measurement has been checked, turn feed tube counterclockwise 3/4 of a turn before proceeding to the next step.

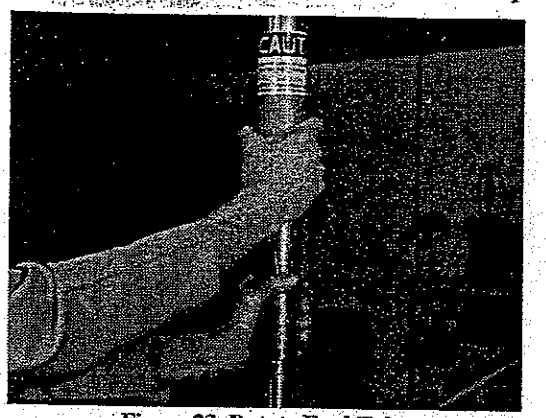


**Figure 23. Rotate Feed Tube**

B. Attach ratchet handle to 3/4" hex drive. While a ratchet handle is furnished, best results will be obtained if handle is rotated a full 360 degrees while cutting. Turn clockwise only. See Figure 24. If air motor is used, review paragraph 6.2, Section I "Air Motor" for important instructions. The rate of advance for the drill is determined by the advance of the feed tube. Eight revolutions of the feed tube will lower the drill one inch.

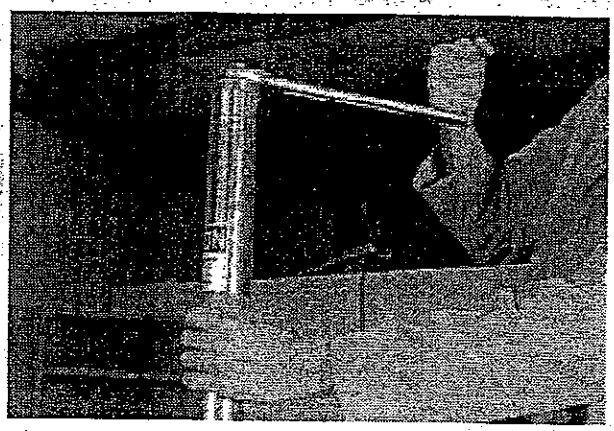


**Figure 24. Attach and Turn Ratchet**

C. As the drill is turned by rotating the ratchet handle, turn the feed tube clockwise to continue lowering the drill.

D. As the drill penetrates the pipe wall, allow line fluid to completely fill valve and fitting to purge all air. See Figure 25. Close bleeder valve after air is purged.

**WARNING: Vent pressure bleed valve away from work area and personnel. Stand clear of bleeder valve. Personal injury may result from blowing debris.**

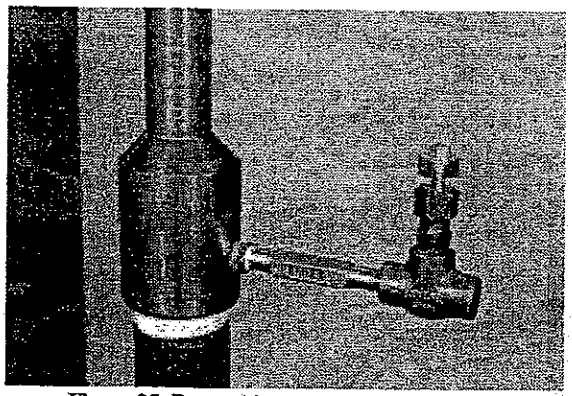


**Figure 25. Purge Air through Bleeder Valve**

**NOTE:** If machine stalls during tap, turn feed tube counterclockwise until drill is free. Resume tapping (with slower feed) to clean burr from hole by turning ratchet handle and reducing the rate of turning the feed tube.

E. When second mark (total travel distance) is reached on body tube, tap should be complete. At this point, the feed tube should turn with little effort. The "feel" and rate of feed confirm the tap to be complete. Rotate feed tube one

complete revolution clockwise. Feed tube should turn freely.

**WARNING: Do not tap through the bottom of the pipe.**

F. By rotating feed tube counterclockwise, retract drill until feed tube is at zero mark on the body tube. If line is under high pressure, it may be necessary to install the locking cap and retract the boring bar by using the ratchet handle. Refer to paragraph 6.0 (A), Section I.

### 2.6 Recover Equipment

A. Close tapping valve.

B. Stand clear of bleeder valve. Bleed off pressure trapped in valve adapter by opening bleeder valve on drilling machine. See Figure 25.

**WARNING: Vent pressure bleed valve away from work area and personnel. Stand clear of bleeder valve. Personal injury may result from blowing debris.**

C. Remove bleeder valve.

D. Remove machine from tapping valve.

*CAUTION: High-temperature taps: after each tap above 350°F, or taps in corrosive fluids, replacement of packing is recommended. (For procedure to replace packing, see Section IV.) Equipment damage might otherwise result.*

## 3.0 Tapping with A Hole Saw

The use of hole saws is recommended for only size-on-size taps, i.e., 2" tap on 2" line, etc. If used on other than size-on-size, a flat-plate cutting condition will be encountered as pipe diameter and wall thickness increase, make completion of the tap and retention of coupon difficult. Therefore, a drill is recommended for other than size-on-size.

Consult Parts List, Section IV, for part numbers of hole saws and holder pilots.

### 3.1 Select Equipment

A. Select proper tapping valve using dimensions in Table 4, attach to tapping fitting, and open to full-open position.

**NOTE:** The tapping valve must allow the hole saw to pass through the bore unobstructed without damage to the hole saw or valve. The bore should be unobstructed by seat ring lugs, etc. The bore of the valve must be round and the minimum inside diameter must correspond to through-bore minimum inside diameter dimension in Table 4, Section I.

B. Select proper holder pilot, hole saw, and valve adapter from Parts List, Section IV. Be sure that U-wire in holder pilot works freely and moves from side to side by its own weight. See Figure 26.

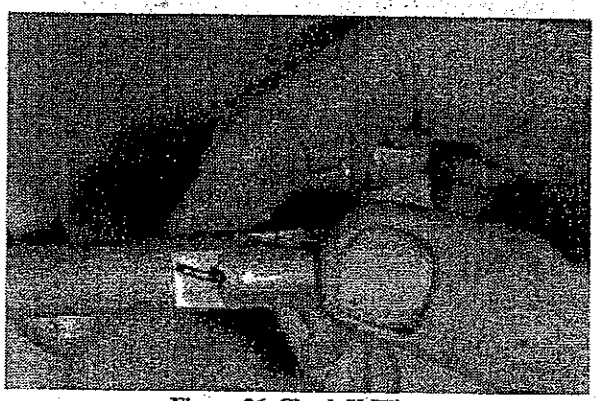


**Figure 26. Check U-Wire**

### 3.2 Assemble Equipment

A. Install adapter. Use sealing tape or thread sealing compound on threads of the valve adapter. See Figure 27.

*CAUTION: Use only TDW valve adapters to assure correct alignment of equipment. Misalignment can result in equipment damage.*

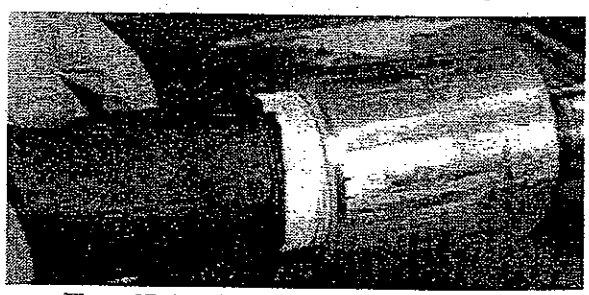


**Figure 27. Attach Adapter to Drilling Machine**

B. Attach hole saw to holder pilot. See Figures 28 and 29.

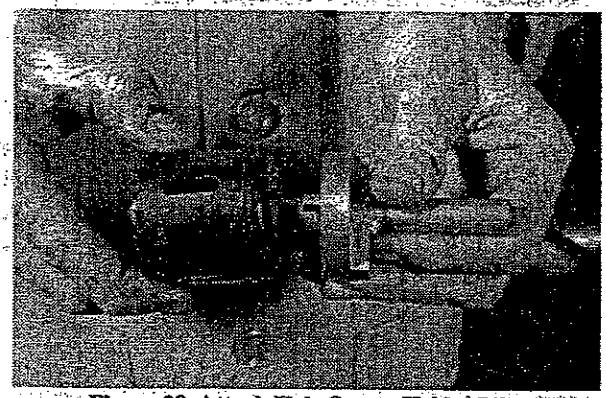


Figure 28. Attach Hole Saw to Holder Pilot

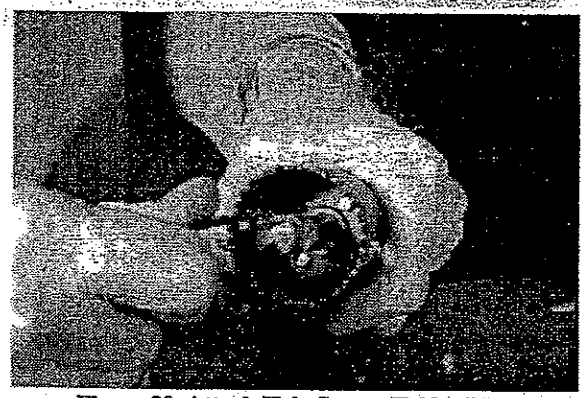


Figure 29. Attach Hole Saw to Holder Pilot

C. While holding body tube, rotate feed tube clockwise to extend boring bar until retainer spring can be removed. Remove retainer spring. See Figure 30.

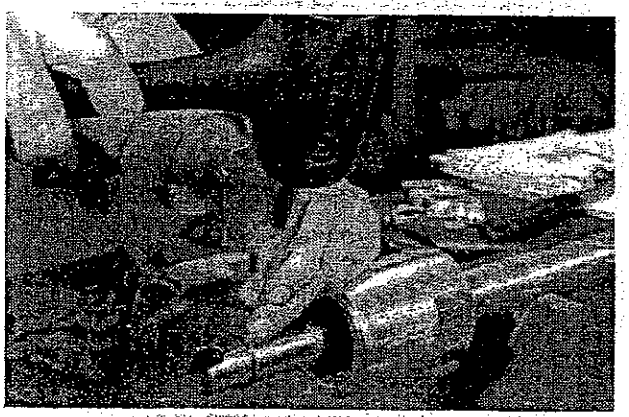


Figure 30. Remove Retainer Spring

D. Insert holder pilot into boring bar and attach retainer spring. See Figure 31. **Do not use grease in hole saws. Grease in hole saw can collect chips and deposit them in internal threads during retraction.**

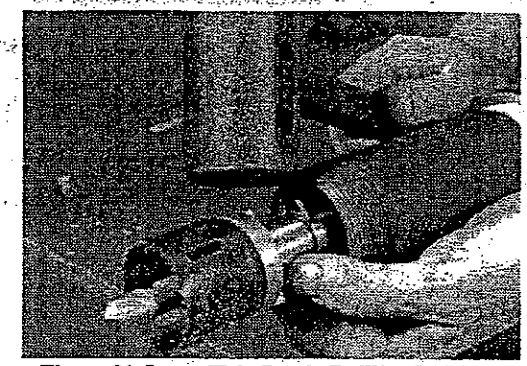


Figure 31. Insert Hole Saw in Drilling Machine

E. While holding body tube, rotate feed tube counterclockwise until feed tube is at zero mark on body tube.

## 3.3 Compute Travel Distance

A. Travel distance is that distance the hole saw must travel to complete the tap and is measured from the zero mark on the body tube to the point at which the saw has cut completely through the pipe and has retained the coupon. It has two components: lower-in distance and cutting distance.

WARNING: **Improper measurements can result in tapping through the bottom of the pipe.**

B. Calculate lower-in distance for pilot drill tip to contact pipe. (Boring bar fully retracted and feed tube at zero mark on body tube.) Refer to Figures 32 or 33.

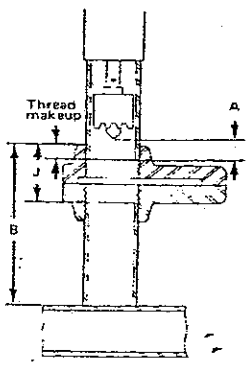



Figure 32. Threaded Valve Adapter

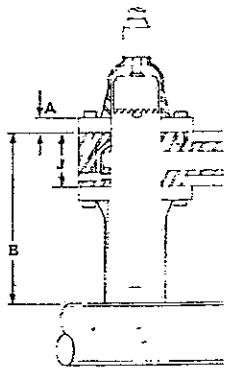



Figure 33. Flanged Valve Adapter

C. Measure and record distance "A", tip of holder pilot drill to valve-adapter face. If threaded

adapter is used, subtract thread makeup between adapter and tapping valve. Thread makeup is not constant. It must be measured each time.

D. Measure and record distance "B", valve face to top of pipe to be tapped.

E. The sum of these two measurements should be the body tube reading when the pilot drill contacts the pipe. Mark this measurement on the body tube.

F. Measure and record distance "J", top of valve face to top of fitting. Retain this figure for later use when setting completion plug.

G. Example:

Assume we are using a threaded valve adapter.

1. If distance "A" measures 2 inches after thread makeup is subtracted, and
2. Distance "B" is 12 inches, then
3. The total lower-in distance would be 14 inches.

H. Determine cutting distance.

I. For size-on-size taps (2" tap on 2" pipe, or 4" on 4" pipe), cutting distance for standard weight pipe is shown in Table 7.

**Table 7**
**Cutting Distances for Std. Wt. Pipe**

| Size | Cutting Distance |
|---|---|
| 1-1/4" | 1-1/4" |
| 1-1/2" | 1-1/2" |
| 2" | 1-3/4" |
| 3" | 2-3/16" |
| 4" | 2-3/8" |
| 6" | 3-9/16" |

**NOTE:** If a size-on-size tap is being made on heavy wall pipe, make sure that the ID of the pipe is larger than the OD of the cutter in order to complete a successful tap and retain the coupon. See Figure 34.

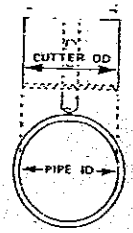



**Figure 34. Check Pipe ID**

J. Travel distance (distance required to complete the tap) equals lower-in distance, total of measurements "A" and "B" plus cutting distance, from Table 7. Add these figures and mark on body tube.

*CAUTION: If the total of these figures exceeds 18 inches, (maximum boring bar travel for the T-101b), or 28" for the T-101b/XL (maximum for the T-101b/XL), the tap cannot be completed with this machine.*

## 3.4 Install Equipment

*CAUTION: When using flanged adapter, make sure bore of tapping valve and bore of fitting are in alignment.*

A. Attach machine to tapping valve. See Figure 35. Operate valve to make sure it opens and closes without interference from tip of pilot drill. Be sure valve is in full-open position before continuing to next step.

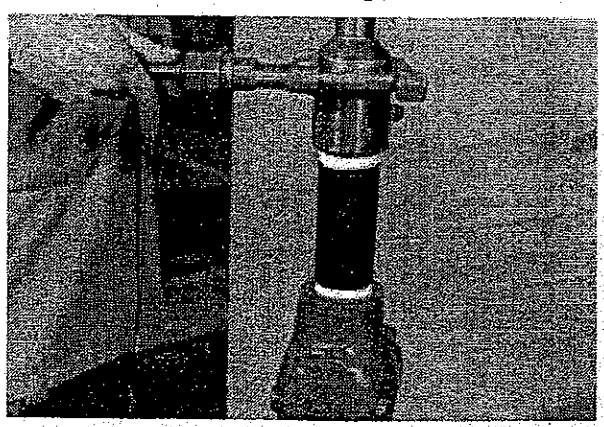


**Figure 35. Install Drilling Machine**

B. Remove pipe plug from bleeder valve connection and install bleeder valve and nipple. Open bleeder valve. See Figure 36.

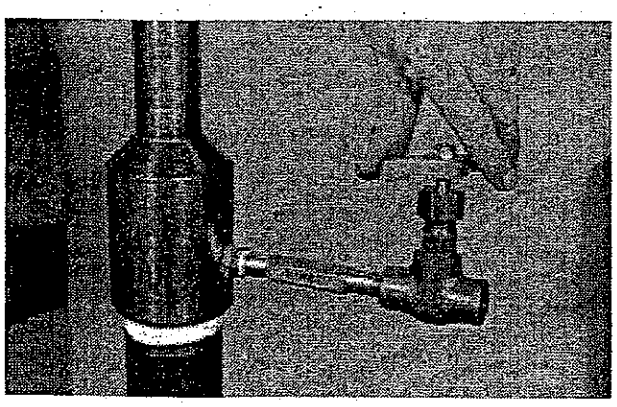


Figure 36. Install and open Bleeder Valve

**WARNING: Make sure bleeder valve is in open position. If not, open it.**

C. Test setup for pressure tightness by pressuring through bleeder valve on drilling machine.

*CAUTION: When conducting pressure test, do not exceed internal pipeline pressure.*

## 3.5 Make Tap

A. By rotating feed tube clockwise, extend pilot drill until it contacts pipe. The feed tube should be at the first mark on the body tube (lower-in distance). Rotate slowly during last inch of travel to prevent damage to the tip of the pilot drill. After measurement has been checked, turn feed tube counterclockwise three-quarters of a turn before proceeding to the next step.

B. Attach ratchet handle to 3/4" hex drive. See Figure 37. While a ratchet handle is furnished, best results will be obtained if handle is rotated 360 degrees while cutting. Turn clockwise only. If air motor is used, review Paragraph 6.2, Section I, "Air Motor Operation," for important instructions. The rate of advance for the hole saw is determined by the advance of the feed tube. Do not overfeed to prevent damage to the pilot drill or hole saw. Eight revolutions of the feed tube will lower the hole saw one inch.

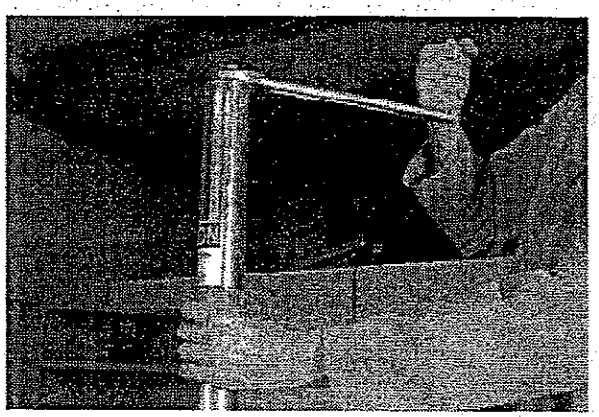


Figure 37. Attach and Turn Ratchet

C. As the pilot drill penetrates the pipe wall, allow line fluid to completely fill valve and fitting to purge all air. See Figure 38. Close bleeder valve.

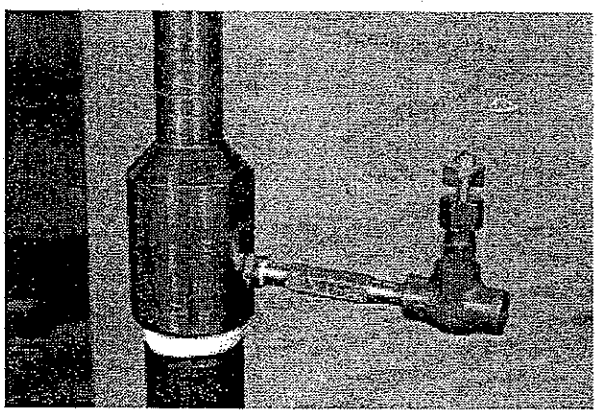


Figure 38. Purge Air through Bleeder Valve

**WARNING: Stand clear of bleeder valve. Personal injury might result from blowing debris.**

**NOTE:** As the tap nears completion, the cutting noise may become louder and more irregular. This is caused by the coupon changing shape or relieving stress. If the pipe is highly stressed at the tapping location, the hole saw may become locked by the loosened coupon spreading out. In this case retract hole saw by turning feed tube one revolution counterclockwise. Resume tap (with a slower feed) to clear burr from hole.

D. When the second mark (total travel distance) is reached on body tube, tap should be complete. At this point, the feed tube should turn with

little effort. The "feel" and rate of feed confirm the tap to be complete.

*CAUTION: When tapping size on size, do not travel more than 1-7/16" after pilot drill touches pipe for 1-1/4" taps; 1-5/8" for 1-1/2" taps; 1-7/8" for 2" taps; or 2-1/2" for 3" and 4" taps. If these distances are exceeded, the hole saw or pilot drill will damage or penetrate the lower half of the pipe.*

### 3.6 Recover Equipment

A. By rotating feed tube counterclockwise, retract hole saw until feed tube is at the zero mark on the body tube or until it comes to a firm stop. If line is under high pressure, it may be necessary to install the locking cap and retract the hole saw by using the ratchet handle. Refer to paragraph 6.0 (A), Section I.

B. Close tapping valve.

C. Bleed off pressure trapped in valve adapter by opening bleeder valve on drilling machine. Stand clear of bleeder valve.

D. Remove bleeder valve.

E. Remove machine from tapping valve.

*CAUTION: High-temperature taps: after each high-temperature tap above 350°F, or taps in corrosive fluids, replacement of packing is recommended. (For procedure to replace packing, see Section IV.) Equipment damage might otherwise result.*

F. Remove coupon (Figure 39). To enable coupon to slide off pilot drill, coupon must be pushed up to allow U-wire to rotate to position 2, as shown in Figure 40. Slide coupon over pilot drill.

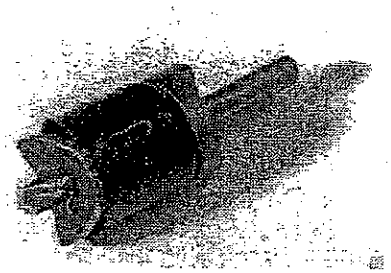


**Figure 39. Coupon Attached to Holder Pilot**

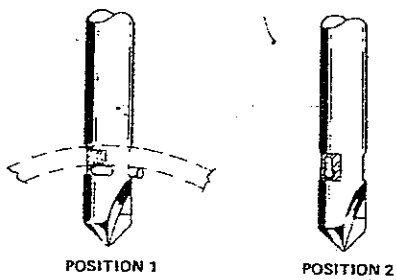



**Figure 40. Coupon Removal**

# Section III: Completion Plug Operations

## 1.0 General Information

When work is completed on the line, a completion plug can be installed in the fitting, permitting removal of the tapping valve. A cap or blind flange is placed on the fitting to complete the job.

At a future date, a valve can again be placed on the fitting and the line reentered by removal of the completion plug.

This section addresses setting and removal of the THREAD-O-RING and SHORTSTOPP 275 Completion Plugs.

## 2.0 Install 2" THREAD-O-RING Plug

### 2.1 Preparations

A. While holding body tube, rotate feed tube clockwise to extend boring bar until retainer spring can be removed. Remove retainer spring. See Figure 41.

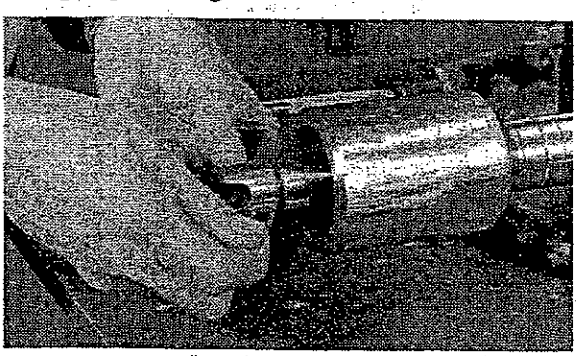


**Figure 41. Remove Retainer Spring**

B. Attach proper TDW valve adapter (from Parts List, Section IV) on drilling machine. Use sealing tape or thread sealing compound on all threaded connections. See Figure 42.

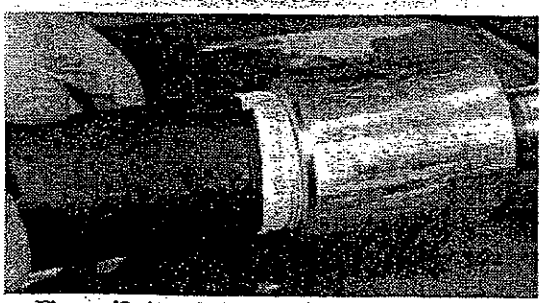


**Figure 42. Attach Adapter to Drilling Machine**

*CAUTION: Use only TDW valve adapters to assure correct alignment of equipment. Misalignment can result in equipment damage.*

C. Insert plug holder into boring bar and attach retainer spring. See Figure 43.

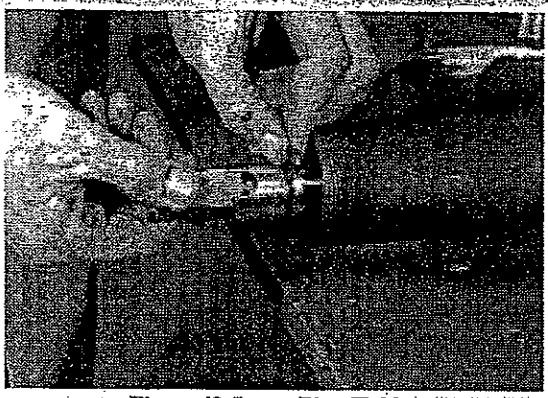


**Figure 43. Insert Plug Holder**

D. Attach plug to plug holder. See Figure 44. Retainer balls in holder should snap into groove in plug. Do not let plug holder bottom-out in plug. There should be about 1/4" between top of plug and plug holder shoulder as shown in Figure 45. This allows for slight movement of holder inside of plug, as the plug is rotated to align with fitting threads.

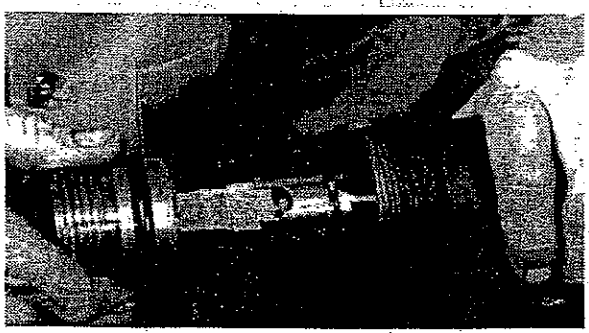


**Figure 44. Attach Plug to Holder**

E. Lubricate O-ring on plug with an all-purpose lubricant. See Figure 46. Check O-ring to make sure it is not twisted and is not damaged. Replace if necessary.

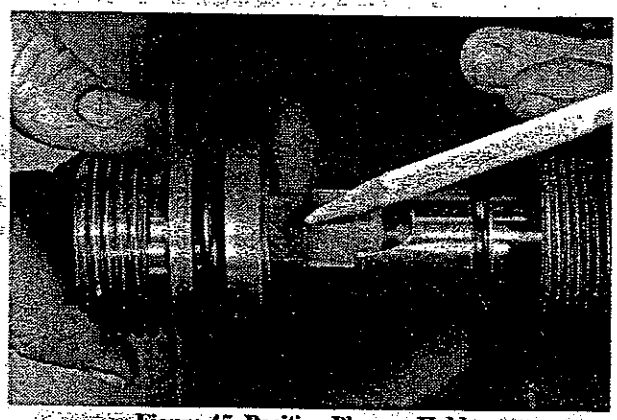


Figure 45. Position Plug on Holder

**WARNING: Replace damaged O-rings. A damaged O-ring can create a hazardous environment from leaking fluids and result in personal injury and/or property damage.**

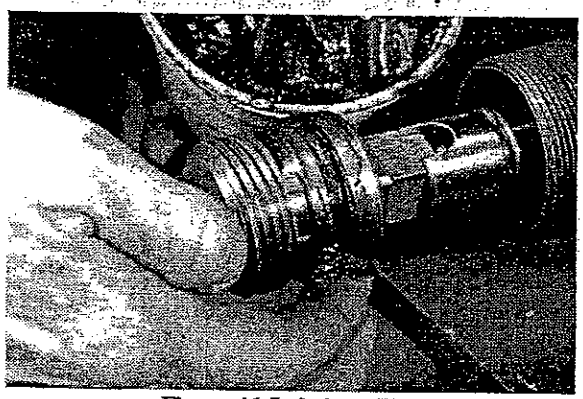


Figure 46. Lubricate Plug

F. While holding body tube, rotate feed tube counterclockwise until feed tube is at zero.

## 2.2 Calculate Travel Distance

Determine distance completion plug travels to be completely set in tapping fitting. With boring bar fully retracted and feed tube at zero mark on body tube, take the following measurements. Refer to Figure 47 or 48.

A. Measure and record distance "G", adapter face to bottom of plug. If threaded adapter is used, subtract thread makeup between adapter and tapping valve from measurement "G". Thread makeup is not constant and must be measured each time. If a flanged adapter is used, include thickness of gasket between adapter and tapping valve.

B. Add distance "J", valve face to top of tapping fitting. This distance was measured and recorded before the tap was made. See paragraph 2.3F or 3.3F, Section II, as appropriate.

C. Add the constant distance "K" (top of tapping fitting to point where plug is completely set in fitting). "K" is a constant at 1-7/8" for 2" THREAD-O-RING Plugs.

D. The sum of these three measurements should be the body tube reading when the plug is completely set. Mark this measurement on the body tube.

E. Example: Assume we are setting a 2" THREAD-O-RING Plug using a threaded adapter. We measured distance "G" to be 2-5/8" after thread makeup was subtracted. Previously we recorded distance "J" to be 4 1/2".

| | | |
|---|---|---|
| Measurement | G | 2-5/8" |
| Measure | J | 4-1/2" |
| Measurement | K | 1-7/8" |
| TOTAL | | 9" |

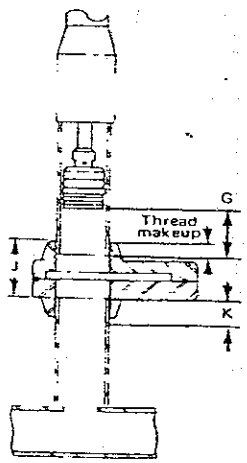



Figure 47. Threaded Valve Adapter

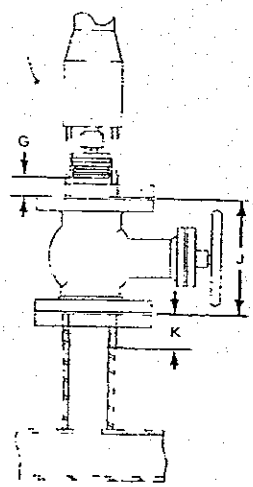



Figure 48. Flanged Valve Adapter

## 2.3 Assemble Equipment

A. Attach drilling machine to tapping valve.

B. Install bleeder valve and open. See Figure 49.

C. Open tapping valve slightly to purge air through bleeder valve on drilling machine. When air is completely purged, close bleeder valve. Open tapping valve to full-open position.

**WARNING: Stand clear of bleeder valve.**

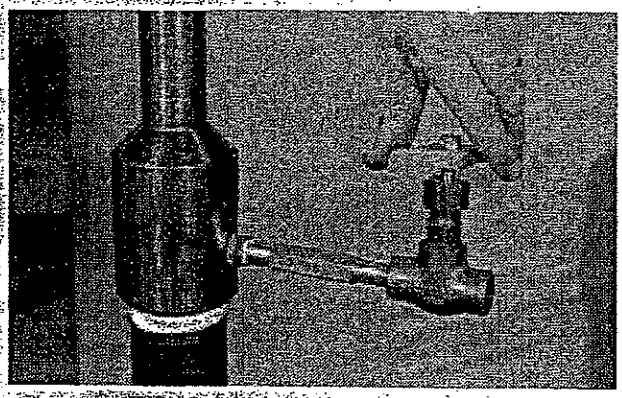


Figure 49. Install and Open Bleeder Valve

## 2.4 Set Completion Plug

A. Hold hex drive and rotate feed tube clockwise until feed tube is 2" from mark on body tube. Stop rotation.

B. Install locking cap. See Figure 50. This locks the feed tube and boring bar together permitting extension and rotation of the boring bar at the same time.

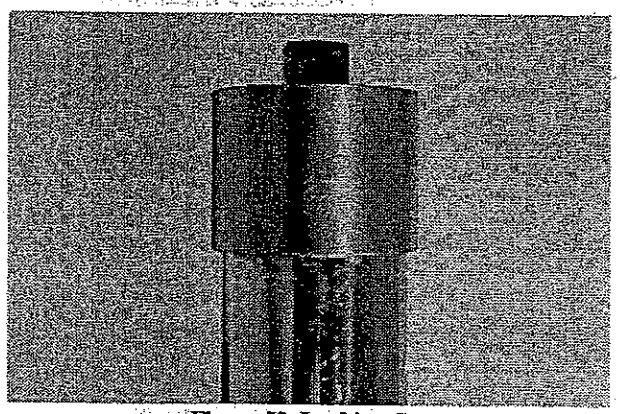


Figure 50. Locking Cap

C. Attach ratchet handle to 3/4" hex drive. Do not use air motor for completion plug setting operations.

D. Rotate ratchet handle clockwise until mark is reached on body tube and plug is tight inside fitting. Do not over-tighten to prevent damage to O-ring and threads.

E. If measurements correspond, check seal on plug by opening bleeder valve on drilling machine for several minutes. Leave bleeder valve open after pressure is completely relieved. Should leakage occur, it indicates the following possibilities.

1. Plug is not completely set. To correct, remove plug from fitting and reinstall. See removal instructions.

2. O-ring on the plug is damaged. To correct, remove plug and replace O-ring. See removal instructions.

**WARNING: If measurements taken in paragraph 2.2 cannot be attained, do not assume plug is set. DO NOT REMOVE VALVE. THREAD-O-RING Plug is not completely set. Follow removal instructions, check all work including measurements, and reset.**

## 2.5 Recover Equipment

A. Remove ratchet handle. Remove cap. Replace handle. See Figure 50. Turn feed tube counterclockwise to zero mark on body tube. Do not permit boring bar to rotate. Otherwise, the plug will unscrew from fitting.

**WARNING: Do not turn ratchet handle counterclockwise with locking cap on machine. This will unthread completion plug.**

B. Remove bleeder valve.

C. Remove drilling machine.

D. Remove tapping valve.

E. Apply a light coat of grease to the THREAD-O-RING Plug top, but not on fitting threads.

F. Apply sealant to threads and install THREAD-O-RING Cap on fitting.

# 3.0 Remove 2" THREAD-O-RING Plug

## 3.1 Preparations

A slight seepage over a period of time may trap line pressure between THREAD-O-RING Cap and THREAD-O-RING Plug.

Check for leaks around the THREAD-O-RING Cap. Remove cap slowly and allow any trapped pressure to bleed off before completely removing cap.

**WARNING: If trapped pressure does not bleed off, the THREAD-O-RING Plug cannot be safely removed with line under pressure. Personal injury could result.**

**Tighten THREAD-O-RING Cap and abandon fitting.**

## 3.2 Install Equipment

A. Select proper tapping valve by using dimensions in Table 4, Section I. Attach to tapping fitting and open to full-open position.

**NOTE:** Select a tapping valve which will allow the completion plug to pass through the bore. The bore should be unobstructed by seat-ring lugs, etc. The bore of the valve must be round and the minimum inside diameter must correspond to through-bore minimum inside diameter dimension in Table 5, Section I.

B. Attach proper TDW valve adapter (see Parts List, Section IV) to drilling machine. Use Teflon tape or thread sealing compound on all threaded connections to assure a pressure-tight seal. See Figure 42.

*CAUTION: Use only TDW valve adapters to assure correct alignment of equipment. Misalignment can result in equipment damage.*

C. While holding body tube, rotate feed tube clockwise to extend boring bar until retainer spring can be removed. Remove retainer spring.

D. Insert plug holder into boring bar and attach retainer spring. See Figure 43.

E. While holding body tube, rotate feed tube counterclockwise until feed tube is at zero mark on body tube.

## 3.3 Calculate Travel Distance

A. With boring bar fully retracted and feed tube at zero mark on body tube, calculate distance plug holder travels to contact bottom of recess in plug. See Figures 51 and 52.

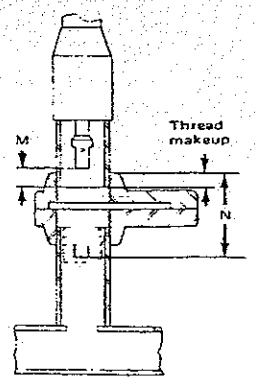



**Figure 51. Threaded Valve Adapter Calculate Distance**

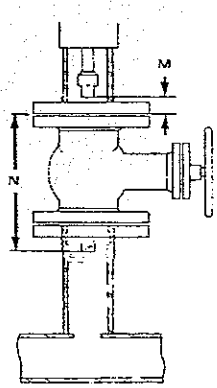



**Figure 52. Flanged Valve Adapter Calculate Distance**

B. Measure and record distance "M", bottom of plug holder to adapter face. If threaded adapter is used, subtract thread makeup between adapter and tapping valve. This is not a constant and must be measured each time. If a flanged adapter is used, include thickness of gasket between adapter and tapping valve.

C. Measure and add distance "N", valve face to bottom of recess in plug.

D. The sum of these distances should be the reading on the body tube when the plug holder contacts bottom of recess in plug. Mark this measurement on body tube.

E. Example: Assume we are removing a 2" THREAD-O-RING Plug using a threaded adapter. We measure distance "M" to be 3" after thread makeup is subtracted, and distance "N" to be 10".

| | |
|---|---|
| Distance M | 3" |
| Distance N | 10" |
| TOTAL | 13" |

The feed tube should be at number 13" on the body tube when bottom of plug holder contacts bottom of recess in plug.

## 3.4 Removal of 2" THREAD-O-RING Plug

A. Attach drilling machine to tapping valve. Open tapping valve to full open position.

B. Install bleeder valve in open position. See Figure 49.

C. With cap removed, rotate feed tube clockwise to extend boring bar until plug holder contacts bottom of hole in plug. The feed tube should be at mark on body tube. If the feed tube is 1" above the mark on body tube, the plug holder did not align with square hole in plug. If it did not line up, use the following procedure.

D. To line up square plug holder with square hole in plug, rotate ratchet handle and feed tube clockwise slowly, but do not force. When properly aligned, extend plug holder by rotating feed tube clockwise until stop is reached (approximately 1" travel). The mark on the body tube should be reached.

E. Rotate the feed tube one-half revolution counterclockwise to align balls on plug holder in plug-retention groove.

F. Install locking cap. See Figure 50.

G. Attach ratchet handle to 3/4" hex drive.

H. Rotate ratchet handle counterclockwise until pressure starts to flow past plug. Purge air through bleeder valve. After air is completely purged, close bleeder valve and continue retracting the plug to zero mark on body tube.

**WARNING: Stand clear of bleeder valve.**

### 3.5 Recover Equipment

A. Close tapping valve.

B. Bleed off pressure trapped in adapter by opening bleeder valve.

C. Remove bleeder valve.

D. Remove drilling machine from tapping valve.

## 4.0 Install 2" or 3" SHORTSTOPP Square Drive Completion Plug

The T-101b Drilling Machine can be used to set a 2" or 3" solid-steel threaded completion plug with the use of a special plug holder, part number 08-2120-0000.

**NOTE:** The SHORTSTOPP 60 pressed-steel SHORTPLUG™ Completion Plugs cannot be set or removed with this plug holder.

This plug holder along with the 2" SHORTSTOPP 275 Completion Plug is shown in Figure 53. It has a spring-loaded movement and can be compressed 3/8". This is to compensate for the difference in thread pitch between the drilling machine and the completion plugs. The drilling machine has eight threads per inch and the completion plugs have 12 threads per inch of feed.

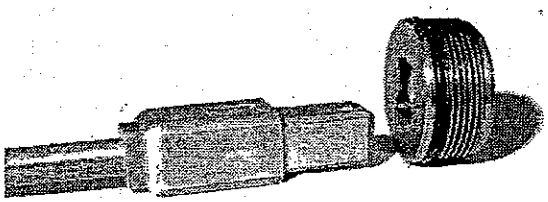


**Figure 53. Plug Holder and SHORTSTOPP 275 Completion Plug**

### 4.1 Preparations

A. While holding the body tube, rotate feed tube clockwise to extend boring bar until retainer spring can be removed. Remove retainer spring. See Figure 54.

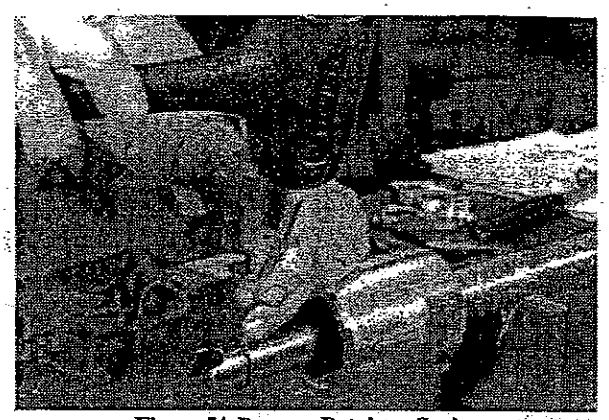


**Figure 54. Remove Retainer Spring**

B. Attach proper TDW valve adapter on drilling machine (see Parts List, Section IV). Use sealing tape or thread-sealing compound on all threaded connections to assure pressure-tight seal. See Figure 55.

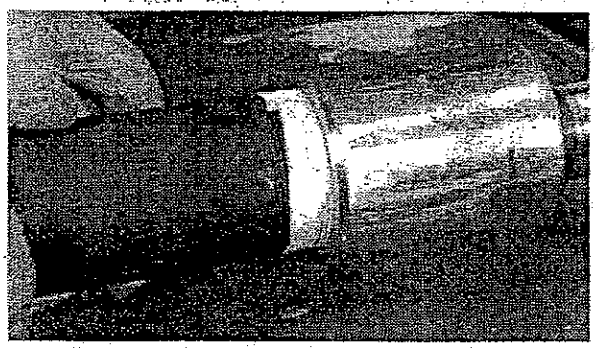


**Figure 55. Attach Adapter to Drilling Machine**

*CAUTION: Use only TDW valve adapters to assure correct alignment of equipment. Misalignment can result in equipment damage.*

C. Insert plug holder into boring bar and attach retainer spring. See Figure 56. Make sure plug holder compresses and expands freely.

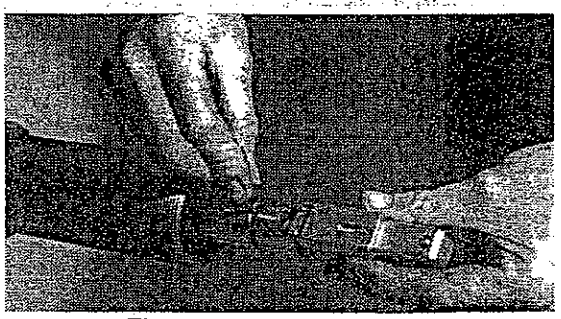


**Figure 56. Insert Plug Holder**

D. Attach plug to plug holder. See Figure 57. Retainer balls in holder must snap into groove in plug. Do not let plug holder bottom-out in plug.

Figure 57. Attach Plug to Holder

E. Figure 58 shows alignment of plug on plugholder.

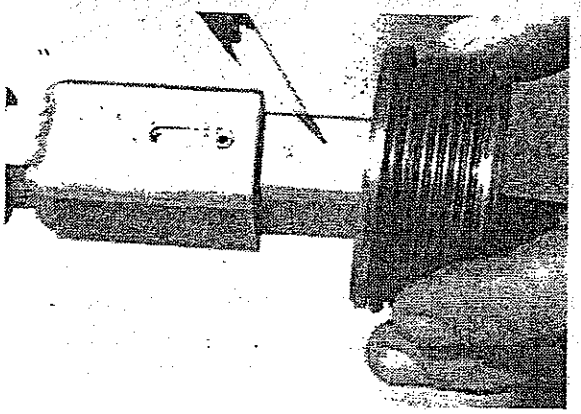


Figure 58. Position Plug

F. Lubricate O-ring on plug with an all-purpose lubricant. See Figure 59. Check O-ring to make sure it is not twisted and is not damaged. Replace if necessary.

G. While holding body tube, rotate feed tube counterclockwise until feed tube is at zero mark on body tube.

**WARNING: Replace damaged O-rings. A damaged O-ring can create a hazardous environment from leaking fluids and result in personal injury and/or property damage.**

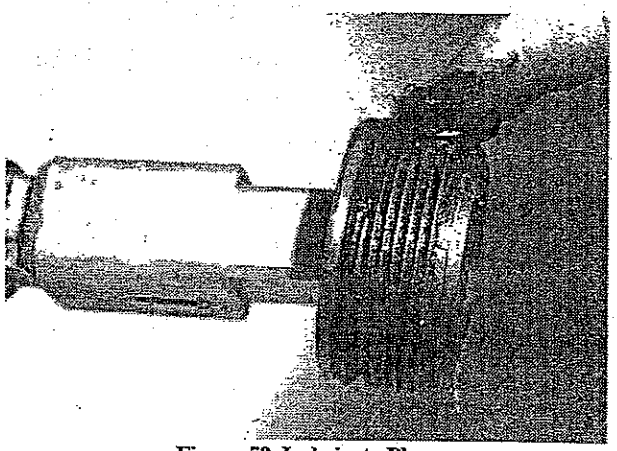


Figure 59. Lubricate Plug

## 4.2 Calculate Travel Distance

Determine distance completion plug travels to be completely set in tapping fitting. With boring bar fully retracted and feed tube at zero mark on body tube, take following measurements. Refer to Figure 60 or 61.

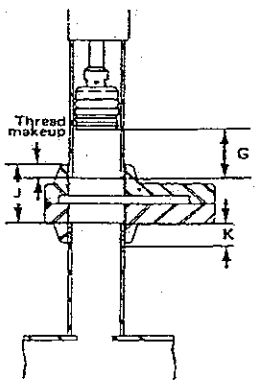



Figure 60. Threaded Valve Adapter Calculate Distance

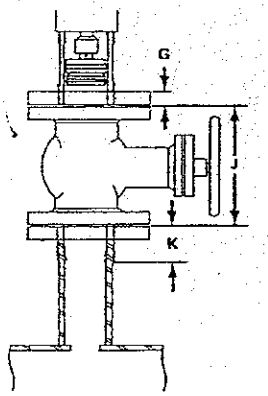



Figure 61. Flanged Valve Adapter Calculate Distance

A. Measure and record distance "G", adapter face to bottom of plug. If threaded adapter is used, subtract thread makeup between adapter and tapping valve. Thread markup is not constant and must be measured each time. If a flanged adapter is used, include thickness of gasket between adapter and tapping valve.

B. Add distance "J", valve face to top of tapping fitting. This distance was measured and recorded before the tap was made. See paragraph 2.3 or 3.3, Section II, as appropriate.

C. Add distance "K", top of tapping fitting to point where plug is completely set in fitting. "K" is a constant at 7/8" for SHORTSTOPP 275 Completion Plugs.

D. Add plug holder spring travel of 3/8".

E. The sum of these four measurements should be the body tube reading when the plug is completely set. Mark this measurement on the body tube.

F. Example: Assume we are setting a 2" solid steel SHORTPLUG Completion Plug using a threaded adapter. We measure distance "G" to be 2-5/8" (thread makeup subtracted). Previously we recorded distance "J" to be 4-1/2".

| | |
|---|---|
| Distance G | 2-5/8" |
| Distance J | 4-1/2" |
| Distance K | 7/8" |
| Spring Travel | 3/8" |
| TOTAL | 8-3/8" |

## 4.3 Install Equipment

A. Attach drilling machine to tapping valve.

B. Install bleeder valve and open. See Figure 62.

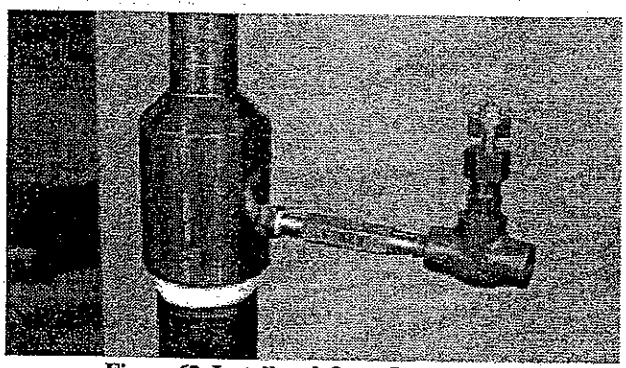


**Figure 62. Install and Open Bleeder Valve**

C. Open tapping valve slightly to purge air through bleeder valve on drilling machine. When air is completely purged, close bleeder valve. Open tapping valve to full-open position.

**WARNING: Stand clear of bleeder valve. Personal injury might result from blowing debris.**

## 4.4 Set Completion Plug

A. Hold hex drive and rotate feed tube clockwise until feed tube is 2" from mark on body tube. Stop rotation.

B. Install locking cap. See Figure 63.

C. Attach ratchet handle to 3/4" hex drive. Do not use air motor drive.

D. Turn ratchet handle clockwise until mark is reached on body tube and plug is tight inside fitting. Do not over-tighten to prevent damage to O-ring and threads. Turn ratchet handle slowly so that plug is threaded into fitting slowly.

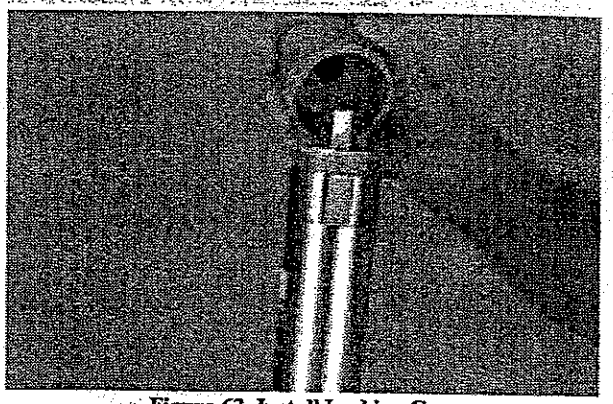


**Figure 63. Install Locking Cap**

**NOTE:** Threading the plug into the fitting too fast will sometimes cause the O-ring to move out of its groove because of increasing differential pressure and friction. Threading the plug slowly will keep the O-ring in place.

E. If reading on body tube corresponds with measurements taken, check seal on plug by opening bleeder valve on drilling machine for several minutes. Leave bleeder valve open after pressure is completely relieved. Should leakage occur, it indicates the following possibilities.

1. Plug is not completely set. To correct, remove plug from fitting and reinstall. See removal instructions.

2. O-ring on plug is damaged. To correct, remove plug and replace O-ring. See removal instructions.

**WARNING: If measurements in paragraph 4.2 cannot be attained, do not assume plug is set. DO NOT REMOVE VALVE. Completion plug is not completely set. Follow removal instructions, check work, including measurements, inspect plug, and reset.**

## 4.5 Remove Equipment

A. Remove cap. See Figure 63. Turn feed tube counterclockwise to zero mark on body tube. Do not permit boring bar to rotate. Otherwise, the plug will unscrew from fitting.

**WARNING: Remove locking cap before turning feed tube counterclockwise. To leave on the machine will unthread the completion plug.**

B. Remove bleeder valve.

C. Remove drilling machine.

D. Remove tapping valve.

E. Apply a light coat of grease to the plug.

F. Apply thread sealant to fitting threads and install cap.

## 5.0 Remove SHORTSTOPP Threaded Completion Plug

A slight seepage over a period of time may trap line pressure between cap and completion plug.

Check for leaks around cap. Remove cap slowly and allow any trapped pressure to bleed off before completely removing cap.

**WARNING: If trapped pressure does not bleed off, the completion plug cannot be safely removed with the line under pressure. Personal injury could result. Tighten cap and abandon fitting.**

Clean debris from recess hole in completion plug.

## 5.1 Preparations

A. Select proper tapping valve by using dimensions in Table 4, Section I. Attach to tapping fitting and open to full-open position.

**NOTE:** Select a tapping valve which will allow the completion plug to pass through the bore. The bore should be unobstructed by seat-ring lugs, etc. The bore of the valve must be round. The minimum inside diameter must correspond to through-bore minimum inside diameter dimension in Table 5, Section I.

B. Attach proper TDW valve adapter (from Parts List, Section IV) to drilling machine. Use sealing tape or thread-sealing compound on all threaded connections to assure a pressure-tight seal. See Figure 55.

*CAUTION: Use only TDW Valve adapters to assure correct alignment of equipment. Misalignment can result in equipment damage.*

C. While holding body tube, rotate feed tube clockwise to extend boring bar until retainer spring can be removed. Remove retainer spring.

D. Insert plug holder into boring bar and attach retainer spring. See Figure 56. Make sure plug holder compresses and expands freely.

E. While holding body tube, rotate feed tube counterclockwise until feed tube is at zero mark on body tube.

### 5.2 Calculate Travel Distance

A. With boring bar fully retracted and feed tube at zero mark on body tube, calculate distance plug holder travels to contact bottom of recess in plug. See Figure 64 and 65.

B. Measure and record distance "M", bottom of plug holder to adapter face. If threaded adapter is used, subtract thread makeup between adapter and tapping valve. This is not a constant and must be measured each time. If a flanged adapter is used, include thickness of gasket between adapter and tapping valve.

C. Measure and add distance "N", valve face to bottom of recess in plug.

D. Add spring travel of 3/8".

E. The sum of these distances should be the reading on the body tube when the plug holder contacts the bottom of the recess in plug. Mark this measurement on the body tube.

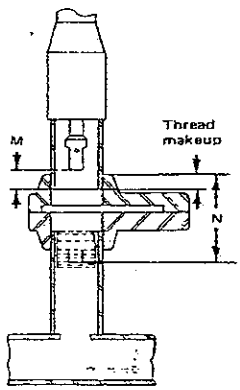



**Figure 64. Threaded Valve Adapter Calculate Distance**

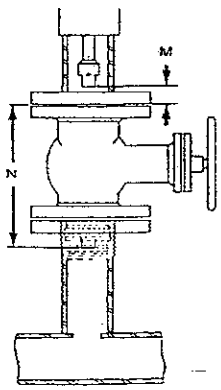



**Figure 65. Flanged Valve Adapter Calculate Distance**

F. Example: Assume we are removing a 2" SHORTSTOPP 275 Completion Plug using a threaded adapter. We measure distance "M" to be 3" after thread makeup is subtracted and distance "N" to be 6".

| | |
|---|---|
| Distance M | 3" |
| Distance N | 6" |
| Spring Travel | 3/8" |
| TOTAL: | 9-3/8" |

The feed tube should be about halfway between the 9" and 10" on the body tube when bottom of plug holder contact bottom of recess in plug.

## 5.3 Removal of SHORTSTOPP Threaded Completion Plugs

A. Attach drilling machine to tapping valve. Open tapping valve to full open position.

B. Install bleeder valve and leave in closed position. See Figure 62.

C. Rotate feed tube clockwise to extend boring bar until plug holder contacts bottom of hole in plug. The feed tube should be at mark on body tube. If the feed tube is 1" above mark on body tube, the plug holder did not align with square hole in plug. If it did not line up, use the following procedure.

D. To line up square plug holder with square hole in plug, rotate ratchet handle clockwise slowly while holding feed tube. When properly aligned, a snap sound may be heard, indicating the plug holder is seated in the plug and there will be resistance to turning. Turn the feed tube until a stop is reached.

E. Rotate the feed tube one-half revolution counterclockwise to align balls in plug holder in plug-retention grooves.

F. Install locking cap. See Figure 63.

G. Attach ratchet handle to 3/4" hex drive.

H. Rotate ratchet handle counterclockwise until pressure starts to flow past plug. Open bleeder valve gradually and purge air through bleeder valve. After air is completely purged, close bleeder valve and continue retracting the plug to zero mark on the body tube.

**WARNING: Stand clear of bleeder valve.**

## 5.4 Recover Equipment Drilling Machine

A. Close tapping valve.

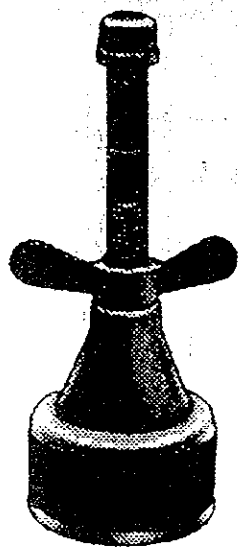
B. Bleed off pressure trapped in adapter by opening bleeder valve.

C. Remove bleeder valve.

D. Remove drilling machine from tapping valve.

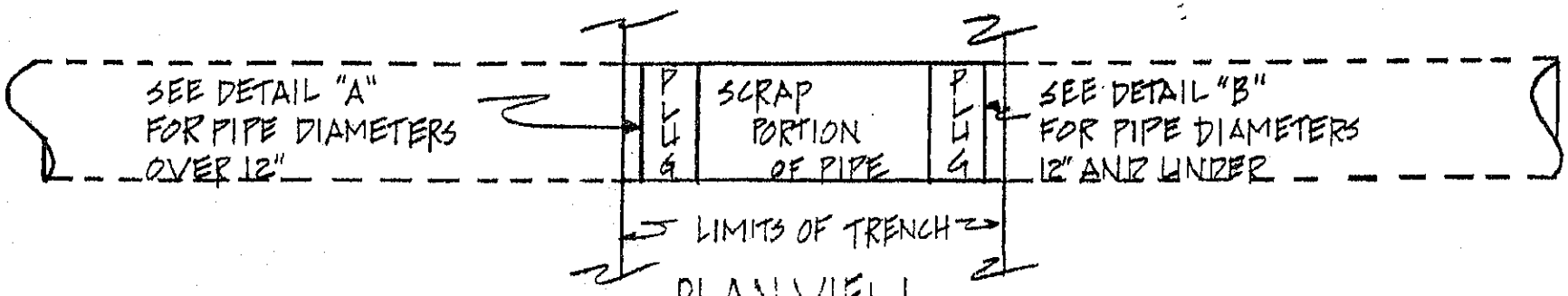
# APPENDIX E

# DETAIL FOR PLUGS AND CONCRETE BULKHEADS

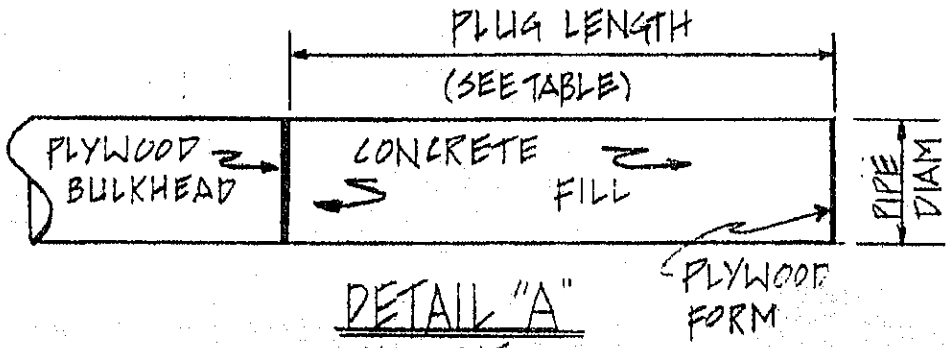


**C Pipe Stem Test Plugs with Bypass**—For use in cast iron, steel, vitrified clay, and concrete pipe. Made of cast iron with a rubber ring. Include a removable bypass cap. Max. temp. is 120° F.

| Pipe Size | *ID Usage Range* Min. | Max. | O'all Ht. | *Maximum Backpressure* Air, psi | Water, ft. of head | Bypass Dia., NPT Male |
|---|---|---|---|---|---|---|
| ½" | 0.46" | 0.71" | 4.25" | 70 | 163 | 1/16" |
| ¾" | 0.71" | 0.94" | 4.75" | 70 | 163 | ⅛" |
| 1" | 0.94" | 1.15" | 4.75" | 70 | 163 | ⅜" |
| 2" | 1.75" | 2.25" | 10" | 30 | 70 | ½" |
| 3" | 2.75" | 3.25" | 10" | 30 | 70 | ½" |
| 4" | 3.62" | 4.50" | 10" | 22 | 52 | ½" |
| 5" | 4.50" | 5.50" | 13" | 22 | 52 | ½" |
| 6" | 5.50" | 6.25" | 13" | 15 | 35 | ½" |
| 8" | 7.50" | 8.25" | 15" | 11 | 25 | ½" |
| 10" | 9.50" | 10.25" | 15" | 8 | 19 | ½" |
| 12" | 11.50" | 12.25" | 15" | 6 | 15 | 1" |
| 14" | 13.62" | 14.25" | 15" | 6 | 15 | 1" |




PLAN VIEW
NO SCALE




DETAIL "A"
NO SCALE

| DIM | PIPE DIAM | PLUG LGTH |
|---|---|---|
| A | 14" | 14" |
| B | 18" | 18" |
| C | 20" | 20" |
| D | 24" | 24" |
| E | 30" | 30" |
| F | 36" | 36" |
| G | 48" | 48" |
| H | 54" | 54" |

DETAIL "B"
NO SCALE

| RAMIREZ & MARSCH, INC. HAMMOND, IN | | |
|---|---|---|
| JOB NO.: | 2-0016 | DRAWING NO: |
| DRAWN BY: | JW | P-1 |
| DATE: | 3-25-02 | |

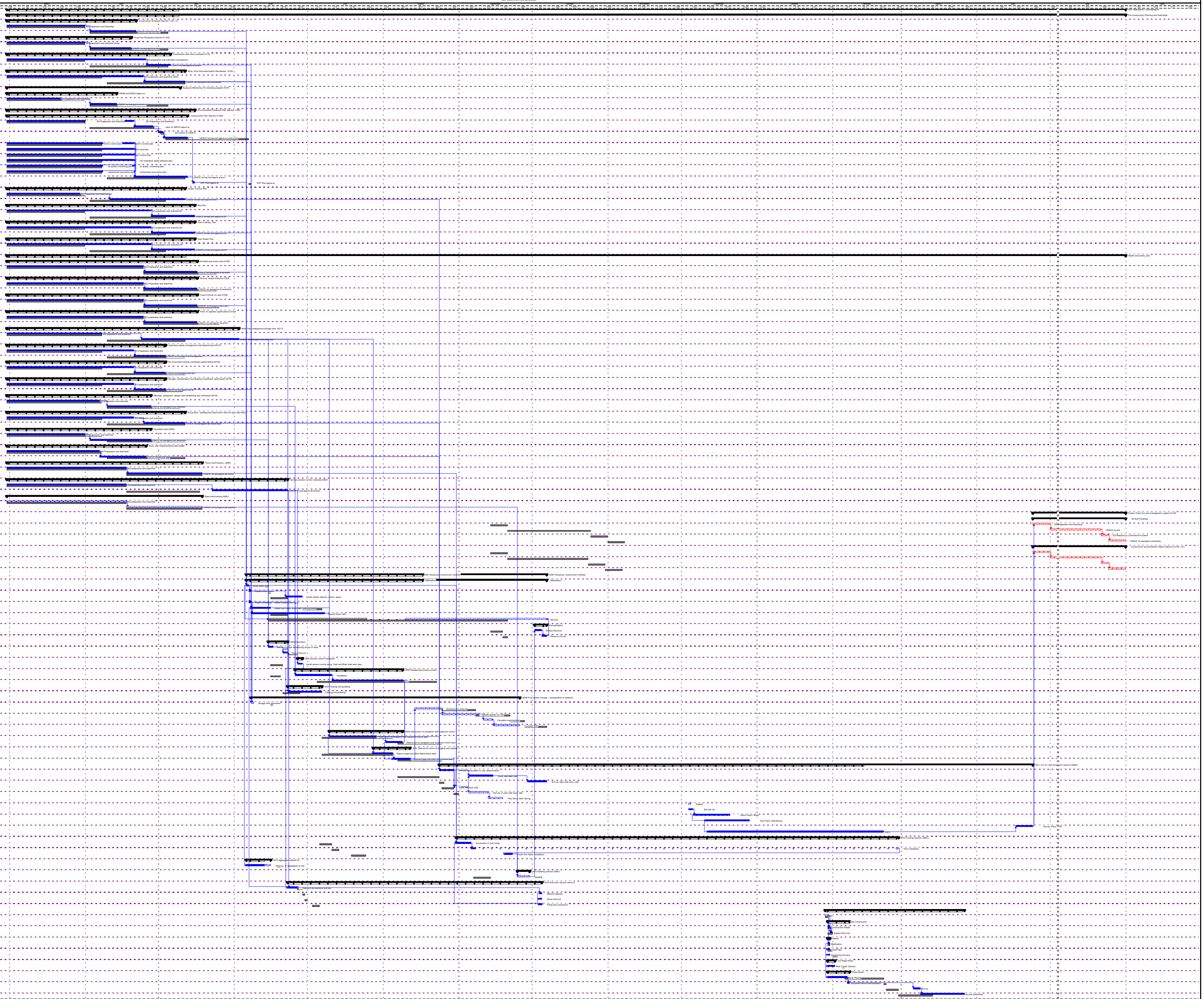
ATTACHMENT "C"

# APPENDIX F

# CONSTRUCTION SCHEDULE

INDIANA HARBOR & CANAL
CONFINED DISPOSAL FACILITY, SLURRY WALL
GAP CONSTRUCTION SCHEDULE

| ID | Task Name | Duration | Start | Finish | Predecessors |
|---|---|---|---|---|---|
| 1 | **0001 Mobilization/ Demobilization** | **323 days?** | **Tue 2/28/06** | **Thu 5/31/07** | |
| 2 | **Pre-Construction Planning and Submittals** | **323 days?** | **Tue 2/28/06** | **Thu 5/31/07** | |
| 3 | **Construction Schedule (Section 1100 1.4)** | **38 days** | **Tue 2/28/06** | **Fri 4/21/06** | |
| 4 | EQ Preparation and Submittal | 24 days | Tue 2/28/06 | Fri 3/31/06 | |
| 5 | USACE review and apvl | 14 days | Mon 4/3/06 | Fri 4/21/06 | 4 |
| 6 | **Drug Free Workplace (Section 01100)** | **36 days?** | **Tue 2/28/06** | **Wed 4/19/06** | |
| 7 | EQ preparation and submittal (drug) | 24 days? | Tue 2/28/06 | Fri 3/31/06 | |
| 8 | USACE review/approval-drug | 12 days? | Mon 4/3/06 | Wed 4/19/06 | 7 |
| 9 | **Coordination with other schedule-01100** | **48 days?** | **Tue 2/28/06** | **Fri 5/5/06** | |
| 10 | EQ preparation and submittal (coordination) | 40 days? | Tue 2/28/06 | Tue 4/25/06 | |
| 11 | USACE review/approval-others | 8 days | Wed 4/26/06 | Fri 5/5/06 | 10 |
| 12 | **Work Zone Decontamination Boundaries -01351** | **52 days?** | **Tue 2/28/06** | **Thu 5/11/06** | |
| 13 | EQ preparation and submittal (work) | 39 days? | Tue 2/28/06 | Mon 4/24/06 | |
| 14 | USACE review/approvals-boundaries | 13 days? | Tue 4/25/06 | Thu 5/11/06 | 13 |
| 15 | **Exposure Monitoring/ Air sampling program-01351** | **50 days?** | **Tue 2/28/06** | **Tue 5/9/06** | |
| 18 | **SSHM and SSHO approval** | **33 days?** | **Tue 2/28/06** | **Thu 4/13/06** | |
| 19 | EQ preparation and submittal | 16 days? | Tue 2/28/06 | Tue 3/21/06 | |
| 20 | USACE review/approval-sshm | 9 days | Mon 4/3/06 | Thu 4/13/06 | 19 |
| 21 | **Environmental Protection Plan (Section 1355)** | **54 days?** | **Tue 2/28/06** | **Mon 5/15/06** | |
| 22 | **Construction Plan (Section 01355)** | **53 days?** | **Tue 2/28/06** | **Fri 5/12/06** | |
| 23 | EQ Preparation and Submittal | 37 days? | Tue 2/28/06 | Thu 4/20/06 | |
| 24 | Lake Co SWCD approval | 6 days | Fri 4/21/06 | Fri 4/28/06 | 23 |
| 25 | EQ submit to USACE | 2 days | Mon 5/1/06 | Tue 5/2/06 | 24 |
| 26 | USACE review and approve-const | 8 days | Wed 5/3/06 | Fri 5/12/06 | 25 |
| 27 | Traffic Control plan | 37 days | Tue 2/28/06 | Thu 4/20/06 | |
| 28 | work area plan | 37 days? | Tue 2/28/06 | Thu 4/20/06 | 27FF |
| 29 | Spill Control Plan | 37 days | Tue 2/28/06 | Thu 4/20/06 | 28FF |
| 30 | non hazardous waste disposal plan | 37 days? | Tue 2/28/06 | Thu 4/20/06 | 28FF |
| 31 | air quality monitoring plan | 37 days? | Tue 2/28/06 | Thu 4/20/06 | 30FF |
| 32 | contaminant prevention plan | 37 days? | Tue 2/28/06 | Thu 4/20/06 | 31FF |
| 33 | USACE review and approval-envt | 16 days | Fri 4/21/06 | Fri 5/12/06 | 32,27,28,30,31 |
| 34 | EPP Plan approval | 1 day? | Mon 5/15/06 | Mon 5/15/06 | 26,33 |
| 35 | **Quality Control Plan** | **52 days?** | **Tue 2/28/06** | **Thu 5/11/06** | |
| 36 | EQ Preparation and Submittal-QC | 22 days? | Tue 2/28/06 | Wed 3/29/06 | |
| 37 | USACE review and approval-QC | 22 days | Tue 4/11/06 | Thu 5/11/06 | 36 |
| 38 | **Site Plan** | **54 days?** | **Tue 2/28/06** | **Mon 5/15/06** | |
| 39 | EQ preparation and submittal SP | 42 days? | Tue 2/28/06 | Thu 4/27/06 | |
| 40 | USACE review and approval-SP | 12 days | Fri 4/28/06 | Mon 5/15/06 | 39 |
| 41 | **Traffic Safety Plan** | **54 days?** | **Tue 2/28/06** | **Mon 5/15/06** | |
| 42 | EQ preparation and submittal QC | 42 days? | Tue 2/28/06 | Thu 4/27/06 | |
| 43 | USACE review and approval-QC | 12 days | Fri 4/28/06 | Mon 5/15/06 | 42 |
| 44 | **Haul Roads Plan** | **54 days?** | **Tue 2/28/06** | **Mon 5/15/06** | |
| 45 | EQ preparation and submittal HR | 42 days? | Tue 2/28/06 | Thu 4/27/06 | |
| 46 | USACE review and approval-HR | 12 days | Fri 4/28/06 | Mon 5/15/06 | 45 |
| 47 | **Health and safety plan** | **323 days?** | **Tue 2/28/06** | **Thu 5/31/07** | |
| 48 | **Accident prevention plan-01525** | **55 days?** | **Tue 2/28/06** | **Tue 5/16/06** | |
| 49 | EQ Preparation and Submittal | 39 days? | Tue 2/28/06 | Mon 4/24/06 | |
| 50 | USACE review/approval-accident | 16 days | Tue 4/25/06 | Tue 5/16/06 | 49 |
| 51 | **Activity hazard analysis-01525** | **55 days?** | **Tue 2/28/06** | **Tue 5/16/06** | |
| 52 | EQ Preparation and Submittal | 39 days? | Tue 2/28/06 | Mon 4/24/06 | |
| 53 | USACE review/approval-hazardous | 16 days | Tue 4/25/06 | Tue 5/16/06 | 52 |
| 54 | **Crane Critical Lift plan-01525** | **55 days** | **Tue 2/28/06** | **Tue 5/16/06** | |
| 55 | EQ preparation and submittal | 39 days | Tue 2/28/06 | Mon 4/24/06 | |
| 56 | USACE review/approvals-crane | 16 days | Tue 4/25/06 | Tue 5/16/06 | 55 |
| 57 | **Proof of operator qualifications-01525** | **55 days** | **Tue 2/28/06** | **Tue 5/16/06** | |
| 58 | EQ preparation and submittal | 39 days | Tue 2/28/06 | Mon 4/24/06 | |
| 59 | USACE review/approvals-proof | 16 days | Tue 4/25/06 | Tue 5/16/06 | 58 |
| 60 | **Work Plan-underground storage tank -02115** | **67 days** | **Tue 2/28/06** | **Fri 6/2/06** | |
| 61 | EQ preparation and submittal | 29 days | Tue 2/28/06 | Fri 4/7/06 | |
| 62 | USACE review/approvals-work plan | 29 days | Mon 4/24/06 | Fri 6/2/06 | 61 |
| 63 | **Hazardous waste management and disposal p** | **46 days?** | **Tue 2/28/06** | **Wed 5/3/06** | |
| 64 | EQ Preparation and Submittal | 37 days? | Tue 2/28/06 | Thu 4/20/06 | |
| 65 | USACE review/approval-management | 9 days | Fri 4/21/06 | Wed 5/3/06 | 64 |
| 66 | **Environmental sample coordinator qualifi** | **46 days?** | **Tue 2/28/06** | **Wed 5/3/06** | |
| 67 | EQ preparation and submittal | 37 days? | Tue 2/28/06 | Thu 4/20/06 | |
| 68 | USACE review/approvals-qua | 9 days | Fri 4/21/06 | Wed 5/3/06 | 67 |
| 69 | **Storage, transportation and disposal coo** | **46 days** | **Tue 2/28/06** | **Wed 5/3/06** | |
| 70 | EQ preparation and submittal | 37 days | Tue 2/28/06 | Thu 4/20/06 | |
| 71 | USACE review/approvals-qu | 9 days | Fri 4/21/06 | Wed 5/3/06 | 70 |
| 72 | **Materials, equipment, design data dewatering** | **42 days?** | **Tue 2/28/06** | **Thu 4/27/06** | |
| 73 | EQ preparation and submittal | 28 days? | Tue 2/28/06 | Thu 4/6/06 | |
| 74 | USACE review/approvals-materials | 13 days | Mon 4/10/06 | Thu 4/27/06 | 73 |
| 75 | **Excavation, handling and obstruction removal** | **52 days?** | **Tue 2/28/06** | **Thu 5/11/06** | |
| 76 | EQ preparation and submittal | 37 days? | Tue 2/28/06 | Thu 4/20/06 | |
| 77 | USACE review/approvals-excavation | 13 days | Tue 4/25/06 | Thu 5/11/06 | 76 |
| 78 | **Demolition plan-02220** | **42 days?** | **Tue 2/28/06** | **Thu 4/27/06** | |
| 79 | EQ preparation and submittal | 24 days? | Tue 2/28/06 | Fri 3/31/06 | |
| 80 | USACE review/approvals-demolition | 18 days? | Mon 4/3/06 | Thu 4/27/06 | 79 |
| 81 | **Slurry wall Implementation plan-02260** | **40 days?** | **Tue 2/28/06** | **Tue 4/25/06** | |
| 82 | EQ Preparation and Submittal | 28 days? | Tue 2/28/06 | Thu 4/6/06 | |
| 83 | USACE review and appl | 12 days? | Fri 4/7/06 | Tue 4/25/06 | 82 |
| 84 | **Fence certifications -02821** | **57 days** | **Tue 2/28/06** | **Thu 5/18/06** | |
| 85 | EQ preparation and submittal | 34 days | Tue 2/28/06 | Mon 4/17/06 | |
| 86 | USACE review/approvals-fence | 23 days | Tue 4/18/06 | Thu 5/18/06 | 85 |
| 87 | **Surface erosion control materials-02921** | **81 days** | **Tue 2/28/06** | **Thu 6/22/06** | |
| 88 | EQ preparation and submittal | 34 days | Tue 2/28/06 | Mon 4/17/06 | |
| 89 | USACE review/approvals-erosion | 22 days | Tue 5/23/06 | Thu 6/22/06 | 88 |
| 90 | **Seed certifications-02921** | **57 days?** | **Tue 2/28/06** | **Thu 5/18/06** | |
| 91 | EQ preparation and submittal | 34 days? | Tue 2/28/06 | Mon 4/17/06 | |
| 92 | USACE review/approvals-seeding | 23 days? | Tue 4/18/06 | Thu 5/18/06 | 91 |
| 93 | **Project Close Out and management support-0** | **28 days** | **Tue 4/24/07** | **Thu 5/31/07** | |
| 94 | **As-built Drawings** | **28 days** | **Tue 4/24/07** | **Thu 5/31/07** | |
| 95 | EQ Preparation and Submittal | 5 days | Tue 4/24/07 | Mon 4/30/07 | 149 |
| 96 | USACE review | 15 days | Tue 5/1/07 | Mon 5/21/07 | 95 |
| 97 | EQ Respond to Comments/re-submit | 3 days | Tue 5/22/07 | Thu 5/24/07 | 96 |
| 98 | USACE review/approval-drawing | 5 days | Fri 5/25/07 | Thu 5/31/07 | 97 |
| 99 | **Construction documentation Report (S** | **28 days** | **Tue 4/24/07** | **Thu 5/31/07** | |
| 100 | EQ Preparation and Submittal | 5 days | Tue 4/24/07 | Mon 4/30/07 | 149 |
| 101 | USACE review | 15 days | Tue 5/1/07 | Mon 5/21/07 | 100 |
| 102 | EQ Respond to Comments/re-submit | 3 days | Tue 5/22/07 | Thu 5/24/07 | 101 |
| 103 | USACE review/approval-documentati | 5 days | Fri 5/25/07 | Thu 5/31/07 | 102 |
| 104 | **0002 Temporary construction facilities** | **87 days** | **Tue 6/6/06** | **Fri 10/6/06** | |
| 105 | **Mobilization** | **87 days** | **Tue 6/6/06** | **Fri 10/6/06** | |
| 106 | Install trailer pads | 1 day | Tue 6/6/06 | Tue 6/6/06 | 8,11,14,34,50,5 |
| 107 | Install office trailers | 1 day | Wed 6/7/06 | Wed 6/7/06 | 106 |
| 108 | Install utilities (electric, phone, water) | 5 days | Thu 6/22/06 | Wed 6/28/06 | 107 |
| 109 | Install Construction signs | 1 day | Wed 6/7/06 | Wed 6/7/06 | 106 |
| 110 | Install haul roads/ slurry wall crossing plates | 6 days | Thu 6/8/06 | Thu 6/15/06 | 43,46,160 |
| 111 | Expand leach field | 21 days | Thu 6/8/06 | Fri 7/7/06 | 109 |
| 112 | Security | 68 days | Thu 6/15/06 | Fri 10/6/06 | 106SS,115FF |
| 113 | **Demobilization** | **5 days** | **Mon 10/2/06** | **Fri 10/6/06** | |
| 114 | Utilities Removal | 3 days | Mon 10/2/06 | Wed 10/4/06 | 158 |
| 115 | Remove offices | 2 days | Thu 10/5/06 | Fri 10/6/06 | 114 |
| 116 | **0003 Demolition** | **6 days** | **Thu 6/15/06** | **Thu 6/22/06** | |
| 117 | Site survey and establishing extent of work | 2 days | Thu 6/15/06 | Fri 6/16/06 | 62,80,107 |
| 118 | Fence removal | 2 days | Wed 6/21/06 | Thu 6/22/06 | 117 |
| 119 | **0004 Erosion control installation** | **2 days** | **Tue 6/27/06** | **Wed 6/28/06** | |
| 120 | Install erosion control along East and West side work ar | 2 days | Tue 6/27/06 | Wed 6/28/06 | 89 |
| 121 | **0006 Dewatering process system** | **31 days** | **Mon 6/26/06** | **Tue 8/8/06** | |
| 122 | Installation | 10 days | Mon 6/26/06 | Mon 7/10/06 | 74,109 |
| 123 | Operation and Maintenance | 21 days | Tue 7/11/06 | Tue 8/8/06 | 122,133FF,134F |
| 124 | **0007 Clearing and grubbing** | **9 days** | **Fri 6/23/06** | **Thu 7/6/06** | |
| 125 | Clearing and grubbing | 9 days | Fri 6/23/06 | Thu 7/6/06 | 62,77,89,109 |
| 126 | **0008 Free product storage , transportation & disposal** | **76 days** | **Thu 6/8/06** | **Mon 9/25/06** | |
| 127 | Storage tank placement | 1 day | Thu 6/8/06 | Thu 6/8/06 | 11,14,20,65,68, |
| 128 | Sampling and analysis | 9 days | Mon 8/14/06 | Thu 8/24/06 | 137 |
| 129 | Obtain quotes for TSD | 10 days | Fri 8/25/06 | Fri 9/8/06 | 128 |
| 130 | Complete manifestation | 4 days | Mon 9/11/06 | Thu 9/14/06 | 129 |
| 131 | Complete TSD | 7 days | Fri 9/15/06 | Mon 9/25/06 | 130 |
| 132 | **0009 Obstruction investigation and inspection trench** | **22 days?** | **Mon 7/10/06** | **Tue 8/8/06** | |
| 133 | Obstruction investigation and inspection trench-west | 15 days? | Mon 7/10/06 | Fri 7/28/06 | 62,77,110,111 |
| 134 | Obstruction investigation and inspection trench-east | 5 days | Wed 8/2/06 | Tue 8/8/06 | 133 |
| 135 | **0010 Obstruction removal plugging and capping** | **11 days** | **Fri 7/28/06** | **Fri 8/11/06** | |
| 136 | Remove pipe and other obstructions-west | 6 days | Fri 7/28/06 | Fri 8/4/06 | 62,133SS |
| 137 | Remove pipe and other obstructions-east | 5 days | Sat 8/5/06 | Fri 8/11/06 | 136,134SS |
| 138 | **0011 Cut off wall installation (section 02260)** | **171 days?** | **Thu 8/24/06** | **Mon 4/23/07** | |
| 139 | Pre-SW boring depth to clay determination | 4 days? | Thu 8/24/06 | Tue 8/29/06 | 37,77,83,133 |
| 140 | Slurry wall west side | 8 days | Tue 9/5/06 | Thu 9/14/06 | 139,142 |
| 141 | Survey west side slurry wall | 6 days | Fri 9/29/06 | Fri 10/6/06 | 140 |
| 142 | Slurry wall east side | 3 days | Wed 8/30/06 | Fri 9/1/06 | 137,139 |
| 143 | Survey of east side slurry wall | 6 days | Tue 9/5/06 | Tue 9/12/06 | 142 |
| 144 | Post Slurry Wall Boring | 4 days | Wed 9/13/06 | Mon 9/18/06 | 143 |
| 145 | **Rework** | **1 day?** | **Mon 12/4/06** | **Mon 12/4/06** | |
| 146 | Site Set Up | 2 days | Mon 12/4/06 | Tue 12/5/06 | |
| 147 | Remix Slurry Walls | 11 days | Wed 12/6/06 | Wed 12/20/06 | 146 |
| 148 | Post Slurry Wall Boring | 14 days | Mon 12/11/06 | Thu 12/28/06 | 147SS+3 days |
| 149 | Survey Slurry Wall | 5 days | Tue 4/17/07 | Mon 4/23/07 | 150 |
| 150 | Analysis Testing of Borings | 52 days | Tue 12/12/06 | Wed 2/21/07 | 148SS+25 days |
| 151 | **0012 Fencing (section 02821)** | **127 days** | **Thu 8/31/06** | **Tue 2/27/07** | |
| 152 | Excavation of post holes | 3 days | Thu 8/31/06 | Tue 9/5/06 | 86,106,163 |
| 153 | Post Installation | 3 days | Wed 9/6/06 | Tue 2/27/07 | 152 |
| 154 | Chain link Fabric installation | 3 days | Wed 9/20/06 | Fri 9/22/06 | 153FS+3 days |
| 155 | **0013 Aggregate material fill** | **8 days** | **Tue 6/6/06** | **Thu 6/15/06** | |
| 156 | Delivery of aggregates to site | 8 days | Tue 6/6/06 | Thu 6/15/06 | 106SS |
| 157 | **0015 Seeding (section 02921)** | **5 days** | **Mon 9/25/06** | **Fri 9/29/06** | |
| 158 | Seeding | 5 days | Mon 9/25/06 | Fri 9/29/06 | 92,154 |
| 159 | **0016 Rail track section removal** | **72 days** | **Fri 6/23/06** | **Wed 10/4/06** | |
| 160 | Remove rail sections and ties | 2 days | Fri 6/23/06 | Mon 6/26/06 | 118,120 |
| 161 | Material disposal | 1 day | Wed 10/4/06 | Wed 10/4/06 | 160 |
| 162 | Stone removal | 1 day | Wed 10/4/06 | Wed 10/4/06 | 161SS |
| 163 | Filling and compaction | 1 day | Wed 10/4/06 | Wed 10/4/06 | 162SS |
| 164 | **0017 Ballast Stone Placement** | **41 days** | **Mon 1/29/07** | **Mon 3/26/07** | |
| 165 | NTP | 1 day | Mon 1/29/07 | Mon 1/29/07 | |
| 166 | **Site Construction** | **7 days** | **Tue 1/30/07** | **Wed 2/7/07** | |
| 167 | Construction Roads | 1 day | Tue 1/30/07 | Tue 1/30/07 | 165 |
| 168 | Support Services | 1 day | Wed 1/31/07 | Wed 1/31/07 | 165,167 |
| 169 | **Dewater** | **1 day** | **Tue 1/30/07** | **Tue 1/30/07** | |
| 170 | Mobilization | 1 day | Tue 1/30/07 | Tue 1/30/07 | 165 |
| 171 | Install Pipe | 1 day | Tue 1/30/07 | Tue 1/30/07 | 170SS |
| 172 | Dewatering Process | 1 day | Tue 1/30/07 | Tue 1/30/07 | 171SS |
| 173 | **Cut Weep Holes** | **3 days** | **Tue 1/30/07** | **Thu 2/1/07** | |
| 174 | Mob /Install /Demob | 3 days | Tue 1/30/07 | Thu 2/1/07 | 172SS |
| 175 | **Place Stone** | **7 days** | **Tue 1/30/07** | **Wed 2/7/07** | |
| 176 | Stone Placing | 6 days | Tue 1/30/07 | Tue 2/6/07 | 174SS |
| 177 | Decontamination/Demobilization | 1 day | Wed 2/7/07 | Wed 2/7/07 | 176 |
| 178 | Survey | 3 days | Tue 3/6/07 | Thu 3/8/07 | 177 |
| 179 | As built Submittals | 12 days | Fri 3/9/07 | Mon 3/26/07 | 178 |



Project: 0407SWG Schedule1
Date: Fri 5/4/07

Critical | Critical Split | Critical Progress | Task | Split | Task Progress | Baseline | Baseline Split | Baseline Milestone | Milestone | Summary Progress | Summary | Project Summary | External Tasks | External Milestone | Deadline

# APPENDIX C

# FINAL SOIL BENTONITE SLURRY TRENCH CUTOFF WALL IMPLEMENTATION PLAN

# SOIL-BENTONITE SLURRY TRENCH CUTOFF WALL IMPLEMENTATION PLAN

Prepared for:

U.S. Army Corps of Engineers
Indiana Harbor & Canal Confined Disposal Facility
Slurry Wall Gaps

Contract No. W912P6-06-C-0003
Submittal No. 02260-4
Item No. 9

Prepared by:

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August 2007

**SOIL-BENTONITE SLURRY TRENCH CUTOFF WALL IMPLEMENTATION PLAN**

Contract No. W912P6-06-C-0003
Submittal No. 02260-4

I certify that this submittal has been reviewed in detail and is correct and in strict conformance with the contract drawings and specifications except as otherwise stated.

Ed Wise Date

Noted Exceptions:

1) EQ is proposing an alternate method for installation of the soil-bentonite slurry wall. This method is essentially a continuous one-pass trenching method. A large trencher capable of excavating up to 40 feet in depth would cut the trench. A concentrated bentonite slurry (delivering the required 6% bentonite) would be injected mid-way along the back side of the trencher bar. The bentonite would be thoroughly mixed in situ by the trencher teeth. The wall will be constructed with 6% bentonite, will be 30 inches wide, and will have a permeability of 1x $10^{-7}$ cm/sec or less (as with the conventional design). This method eliminates the need for mixing of soil and bentonite with excavators, and EQ believes it will yield a more homogenous mix and therefore a higher quality wall. The disadvantage to this method is we will not have a direct visual indication of the sand/clay interface. EQ is proposing to collect the sand/clay interface elevation independently by installing soil borings every 100 linear feet prior to installation of the wall. This data would be used to determine the depth to clay and will define the depth of the excavation. This method also does not use a conventional slurry, and would not result in an extended open trench containing slurry. We would therefore not be performing the testing of the initial bentonite slurry or in-trench slurry specified in Table 1 of Specification Section 02260. As an additional verification of the integrity of the wall, EQ is proposing to collect samples of the installed wall with a drill rig at various depths. This testing would be in addition to that specified in Table 1 of Specification Section 02260. Samples would be collected once per 100 linear feet at alternating depths of 5, 15, and 30 feet. One sample would be collected at each location (not three). In the event either of the initial samples or confirmatory samples fails the quality control objective of 1 x $10^{-7}$ cm/sec, the section of wall bracketing the failed sample will be replaced and re-tested at no additional cost to the government.

2) Specification Section 02260.2.1.1 requires that the bentonite shall be sodium cation base montmorillonite powder that conforms to API Spec 13A, API RP 13B-1, ASTM D2216,

Sections 5, 12, and 13, and Table 1. The API specifications have changed and these references are no longer applicable (see Appendix A). In addition, the former Section 4 material was used for the remainder of the slurry wall. This was an approved deviation from the original construction specifications. EQ is requesting a deviation to allow the use of API 13A Section 9 product and the revised requirements presented in Table 1. This is the same material from the same supplier used for the remainder of the slurry wall at IHCDF.

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# SECTION 1

# INTRODUCTION

This Soil-Bentonite Slurry Trench Cutoff Wall Implementation Plan has been prepared in accordance with Section 02260 of the Construction Specifications. The primary purpose of this project is the installation of approximately 970 linear feet of slurry wall. This slurry wall will be installed in two segments. One segment is on the west side of the property between about Stations 78+50 to 86+90 (840 feet), and the other segment is on the east side between about Stations 43+30 and 44+60 (130 feet). These segments represent gaps in the west and east sides of the slurry wall surrounding the site. These gaps exist because of right-of-way issues with the CSX Railroad that have recently been resolved. Prior to installation of the slurry wall, all obstructions along its path were removed. Because the site was formerly used as a refinery, numerous pipes, conduits, and other obstructions existed in the path of the cutoff wall.

# SECTION 2

# SITE LOCATION AND DESCRIPTION

## 2.1 Site Location

The Energy Cooperative Incorporated (ECI) property is located in Lake County Indiana (northwest Indiana), 20 miles southeast of downtown Chicago, Illinois and 1.5 miles northwest of the City of East Chicago, Indiana. A location map is provided as Figure 1. The overall size of the property is approximately 160 acres. The project site is bordered by the Lake George Canal to the south, Indianapolis Boulevard to the east, Cline Avenue to the north, and the Amoco Oil Company Refinery to the west. A railroad track owned by CSX Railroad runs parallel to the entire length of the west property line. A portion of these railroad tracks also diverges and bisects the property into a northern and a southern zone. The northern zone is approximately 50 acres, and the southern zone is approximately 110 acres. The northern zone is connected to the southern zone via a right-of-way that crosses the bisecting railroad track near the eastern edge of the property.

## 2.2 Site Description

The ECI property was the location of a petroleum products refinery from 1918 to 1981. Peak production was approximately 140,000 barrels per day. The project parcel, termed the main refinery, contained the principal production area and also included storage, a marine loading area, rail loading areas, insecticide manufacturing, truck docking facilities, and an American Petroleum Institute (API) separator. The refinery operations included the production of mineral spirits, propane, leaded and unleaded gasoline, fuel oil, kerosene, asphalt and asphalt products, liquefied petroleum gas, grease, lubricating oils, paraffin wax, phenols, and sulfur. Between 1940 and 1958, pyrethrum extract consisting of dried heads of certain varieties of chrysanthemums was filtered on site. The filtered extract was combined with kerosene and used as an insecticide base to produce insecticide. The maximum annual production of insecticide

base occurred in 1944 when 49,359 barrels were produced. This accounted for 0.26 percent of the total plant throughput.

Former owners of the project site include Sinclair from 1918 to 1968, Atlantic Richfield Company (ARCO) from 1968 to 1976, and ECI from 1976 to 1981. Figure 2 shows the project site plan during ECI's ownership in 1977 while it operated as a refinery. In 1981 ECI filed for bankruptcy, and in the late 1980s all buildings and aboveground structures were razed in response to a court order. Several inches of clean topsoil were graded to cover the site. In 1989, the City of East Chicago became the owner of the site as payment for back taxes owed by ECI. The site has open Resource Conservation and Recovery Act (RCRA) status because the court-approved closure of the facility was not comparable to a RCRA-approved closure. In addition, the site requires RCRA corrective action because soil and groundwater on site were contaminated from past industrial activities.

# SECTION 3

# SCOPE OF WORK

The work will be performed in accordance with U.S. Army Corps of Engineers (USACE) contract number W912P6-06-C-0003 project specifications, addendums, and project drawings. The project consists of the construction of a minimum 30-inch-wide, 1 x$10^{-7}$ cm/sec, soil-bentonite cutoff wall in two segments. One segment is on the western edge of the property between about Stations 78+50 to 86+90 (840 feet), and the other segment is on the east side between about Stations 43+30 and 44+60 (130 feet). These segments represent gaps in the west and east sides of the slurry wall surrounding the site. These gaps exist because of right-of-way issues with the CSX Railroad that have recently been resolved. Figure 3 shows the reduced site plan with the locations of the two segments as well as other prominent site features and operational areas.

The soil-bentonite cutoff wall construction involves the following operations: mobilization of personnel and equipment to the site, removal of obstructions in the path of the cutoff wall, slurry mixing, trench excavation, mixing of soil-bentonite backfill, quality control activities, site restoration, and demobilization. The following sections describe the approach to each of these tasks based on the information provided in the project specifications and drawings.

The construction specifications call for a conventional excavation, separate mixing, and placement technique. EQ had intended on following this method and mobilized labor, equipment and supplies to perform the work in this manner. However, it was determined that the excavator lacked sufficient power to perform the work. EQ was unable to locate a suitable excavator that would be available in a reasonable timeframe. While performing research EQ identified an alternate method of excavating, mixing the bentonite, and replacing the backfill. This method essentially involves a large trencher. The appropriate amount of bentonite is mixed directly with a large earth trencher. The trencher performs the functions of excavating the soils, mixing the bentonite, and replacing the backfill in one pass. There is essentially no open excavation and no need for a conventional bentonite slurry to hold the excavation open. There

are several advantages to this alternate trencher method. The conventional excavator method involves excavating soils, placing them in a mixing bed, mixing with small bulldozers or excavators and placing the backfill into the trench. There are several disadvantages with this method. A substantial open trench exists between the initial excavation and where the backfill is placed. This open excavation must be held in place by a soil bentonite slurry. Despite the presence of the slurry a significant risk exists for the sidewalls of the excavation to collapse. This could result in both a dilution to the bentonite addition rate, and the potential for "bridging" of caved soil causing a pocket of bentonite free soil. The mixing bed itself is also very inefficient. Tracking of the mixing equipment inevitably results in additional soil from the mixing bed being churned into the backfill mix. This has the potential for diluting the backfill mix. It can also result in the excess backfill remaining in the mixing bed. Mixing in the bed may also be uneven and some areas of backfill may contain more (or less) bentonite than others. For these reasons EQ proposed the alternate one pass method.

The trencher to be used is an extremely large version of a conventional trencher. It is powered with engines totaling 1800 hp. The existing boom will be extended such that the trencher can dig to a depth of 40 feet. The entire head of the excavator is controlled by hydraulic cylinders. It has a vertical range of 12 feet (with this boom we will be able to install slurry wall in a range of 28 to 40 feet). The depth of the cut is controlled by raising or lowering the entire head versus angling the cutter head.

Appendix D presents vendor literature and a DVD containing clips from prior projects installed by this method. A concentrated bentonite slurry will be injected mid-way along the back side of the trencher bar. The bentonite will be vigorously mixed in situ by the trencher teeth as the trencher progresses. The wall will be constructed with 6% bentonite, will be 30 inches wide, and will have a permeability of $1 \times 10^{-7}$ cm/sec or less (as with the conventional design). Calculations (see Section 7.5) indicate that one 4000-lb super sack of bentonite will be needed per 7.02 feet of wall. The bentonite addition rate will be controlled by the rate of excavation, such that one super sack is used over a distance of no more than 7 feet. This method eliminates the need for mixing of soil and bentonite with excavators, and EQ believes it will yield a more homogenous mix and therefore a higher quality wall. The disadvantage to this

method is we will not have a direct visual indication of the sand/clay interface or the trench bottom.

EQ is proposing to collect the sand/clay interface data independently by installing soil borings every 100 linear feet prior to installation of the wall. This data would be used to determine the depth to clay and will define the depth of the excavation. The total depth of the wall will be determined with the existing survey data of the surface centerline and known depth of the trench. This method also does not use a conventional slurry, and would not result in an open trench containing slurry. We would therefore not be performing the testing of the initial bentonite slurry or in-trench slurry specified in Table 1 of Specification Section 02260.

As an additional verification of the integrity of the wall, EQ is proposing to collect samples of the installed wall with a drill rig at various depths. This testing would be in addition to that specified in Table 1 of Specification Section 02260. Samples would be collected once per 100 linear feet at alternating depths of 5, 15, and 30 feet. An Ostenberg hydraulic piston sampler will be used to collect Shelby Tube samples at each location. Samples would be collected at a depth of 5 feet at Stations 43+45, 79+70, 82+70, and 85+70; at a depth of 15 feet at Stations 44+45, 80+70, 83+70, and 86+70; and at 30 feet from Stations 78+70, 81+70, and 84+70.

In the event either of the initial samples (specified in Table 1 of Specification Section 02260) or confirmatory samples fails the quality control objective of $1 \times 10^{-7}$ cm/sec, the section of wall bracketing the failed sample will be replaced and re-tested at no additional cost to the government. The new slurry wall will overlap the existing wall by a minimum of 10 feet at each end to the entire depth. No lead-in trench will be necessary. The trencher will begin at the beginning of the overlap section and will proceed by "laying" the boom down and allowing it to excavate to the total depth and with a completely vertical cutter head before progressing with the installation.

# SECTION 4

# SLURRY WALL DESIGN

The basic design of the slurry trench cutoff wall is depicted in Figure 4. The slurry trench will have a minimum width of 30 inches and will be installed into the key stratum. The minimum key-in distance will be 3 feet. The maximum key-in depth for payment is 5 feet. The depth of the clay will be determined by the preconstruction borings (see Section 3). The depth of the clay will be assumed to be the largest depth of the adjacent borings. The depth of the key will be determined with the preconstruction surficial centerline elevations and the known depth of the trencher. The top of the completed slurry wall will be no more than 1 foot below existing grade. The top of the soil-bentonite slurry trench cutoff wall cap will be at the top of the working surface. The permeability requirement for the installed cutoff wall will be no more than $1 \times 10^{-7}$ cm/sec based on the samples taken of either the in-place backfill samples or the post-construction verification samples collected from the borings.

The cutoff wall backfill material will be composed of the excavated soils, bentonite slurry, and dry bentonite (at least 6%, as determined by pre-construction chemical compatibility testing and project specifications). Some dry bentonite will be placed along the path of the trencher, and the remaining will be added via the slurry. The backfill will be mixed in situ with the excavator teeth. The field and laboratory quality control testing will ensure that a continuous and acceptable barrier is installed as designed.

# SECTION 5

# MIX DESIGN AND MIX COMPONENT MATERIALS

Soil and liquid samples collected from the site have undergone pre-construction chemical compatibility testing. The results of this testing showed that the bentonite and fines mix ratio required to achieve the specified permeability limits was 6%.

The proposed mix design for the project is a soil bentonite backfill composed of the following materials.

- On-site soils excavated from the trench
- Bentonite slurry (a mixture of water and bentonite)
- Dry bentonite

Tables 1 through 3 present the acceptable properties of bentonite powder, mix water, and soil-bentonite backfill (respectively).

The site soils will make up the majority of the backfill, and sufficient bentonite slurry and dry bentonite will be added to make the backfill meet all specification requirements, including permeability and workability (slump of 2 to 6 inches). Peptizing agents and bulking agents will not be mixed with the slurry.

# SECTION 6

# EQUIPMENT

## 6.1 Slurry Wall Equipment

The soil-bentonite slurry wall will be excavated by a long-reach hydraulic trencher capable of digging the maximum depths required for this project. The trencher will be equipped with a minimum 30-inch-wide cutter head capable of excavating the site soils to the minimum specified width in a single pass. The trencher will be assembled on site prior to use. One wide-track hydraulic excavator will be used to prepare the site (including a full perimeter berm) and to place dry bentonite in the path of the trencher.

Equipment will be mobilized to the site once personnel arrive. A more detailed list is as follows:

- Large hydraulic trencher (approximately 135,000 lbs) capable of reaching at least 40 feet deep.
- One small hydraulic excavator (Cat 320 or similar) to be used for bentonite placement and other miscellaneous tasks.
- A small (35-ton) service crane for assembly/disassembly of the trencher.
- 8,000-pound rough-terrain forklift for material handling.
- Specially fabricated high-speed, high-shear, colloidal mixing batch plant along with associated pumps and piping.
- Office, crew, and tool trailers.
- Laboratory shed and required lab equipment and supplies.
- Trucks and other small tools.

## 6.2 Quality Control Testing Equipment

The testing equipment for quality control includes at a minimum one mold and rod for the slump test, and field permeability testing equipment.

# SECTION 7

# CONSTRUCTION PROCEDURES

Subsurface slurry walls act as barriers to the lateral flow of groundwater and water-borne pollutants. The major characteristic of slurry cutoff construction is the use of bentonite, which decreases the permeability of the soils. This slurry wall will be installed with a one-pass trencher wherein the benonite is added to the soil as the trencher excavates the soil. This wall will be a minimum of 30-inches wide with a bentonite addition rate of no less than 6%. The trench will be excavated into the underlying clay layer forming a "key" of between 3 and 5 feet. The clay forms the bottom, and the slurry wall forms the side of the containment.

## 7.1 Mobilization and Site Preparation

The slurry wall mobilization and site preparation will include the following tasks:

- Personnel and equipment arrive on site.
- Support trailers and facilities, staging areas, storage areas, and stockpile areas are set up.
- Obstructions along the path of the cutoff wall are removed.
- The batch plant and excavation equipment are delivered and set up.
- HDPE pipe for transferring water and slurry is welded together.
- The ground in the work area is cleared and grubbed.

## 7.2 Staging and Access Plan

All construction work will be performed off of the site access road(s). During construction, soil delivery and spoils removal trucks will utilize the site access roads. Construction will be scheduled to minimize impact to all other operations taking place at the site.

The slurry mix plant will be located as shown in Figure 3. The slurry mix plant will consist of a nominal 1,000-gallon mixer, pumps, and associated fittings and piping to prepare the fresh bentonite slurry and deliver it to the trench excavation. Water will be supplied from the existing city water connection on the east side of the bridge crossing the Lake George Branch of

the Indiana Harbor Canal. Slurry will be pumped from the slurry mix plant to each of the two soil bentonite slurry wall segments. The slurry line to the west segment will be routed over the existing berm. Steel plates will be installed on top of the berm where the pipe crosses in order to allow for vehicular traffic. The approximate locations of the water supply and slurry piping systems are shown in Figure 3.

## 7.3 Mixing and Placing of Bentonite Slurry

Once personnel have received site-specific training, the batch plant and all associated pumps, fittings, and HDPE lines will be set up. The bentonite slurry will be produced in a high-shear colloidal mixer. This 5-cubic-yard mixer (nominal 1,000 gallons) has the capability of producing several hundred gallons of hydrated bentonite slurry per minute.

The city water supply adjacent to the site will provide water for the slurry wall construction. Utilizing system pressure, the water will be transferred from the southeast corner of the property to the batch plant via a 4-inch high-density polyethylene (HDPE) pipe. After water and bentonite are mixed to produce the required bentonite slurry, the hydrated slurry will be pumped from the batch plant to the trench by a 6-inch pump and 4-inch HDPE pipe used as a slurry transfer line.

Slurry will be introduced into the trencher at the time excavation begins. It is added about mid-way down the trencher cutter head on the back side. With this method, there will be no quality control testing of the fresh slurry or in-trench slurry

## 7.4 Trench Construction and Excavation

The cut-off wall segments will be installed by using a large hydraulic trencher to dig a narrow trench (minimum 30 inches) to the design depth. The new slurry wall will overlap the existing wall by a minimum of 10 feet at each end to the entire depth. The end points will be Station 43+20 and 44+70 for the east segment, and 78+40 and 87+00 for the west segment. No lead-in trench will be necessary. The trencher will start at the beginning of the overlap section and will proceed by "laying" the boom down and allowing it to excavate to the total depth and with a completely vertical cutter head before progressing with the installation. The trenching equipment will be measured with a carpenter's level or other suitable device to ensure it is no

more than 2 percent out of plumb. The trench will be installed continuously. The depth of the cutter head will be adjusted based on the preconstruction boings and known depths to clay at the ends of the existing slurry wall to achieve a 3- to 5-foot key into the clay layer. These calculations will be based on the adjacent soil borings that have the deepest depth to clay. No sounding of the trench will be performed.

## 7.5 Mixing and Placing of Soil-Bentonite Backfill

Based on the mix design, bentonite will be added to the soil in the form of bentonite slurry and in dry form from 4,000-pound jumbo bags of bentonite (minimum 6% by dry weight). The estimated interval between jumbo bags is determined based on an assumed soil density of 100 pounds per cubic foot. The width of the trench will be a minimum of 30 inches (in.), and the depth will be up to 38 feet (ft) (33 ft to clay plus 5 ft key-in depth). Based on a 6% mix ratio, the spacing of jumbo bags will be approximately 7.02 feet. This was calculated by determining the weight of backfill material required (4,000 lbs. bag ÷ 0.06 = 66,700 lbs. backfill); then dividing the weight by the backfill density (66,700 lbs. backfill ÷ 100 lbs. backfill per $ft^3$ = 667 $ft^3$ of backfill) to get backfill volume. The spacing is calculated by dividing the backfill volume by the cross-sectional area of the trench (30 in. ÷ 12 in. per ft * 38 ft = 95 $ft^2$). This spacing is approximately 7.0 ft (667 $ft^3$ ÷ 95 $ft^2$ = 7.02 ft).

The soil-bentonite trench will be constructed without undue interruption until its completion. If the various sections of the soil-bentonite slurry trench are constructed separately (i.e., at the intersection with previously placed trench segments), a section of the previously constructed soil-bentonite slurry trench backfill material will be re-excavated at the construction joint. The re-excavation of the placed backfill will consist of the removal of 10 feet of the backfill for the full depth of the soil-bentonite slurry trench.

## 7.6 Contingency Plans

The soil-bentonite trench will be constructed without undue interruption until its completion. If there is any question that a panel of soil-bentonite slurry wall has not been properly installed, re-excavation and backfill of that panel may be required.

### 7.6.1 Settlement

If the backfill placed in the trench settles more than 2 inches below the top of the slurry trench during the first 24 hours after placement or more than 6 inches for the remaining project duration, the trench will be topped off with new soil-bentonite backfill.

### 7.6.2 Obstructions

All non-active utilities to a depth of 15 feet below ground surface have been removed during observation, trench, and obstruction removal operations. If an obstruction is encountered at a depth greater than 15 feet below ground surface, trench operations will cease and the COR will be immediately notified.

## 7.7 Slurry Wall Cap Construction

Following installation and survey of the slurry wall, a clay cap will be placed over the trench as detailed in the project specifications. As shown in Figure 4, a 6-ft-wide by 1-ft-thick clay clap (minimum) will be placed over the completed slurry wall to prevent drying and cracking of the top of the soil-bentonite backfill. The slurry wall cap, which will include a woven geotextile fabric rated as Class 1 per AASHTO M288-96, will be placed as soon as the soil-bentonite wall has hardened sufficiently to support the fill. The fill will be placed in loose 8-inch lifts, each of which will be compacted to a minimum 85% of the maximum Standard Proctor dry density (ASTM D 698).

Heavy construction equipment and machinery will only be driven over the soil-bentonite wall at approved heavy equipment crossing points. These crossing points provide suitable roadway support without damaging the slurry wall. Such crossings will be installed on an as-needed basis during field construction. As a result of the continuation of haul roads, an additional crossing point over the existing slurry wall will be required at approximately STA 88+00 (see Figure 3).

# SECTION 8

# DISPOSAL

Any materials that may be disposed of on site will be taken to the designated debris stockpile area or new infiltration gallery cell by truck. Such materials include excess backfill materials and soil samples. Off-site disposal will be required for materials that have not been approved for on-site disposal, including unused raw materials. Leftover bentonite will be removed from the site and either returned to the vendor or taken to a storage yard.

# SECTION 9

# QUALITY CONTROL TESTING

The following sections detail the Quality Control Testing for the proper control of the monitoring, inspection, recording, and certification to construct the soil-bentonite slurry trench cutoff wall. Also contained within this section are modification requests to the field testing requirements of the backfill.

Quality is achieved through the use of skilled personnel, adequate planning, the use of suitable tools and procedures, proper definition of job requirements, appropriate supervision, technical direction, and effective communications. Verification of quality is achieved through inspection, examination, testing and review of work activities, and associated documentation.

## 9.1 Materials and Mix Design

Material requirements and tests to be performed on the specified materials will conform to the following standards:

1. American Petroleum Institute (API) Standard Specifications:

   - API Specification 13A — Specification for Drilling Fluid Materials, Section 9 Latest Revision.
   - API RP13B1 — Field Testing Water-Based Drilling Fluids.

2. American Society for Testing Materials (ASTM) Standards:

   - ASTM C143 — Slump of Hydraulic Cement Concrete.
   - ASTM D421 and D422 — Test Method for Grain-Size Analyses of Fine and Coarse Aggregates.
   - ASTM D698 — Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/cu. ft. (600 kN-m/cu. m.)).

- ASTM D2216 — Laboratory Determination of Water (Moisture) Content of Soil and Rock.
- ASTM D2487 — Classification of Soils for Engineering Purposes (Unified Soil Classification System).
- ASTM D4318 — Liquid Limit, Plastic Limit, and Plasticity Index of Soils.
- ASTM D5084 — Standard Test Method for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter.

3. U.S. Army Corps of Engineer Manual (EM):

   - EM-1110-1-1906 (1996) Soil Sampling.

4. U.S. Environmental Protection Agency (USEPA):

   - EPA 600/4-79/020.

## 9.2 Bentonite

Bentonite standard specifications are as follows:

1. Standard – API Specification 13A Specifications for Drilling Fluid Materials, Section 9 Latest Revision.

The test results for all the material characteristics will meet or exceed the project requirements. A log of bentonite deliveries will be maintained. The bentonite supplier will provide certification of compliance with API Specification 13A for each truckload delivered to the site. All certifications will be kept in a file on site in the EQ office trailer, and copies will be submitted once all material is received. Bentonite to be utilized in the soil-bentonite slurry will be supplied by Federal Industrial Products (M-I) and will be delivered in 4,000-pound bulk bags and 100-pound bags; a minimum of 6% dry bentonite by weight will be added to the backfill.

2. Specification Section 02260.2.1.1

This specification requires that the bentonite shall be sodium cation base montmorillonite

powder that conforms to API Spec 13A, API RP 13B-1, ASTM D2216, Sections 5, 12, and 13 and Table 1. The API specifications have changed and these references are no longer applicable (see Appendix C). In addition, the former Section 4 material was used for the remainder of the slurry wall. This was an approved deviation from the original construction specifications. EQ is requesting a deviation to allow the use of API 13A Section 9 product and the revised requirements presented in Table 1. This is the same material from the same supplier used for the remainder of the slurry wall at the IHCDF.

## 9.3 Additives

Additives should not be required. If additives are required to meet project requirements, approval will be obtained from the USACE prior to any such use.

## 9.4 Backfill Soils

Naturally occurring soils removed from the trenching excavation and those obtained from the enlargement of the infiltration gallery, after screening to –2 inches, will be used in the backfill mix. Because backfill soil will be mixed with the bentonite slurry in situ to the trench and not removed from the trench, the grain size, Atterberg Limits, and moisture content will not be determined.

## 9.5 Quality Control Testing

All soil-bentonite slurry wall materials will be tested for compliance with this document. The following section summarizes the quality control tests that will be performed.

### 9.5.1 Bentonite Powder

Bentonite powder used will be tested in accordance with the specifications presented in Table 1. Each truckload of bentonite shipped to the site will have a certificate of compliance that will be submitted with the quality control reports. Bentonite treated with peptizing agents will not be allowed.

### 9.5.2 Water

Mix water properties are presented in Table 2. Potable water from the city of East Chicago will be used for mix water. Water from the city has been analyzed for the parameters listed in Table 2 and is compliant with this criteria. Analytical results are provided in Appendix B.

### 9.5.3 Bentonite Slurry for Trench Excavation

Bentonite slurry used for trenching will not be tested

### 9.5.4 Backfill Material

The backfill soil will be mixed with the bentonite slurry to achieve the 6% bentonite to soil (dry weight) in situ to the trench and will not be removed from the trench. As a result, grain size, Atterberg Limits, and moisture content will not be performed on the backfill material.

### 9.5.5 Soil-Bentonite Backfill Material

Soil-bentonite backfill material used for slurry wall construction will be tested in accordance with the parameters shown in Table 3. The permeability tests will be performed with city water to be used for mixing bentonite slurry during construction. The soil-bentonite backfill will be sampled just after placement in the trench and through post-construction borings. Test results will be recorded on the daily quality control reports (where applicable) or will be submitted upon receipt from the laboratory. The flexible wall permeameter results will be the basis for acceptance of the soil-bentonite backfill. The permeability determined at the conclusion of the flexible wall tests (field sample collected just after placement, post-construction borings) will be no more than $1.0 \times 10^{-7}$ cm/sec. Area(s) of the production walls that fail to meet the permeability requirement will be removed to the location of the nearest passing test and replaced at no additional cost to the government.

During the work, the field operations will be monitored and measured by the CQCSM for compliance with the specifications and approved Soil-Bentonite Slurry Trench Cutoff Wall Implementation Plan, and approved modifications to specifications.

### 9.6.1 Slurry Preparation

Slurry will be prepared by adding 4000-lb super sacks or 100-lb bags of bentonite to mix water. Water will be introduced into the mixer followed by bentonite to produce slurry.

### 9.6.2 Verticality

The slurry trench will be essentially vertical. The trenching equipment will be leveled to be plumb, which may be measured by a carpenter's level or other suitable device. In no case will the production wall be installed more than 2 percent out of plumb.

### 9.6.3 Trench Depth

The trench will be installed continuously. The depth of the cutter head will be adjusted based on the preconstruction boings to achieve a 3- to 5-foot key into the clay layer. These calculations will be based on the adjacent soil borings that have the deepest depth to clay. No sounding of the trench will be performed.

### 9.6.4 Trench Width

The trencher used for installation of the slurry trench will be equipped with a minimum 30-inch-wide cutter head. The excavator will make a single pass to dig the minimum 30-inch-wide trench.

### 9.6.5 Calibrations

No field equipment will require calibration.

# SECTION 10

# RECORD KEEPING

Work and tests performed will be recorded on the Daily Soil-Bentonite Slurry Wall Quality Control Form located in Appendix C. The CQCSM will complete the forms daily. The original will be maintained on site until the completion of the project, and copies will be forwarded to the USACE Contracting Officer's Field Representative. This system will be used exclusively to eliminate any possibility of quantity disputes and to ensure that all test results and measurements are promptly and accurately recorded.

All records for testing, measurements, and inspections performed to ascertain that the soil-bentonite slurry trench cutoff wall construction meets the specifications will be maintained at the project site for review or inspection at any time. Required reports, records, and documentation will be furnished to the USACE within 24 hours of the test or observation. Reports resulting from laboratory analyses will be provided to USACE within 24 hours from receipt. The records required are outlined below.

EQ will furnish to USACE the results of all construction control testing, including water, bentonite, and backfill tests. All observations, measurements, and tests performed will be furnished and identified with the location and time of testing. In addition, the results of all tests taken, both passing and failing tests, will be recorded in the Daily CQC report.

A construction log of daily activities will be maintained that will include arrival and departure of equipment and manpower, delays encountered during construction, causes of delays, locations of affected areas, and extent of delays. The log will also record unusual conditions or problems encountered, and the dispositions made. The location in the soil-bentonite slurry trench cutoff wall of each day's production of backfill will be recorded. Any observations on caving, squeezing, or other ground movement will be recorded, the top of the backfill at the time of placement and setup will be measured and recorded, and the trench and hardening backfill will be observed for evidence of variability, cracking, excessive drying, contamination, bleeding, subsidence, or other unusual conditions. Any unusual observations will be reported to the Site Manager within 24 hours.

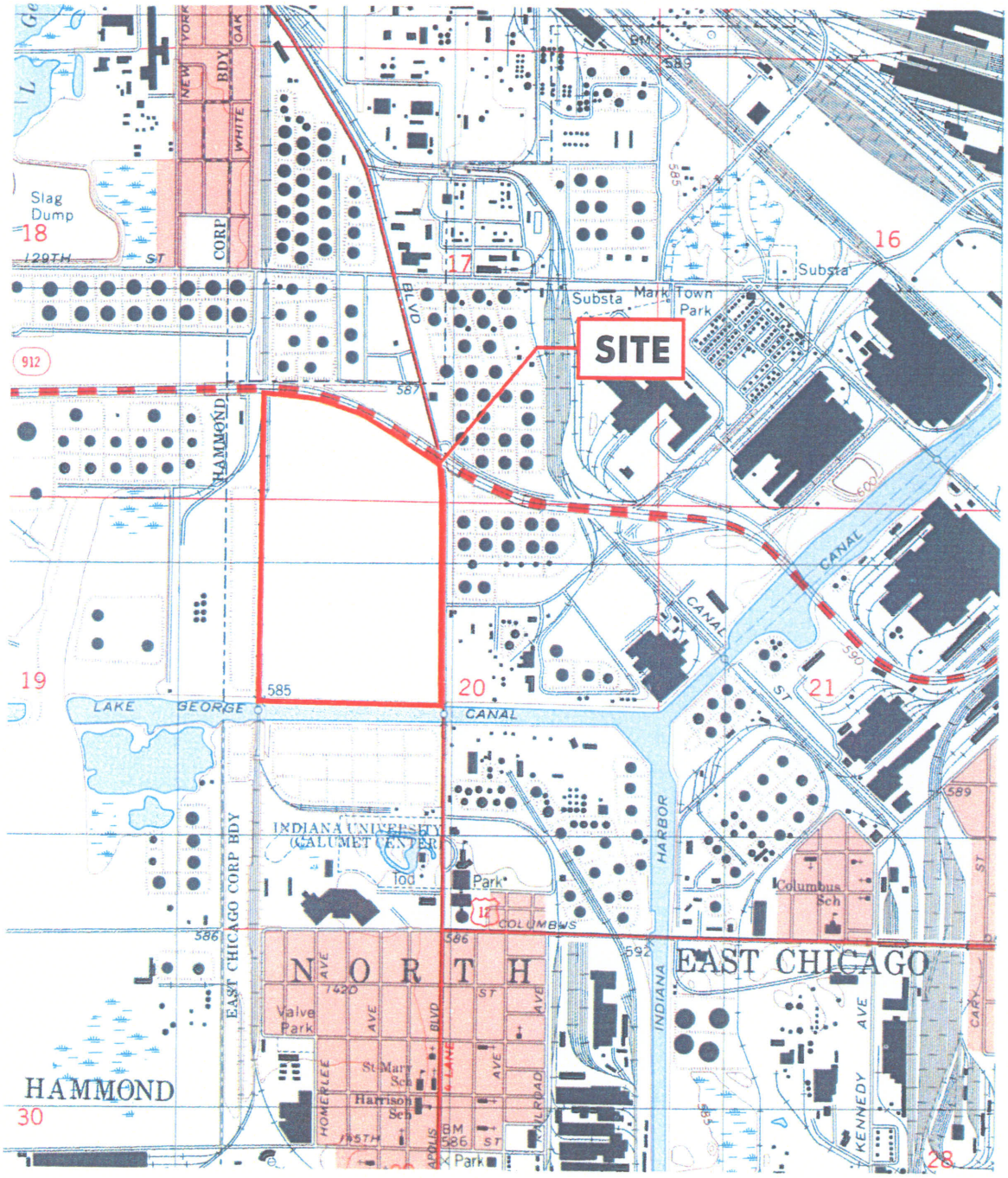
# SECTION 11

# CLEANUP

The slurry wall excavation may produce some excess spoils. Excess backfill from the slurry wall installation will be hauled to the on-site debris stockpile or the new infiltration gallery cell.

When the soil-bentonite slurry wall is completed, all trash and construction debris generated during the course of construction will be disposed of in accordance with the approved waste removal plans. Excess raw materials will be removed from the site. Site restoration will include removal and grading of staging areas and the removal of temporary facilities. All equipment and personnel will then be demobilized from the site.

# FIGURES




Scale 1:24000

1 ½ 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 .5 0 1 KILOMETER

QUADRANGLE LOCATION

N

**Reference:**
IN Harbor & Canal CDF
Subsurface Investigation & Cutoff Wall
3500 Indianapolis Boulevard
East Chicago, IN 46312
Contract No. DACW 27-02-C-0003

**Date:** February 2006

**BASE MAP SOURCE:**
USGS 7 1/2 minute topographic quadrangle map. Whiting, Indiana 1998.

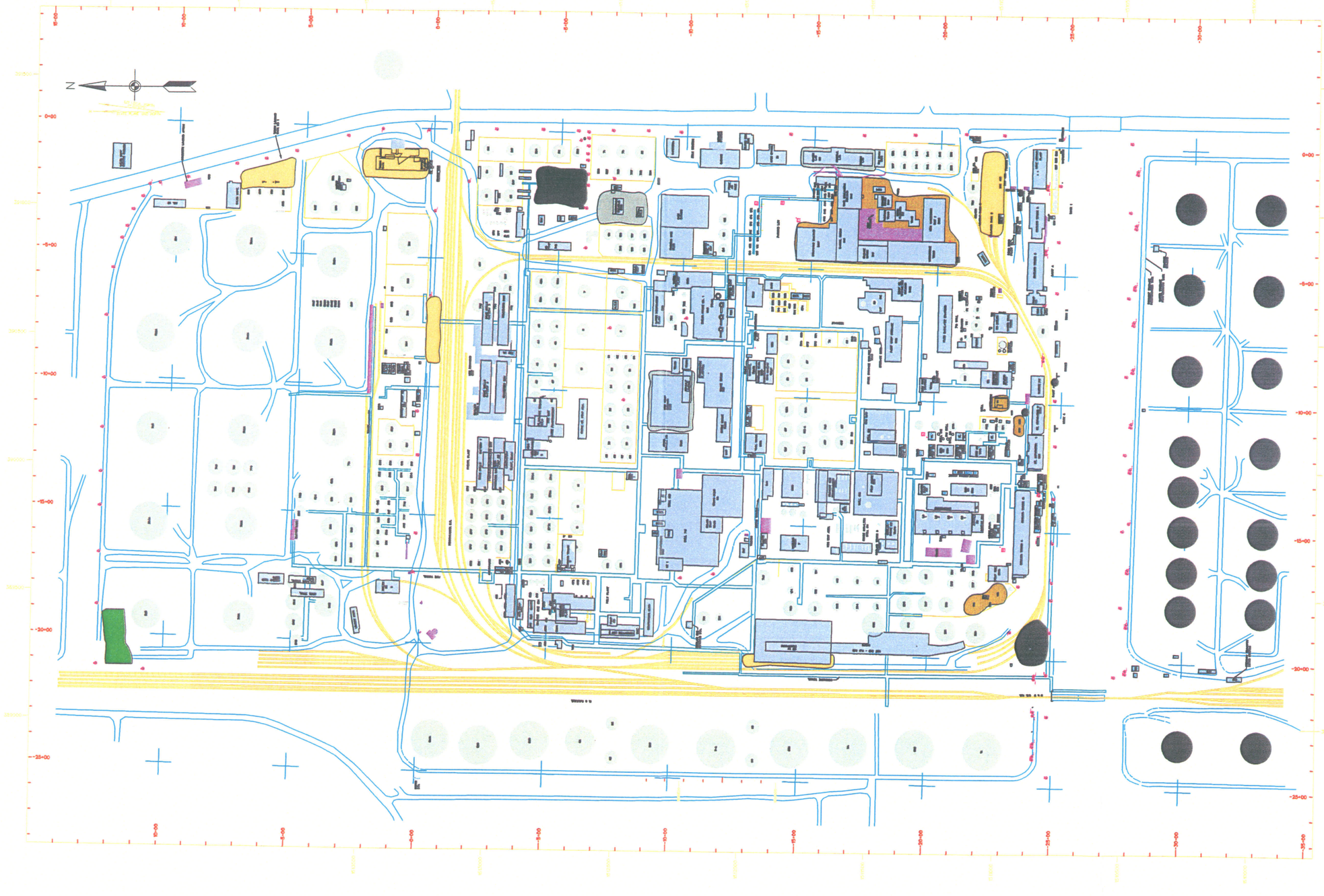

Environmental Quality Management, Inc.
1800 Carillon Boulevard
Cincinnati, Ohio 45240
Phone: (513) 825-7500
Fax: (513) 825-7495


| | | |
|---|---|---|
| DRAWN | SRL | 3/12/02 |
| CHECKED | JAW | 3/12/02 |
| APPROVED | FDH | 3/12/02 |

SCALE: 1:24000

# Site Location Map
ICH CDF Slurry Wall Gaps

| ORIGINAL SIZE | PROJECT NO. | DWG NO. | REV |
|---|---|---|---|
| A | 030249 | FIGURE 1 | |




| REV | DESCRIPTION | DATE | APPROVED |
|---|---|---|---|
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

REVISIONS

ENVIRONMENTAL QUALITY MANAGEMENT, INC.
1800 CARILLON BLVD.
CINCINNATI, OHIO 45240
P (513)825-7500

| | | |
|---|---|---|
| DRAWN | D.TOMO | 12/07/06 |
| CHECKED | E.WISE | 12/07/06 |
| APPROVED | J.WENTZ | 12/07/06 |
| | | |
| | | |
| SCALE: | AS NOTED | |

# IHC CDF OBSTRUCTION REMOVAL
# ECI SITE PLAN
# 1977

| ORIGINAL SIZE | PROJECT NO. | DWG NO. | REV |
|---|---|---|---|
| B | 020242 | FIGURE 2 | 0 |

OFFICE TRAILER
LAB CONEX BOX
WORKER LUNCH CONEX BOX
TOOL AND SUPPLY CONEX BOX
OIL WATER SEPARATOR
ROLL OFF BOX FOR MISC. NON-CONTAMINATED CONSTRUCTION WASTE
SEGMENT OF SLURRY WALL GAP TO BE INSTALLED APPROX. STA. 43+20 TO 44+60
PORTABLE RESTROOM W/ WASH STATION (FIXED LOCATION)
ROLLOFF BOXE FOR SPENT SORBANT PADS, OIL BOOM, & PPE
PIPE SLEEVE
INDIANAPOLIS BOULEVARD
HS/BM-IND-15 EL. 596.36
CANAL LEVEL GUAGE
IND-97-002 EL. 609.96
CLEAR 350' OF RAILROAD
EQUIPMENT DECONAMINATION PAD
LIQUID WASTE STORAGE TANKS & DRUMS
SUPPLY & EQUIPMENT LAYDOWN AREA
SLURRY LINE
EXISTING BORROW AREA AND LEACH FIELD
PIPE SLEEVE
100'x400'EXPANSION OF BORROW AREA AND LEACH FIELD
EMPLOYEE PARKING
WATER LINE
TEST CUT-OFF WALL AREA
INDIANA HARBOR CANAL
EXISTING BP/AMOCO RCRA PIPING
EXISTING CULVERT
MAKEUP STOCKPILE
BENTONITE SLURRY BATCH PLANT
SLURRY LINE
VIBRATORY SCREEN
PIPE SLEEVE
SILT FENCE
TRUCK SCALE
DEBRIS STOCKPILE AREA
EXISTING BP/AMOCO RCRA OWS
EXISTING BP/AMOCO RCRA PIPING
EXISTING BP/AMOCO RCRA SHED
TAR PIT
STEEL PLATE
STEEL PLATE
IND-97-001 EL. 614.96
BALTIMORE OHIO C.T. R.R. CO.
HS/BM-IND-16 EL. 592.10
SEGMENT OF SLURRY WALL GAP TO BE INSTALLED APPROX. STA. 78+50 TO 86+90
PORTABLE RESTROOM W/ WASH STATION

SLURRY WALL AREAS
WORK AREAS FOR 2006 SLURRY WALL GAPS WORK
POTENTIALLY CONTAMINATED HAUL ROADS
UNCONTAMINATED VEHICLE ROADS

0 100' 300' 800'
50' 200' 400'

N

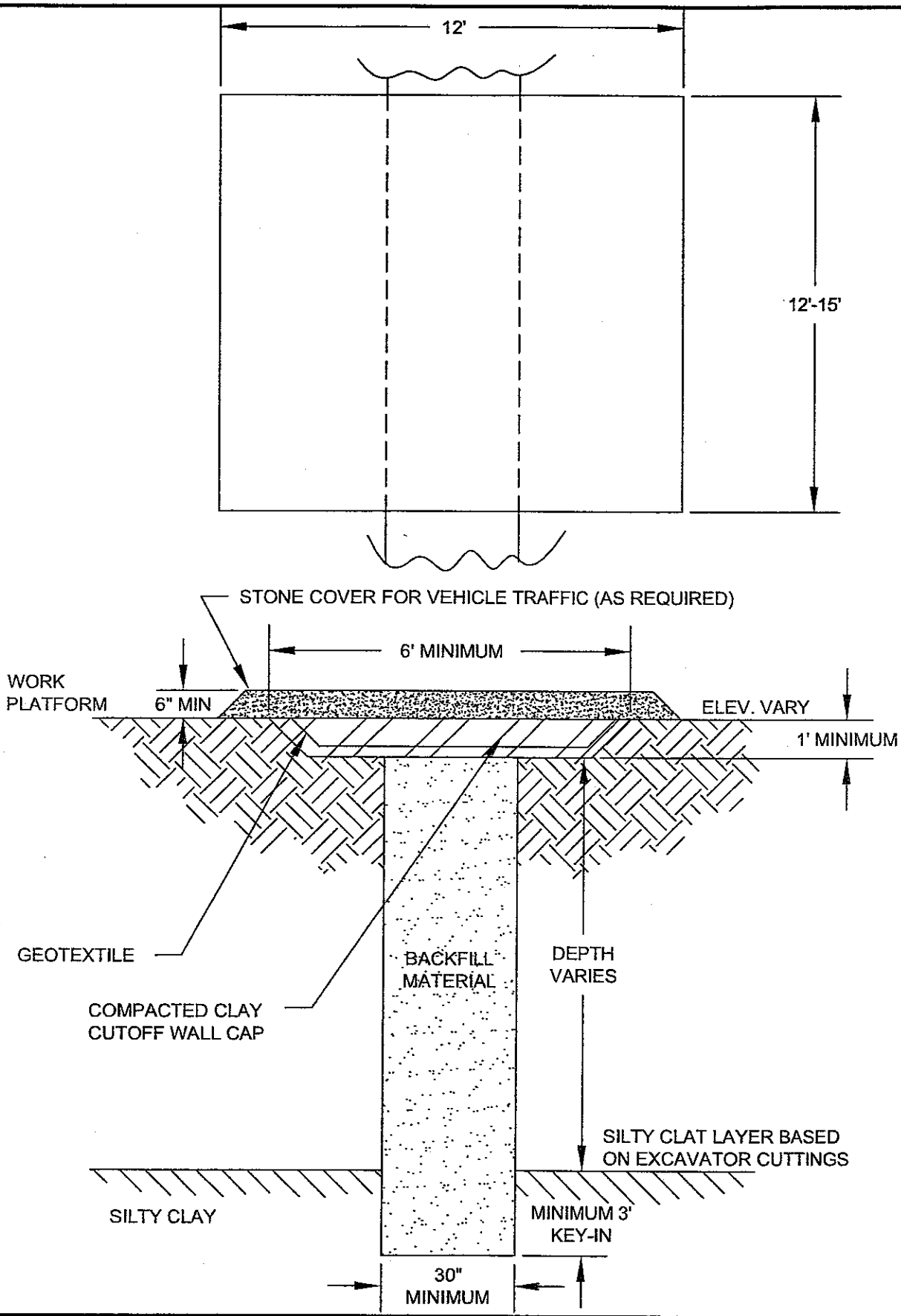
| REV | DESCRIPTION | DATE | APPROVED |
|---|---|---|---|
| | | | |

ENVIRONMENTAL QUALITY MANAGEMENT, INC.
1800 CARILLON BLVD.
CINCINNATI, OHIO 45240
P (513)825-7500

| | | |
|---|---|---|
| DRAWN | D.TOMO | 2/07/06 |
| CHECKED | | |
| APPROVED | | |
| SCALE: | NONE | |

INDIANA HARBOR SLURRY WALL GAPS
AFFECTED AREAS FOR CUTOFF WALL CONSTRUCTION

| ORIGINAL SIZE | PROJECT NO. | DWG NO. | REV |
|---|---|---|---|
| B | [illegible] | FIGURE 2 | 0 |




| REV | DESCRIPTION | DATE | APPROVED |
|---|---|---|---|
| | | | |

REVISIONS

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F (513)825-7495

| | | |
|---|---|---|
| DRAWN | D.TOMO | 3/22/06 |
| CHECKED | | |
| APPROVED | | |
| SCALE: | N.T.S. | |

# INDIANA HARBOR CDF TYPICAL CUTOFF WALL DETAIL

| ORIGINAL SIZE | PROJECT NO. | DWG NO. | REV |
|---|---|---|---|
| A | 030249 | FIGURE 4 | 0 |

## TABLE 1. BENTONITE POWDER PROPERTIES

| Subject | Standard | Type of Test | Minimum Frequency | Specified Value |
|---|---|---|---|---|
| Bentonite | API Specification 13A | Certificate of compliance | 1 per truck load | Sodium cation montmorillonite |
| Bentonite | API Spec 13A<br>API Spec 13A<br>ASTM D 2216 | YP/PV Ratio<br>Filtrate Loss<br>Moisture Content | 1 per truck load<br>1 per truck load<br>1 per truck load | 3.0 maximum<br>15 $cm^3$<br>< 10% |

## TABLE 2. WATER PROPERTIES

| Subject | Standard | Type of Test | Minimum Frequency | Specified Value |
|---|---|---|---|---|
| Water | API RP 13B-1<br>API RP 13B-1<br>EPA 600/4-79/ 020, Method 160.3 | pH<br>Hardness<br>Dissolved Solids | 1 test for each source | 6 to 8<br>< 150 ppm<br>< 500 ppm |

## TABLE 3. SOIL-BENTONITE BACKFILL PROPERTIES

| Subject | Standard | Type of Test | Minimum Frequency | Specified Value |
|---|---|---|---|---|
| Soil-Bentonite Backfill Material | ASTM D 422 | Grain Size | 1/100LF; 1/day; for Test Section 1/20LF | For record |
| | ASTM D 4318 | Atterberg Limits | 1/100LF; 1/day; for Test Section 1/20LF | For record |
| | ASTM C 143 | Slump Cone | 1/100LF perimeter wall and test cell, min. 1/day | 2 to 6 inches |
| | ASTM D 698 | Density | 1/100LF perimeter wall and test cell, min. 1/day | at least 15 pcf > slurry |
| | Field Calculated | Bentonite content | | $\geq$6% by weight |
| | API RP 13B-1 & ASTM D 5084 | Permeability | 1/100 LF using API fixed ring, min. 1/day | $1.0 \times 10^{-7}$ cm/sec maximum performed @ effective confining pressure of 0.5 tsf |
| | | | 1/100 LF post construction boring using API flexible wall (ASTM D5084) | $1.0 \times 10^{-7}$ cm/sec maximum performed @ effective confining pressure of 0.5 tsf |
| | | | 1/100 LF using dup sample from API and flexible wall permeameter (ASTM D5084), min 1/day | $1.0 \times 10^{-7}$ cm/sec maximum performed @ effective confining pressure of 0.5 tsf |

# APPENDIX A

# FEDERAL INDUSTRIAL PRODUCTS LETTER

FEDERAL
INDUSTRIAL PRODUCTS
A Business Unit of M-I LLC
P.O. Box 42842 Houston, Texas 77242-2842 Tel:832-295-2619 Toll Free: 866-299-1464 Fax: 832-295-2595

April 3, 2006

John Wentz
Environmental Quality Management
Cincinnati, OH
Sent VIA: jwentz@eqm.com

RE: Bentonite specifications

Dear Mr. Wentz,

In review of our discussion on Friday, please see the following information describing the applications and differences between the two A.P.I. bentonite specifications.

Almost two years ago the American Petroleum Institute changed the specification designation numbers for the 13A specs. The products and the requirements all stayed the same, only the number designations changed. What had been the untreated designation 13A Section 5 became 13A Section 10 and the 90 barrel standard oilfield bentonite, that had been 13A Section 4 became 13A Section 9.

To briefly touch on the differences between the two product specifications:

API 13A section 9 product is the standard in both the oilfield and in the slurry wall markets. Of the slurry trenches we have quoted or supplied in the last ten years, approximately 90-95 % of them have been this "90 Barrel" product, including the earlier Indiana Harbor project. The 90 barrel yield that is required for this specification is a viscosity that has a reference in the spec as the "AV" or apparent viscosity, and really defines one of the two primary differences between the two products. Section 9 bentonite has a viscosity requirement where the section 10 material does not. Section 9 product can also have additives where the "untreated" or "natural" section 10 material can not. Additives employed are usually either soda ash, or polymer, or a combination of the two, the YP/PV ratio is the limitation used to prevent the over-treatment of a low grade ore.

API 13A section 10 material does not allow for any additives and has a different set of specification standards. The product concentration for the testing is higher, and the fluid loss test is run on slurry dispersed with Sodium Phosphate. Section 10 product also typically has a higher price and is at times less available that the "standard" Section 9 material.

In the field the section 10 product has at times been reported to suspend sand to a greater degree than the Section 9 material leading to density and sand % issues, although no true research has been done to confirm this observation. Permeability results are normally not significantly different using either of the two products.

The actual specification documents can be downloaded for a small fee at: www.api.org

Please let me know if you need further information or have any other questions, I look forward to your review and response.

Best Regards,

John Livezey
Sales Manager - Industrial Products

# APPENDIX B

# ANALYTICAL SUMMARY OF CITY WATER

IMALABS

INTERNATIONAL

## SAMPLE RESULTS

| | | | |
|---|---|---|---|
| Customer: | ENVIRONMENTAL QUALITY MGT., INC. | Cust. Proj. No.: | 030205.0013 |
| Source: | IH CDF / INDIANA HARBOR | Login No.: | L5355 |
| Analysis: | pH | Date Received: | 11-NOV-02 |
| Method: | EPA 150.1 | Date Analyzed: | 11-NOV-02 |
| Prep Method: | EPA 9040B | Date Extracted: | 11-NOV-02 |
| Lab Notebook No: | 1363 | Preparation Batch: | WG13433 |
| Initial Cal ID: | WG13481 | Instrument Batch: | WG13481 |

| LAB ID. | CUSTOMER SAMPLE NO. | LOCATION | MATRIX | RESULT (su) | TEMP (Deg. C) | FLAG |
|---|---|---|---|---|---|---|
| L5355-1 | MUNI | | Misc. H2O | 7.2 | 18.1 | |

Comments: 1) Sample results are reported as rounded values.
2) These results are applicable only to the items tested.

# ENVIRONMENTAL CHEMICAL CORPORATION

| | | | |
|---|---|---|---|
| Customer: | Environmental Quality Mgt., Inc. | Cust. Proj. No.: | 30205 |
| Source: | IH CDF/Indiana Harbor | Project No.: | L5355 |
| **Analysis:** | Total Hardness | Date Received: | 11-NOV-02 |
| Method: | SM 2340B | Date Analyzed: | 13-NOV-02 |
| Lab Notebook: | 1387 | **Prep Batch:** | WG13338 |
| Detection Limit: | mdl=0.751mg/l RL=2.91mg/l | **Instr. Batch:** | WG13379 |

| LAB I.D. | CUSTOMER SAMPLE NO. | MATRIX | LOCATION | VALUE mg/L |
|---|---|---|---|---|
| L5355-1 | MUNI | Misc. Water | N/A | 142 |
| L5355-2 | MW-7 | Ground Water | N/A | 411 |
| L5355-3 | CE-106 | Ground Water | N/A | 588 |

BRL: Below Reporting Limit

IMALABS
INTERNATIONAL

## SAMPLE RESULTS

| | |
|---|---|
| Customer: | ENVIRONMENTAL QUALITY MGT., INC. |
| Source: | IH CDF / INDIANA HARBOR |
| Analysis: | Total Dissolved Solids |
| Method: | EPA Method 160.1 |
| Prep Method: | EPA 160.1 |
| Lab Notebook No: | 1264 |
| Initial Cal ID: | WG13490 |

| | |
|---|---|
| Cust. Proj. No.: | 030205.0013 |
| Login No.: | L5355 |
| Date Received: | 11-NOV-02 |
| Date Analyzed: | 11-NOV-02 |
| Date Extracted: | 11-NOV-02 |
| Preparation Batch: | WG13489 |
| Instrument Batch: | WG13490 |

| LAB ID. | TIME ANALYZED | CUSTOMER SAMPLE NO. & LOCATION | MATRIX | DILUTION | % SOLIDS | MDL (mg/l) | RL (mg/l) | RESULT (mg/l) | FLAG |
|---|---|---|---|---|---|---|---|---|---|
| L5355-1 | 14:00 | MUNI | Misc. H2O | 1 | N/A | 10.0 | 10.0 | 175 | |
| L5355-2 | 14:00 | MW-7 | Ground H2O | 1 | N/A | 10.0 | 10.0 | 401 | |
| L5355-3 | 14:00 | CE-106 | Ground H2O | 1 | N/A | 10.0 | 10.0 | 4010 | |

Comments: 1) Sample results are reported as rounded values.
2) These results are applicable only to the items tested.

RL - Reporting Limit

MDL - Method Detection Limit

# SIMALABS International

# Narrative pH Analysis

Project No.: L5355 Customer Name: Environmental Quality Management
Analytical Method: EPA 9040B Prep Method: EPA 9040B
Prep Work Group: WG13433 Analytical Work Group: WG13481
Instrumentation: Accumet 25
SOP No.: Wat 52/Rev.# 6

1. QC Package for this prep. batch is from project: L5355

2. Calibration: The initial calibration date is: 11-Nov-02
   Describe any problems: None.

3. Dilutions: No dilutions were needed.

4. Quality Control:
   - Method blank analyzed? No. Any contamination? n/a
   -LCS analyzed? Yes. Is recovery within limits? Yes.
   -Duplicate analyzed? Yes. Is duplicate from this project? Yes. RPD passing? Yes.
   -MS/MSD analyzed: No. Are MS/MSD from this project? n/a
   Is recovery within QC limits? n/a

5. Any sediment problems, instrument problems, digestion problems, etc. If no problems, type no in the following space: If yes describe: This package includes only L5355-1.

6. Control Charts Checked? Yes.

---

Review: Level 1 Initial SAH Date 11/18/02

Level 2 Initial __SLP_____ Date _11/18/02_____ SLP

---

IMALABS
INTERNATIONAL

QUALITY CONTROL

| | | | |
|---|---|---|---|
| Customer: | ENVIRONMENTAL QUALITY MGT., INC. | Cust. Proj. No.: | N/A |
| Source: | IH CDF / INDIANA HARBOR | Login No.: | L5355 |
| **Analysis:** | **pH** | Date Received: | 11-NOV-02 |
| Method: | EPA 150.1 | Date Analyzed: | 11-NOV-02 |
| Prep Method: | EPA 9040B | Prep Date: | 11-NOV-02 |
| Lab Notebook No: | 1363 | **Preparation Batch:** | WG13433 |
| Initial Cal ID: | WG13481 | **Instrument Batch:** | WG13481 |

| LAB ID | SAMPLE TYPE | PARENT SAMPLE CUSTOMER ID | PARENT SAMPLE LAB ID | PARENT SAMPLE VALUE | MATRIX | RESULTS (su) | TEMP (Deg. C) | RPD | MAX RPD | FLAG |
|---|---|---|---|---|---|---|---|---|---|---|
| WG13433-3 | DUP | MUNI | L5355-1 | 7.2 | Misc. H2O | 7.2 | 18.1 | 0 | 20 | |

| | | | | | | TRUE VALUE (su) | FOUND (su) | TEMP (Deg. C) | RPD | QC LIMITS | MAX RPD | FLAG |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| WG13433-1 | LCS | N/A | N/A | -- | Misc. H2O | 6.4 | 6.3 | 20.6 | | 6.1-6.4 | | |
| WG13433-2 | LCD | N/A | N/A | -- | Misc. H2O | 6.4 | 6.3 | 20.6 | 0 | 6.1-6.4 | 20 | |

Comments:

RPD - Relative Percent Difference

# ENVIRONMENTAL CHEMICAL CORPORATION

**Quality Control**

| | | | |
|---|---|---|---|
| Customer: | Environmental Quality Mgt., Inc. | Cust. Proj. No.: | 30205.001 |
| Source: | IH CDF/Indiana Harbor | Project No.: | L5355 |
| **Analysis:** | Total Hardness | Date Received: | 11-Nov-02 |
| Method: | SM 2340B | Date Analyzed: | 13-Nov-02 |
| Lab Notebook: | 1387 | **Prep Batch:** | WG13338 |
| Detection Limit: | mdl=0.751mg/l RL=2.91mg/l | **Instr. Batch:** | WG13379 |

| LAB I.D. | CUSTOMER SAMPLE NO. | MATRIX | LOCATION | VALUE mg/L | |
|---|---|---|---|---|---|
| L5352-50 | N/A | Water | N/A | 1.1 | |
| L5352-50DUP | N/A | Water | N/A | 1.6 | |
| | | | **Duplicate Relative Percent Difference=37%** | | |
| BLANK, WG13338-1 | N/A | LIQUID | N/A | ---- | U |

| | | | Spike mg/L | Recovered mg/L | % Recovery | QC Limits |
|---|---|---|---|---|---|---|
| LCS, WG13338-2 | N/A | LIQUID | 33.1 | 33.1 | 100 | 80-120 |

U= below mdl
mdl=method detection limit
RL=reporting limit

BRL: Below Reporting Limit

# SIMALABS International

# Narrative TDS Analysis

Project No.: L5355 Customer Name: Environmental Quality Management
Analytical Method: EPA 160.1 Prep Method: EPA 160.1
Prep Work Group: WG13489 Analytical Work Group: WG13490
Instrumentation: Mettler AE 100
SOP No.: Wat 44/Rev.# 9

1. QC Package for this prep. batch is from project: L5330

2. Calibration: The initial calibration date is: 11-Nov-02
   Describe any problems: None

3. Dilutions: No dilutions were needed.

4. Quality Control:
   - Method blank analyzed? Yes. Any contamination? Yes, but less than RL.
   -LCS analyzed? Yes. Is recovery within limits? Yes.
   -Duplicate analyzed? Yes. Is duplicate from this project? No. RPD passing? Yes.
   -MS/MSD analyzed: No. Are MS/MSD from this project? n/a
   Is recovery within QC limits? n/a

5. Any sediment problems, instrument problems, digestion problems, etc. If no problems, type no in the following space: no If yes describe:
   * Please note that QC for this project is reported in units of ug/L.

6. Control Charts Checked; yes

---

Review: Level 1 Initial SAH Date 11/18/02

Level 2 Initial__SLP_____Date__11/18/02____ SLP

---

IMALABS
INTERNATIONAL

QUALITY CONTROL

| | | | |
|---|---|---|---|
| Customer: | ENVIRONMENTAL QUALITY MGT., INC. | Cust. Proj. No.: | N/A |
| Source: | IH CDF / INDIANA HARBOR | Login No.: | L5355 |
| **Analysis:** | **Total Dissolved Solids** | Date Received: | 11-NOV-02 |
| Method: | EPA Method 160.1 | Date Analyzed: | 11-NOV-02 |
| Prep Method: | EPA 160.1 | Prep Date: | 11-NOV-02 |
| Lab Notebook No: | 1264 | **Preparation Batch:** | WG13489 |
| Initial Cal ID: | WG13490 | **Instrument Batch:** | WG13490 |

| LAB I.D. | SAMPLE TYPE | PARENT SAMPLE CUSTOMER ID | PARENT SAMPLE LAB ID | PARENT SAMPLE VALUE | MATRIX | % SOLIDS | MDL (ug/l) | RL (ug/l) | RESULTS (ug/l) | RPD | FLAG |
|---|---|---|---|---|---|---|---|---|---|---|---|
| WG13489-1 | BLANK | Laboratory Blank | N/A | ----- | Ground H2O | N/A | 10000 | 10000 | 8000 | | |
| WG13489-4 | DUP | Duplicate | L5330-30 | 2080000 | Ground H2O | N/A | 10000 | 10000 | 2070000 | 1 | |

| | | | | | | | SPIKE ADDED (ug/l) | R (ug/l) | %R | RPD | QC LIMITS | MAX RPD | FLAG |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| WG13489-2 | LCS | Lab Control Sample | N/A | -- | Ground H2O | N/A | 512000 | 488000 | 95 | | 80-120 | | |
| WG13489-3 | LCD | Lab Control Samp Dup | N/A | -- | Ground H2O | N/A | 512000 | 476000 | 93 | 2 | 80-120 | 20 | |

Comments:

RL - Reporting Limit
MDL - Method Detection Limit
R - Recovery
RPD - Relative Percent Difference

# SIMALABS International

# Narrative pH Analysis

Project No.: L5355 Customer Name: Environmental Quality Management
Analytical Method: EPA 9040B Prep Method: EPA 9040B
Prep Work Group: WG13480 Analytical Work Group: WG13481
Instrumentation: Accumet 25
SOP No.: Wat 52/Rev.# 6

1. QC Package for this prep. batch is from project: L5355
   This package includes samples L5355-2 & L5355-3. The QC duplicates for these samples are included in this package. However, the LCS and LCD for this project is reported with the package associated with prep work group WG13433.

2. Calibration: The initial calibration date is: 11-Nov-02
   Describe any problems: None.

3. Dilutions: No dilutions were needed.

4. Quality Control:
   - Method blank analyzed? No. Any contamination? n/a
   -LCS analyzed? Yes. Is recovery within limits? Yes.
   -Duplicate analyzed? Yes. Is duplicate from this project? Yes. RPD passing? Yes.
   -MS/MSD analyzed: No. Are MS/MSD from this project? n/a
   Is recovery within QC limits? n/a

5. Any sediment problems, instrument problems, digestion problems, etc. If no problems, type no in the following space: If yes describe: Due to different water matrices, L5355-2 and L5355-3 are in a different prep work group than L5355-1. The LCS and LCD are found in prep work group WG13433.

6. Control Charts Checked? Yes.

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Review: Level 1 Initial SAH Date 11/18/02

Level 2 Initial __SLP_____ Date __11/18/02__ SLP

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# APPENDIX C

# FORMS

# DAILY SOIL-BENTONITE SLURRY WALL QUALITY CONTROL FORM

JOB NAME: _____ JOB NUMBER: _____

THER: _____ RIG NUMBER: _____

## SLURRY

### WITHIN TRENCH

| ATION | DEPTH | DENSITY | SAND | FILTRATE LOSS | VISCOSITY | PH |
|---|---|---|---|---|---|---|
| | feet | lb/ft3 | % | cm3 | seconds | S.U. |
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### BACKFILL

| ATION | MOISTURE | FULL GRAIN SIZE | #200 SIEVE FINES | ATTERBURG |
|---|---|---|---|---|
| | % | | % | |
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### SOIL-BENTONITE BACKFILL

| ATION | SLUMP CONE | FULL GRAIN SIZE | #200 SIEVE FINES | ATTERBURG | PERMEABILITY | PERM. DUPLICATE |
|---|---|---|---|---|---|---|
| | inches | | % | | API | TAKEN FOR D5084? |
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MMENTS

| DRY BENTONITE ADDITION | | |
|---|---|---|
| | TONS | % |
| TODAY | | |
| TO DATE | | |
| BORROW % | CY | |

| | |
|---|---|
| PH CALIBRATIONS PERFORMED TODAY? | |
| BALANCE CALIBRATIONS PERFORMED TODAY? | |
| FUNNEL CALIBRATIONS PERFORMED TODAY? | |

ON: _____ OWNER: _____

# DAILY SOIL-BENTONITE SLURRY WALL QUALITY CONTROL FORM

______________________ JOB NAME: ______________ JOB NUMBER: ______________

ATHER: ______________________________ RIG NUMBER: ______________

| EXCAVATION | | | | | | | BACKFILL | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ATION | DEPTH | | | | | | | SLOPE | | |
| | TOP KEY | BOT EXCAVATION | AVG DEPTH | LENGTH | AREA | WIDTH | STATION | START OF SHIFT | END OF SHIFT | |
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SF TODAY ______

SF TO DATE ______

MMENTS

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______________________________________________________________

______________________________________________________________

______________________________________________________________

-CON: ______________________ OWNER: ______________________

# APPENDIX D

# VENDOR LITERATURE AND DVD

# *DEWIND ONE-PASS TRENCHING STATEMENT OF QUALIFICATIONS*

## *Introduction*

DeWind One-Pass Trenching is a specialty construction company based in Holland, Michigan. Utilizing our custom-made One-Pass Trenchers and delivery systems DeWind installs:

- Collection Trenches
- Permeable Reactive Barriers (PRBs)
- Slurry Walls
- HDPE Pipe (Forcemains)
- Horizontal Dewatering Lines

These systems provide our civil and environmental construction customers with proven, cost effective approaches for performing underground construction.

## *History of the Company*

DeWind began as a construction dewatering company in 1984. In 1990 we built our first One-Pass Trencher and began installing horizontal dewatering pipe for civil construction clients in Michigan. Our current trencher fleet boasts seven of the most powerful trenchers available in North America. Four trenchers are based in Holland, Michigan and three are based in Edgewater, Florida. These trenchers have installed over one million feet of horizontal dewatering pipe for the construction industry. More recently we created a delivery system that allows us to directly bury HDPE pipe for forcemains or other applications.

These same One-Pass Trenching Machines are also utilized on environmental remediation jobs and have been used for installing Collection Trenches, Air Sparging Trenches, Permeable Reactive Barriers (PRBs), and Slurry Walls. Our job summary section summarizes some recent construction jobs and provides references.

## *Description of the Technology*

Our construction method utilizes custom designed and manufactured One-Pass Trenchers and delivery systems for installations in unconsolidated soils and sediments. We build our trenchers in Michigan using both standard and proprietary components. The trencher is a track mounted vehicle that has a cutting boom that resembles a large chain saw. To our knowledge these are the most powerful unconsolidated soils One-Pass Trenchers available in North America. Each trencher is powered by 800-1700 hp motors that provide over 200,000 ft/lbs of torque.

The trenchers have interchangeable cutting booms and can cut a nominal 14-, 20-, 26-, or 36 - inch wide trench. A laser-guided system allows precise depth-control during installation. The horizontal pipes can be installed on grade as necessary.

**Collection Trenches**

The maximum installation depth for collection trenches is 35-ft from the working platform. The installation width is 12-, 18-, 24-, or 36-inches depending on the cutting chain configuration. The trenching machine is readied for installation by attaching the cutting boom and well delivery system. The delivery system is a steel box with an open back. This design provides stabilization of the sidewalls during installation so that a backfill media (typically sand or pea gravel) can be installed from the total trenching depth to near ground surface.

Prior to ground cutting an 8- to 18-inch diameter vertical riser can be attached at the back of the delivery system. SDR-11 3- to 6-inch HDPE screen is fed through a tube in the delivery system and attached approximately 6-inches from the bottom of the vertical riser at a tee. The cutting boom excavates a trench by rotating the cutting chain until the boom has cut into a vertical position relative to ground surface. The vertical riser is released and the trencher begins moving forward while simultaneously cutting the trench and installing the horizontal screen. A front-end loader or excavator is used to place the backfill material into a hopper that feeds the material into the delivery system that is stabilizing the walls of the narrow cut trench. The backfill material will be placed from approximately 12-inches below the horizontal pipe to near ground surface. We can regulate the height of the sand or gravel via a slide plate on the back of the delivery system. Installation proceeds until the design length of the Collection Trench is installed. The HDPE screen is then converted to a solid section of HDPE pipe that is installed through the delivery system as the boom is lifted out of the ground. This provides a second access port to the horizontal well screen.

During construction trench grades are controlled to within plus or minus 0.1-ft using a laser guidance system. No construction dewatering is required for trench installation with this One-Pass installation technique.

## Slurry Walls

Slurry walls only require a slurry delivery tube attached to the cutting boom. Consequently, slurry walls can be installed up to 50-ft deep from the working platform. Prior to the in-situ mixing of the slurry wall an on-site mixing tank is used to create a bentonite slurry mixture in batches. The quantity of bentonite required to achieve the project specifications is calculated and the feed rate of the bentonite slurry during installation is determined.

The trencher moves into position and the cutting chain is rotated to begin excavating to the required depth. The cutting boom excavates into a vertical cutting position. At this point the bentonite slurry is pumped down a tube to the bottom of the slurry wall cut. The rotating cutting chain homogenizes the bentonite slurry and native soils as it creates the slurry wall. With this single cut and mix method there is little chance of high-permeability windows in the slurry wall.

## Permeable Reactive Barrier

Installing a PRB is very similar to installing a Collection Trench. The maximum installation depth is 35-ft from the working platform. The trenching machine is readied for installation by attaching the cutting boom and permeable media delivery system. The cutting boom excavates a trench by rotating the cutting chain until the boom and delivery system has cut into a vertical position relative to ground surface. At this point the delivery system is loaded with the permeable treatment media (iron filings, etc.) and the trencher moves forward while simultaneously cutting the trench and placing the cuttings adjacent to the trench. A front-end loader or excavator is used to place the backfill media in a hopper that feeds into the narrow trench. The steel box delivery system helps to stabilize the walls during installation of this backfill media. Installation proceeds until the design length of the PRB has been installed.

## Construction Dewatering

Construction dewatering typically involves placement of horizontal corrugated HDPE well sock. Installation depths are usually less than 20-ft. Installation of the horizontal sock is achieved by feeding the well sock through a tube to near the bottom of the narrow trench. Native soils are typically returned to the trench as installation proceeds. For soils with low hydraulic conductivity's, placement of a preferential sand or pea gravel backfill may be required. These installations are similar to the collection trench installation described above.

## Solid HDPE Pipe

Our direct-bury installation method allows installation of up to 14-inch diameter HDPE up to 10-ft below grade. As with our other systems, this pipe can be installed directly into water saturated soils with no need for construction dewatering. The depth of installation is controlled by a laser-guided system that provides tolerances of 0.1 ft.

## *Health and Safety*

DeWind is committed to maintaining a safe and healthful work environment on all projects. Achieving an outstanding safety record for our clients is among our paramount goals. All DeWind employees are charged by management with promoting safety during fieldwork. Safety excellence will be accomplished through strong program management commitment, active employee involvement in the safety process, and timely communication through the chain-of-command.

DeWind offers crews fully trained for work on hazardous waste sites. All operators and laborers are 40-hour HAZWOPER trained with a current 8-hour refresher. We operate under a Health and Safety Plan that is in compliance with 29 CFR 1910.120 and other OSHA requirements.

## *Job Summaries*

**Hill AFB**

During the summer of 2000 DeWind completed the installation of 9 collection trenches (over 4700-linear ft) at Hill AFB located in Layton, Utah. The collection trenches were installed in a sandy gravel formation that had numerous cobbles. Installation depths ranged from 24-42 ft bls for the 18-inch wide trenches. Our newest trencher operated in land benches up to 17-ft deep to achieve these installation depths. We also used a special gravel delivery system that allows loading of the backfill gravel from the back end of the trencher. This minimized the working platform width thereby reducing the quantity of soil that had to be removed and replaced while creating the land benches. For the horizontal collection lines we installed two 4-inch diameter SDR-11 screens (one on top of the other) that were tied into 4-ft diameter concrete manholes.

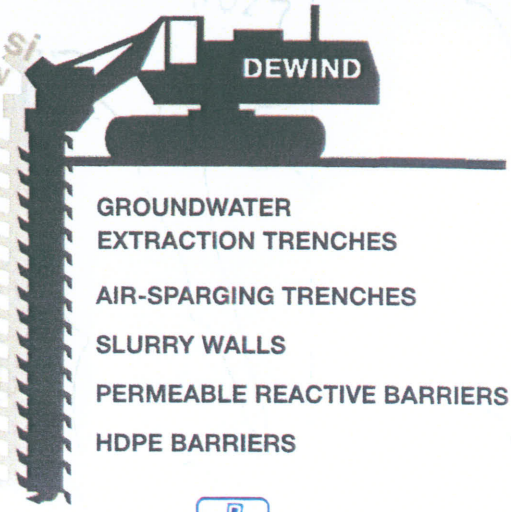
**POC**
Kevin Wong, URS Greiner
916-679-2000

**Varian Facility**

DeWind completed the installation of two collection trenches (970-ft total length) and a slurry wall (500-ft total length) at the Varian facility in Salt Lake City Utah during the summer of 1999. The trenches, approximately 20-ft deep and 12-inches wide, were installed to replace a vertical well recovery system that had proved to not be effective in recovering groundwater contaminated with TCE. Site soils were silt, clay, and sand. The slurry wall was installed parallel to and downgradient from a collection trench.

**POC**
Keith Johnson, Montgomery Watson
801-993-2408

# SLURRY WALLS




GROUNDWATER EXTRACTION TRENCHES

AIR-SPARGING TRENCHES

SLURRY WALLS

PERMEABLE REACTIVE BARRIERS

HDPE BARRIERS

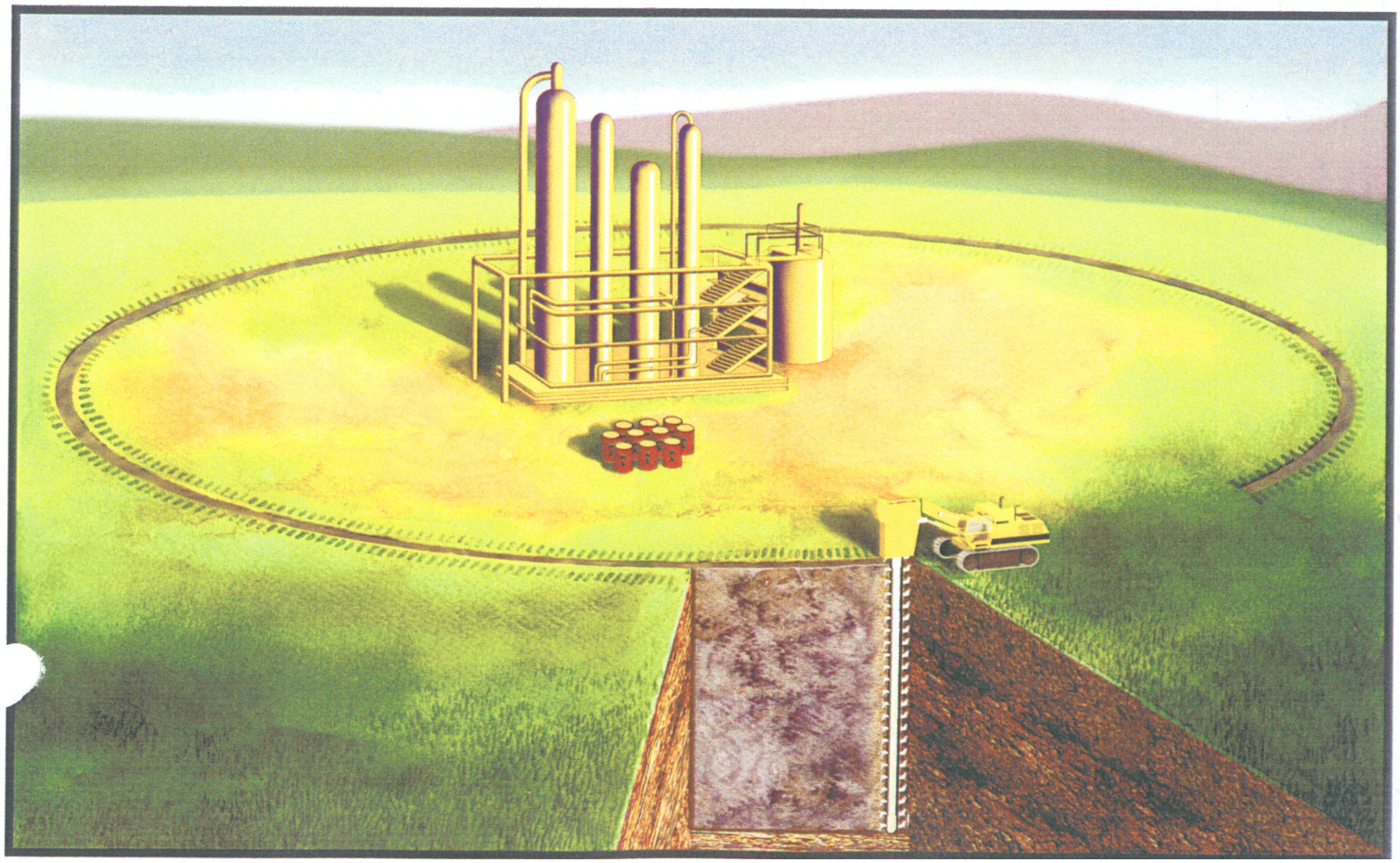
***Slurry Walls*** **typically offer the most cost-effective hydraulic containment of contaminated groundwater. Our One-Pass Trenchers perform in-situ mixing up to 50 feet below grade by homogenizing bentonite slurry directly with the native soils. Advantages over conventional slurry wall installation techniques include:**

- Much higher installation rates (typically 300-500 LF/Day).
- Lower Cost.
- Smaller work area requirements.
- Less site disruption during construction.

**DEWIND**

**Dewatering and Trenching**

9150 96th Ave.
Zeeland, Michigan 49464
Ph 616 875-7580
Fax 616 875-7334
dewinddewatering.com



# DeWind One-Pass Trenching LLC

## Quick reference Guide
## Projects and Customer

Parsons Engineering, Seneca Army Depot in NY, 650' ZVI wall
Ted hartfelder 303-764-1918

Parsons Engineering:
Ellsworth AFB, Mulch wall PRB, 600' x 35"blg
Altus AFB, Bio wall, 5000' x 35' blg with 3" hdpe pipe.
Warren AFB, Bio Wall , 500'
Dover AFB, Bio wall
Contact D.H. Woolf @ 303-831-8100

Bechtel Group, Pensecola Naval Station in Florida, 600' CT

Shaw Group, York town Naval Station in Virginia, 17 CT's totaling 2500'
Contact Fred Johnson 301-837-5443

Avisco, DOE Y-12 site in Tennissee, 100' CT

Montgomery Watson, Varian facility in Salt lake City, 2 CT's and one SW.

Montgomery Watson, Moog facility in salt lake City, 900' CT

CDM Enviro, Universal Studios in Florida
Joe McDivitt 407-660-6450

Entact, Lakeland Disposal Site in Indiana, 5 CT's = 2500 feet
Brian Morgan 630-842-7388

URS, Hill AFB in Utah 9 CT's = 4700 feet
Bob Noise 916-569-5530

URS, Dover AFB in Delaware, 2 CT's = 1000 feet
Gordon Chin 215-657-5000

URS, Arvesta Facility, ZVI wall
Contact: Darryl Daugherty 216-622-2400

Groundwater Services, Offitt AFB in Nebraska, 500' PRB wall
713-522-6300

Dupont , East Chicago facility, 2000 foot PRB wall
Rajiv Sinha 3002-892-8692

Sevenson Enviro, DuPont facility in Newport Delaware, 900' long PRB wall
Rich Badis 800-777-2283

Dan Raviv Ass., Newport development Corp in NJ , 6 CT's
Peter Grogan 973-564-6006 ext. 232

Creamer Enviro, MGP site in NJ, 8 CT's = 600 feet
Greg Elband 201-968-3300

Tetra Tech. Orlando Naval Station, 220' PRB wall

Shaw Group, Vance AFB in Oklahoma, 500' long PRB wall
Ted Hartfelder 303-764-1918

LaGloria Oil, 600' SW in Tyler Tx
Gus harting 903-579-3408

Law Engineering, Inland Steel facility in IN, 200' CT
Ken Hill P.E. 219-399-1349

Thermo Retec, Former BP Amoco site in Kansas, 1200' long SW

S.S. Papadapolous, East Palo Alto site in CA, 1200' CT.

Pangea, DOE Weldon Springs site in St. Louis MO, 500' CT

Harding Lawson, Tampa site in Flordia, 1200' long CT

Bay West Inc., twin Cities Army Depot in Minn., 300' ling CT.

Centerline Utilities, West Palm FL 900' long SW
Fred Chesney 561-689-3917

Hanna Const, Whitestown landfill in NY
Jim Cammer 315-793-5253

Moretrench, Cargill facility in Flordia, 2000' long CT.
Bob Kunzel 973-983-0903

It/OHM Group, Vance AFB
Dan Butler 713-996-4525

Heritage Environmental, Paxton II Landfill, leachate poly installed.
Jim Nance 317-727-7062

Horizon Environmental, pfizer Global, CT's for Airsparge
Chris Miron P.E. 616-554-3210

LaGloria Oil & Gas, Slurry wall
Gus Harting 903-579-3408

Phillips Enviro, Flint Hills Corpus Christy TX , CT
Gary Hierstien 713-495-3204

Great lakes Carbon, Allied Science, CT's
Bill Pierce 231-258-8014

Geo Sciences, Rhodia Collection Trenches
Dr. Mohammed Mohammadi 225-751-5253

Compass Enviro and CH2MHILL:
Broderick Superfund Site:
*Slurry walls
*Cut off drains
*Recovery Trenches w/ manholes
Contact: CH2MHILL Phillip Altman 770-604-9182
Compass: Glen Schwartz 312-492-6590

HSA Enviro, Seminole Electric Co. Palatka FL
2500' x 25' blg Colection Trenches
Contact George 813-971-3882

Sevenson, Koppers Wood Treating, IL
1000' x 35' blg CT Trenches w/ sumps
Contact; Bob Braden 517-974-8242

# APPENDIX E

# K & S SAMPLING PROCEDURES

# INDIANA HARBOR CONFINED DISPOSAL FACILITY
## Slurry Wall Gaps Wall Sampling
## Quality Control

Scope of Work

## INTRODUCTION

1. The U.S. Army Corps of Engineers, Chicago District (COE) is currently designing and constructing the Indiana Harbor and Canal Confined Disposal Facility (CDF). The CDF will be constructed to contain contaminated sediments that will be dredged from the Indiana Harbor and Canal (IHC). A perimeter soil-bentonite cutoff wall has been installed as part of the construction. The soil-bentonite cutoff wall is being installed on the west side of the site from Stations 78+50 to 86+90 and on the east side of the site from Stations 43+30 to 44+60.

2. The work required under this scope shall consist of drilling eleven (11) borings into the completed soil-bentonite wall as described in IHC CDF Slurry Wall Gaps (W912P6-06-C-0003) Transmittal Number 02260-4. The purpose of the borings is to obtain 3-inch diameter Osterberg piston tube samples of the soil-bentonite backfill for laboratory permeability testing from each boring. The Corps intends to investigate whether the soil-bentonite backfill has a hydraulic conductivity of less than $1.0 \times 10^{-7}$ cm/s based on laboratory tests.

## DESCRIPTION OF WORK

3. The borings shall be advanced using an all-terrain drill rig utilizing the rotary wash method. This method consists of casing the hole with HW (nominal 4-inch diameter) casing. At the start of each boring, the rig shall be leveled using the hydraulic outriggers and the drill stem plumbed using a carpenter's level. The drill rig shall be centered on the staked boring location, which is to be the center of the cutoff wall as-built. A drill bit (3 7/8-inch tri-cone roller bit) connected to the drill section is then inserted into the casing for drilling. After the casing has been advanced to the desired sampling depth, water pressure is used to rotate the bit, which is then advanced by the downhole pressure on the bit. The hole advancement method is to be rotary wash using circulating water and the tri-cone roller bit. Below the water table, water shall be maintained within the casing at or above the groundwater level. **No drilling mud is to be used.**

4. When the desired sampling depth has been reached the bit is pulled and the Osterberg sampler is lowered into position and then hydraulically advanced into the undisturbed soil-bentonite backfill. Once the sample has been retrieved the casing is advanced and the drill bit cleans out the hole down to the next sampling interval. The Contractor is to obtain the 3 ft long, 3-inch diameter Osterberg samples in accordance with ASTM D

1587. Samples shall be obtained from the following intervals: target elevation + 3 ft and target elevation - 3 feet. The target elevations shall be 5, 15, and 25 ft. This means that if the target elevation is 5 ft, then a sample will be obtained from 2 – 5 ft and from 5 – 8 ft. For a target elevation of 15 ft samples would be collected from 12 – 15 ft and 15 – 18 ft. For a target elevation of 25 ft samples would be collected from 22 – 25 ft and 25 – 28 ft.

The target elevations are:

5 ft for Stations 43+45, 79+70, 82+70, and 85+70
15 ft for Stations 44+45, 80+70, 83+70, and 86+70.
25 ft for Stations 78+70, 81+70, and 84+70.

If any of the 3 ft samples obtained has less than 24 inches of recovery an offset boring shall be drilled 3 from the original location and another sample(s) obtained. The samples shall be sealed with wax in the following manner in accordance with EM 1110-1-1906.

- Seal the top of the sample by inserting a cardboard disk (or cheesecloth) and pouring in slowly 1 to 2 inches of melted beeswax in several thin layers. Fill the remaining void space in the tube with sand to prevent slippage of the sample.

- Cap the end, tape securely, and dip the end into the melted wax several times.

- Repeat the above steps for the opposite end of the tube. Typically, it will be necessary to scrape out an inch or so of undisturbed material to allow the wax to seat.

5. Following sampling, the borings shall be tremie-grouted shut from the bottom of the borehole to the top of the wall using a high-solids (30%) bentonite grout. The contractor shall be responsible for the preparation of a separate drilling log for each boring (ENG FORM 1836) and shall deliver complete, typed copies of these logs along with the lab testing results. All field operations and logging shall be under the direction of a licensed engineer or geologist. All field logs shall be recorded during the actual performance of the work and shall be preserved in good condition and order by the contractor until they are delivered as part of the final report. The following information shall be included on the logs for each borehole:

a. Borehole number, station and offset, coordinates, and elevation of top of borehole. The elevation and horizontal location of each borehole shall be determined within an accuracy of ±0.2 foot.

b. Driller's name, logger's name, model designation of drilling and sampling equipment.

c. Dates and time by depths when drilling and sampling operations were performed.

d. Drill action, water pressure, and any other unusual and non-ordinary experience, which could indicate the subsurface conditions encountered. Depths at which any drill water is lost and regained and amounts.

e. Depths at which samples were recovered including top and bottom depth of each sample.

f. Length of sample recovered.

6. All tube samples will be transported to the contractor's lab in an enclosed vehicle with a chain of custody seal. In addition, the tube samples shall be protected from freezing and transported in a vertical position in special boxes in accordance with ASTM D 4220.

7. Surveying. The location of all borehole locations shall be established using existing EQM monumentation. All elevations are to be noted as NGVD 29 (National Geodetic Vertical Datum). Locations of the borings shall be described using Indiana East Zone (NAD 83). Additional control may have to be set by the Contractor. The tolerance for vertical and horizontal position shall be ±0.2 feet. Copies of standard COE filed notes shall be turned into the COE upon completion of survey work.

8. Laboratory Testing. Laboratory analysis of soil samples shall be conducted in accordance with appropriate testing procedures indicated in ASTM standards. The permeability tests shall be performed using ASTM D 5084. The effective confining pressure shall be 2.3 psi for five foot target depth samples, 6.75 psi for 15 ft target depth samples, and 11.3 psi for 25 ft target depth samples. The hydraulic gradient shall not exceed the maximum value recommended in ASTM D 5084. All tube extrusion shall be observed by a Corps representative. All extruded samples shall be photographed with a digital camera.

9. References. The publications listed below form a part of this scope-of-work to the extent referenced. The publications are referred to in the text by basic designation only.

- Safety and Health Requirements Manual, EM 385-1-1, September 1996
- Geotechnical Investigations, EM 1110-1-1804, February 1984
- "Thin-Walled Tube Geotechnical Sampling of Soils," ASTM D 1587-94
- "Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter," ASTM D 5084-90 (1997)
- "Field Logging of Subsurface Explorations of Soil and Rock," ASTM D 5434-93
- "Standard Practices for Preserving and Transporting Soil Samples," ASTM D 4220-95

DECONTAMINATION

10. Drilling equipment used shall be decontaminated using high-pressure water or steam cleaning to volatilize and remove residual contamination and visible dirt prior to leaving the site. A temporary equipment decontamination pad with sump shall be constructed for heavy equipment decontamination. The Contractor shall coordinate the location of the decontamination pad with EQ and it shall be removed from the site and disposed of properly immediately following completion of the work in the field. Decontamination activity will be performed at this temporary decontamination station in such a way that fluids are retained for future treatment or disposal. The following steps will be used to decontaminate drilling equipment prior to leaving the site:

- Gross contamination and/or drill cuttings caked on equipment will be scraped off with a flat-bladed scraper.
- The drill rig, augers, casing, shovels, etc. will be sprayed with detergent water by a high-pressure washer, then rinsed with potable water. Care should be taken to adequately clean the insides of the hollow-stem augers or casing used.

SUBMITTALS

11. Report. An INVESTIGATION REPORT shall be submitted as part of the investigation. Three (3) draft copies of these reports shall be submitted to the Chicago District for review. Five bound copies and one unbound copy of the final report shall be submitted which incorporates the comments made by the COR along with a CD containing a copy of the final report and all drawings electronically reproduced. In addition, the entire report, including boring shall be submitted in PDF format. The INVESTIGATION REPORT shall contain, as a minimum, the following:

- Authorization and Purpose of Investigation
- Project Location
- Exploration and Testing Procedures
- Boring Logs
- Hydraulic Conductivity Test Results

12. A table shall also be included listing all borings, with the following information: Boring Number, Northing, Easting, Top of Hole Elevation, Depth of Sample, Sample Number, and Hydraulic Conductivity. A plan drawing shall be prepared showing the borehole locations.

13. Draft Borehole Logs. A copy of each BOREHOLE LOG shall be made at site and provide to the Corps Construction Representative, upon completion of each day of drilling. In addition, a copy of each BOREHOLE LOG shall be faxed (and a PDF sent) to the COR after each day of drilling. The draft boring logs shall clearly indicate the locations and recoveries of the undisturbed samples.

14. Exhibits. Exhibits shall be prepared using the Chicago District's standards for Preparation of Drawings. Plates shall be provided on sheets no larger than 11" x 17".

15. Digitized Data. Information submitted digitally shall be saved onto a CD-R. Text shall be prepared in Microsoft Word format. Spreadsheets shall be prepared in Microsoft Excel format. Drawings shall be prepared in MicroStation J format. In addition, the entire report, including boring logs, photographs, and test results, shall be submitted in PDF format.

# APPENDIX D

# PROJECT RECORDS

# INITIAL AND FINAL VERIFICATION RESULTS SUMMARY TABLES

**Indiana Harbor & Canal**
**Confined Disposal Facility**
**Slurry Wall Gaps**
**Contract No. W912P6-06-C-0003**

**Initital Verification Sample Results**

| | East Side Station | Avg Depth, ft | Target Test Press. psi | EQ Sample -Great Lakes Lab Interval ft | Test Press. psi | Result cm/s | Status P or F | USACE Split -STS Lab Interval ft | Test Press psi | Result cm/s | Status P or F |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 43+50 | 5 | 2.3 | 2-5 | 2.3 | 6.1x10-8 | Pass | 5-8 | 2.3 | 4.52x10-7 | Fail |
| 2 | 44+50 | 15 | 6.75 | 12-15 | 6.8 | 3.8x10-8 | Pass | No Duplicate Sample | | | |

| | West Side Station | Avg Depth, ft | Target Test Press. psi | EQ Sample Interval ft | Test Press. psi | Result cm/s | | USACE Split Interval ft | Test Press psi | Result cm/s | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 78+85 | 25 | 11.3 | 25-28 | 11.3 | 8.4x10-8 | Pass | No Duplicate Sample | | | |
| 2 | 79+85 | 5 | 2.3 | 5-8 | 2.3 | 8.8x10-8 | Pass | No Duplicate Sample | | | |
| 3 | 80+85 | 15 | 6.75 | 12-15 | 6.8 | 1.1x10-7 | Fail | 15-18 | 6.75 | 2.15x10-7 | Fail |
| 4 | 81+85 | 25 | 11.3 | 25-28 | 11.3 | 4.4x10-7 | Fail | No Duplicate Sample | | | |
| 5 | 82+85 | 5 | 2.3 | 5-8 | 2.3 | 2.1x10-7 | Fail | No Duplicate Sample | | | |
| 6 | 83+85 | 15 | 6.75 | 15-18 | 6.8 | 3.1x10-7 | Fail | No Duplicate Sample | | | |
| 7 | 84+85 | 25 | 11.3 | 22-25 | 11.3 | 4.0x10-8 | Pass | 25-28 | 11.3 | 8.49x10-8 | Pass |
| 8 | 85+70 | 5 | 2.3 | 2-5 | 2.3 | 2.2x10-7 | Fail | No Duplicate Sample | | | |
| 9 | 86+70 | 15 | 6.75 | 15-18 | 6.8 | 4.7x10-8 | Pass | No Duplicate Sample | | | |

Sample Intervals
5': 2-5, 5-8 with target top pressure of 2.3 psi
15': 12-15,15-18 with target top pressure of 6.75 psi
25': 22-25, 25-28 with target top pressure of 11.3 psi.

Indiana Harbor & Canal
Confined Disposal Facility
Slurry Wall Gaps
Contract No. W912P6-06-C-0003

Verification Sample Results

| East Side Station | Avg Depth, ft | Target Test Press. psi | EQ Sample -Great Lakes Lab Interval ft | Test Press. psi | Result cm/s | Status P or F | USACE Split -STS Lab Interval ft | Test Press psi | Result cm/s | Status P or F |
|---|---|---|---|---|---|---|---|---|---|---|
| 43+50 | 5 | 2.3 | 2-5 | 2.3 | 6.1x10-8 | Pass | No Duplicate Sample | | | |
| 44+50 | 15 | 6.75 | 12-15 | 6.8 | 3.8x10-8 | Pass | No Duplicate Sample | | | |

Note that 43+50 results passed in Rework, however, USACE duplicate failed.
Area was reworked again, sample collected, and provided to Great Lakes Lab for permeability analysis.

| West Side Station | Avg Depth, ft | Target Test Press. psi | EQ Sample Interval ft | Test Press. psi | Result cm/s | | USACE Split Interval ft | Test Press psi | Result cm/s | |
|---|---|---|---|---|---|---|---|---|---|---|
| 78+85 | 25 | 11.3 | 25-28 | 11.3 | 8.4x10-8 | Pass | No Duplicate Sample | | | |
| 79+85 | 5 | 2.3 | 5-8 | 2.3 | 8.8x10-8 | Pass | No Duplicate Sample | | | |
| 80+85 | 15 | 6.75 | 15-18 | 6.8 | 3.4x10-8 | Pass | 12-15 | 6.75 | 2.4x10-8 | Pass |
| 81+85 | 25 | 11.3 | 22-25 | 11.3 | 1.8x10-8 | Pass | No Duplicate Sample | | | |
| 82+85 | 5 | 2.3 | 5-8 | 2.3 | 7.1x10-8 | Pass | No Duplicate Sample | | | |
| 83+85 | 15 | 6.75 | 15-18 | 6.7 | 2.9x10-8 | Pass | No Duplicate Sample | | | |
| 84+85 | 25 | 11.3 | 22-25 | 11.3 | 1.5x10-8 | Pass | 25-28 | 11.3 | 2.53x10-8 | Pass |
| 85+70 | 5 | 2.3 | 2-5 | 2.3 | 5.7x10-8 | Pass | No Duplicate Sample | | | |
| 86+70 | 15 | 6.75 | 15-18 | 6.8 | 4.7x10-8 | Pass | No Duplicate Sample | | | |

Sample Intervals
5': 2-5, 5-8 with target top pressure of 2.3 psi
15': 12-15,15-18 with target top pressure of 6.75 psi
25': 22-25, 25-28 with target top pressure of 13.2 psi.

Rework Verification Sample Checked and Pass

**Slurry Wall Gaps Installation Dates**

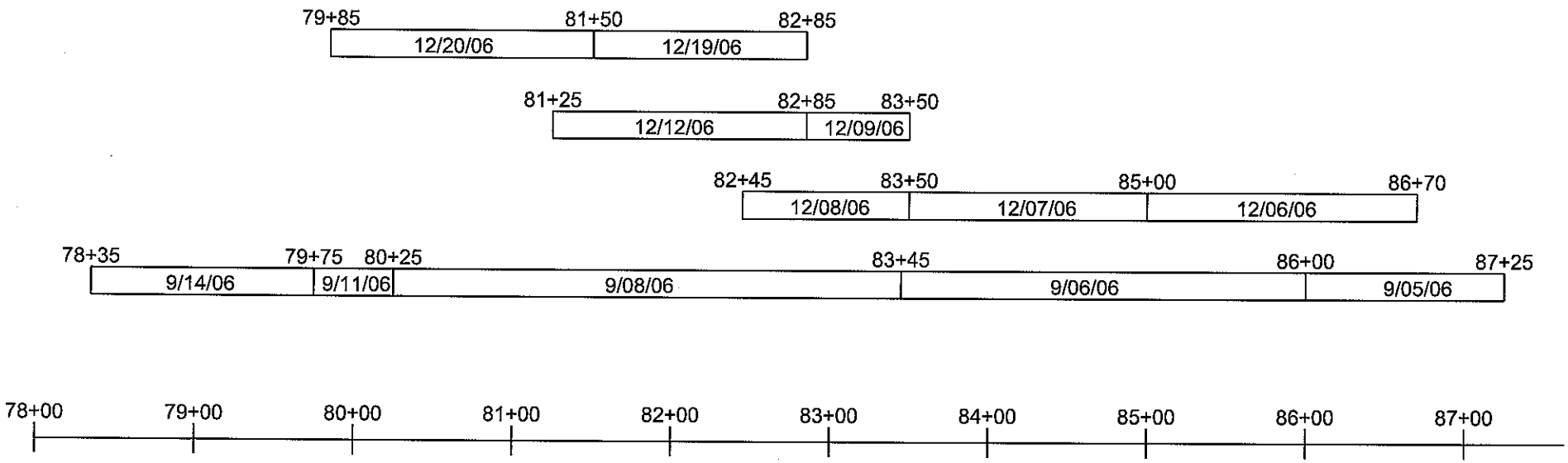
| Date Installed | Segment Installed From | Segment Installed To | Comment |
|---|---|---|---|
| 8/31/2006 | 44+70 | 44+15 | Initial Installation |
| 9/1/2006 | 44+15 | 43+20 | Initial Installation |
| 9/5/2006 | 86+00 | 87+25 | Initial Installation |
| 9/6/2006 | 83+45 | 86+00 | Initial Installation |
| 9/8/2006 | 83+45 | 80+25 | Initial Installation |
| 9/11/2006 | 80+25 | 79+75 | Initial Installation |
| 9/14/2006 | 79+75 | 78+35 | Initial Installation |
| 12/5/2006 | 43+20 | 44+50 | Rework |
| 12/6/2006 | 86+70 | 85+00 | Rework |
| 12/7/2006 | 85+00 | 83+50 | Rework |
| 12/8/2006 | 83+50 | 82+45 | Rework |
| 12/9/2006 | 82+85 | 83+50 | Rework |
| 12/12/2006 | 81+25 | 82+85 | Rework |
| 12/19/2006 | 81+50 | 82+85 | Rework |
| 12/20/2006 | 79+85 | 81+50 | Rework |
| 2/20/2007 | 43+20 | 44+50 | Rework |

**Slurry Wall Gaps Boring Collection Dates**

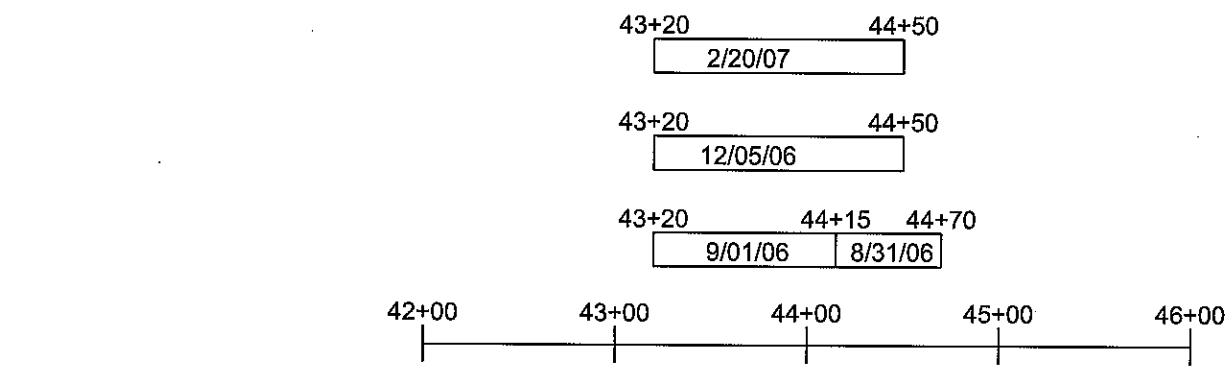
| Boring Sample Collection Date | Location (by Station) | Depth Range, ft | Report No. | Permeability Result cm/sec | Boring Log Attached to Daily QC Report |
|---|---|---|---|---|---|
| **Initial Verification Samples** | | | | | |
| 9/28/2006 | 43+50 | 2-5 | 12231 | 6.1E-08 | Y |
| 9/28/2006 | 44+50 | 12-15 | 12230 | 3.8E-08 | Y |
| 9/27/2006 | 78+85 | 25-28 | 12229 | 8.4E-08 | Y |
| 9/27/2006 | 79+85 | 5-8 | 12228 | 8.8E-08 | Y |
| 9/27/2006 | 80+85 | 12-15 | 12227 | 1.1E-08 | Y |
| 9/25/2006 | 81+85 | 25-28 | 12226 | 4.4E-07 | Y |
| 9/26/2006 | 82+85 | 5-8 | 12225 | 2.1E-07 | Y |
| 9/26/2006 | 83+85 | 15-18 | 12224 | 3.1E-07 | Y |
| 9/25/2006 | 84+85 | 22-25 | 12223 | 4.0E-08 | Y |
| 9/25/2006 | 85+70 | 2-5 | 12222 | 2.2E-07 | Y |
| 9/21/2006 | 86+70 | 15-18 | 12221 | 4.7E-08 | Y |
| **Final Verification Samples** | | | | | |
| 2/21/2007 | 43+50 | 5-8 | 13380 | 4.0E-08 | N (2) |
| 12/27/2006 | 80+85 | 15-18 | 12920 | 3.4E-08 | N (2) |
| 12/27/2006 (1) | 81+85 | 22-25 | 12921 | 1.8E-08 | N (2) |
| 12/28/2006 | 84+85 | 22-25 | 12922 | 1.5E-08 | N (2) |
| 12/11/2006 | 43+50 | 2-5 | 12881 | 6.8E-08 | N (2) |
| 12/14/2006 | 82+85 | 5-8 | 12883 | 7.1E-08 | N (2) |
| 12/14/2006 | 83+85 | 15-18 | 12884 | 2.9E-08 | N (2) |
| 12/11/2006 | 85+70 | 2-5 | 12882 | 5.7E-08 | N (2) |

(1) Sample collection date for 81+85 is not identified in the Daily QC Report. Lab report 12921 for 81+85 shows sample receipt12/29/06. Sample 82+85 is identified in the Daily QC Reports as collected on 12/14/06 and 12/27/06, but the latest sample received date is 12/18/06. Therefore it is believed that 81+85 was colleteed on 12/27/06 and improperly identified in the Daily QC Report as 82+85

(2) Boring logs were not prepared for Final Verifiaction Samples collected at the same location where Initial Verification Sample results did not meet specification




WEST SIDE




EAST SIDE

| REV | DESCRIPTION | DATE | APPROVED |
|---|---|---|---|
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

REVISIONS

ENVIRONMENTAL QUALITY MANAGEMENT, INC.
1800 CARILLON BLVD.
CINCINNATI, OHIO 45240
P (513)825-7500
F (513)825-7495

| | | |
|---|---|---|
| DRAWN | D.TOMO | 7/11/08 |
| CHECKED | | |
| APPROVED | | |
| SCALE: | NONE | |

# INDIANA HARBOR SLURRY WALL GAP SEGMENTS BY DATE

| ORIGINAL SIZE | PROJECT NO. | DWG NO. | REV |
|---|---|---|---|
| A | 030249.0001 | FIGURE 1 | 0 |

# FINAL VERIFICATION SAMPLES

**Great Lakes Soil & Environmental Consultants, Inc**
333 Shore Drive, Burr Ridge, IL 60521 Ph: (630) 321-0944 Fax: (630) 321-0945

**COEFFICIENT OF PERMEABILITY - ASTM D5084 (FLEXIBLE WALL)**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project** | Indiana Harbor Slurry Wall-East Chicago | | | | | | |
| **Client** | Environmental Quality Management, 1800 Carillon Boulevard, Cincinnati, OH 45240 | | | | | | |
| **File #** | 3794 | **Date Tested** | 2/28/2008 | **Tested by:** | NP | **QC by:** | NP |
| **Sample ID:** | 43 + 50 C (5 - 8) | Date Recd. | 2/22/07 | **Location** | Sta 43+50 3rd tube / 5' - 8' depth | | |
| **Sample Description** | Gray SB Backfill | | | | | | |

*Specimen Data*

***Initial***

| | | | | | |
|---|---|---|---|---|---|
| Diameter: | 6.71 | cm | Area, A: | 35.4 | sq cm |
| Height, L: | 6.25 | cm | Volume, V: | 221.0 | cu cm |
| Mass of Sample: | 451.9 | g | **Moisture Content:** | **30.8** | % |
| | | | **Wet Density** | **127.6** | **pcf** |
| | | | **Dry Density** | **97.6** | **pcf** |

***Final***

| | | | | | |
|---|---|---|---|---|---|
| Diameter: | 7.00 | cm | Area, A: | 38.5 | sq cm |
| Height, L: | 5.89 | cm | Volume, V: | 226.7 | cu cm |
| Mass of Sample: | 443.38 | g | **Moisture Content:** | **29.0** | % |
| | | | **Wet Density** | **122.1** | **pcf** |
| | | | **Dry Density** | **94.6** | **pcf** |
| | | | **Deg of Saturation** | **98.0** | |

*Test Data*

| | | |
|---|---|---|
| Permeant: | De-aired Tap Water | |
| Cell Pressure | 25.0 | psi |
| Top Pressure | 20.9 | psi |
| Bottom Pressure | 22.7 | psi |
| Gradient: | 20.3 | |

| Date | Time | Elapsed Time (Sec) | Cumulative Time (Sec) | Burette Readings Outflow cc | Burette Readings Inflow cc | Outflow/Inflow Ratio | Fluid Temp. oC | Permeability cm/sec |
|---|---|---|---|---|---|---|---|---|
| 2/28/2007 | 9:15 AM | 0 | 0 | 3.06 | 5.69 | | 20.0 | --- |
| 2/28/2007 | 10:15 AM | 3600 | 3600 | 3.20 | 5.56 | 1.1 | 20.0 | 4.43E-08 |
| 2/28/2007 | 11:30 AM | 4500 | 8100 | 3.36 | 5.41 | 1.1 | 20.0 | 4.15E-08 |
| 2/28/2007 | 1:00 PM | 5400 | 13500 | 3.52 | 5.25 | 1.0 | 20.0 | 3.74E-08 |
| 2/28/2007 | 2:00 PM | 3600 | 17100 | 3.62 | 5.15 | 1.0 | 20.0 | 3.56E-08 |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

Average Permeability = **4.0E-08** cm/sec

**Remarks:**

| | |
|---|---|
| **Test ID** | 13380 |

*Quality, Service & Commitment*

**Great Lakes Soil & Environmental Consultants, Inc**
333 Shore Drive, Burr Ridge, IL 60521 Ph: (630) 321-0944 Fax: (630) 321-0945

**COEFFICIENT OF PERMEABILITY - ASTM D5084 (FLEXIBLE WALL)**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project** | Indiana Harbor Slurry Wall-East Chicago | | | | | | |
| **Client** | Environmental Quality Management, 1800 Carillon Boulevard, Cincinnati, OH 45240 | | | | | | |
| **File #** | 3794 | **Date Tested** | 1/2/2007 | **Tested by:** | LR | **QC by:** | SB |
| **Sample ID:** | 80+85 (15-18) | Date Recd. | 12/29/06 | **Location** | Sta 80+85 / 15' - 18' depth | | |
| **Sample Description** | Gray SB Backfill | | | | | | |

## *Specimen Data*

***Initial***

| | | | | | |
|---|---|---|---|---|---|
| Diameter: | 7.21 | cm | Area, A: | 40.8 | sq cm |
| Height, L: | 6.46 | cm | Volume, V: | 263.8 | cu cm |
| Mass of Sample: | 519.4 | g | **Moisture Content:** | 22.8 | % |
| | | | **Wet Density** | 122.9 | pcf |
| | | | **Dry Density** | 100.1 | pcf |

***Final***

| | | | | | |
|---|---|---|---|---|---|
| Diameter: | 7.17 | cm | Area, A: | 40.4 | sq cm |
| Height, L: | 6.16 | cm | Volume, V: | 248.7 | cu cm |
| Mass of Sample: | 503.92 | g | **Moisture Content:** | 19.3 | % |
| | | | **Wet Density** | 126.4 | pcf |
| | | | **Dry Density** | 106.0 | pcf |
| | | | **Deg of Saturation** | 85.6 | |

## *Test Data*

| | |
|---|---|
| Permeant: | De-aired Tap Water |
| Cell Pressure | 26.8 psi |
| Top Pressure | 18.5 psi |
| Bottom Pressure | 20.0 psi |
| Gradient: | 16.3 |

| Date | Time | Elapsed Time (Sec) | Cumulative Time (Sec) | Burette Readings Outflow cc | Burette Readings Inflow cc | Outflow/Inflow Ratio | Fluid Temp. oC | Permeability cm/sec |
|---|---|---|---|---|---|---|---|---|
| 1/2/2007 | 9:43 AM | 0 | 0 | 3.25 | 5.11 | | 20.0 | --- |
| 1/2/2007 | 10:43 AM | 3600 | 3600 | 3.36 | 5.00 | 1.0 | 20.0 | 4.10E-08 |
| 1/2/2007 | 11:43 AM | 3600 | 7200 | 3.44 | 4.90 | 0.8 | 20.0 | 3.78E-08 |
| 1/2/2007 | 12:43 PM | 3600 | 10800 | 3.53 | 4.82 | 1.1 | 20.0 | 3.05E-08 |
| 1/2/2007 | 1:43 PM | 3600 | 14400 | 3.60 | 4.75 | 1.0 | 20.0 | 2.70E-08 |

Average Permeability = **3.4E-08** cm/sec

**Remarks:**

| | |
|---|---|
| **Test ID** | 12920 |

**Great Lakes Soil & Environmental Consultants, Inc**
333 Shore Drive, Burr Ridge, IL 60521 Ph: (630) 321-0944 Fax: (630) 321-0945

**COEFFICIENT OF PERMEABILITY - ASTM D5084 (FLEXIBLE WALL)**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project** | Indiana Harbor Slurry Wall-East Chicago | | | | | | |
| **Client** | Environmental Quality Management, 1800 Carillon Boulevard, Cincinnati, OH 45240 | | | | | | |
| **File #** | 3794 | **Date Tested** | 1/2/2007 | **Tested by:** | LR | **QC by:** | SB |
| **Sample ID:** | 81+85 (22-25) | Date Recd. | 12/29/06 | **Location** | Sta 81+85 / 22' - 25' depth | | |
| **Sample Description** | Gray SB Backfill | | | | | | |

## *Specimen Data*

***Initial***

| | | | | | |
|---|---|---|---|---|---|
| Diameter: | 7.23 | cm | Area, A: | 41.1 | sq cm |
| Height, L: | 6.29 | cm | Volume, V: | 258.2 | cu cm |
| Mass of Sample: | 465.4 | g | **Moisture Content:** | **27.8** | % |
| | | | **Wet Density** | 112.5 | **pcf** |
| | | | **Dry Density** | 88.0 | **pcf** |

***Final***

| | | | | | |
|---|---|---|---|---|---|
| Diameter: | 6.86 | cm | Area, A: | 37.0 | sq cm |
| Height, L: | 5.63 | cm | Volume, V: | 208.1 | cu cm |
| Mass of Sample: | 428.87 | g | **Moisture Content:** | **20.9** | % |
| | | | **Wet Density** | 128.6 | **pcf** |
| | | | **Dry Density** | 106.4 | **pcf** |
| | | | **Deg of Saturation** | 93.7 | |

## *Test Data*

| | | |
|---|---|---|
| Permeant: | De-aired Tap Water | |
| Cell Pressure | 31.3 | psi |
| Top Pressure | 18.5 | psi |
| Bottom Pressure | 20.0 | psi |
| Gradient: | 16.8 | |

| Date | Time | Elapsed Time (Sec) | Cumulative Time (Sec) | Burette Readings Outflow cc | Burette Readings Inflow cc | Outflow/Inflow Ratio | Fluid Temp. oC | Permeability cm/sec |
|---|---|---|---|---|---|---|---|---|
| 1/3/2007 | 9:53 AM | 0 | 0 | 2.15 | 5.55 | | 20.0 | --- |
| 1/3/2007 | 10:53 AM | 3600 | 3600 | 2.21 | 5.50 | 1.2 | 20.0 | 1.65E-08 |
| 1/3/2007 | 11:53 AM | 3600 | 7200 | 2.28 | 5.44 | 1.2 | 20.0 | 1.99E-08 |
| 1/3/2007 | 12:53 PM | 3600 | 10800 | 2.34 | 5.38 | 1.0 | 20.0 | 2.01E-08 |
| 1/3/2007 | 1:53 PM | 3600 | 14400 | 2.40 | 5.33 | 1.2 | 20.0 | 1.68E-08 |

Average Permeability = **1.8E-08** cm/sec

**Remarks:**

| | |
|---|---|
| **Test ID** | 12921 |

**Great Lakes Soil & Environmental Consultants, Inc**
333 Shore Drive, Burr Ridge, IL 60521 Ph: (630) 321-0944 Fax: (630) 321-0945

# COEFFICIENT OF PERMEABILITY - ASTM D5084 (FLEXIBLE WALL)

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project** | Indiana Harbor Slurry Wall-East Chicago | | | | | | |
| **Client** | Environmental Quality Management, 1800 Carillon Boulevard, Cincinnati, OH 45240 | | | | | | |
| **File #** | 3794 | **Date Tested** | 1/2/2007 | **Tested by:** | LR | **QC by:** | SB |
| **Sample ID:** | 84+85 (22-25) | Date Recd. | 12/29/06 | **Location** | Sta 84+85 / 22' - 25' depth | | |
| **Sample Description** | Gray SB Backfill | | | | | | |

## *Specimen Data*

***Initial***

| | | | | | |
|---|---|---|---|---|---|
| Diameter: | 7.26 | cm | Area, A: | 41.4 | sq cm |
| Height, L: | 5.70 | cm | Volume, V: | 236.0 | cu cm |
| Mass of Sample: | 418.7 | g | **Moisture Content:** | 27.4 | % |
| | | | **Wet Density** | 110.7 | **pcf** |
| | | | **Dry Density** | 86.9 | **pcf** |

***Final***

| | | | | | |
|---|---|---|---|---|---|
| Diameter: | 6.90 | cm | Area, A: | 37.4 | sq cm |
| Height, L: | 5.02 | cm | Volume, V: | 187.7 | cu cm |
| Mass of Sample: | 389.06 | g | **Moisture Content:** | 21.6 | % |
| | | | **Wet Density** | 129.3 | **pcf** |
| | | | **Dry Density** | 106.3 | **pcf** |
| | | | **Deg of Saturation** | 96.9 | |

## *Test Data*

| | | |
|---|---|---|
| Permeant: | De-aired Tap Water | |
| Cell Pressure | 31.3 | psi |
| Top Pressure | 18.5 | psi |
| Bottom Pressure | 20.0 | psi |
| Gradient: | 18.5 | |

| Date | Time | Elapsed Time (Sec) | Cumulative Time (Sec) | Burette Readings Outflow cc | Burette Readings Inflow cc | Outflow/Inflow Ratio | Fluid Temp. oC | Permeability cm/sec |
|---|---|---|---|---|---|---|---|---|
| 1/3/2007 | 9:54 AM | 0 | 0 | 1.96 | 5.94 | | 20.0 | --- |
| 1/3/2007 | 10:54 AM | 3600 | 3600 | 2.02 | 5.89 | 1.2 | 20.0 | 1.44E-08 |
| 1/3/2007 | 11:54 AM | 3600 | 7200 | 2.09 | 5.83 | 1.2 | 20.0 | 1.74E-08 |
| 1/3/2007 | 12:54 PM | 3600 | 10800 | 2.15 | 5.78 | 1.2 | 20.0 | 1.46E-08 |
| 1/3/2007 | 1:54 PM | 3600 | 14400 | 2.20 | 5.73 | 1.0 | 20.0 | 1.46E-08 |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

Average Permeability = **1.5E-08** cm/sec

**Remarks:**

| | |
|---|---|
| **Test ID** | 12922 |

**Great Lakes Soil & Environmental Consultants, Inc**
333 Shore Drive, Burr Ridge, IL 60521 Ph: (630) 321-0944 Fax: (630) 321-0945

**COEFFICIENT OF PERMEABILITY - ASTM D5084 (FLEXIBLE WALL)**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project** | Indiana Harbor Slurry Wall-East Chicago | | | | | | |
| **Client** | Environmental Quality Management, 1800 Carillon Boulevard, Cincinnati, OH 45240 | | | | | | |
| **File #** | 3794 | **Date Tested** | 12/22/2006 | **Tested by:** | NP | **QC by:** | SB |
| **Sample ID:** | 43+50 (2-5) | Date Recd. | 12/18/06 | **Location** | Sta 43+50 / 2' - 5' depth | | |
| **Sample Description** | Gray SB Backfill | | | | | | |

## *Specimen Data*

***Initial***

| | | | | | |
|---|---|---|---|---|---|
| Diameter: | 7.24 | cm | Area, A: | 41.2 | sq cm |
| Height, L: | 6.77 | cm | Volume, V: | 278.7 | cu cm |
| Mass of Sample: | 498.2 | g | **Moisture Content:** | **28.8** | **%** |
| | | | **Wet Density** | 111.5 | **pcf** |
| | | | **Dry Density** | 86.6 | **pcf** |

***Final***

| | | | | | |
|---|---|---|---|---|---|
| Diameter: | 7.07 | cm | Area, A: | 39.3 | sq cm |
| Height, L: | 6.44 | cm | Volume, V: | 252.8 | cu cm |
| Mass of Sample: | 489.88 | g | **Moisture Content:** | **28.3** | **%** |
| | | | **Wet Density** | 120.9 | **pcf** |
| | | | **Dry Density** | 94.3 | **pcf** |
| | | | **Deg of Saturation** | 94.8 | |

## *Test Data*

| | |
|---|---|
| Permeant: | De-aired Tap Water |
| Cell Pressure | 25.0 psi |
| Top Pressure | 21.2 psi |
| Bottom Pressure | 22.7 psi |
| Gradient: | 15.6 |

| Date | Time | Elapsed Time (Sec) | Cumulative Time (Sec) | Burette Readings Outflow cc | Burette Readings Inflow cc | Outflow/Inflow Ratio | Fluid Temp. oC | Permeability cm/sec |
|---|---|---|---|---|---|---|---|---|
| 12/22/2006 | 9:00 AM | 0 | 0 | 3.16 | 5.95 | | 20.0 | --- |
| 12/22/2006 | 10:00 AM | 3600 | 3600 | 3.37 | 5.78 | 1.2 | 20.0 | 6.27E-08 |
| 12/22/2006 | 11:00 AM | 3600 | 7200 | 3.57 | 5.62 | 1.3 | 20.0 | 6.03E-08 |
| 12/22/2006 | 12:00 PM | 3600 | 10800 | 3.78 | 5.44 | 1.2 | 20.0 | 6.94E-08 |
| 12/22/2006 | 1:00 PM | 3600 | 14400 | 3.98 | 5.24 | 1.0 | 20.0 | 7.89E-08 |

Average Permeability = **6.8E-08** cm/sec

**Remarks:**

| | |
|---|---|
| **Test ID** | 12881 |

**Great Lakes Soil & Environmental Consultants, Inc**
333 Shore Drive, Burr Ridge, IL 60521 Ph: (630) 321-0944 Fax: (630) 321-0945

# COEFFICIENT OF PERMEABILITY - ASTM D5084 (FLEXIBLE WALL)

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project** | Indiana Harbor Slurry Wall-East Chicago | | | | | | |
| **Client** | Environmental Quality Management, 1800 Carillon Boulevard, Cincinnati, OH 45240 | | | | | | |
| **File #** | 3794 | **Date Tested** | 12/22/2006 | **Tested by:** | NP | **QC by:** | SB |
| **Sample ID:** | 82+85 (5-8) | Date Recd. | 12/18/06 | **Location** | Sta 82+85 / 5' - 8' depth | | |
| **Sample Description** | Gray SB Backfill | | | | | | |

## *Specimen Data*

***Initial***

| | | | | | |
|---|---|---|---|---|---|
| Diameter: | 7.25 | cm | Area, A: | 41.3 | sq cm |
| Height, L: | 5.04 | cm | Volume, V: | 208.1 | cu cm |
| Mass of Sample: | 458.3 | g | **Moisture Content:** | **37.5** | **%** |
| | | | **Wet Density** | **137.5** | **pcf** |
| | | | **Dry Density** | **100.0** | **pcf** |

***Final***

| | | | | | |
|---|---|---|---|---|---|
| Diameter: | 7.00 | cm | Area, A: | 38.5 | sq cm |
| Height, L: | 4.98 | cm | Volume, V: | 191.7 | cu cm |
| Mass of Sample: | 384.31 | g | **Moisture Content:** | **26.6** | **%** |
| | | | **Wet Density** | **125.1** | **pcf** |
| | | | **Dry Density** | **98.8** | **pcf** |
| | | | **Deg of Saturation** | **99.4** | |

## *Test Data*

| | | |
|---|---|---|
| Permeant: | De-aired Tap Water | |
| Cell Pressure | 25.0 | psi |
| Top Pressure | 21.2 | psi |
| Bottom Pressure | 22.7 | psi |
| Gradient: | 20.9 | |

| Date | Time | Elapsed Time (Sec) | Cumulative Time (Sec) | Burette Readings Outflow cc | Burette Readings Inflow cc | Outflow/Inflow Ratio | Fluid Temp. oC | Permeability cm/sec |
|---|---|---|---|---|---|---|---|---|
| 12/22/2006 | 9:00 AM | 0 | 0 | 3.03 | 5.97 | | 20.0 | --- |
| 12/22/2006 | 10:00 AM | 3600 | 3600 | 3.34 | 5.72 | 1.2 | 20.0 | 6.83E-08 |
| 12/22/2006 | 11:00 AM | 3600 | 7200 | 3.60 | 5.48 | 1.1 | 20.0 | 6.76E-08 |
| 12/22/2006 | 12:00 PM | 3600 | 10800 | 3.88 | 5.23 | 1.1 | 20.0 | 7.25E-08 |
| 12/22/2006 | 1:00 PM | 3600 | 14400 | 4.16 | 4.98 | 1.1 | 20.0 | 7.49E-08 |
| | | | | | | | | |
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| | | | | | | | | |

Average Permeability = **7.1E-08** cm/sec

**Remarks:**

| **Test ID** | 12883 |
|---|---|

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**COEFFICIENT OF PERMEABILITY - ASTM D5084 (FLEXIBLE WALL)**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project** | Indiana Harbor Slurry Wall-East Chicago | | | | | | |
| **Client** | Environmental Quality Management, 1800 Carillon Boulevard, Cincinnati, OH 45240 | | | | | | |
| **File #** | 3794 | **Date Tested** | 12/22/2006 | **Tested by:** | NP | **QC by:** | SB |
| **Sample ID:** | 83+85 (15-18) | Date Recd. | 12/18/06 | **Location** | Sta 83+85 / 15' - 18' depth | | |
| **Sample Description** | Gray SB Backfill | | | | | | |

## *Specimen Data*

***Initial***

| | | | | | |
|---|---|---|---|---|---|
| Diameter: | 7.25 | cm | Area, A: | 41.3 | sq cm |
| Height, L: | 5.83 | cm | Volume, V: | 240.7 | cu cm |
| Mass of Sample: | 412.2 | g | **Moisture Content:** | 33.9 | % |
| | | | **Wet Density** | 106.9 | pcf |
| | | | **Dry Density** | 79.8 | pcf |

***Final***

| | | | | | |
|---|---|---|---|---|---|
| Diameter: | 6.82 | cm | Area, A: | 36.5 | sq cm |
| Height, L: | 5.05 | cm | Volume, V: | 184.5 | cu cm |
| Mass of Sample: | 367.88 | g | **Moisture Content:** | 23.5 | % |
| | | | **Wet Density** | 124.4 | pcf |
| | | | **Dry Density** | 100.7 | pcf |
| | | | **Deg of Saturation** | 92.0 | |

## *Test Data*

| | | |
|---|---|---|
| Permeant: | De-aired Tap Water | |
| Cell Pressure | 25.0 | psi |
| Top Pressure | 16.8 | psi |
| Bottom Pressure | 18.3 | psi |
| Gradient: | 18.1 | |

| Date | Time | Elapsed Time (Sec) | Cumulative Time (Sec) | Burette Readings Outflow cc | Burette Readings Inflow cc | Outflow/Inflow Ratio | Fluid Temp. oC | Permeability cm/sec |
|---|---|---|---|---|---|---|---|---|
| 12/22/2006 | 9:00 AM | 0 | 0 | 3.00 | 5.98 | | 20.0 | --- |
| 12/22/2006 | 10:00 AM | 3600 | 3600 | 3.11 | 5.88 | 1.1 | 20.0 | 3.12E-08 |
| 12/22/2006 | 11:00 AM | 3600 | 7200 | 3.21 | 5.80 | 1.3 | 20.0 | 2.52E-08 |
| 12/22/2006 | 12:00 PM | 3600 | 10800 | 3.31 | 5.71 | 1.1 | 20.0 | 2.87E-08 |
| 12/22/2006 | 1:00 PM | 3600 | 14400 | 3.41 | 5.62 | 1.1 | 20.0 | 2.90E-08 |

Average Permeability = **2.9E-08** cm/sec

**Remarks:**

| **Test ID** | 12884 |
|---|---|

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# COEFFICIENT OF PERMEABILITY - ASTM D5084 (FLEXIBLE WALL)

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project** | Indiana Harbor Slurry Wall-East Chicago | | | | | | |
| **Client** | Environmental Quality Management, 1800 Carillon Boulevard, Cincinnati, OH 45240 | | | | | | |
| **File #** | 3794 | **Date Tested** | 12/22/2006 | **Tested by:** | NP | **QC by:** | SB |
| **Sample ID:** | 85+70 (2-5) | Date Recd. | 12/18/06 | **Location** | Sta 85+70 / 2' - 5' depth | | |
| **Sample Description** | Gray SB Backfill | | | | | | |

## *Specimen Data*

***Initial***

| | | | | | |
|---|---|---|---|---|---|
| Diameter: | 7.25 | cm | Area, A: | 41.3 | sq cm |
| Height, L: | 5.63 | cm | Volume, V: | 232.4 | cu cm |
| Mass of Sample: | 475.0 | g | **Moisture Content:** | **32.2** | **%** |
| | | | **Wet Density** | **127.5** | **pcf** |
| | | | **Dry Density** | **96.5** | **pcf** |

***Final***

| | | | | | |
|---|---|---|---|---|---|
| Diameter: | 6.87 | cm | Area, A: | 37.1 | sq cm |
| Height, L: | 5.32 | cm | Volume, V: | 197.2 | cu cm |
| Mass of Sample: | 395.92 | g | **Moisture Content:** | **25.5** | **%** |
| | | | **Wet Density** | **125.3** | **pcf** |
| | | | **Dry Density** | **99.8** | **pcf** |
| | | | **Deg of Saturation** | **97.5** | |

## *Test Data*

| | | |
|---|---|---|
| Permeant: | De-aired Tap Water | |
| Cell Pressure | 25.0 | psi |
| Top Pressure | 21.2 | psi |
| Bottom Pressure | 22.7 | psi |
| Gradient: | 18.7 | |

| Date | Time | Elapsed Time (Sec) | Cumulative Time (Sec) | Burette Readings Outflow cc | Burette Readings Inflow cc | Outflow/Inflow Ratio | Fluid Temp. oC | Permeability cm/sec |
|---|---|---|---|---|---|---|---|---|
| 12/22/2006 | 9:00 AM | 0 | 0 | 3.04 | 5.96 | | 20.0 | --- |
| 12/22/2006 | 10:00 AM | 3600 | 3600 | 3.27 | 5.77 | 1.2 | 20.0 | 5.78E-08 |
| 12/22/2006 | 11:00 AM | 3600 | 7200 | 3.48 | 5.60 | 1.2 | 20.0 | 5.29E-08 |
| 12/22/2006 | 12:00 PM | 3600 | 10800 | 3.69 | 5.42 | 1.2 | 20.0 | 5.73E-08 |
| 12/22/2006 | 1:00 PM | 3600 | 14400 | 3.89 | 5.24 | 1.1 | 20.0 | 5.86E-08 |
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Average Permeability = **5.7E-08** cm/sec

**Remarks:**

| **Test ID** | 12882 |
|---|---|

# INITIAL VERIFICATION SAMPLES

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# COEFFICIENT OF PERMEABILITY - ASTM D5084 (FLEXIBLE WALL)

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project** | Indiana Harbor Slurry Wall-East Chicago | | | | | | |
| **Client** | Environmental Quality Management, 1800 Carillon Boulevard, Cincinnati, OH 45240 | | | | | | |
| **File #** | 3794 | **Date Tested** | 10/17/2006 | **Tested by:** | NP | **QC by:** | SB |
| **Sample ID:** | ST # 11 | Date Recd. | 9/29/06 | **Location** | STA 43+50 | | |
| **Sample Description** | Gray SB Backfill | | | | | | |

## *Specimen Data*

***Initial***

| | | | | | |
|---|---|---|---|---|---|
| Diameter: | 7.25 | cm | Area, A: | 41.3 | sq cm |
| Height, L: | 6.71 | cm | Volume, V: | 277.0 | cu cm |
| Mass of Sample: | 502.1 | g | **Moisture Content:** | **35.5** | **%** |
| | | | **Wet Density** | **113.1** | **pcf** |
| | | | **Dry Density** | **83.5** | **pcf** |

***Final***

| | | | | | |
|---|---|---|---|---|---|
| Diameter: | 7.06 | cm | Area, A: | 39.1 | sq cm |
| Height, L: | 6.46 | cm | Volume, V: | 252.9 | cu cm |
| Mass of Sample: | 498.33 | g | **Moisture Content:** | **28.7** | **%** |
| | | | **Wet Density** | **123.0** | **pcf** |
| | | | **Dry Density** | **95.5** | **pcf** |
| | | | **Deg of Saturation** | **99.1** | |

## *Test Data*

| | | |
|---|---|---|
| Permeant: | De-aired Tap Water | |
| Cell Pressure | 17.6 | psi |
| Top Pressure | 13.8 | psi |
| Bottom Pressure | 15.3 | psi |
| Gradient: | 15.7 | |

| Date | Time | Elapsed Time (Sec) | Cumulative Time (Sec) | Burette Readings Outflow cc | Burette Readings Inflow cc | Outflow/Inflow Ratio | Fluid Temp. oC | Permeability cm/sec |
|---|---|---|---|---|---|---|---|---|
| 10/17/2006 | 9:15 AM | 0 | 0 | 3.16 | 5.82 | | 20.0 | --- |
| 10/17/2006 | 10:15 AM | 3600 | 3600 | 3.40 | 5.62 | 1.2 | 20.0 | 7.36E-08 |
| 10/17/2006 | 11:15 AM | 3600 | 7200 | 3.57 | 5.47 | 1.1 | 20.0 | 5.64E-08 |
| 10/17/2006 | 12:15 PM | 3600 | 10800 | 3.73 | 5.31 | 1.0 | 20.0 | 6.14E-08 |
| 10/17/2006 | 1:15 PM | 3600 | 14400 | 3.86 | 5.18 | 1.0 | 20.0 | 5.07E-08 |
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Average Permeability = **6.1E-08** cm/sec

**Remarks:**

| **Test ID** | 12231 |
|---|---|

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**COEFFICIENT OF PERMEABILITY - ASTM D5084 (FLEXIBLE WALL)**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project** | Indiana Harbor Slurry Wall-East Chicago | | | | | | |
| **Client** | Environmental Quality Management, 1800 Carillon Boulevard, Cincinnati, OH 45240 | | | | | | |
| **File #** | 3794 | **Date Tested** | 10/17/2006 | **Tested by:** | NP | **QC by:** | SB |
| **Sample ID:** | ST # 10 | Date Recd. | 9/29/06 | **Location** | STA 44+50 | | |
| **Sample Description** | Gray SB Backfill | | | | | | |

## Specimen Data

***Initial***

| | | | | | |
|---|---|---|---|---|---|
| Diameter: | 7.25 | cm | Area, A: | 41.3 | sq cm |
| Height, L: | 6.64 | cm | Volume, V: | 274.1 | cu cm |
| Mass of Sample: | 476.0 | g | **Moisture Content:** | **34.4** | % |
| | | | **Wet Density** | **108.4** | **pcf** |
| | | | **Dry Density** | **80.6** | **pcf** |

***Final***

| | | | | | |
|---|---|---|---|---|---|
| Diameter: | 6.92 | cm | Area, A: | 37.6 | sq cm |
| Height, L: | 6.06 | cm | Volume, V: | 227.9 | cu cm |
| Mass of Sample: | 438.43 | g | **Moisture Content:** | **25.7** | % |
| | | | **Wet Density** | **120.0** | **pcf** |
| | | | **Dry Density** | **95.5** | **pcf** |
| | | | **Deg of Saturation** | **88.6** | |

## Test Data

| | | |
|---|---|---|
| Permeant: | De-aired Tap Water | |
| Cell Pressure | 18.3 | psi |
| Top Pressure | 10.0 | psi |
| Bottom Pressure | 11.5 | psi |
| Gradient: | 15.9 | |

| Date | Time | Elapsed Time (Sec) | Cumulative Time (Sec) | Burette Readings Outflow cc | Burette Readings Inflow cc | Outflow/Inflow Ratio | Fluid Temp. oC | Permeability cm/sec |
|---|---|---|---|---|---|---|---|---|
| 10/17/2006 | 9:15 AM | 0 | 0 | 2.94 | 6.00 | | 20.0 | --- |
| 10/17/2006 | 10:15 AM | 3600 | 3600 | 3.10 | 5.87 | 1.2 | 20.0 | 4.61E-08 |
| 10/17/2006 | 11:15 AM | 3600 | 7200 | 3.22 | 5.77 | 1.2 | 20.0 | 3.60E-08 |
| 10/17/2006 | 12:15 PM | 3600 | 10800 | 3.34 | 5.67 | 1.2 | 20.0 | 3.64E-08 |
| 10/17/2006 | 1:15 PM | 3600 | 14400 | 3.45 | 5.58 | 1.2 | 20.0 | 3.32E-08 |
| | | | | | | | | |
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Average Permeability = **3.8E-08** cm/sec

**Remarks:**

| **Test ID** | 12230 |
|---|---|

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# COEFFICIENT OF PERMEABILITY - ASTM D5084 (FLEXIBLE WALL)

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project** | Indiana Harbor Slurry Wall-East Chicago | | | | | | |
| **Client** | Environmental Quality Management, 1800 Carillon Boulevard, Cincinnati, OH 45240 | | | | | | |
| **File #** | 3794 | **Date Tested** | 10/12/2006 | **Tested by:** | NP | **QC by:** | SB |
| **Sample ID:** | ST # 09 | Date Recd. | 9/29/06 | **Location** | STA 78+85 | | |
| **Sample Description** | Gray SB Backfill | | | | | | |

## *Specimen Data*

***Initial***

| | | | | | |
|---|---|---|---|---|---|
| Diameter: | 7.25 | cm | Area, A: | 41.3 | sq cm |
| Height, L: | 7.77 | cm | Volume, V: | 320.8 | cu cm |
| Mass of Sample: | 612.1 | g | **Moisture Content:** | **21.8** | **%** |
| | | | **Wet Density** | **119.1** | **pcf** |
| | | | **Dry Density** | **97.7** | **pcf** |

***Final***

| | | | | | |
|---|---|---|---|---|---|
| Diameter: | 7.07 | cm | Area, A: | 39.3 | sq cm |
| Height, L: | 7.49 | cm | Volume, V: | 294.0 | cu cm |
| Mass of Sample: | 589.06 | g | **Moisture Content:** | **24.4** | **%** |
| | | | **Wet Density** | **125.0** | **pcf** |
| | | | **Dry Density** | **100.5** | **pcf** |
| | | | **Deg of Saturation** | **94.8** | |

## *Test Data*

| | | |
|---|---|---|
| Permeant: | De-aired Tap Water | |
| Cell Pressure | 26.0 | psi |
| Top Pressure | 13.2 | psi |
| Bottom Pressure | 14.7 | psi |
| Gradient: | 13.6 | |

| Date | Time | Elapsed Time (Sec) | Cumulative Time (Sec) | Burette Readings Outflow cc | Burette Readings Inflow cc | Outflow/Inflow Ratio | Fluid Temp. oC | Permeability cm/sec |
|---|---|---|---|---|---|---|---|---|
| 10/12/2006 | 9:15 AM | 0 | 0 | 3.02 | 5.98 | | 20.0 | --- |
| 10/12/2006 | 10:15 AM | 3600 | 3600 | 3.25 | 5.78 | 1.2 | 20.0 | 8.38E-08 |
| 10/12/2006 | 11:15 AM | 3600 | 7200 | 3.50 | 5.57 | 1.2 | 20.0 | 9.02E-08 |
| 10/12/2006 | 12:15 PM | 3600 | 10800 | 3.70 | 5.39 | 1.1 | 20.0 | 7.93E-08 |
| 10/12/2006 | 1:15 PM | 3600 | 14400 | 3.90 | 5.21 | 1.1 | 20.0 | 8.11E-08 |

Average Permeability = **8.4E-08** cm/sec

**Remarks:**

| | |
|---|---|
| **Test ID** | 12229 |

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# COEFFICIENT OF PERMEABILITY - ASTM D5084 (FLEXIBLE WALL)

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project** | Indiana Harbor Slurry Wall-East Chicago | | | | | | |
| **Client** | Environmental Quality Management, 1800 Carillon Boulevard, Cincinnati, OH 45240 | | | | | | |
| **File #** | 3794 | **Date Tested** | 10/17/2006 | **Tested by:** | NP | **QC by:** | SB |
| **Sample ID:** | ST # 08 | Date Recd. | 9/29/06 | **Location** | STA 79+85 | | |
| **Sample Description** | Gray SB Backfill | | | | | | |

## *Specimen Data*

***Initial***

| | | | | | |
|---|---|---|---|---|---|
| Diameter: | 7.25 | cm | Area, A: | 41.3 | sq cm |
| Height, L: | 7.37 | cm | Volume, V: | 304.3 | cu cm |
| Mass of Sample: | 568.2 | g | **Moisture Content:** | **25.8** | % |
| | | | **Wet Density** | 116.5 | **pcf** |
| | | | **Dry Density** | 92.6 | **pcf** |

***Final***

| | | | | | |
|---|---|---|---|---|---|
| Diameter: | 7.07 | cm | Area, A: | 39.3 | sq cm |
| Height, L: | 6.93 | cm | Volume, V: | 272.1 | cu cm |
| Mass of Sample: | 556.37 | g | **Moisture Content:** | **23.5** | % |
| | | | **Wet Density** | 127.6 | **pcf** |
| | | | **Dry Density** | 103.3 | **pcf** |
| | | | **Deg of Saturation** | 97.8 | |

## *Test Data*

| | | |
|---|---|---|
| Permeant: | De-aired Tap Water | |
| Cell Pressure | 17.6 | psi |
| Top Pressure | 13.8 | psi |
| Bottom Pressure | 15.3 | psi |
| Gradient: | 14.3 | |

| Date | Time | Elapsed Time (Sec) | Cumulative Time (Sec) | Burette Readings Outflow cc | Burette Readings Inflow cc | Outflow/Inflow Ratio | Fluid Temp. oC | Permeability cm/sec |
|---|---|---|---|---|---|---|---|---|
| 10/17/2006 | 9:15 AM | 0 | 0 | 3.18 | 5.92 | | 20.0 | --- |
| 10/17/2006 | 10:15 AM | 3600 | 3600 | 3.51 | 5.65 | 1.2 | 20.0 | 1.09E-07 |
| 10/17/2006 | 11:15 AM | 3600 | 7200 | 3.77 | 5.44 | 1.2 | 20.0 | 8.76E-08 |
| 10/17/2006 | 12:15 PM | 3600 | 10800 | 4.01 | 5.24 | 1.2 | 20.0 | 8.57E-08 |
| 10/17/2006 | 1:15 PM | 3600 | 14400 | 4.19 | 5.08 | 1.1 | 20.0 | 7.02E-08 |
| | | | | | | | | |
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Average Permeability = **8.8E-08** **cm/sec**

**Remarks:**

| **Test ID** | 12228 |
|---|---|

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**COEFFICIENT OF PERMEABILITY - ASTM D5084 (FLEXIBLE WALL)**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project** | Indiana Harbor Slurry Wall-East Chicago | | | | | | |
| **Client** | Environmental Quality Management, 1800 Carillon Boulevard, Cincinnati, OH 45240 | | | | | | |
| **File #** | 3794 | **Date Tested** | 10/19/2006 | **Tested by:** | NP | **QC by:** | SB |
| **Sample ID:** | ST # 07 | Date Recd. | 9/29/06 | **Location** | STA 80+85 | | |
| **Sample Description** | Gray SB Backfill | | | | | | |

## *Specimen Data*

***Initial***

| | | | | | |
|---|---|---|---|---|---|
| Diameter: | 7.25 | cm | Area, A: | 41.3 | sq cm |
| Height, L: | 7.81 | cm | Volume, V: | 322.4 | cu cm |
| Mass of Sample: | 601.5 | g | **Moisture Content:** | **25.3** | **%** |
| | | | **Wet Density** | **116.4** | **pcf** |
| | | | **Dry Density** | **92.9** | **pcf** |

***Final***

| | | | | | |
|---|---|---|---|---|---|
| Diameter: | 7.30 | cm | Area, A: | 41.9 | sq cm |
| Height, L: | 6.94 | cm | Volume, V: | 290.5 | cu cm |
| Mass of Sample: | 559.05 | g | **Moisture Content:** | **27.7** | **%** |
| | | | **Wet Density** | **120.1** | **pcf** |
| | | | **Dry Density** | **94.1** | **pcf** |
| | | | **Deg of Saturation** | **92.3** | |

## *Test Data*

| | |
|---|---|
| Permeant: | De-aired Tap Water |
| Cell Pressure | 18.3 psi |
| Top Pressure | 10.0 psi |
| Bottom Pressure | 11.5 psi |
| Gradient: | 13.5 |

| Date | Time | Elapsed Time (Sec) | Cumulative Time (Sec) | Burette Readings Outflow cc | Burette Readings Inflow cc | Outflow/Inflow Ratio | Fluid Temp. oC | Permeability cm/sec |
|---|---|---|---|---|---|---|---|---|
| 10/19/2006 | 9:30 AM | 0 | 0 | 3.98 | 5.99 | | 20.0 | --- |
| 10/19/2006 | 10:30 AM | 3600 | 3600 | 4.35 | 5.68 | 1.2 | 20.0 | 1.39E-07 |
| 10/19/2006 | 11:30 AM | 3600 | 7200 | 4.63 | 5.44 | 1.2 | 20.0 | 1.12E-07 |
| 10/19/2006 | 12:30 PM | 3600 | 10800 | 4.86 | 5.24 | 1.2 | 20.0 | 9.58E-08 |
| 10/19/2006 | 1:30 PM | 3600 | 14400 | 5.11 | 5.03 | 1.2 | 20.0 | 1.04E-07 |

Average Permeability = **1.1E-07** cm/sec

**Remarks:**

| | |
|---|---|
| **Test ID** | 12227 |

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# COEFFICIENT OF PERMEABILITY - ASTM D5084 (FLEXIBLE WALL)

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project** | Indiana Harbor Slurry Wall-East Chicago | | | | | | |
| **Client** | Environmental Quality Management, 1800 Carillon Boulevard, Cincinnati, OH 45240 | | | | | | |
| **File #** | 3794 | **Date Tested** | 10/19/2006 | **Tested by:** | NP | **QC by:** | SB |
| **Sample ID:** | ST # 06 | Date Recd. | 9/29/06 | **Location** | STA 81+85 | | |
| **Sample Description** | Gray SB Backfill | | | | | | |

## Specimen Data

***Initial***

| | | | | | |
|---|---|---|---|---|---|
| Diameter: | 7.24 | cm | Area, A: | 41.2 | sq cm |
| Height, L: | 6.71 | cm | Volume, V: | 276.2 | cu cm |
| Mass of Sample: | 507.4 | g | **Moisture Content:** | **24.0** | % |
| | | | **Wet Density** | **114.6** | **pcf** |
| | | | **Dry Density** | **92.4** | **pcf** |

***Final***

| | | | | | |
|---|---|---|---|---|---|
| Diameter: | 7.00 | cm | Area, A: | 38.5 | sq cm |
| Height, L: | 6.26 | cm | Volume, V: | 240.9 | cu cm |
| Mass of Sample: | 480.96 | g | **Moisture Content:** | **24.9** | % |
| | | | **Wet Density** | **124.6** | **pcf** |
| | | | **Dry Density** | **99.7** | **pcf** |
| | | | **Deg of Saturation** | **95.1** | |

## Test Data

| | | |
|---|---|---|
| Permeant: | De-aired Tap Water | |
| Cell Pressure | 26.0 | psi |
| Top Pressure | 13.2 | psi |
| Bottom Pressure | 14.7 | psi |
| Gradient: | 15.7 | |

| Date | Time | Elapsed Time (Sec) | Cumulative Time (Sec) | Burette Readings Outflow cc | Burette Readings Inflow cc | Outflow/Inflow Ratio | Fluid Temp. oC | Permeability cm/sec |
|---|---|---|---|---|---|---|---|---|
| 10/19/2006 | 9:30 AM | 0 | 0 | 2.90 | 6.08 | | 20.0 | --- |
| 10/19/2006 | 10:30 AM | 3600 | 3600 | 4.25 | 4.74 | 1.0 | 20.0 | 5.12E-07 |
| 10/19/2006 | 11:30 AM | 3600 | 7200 | 5.23 | 3.77 | 1.0 | 20.0 | 4.30E-07 |
| 10/19/2006 | 12:30 PM | 3600 | 10800 | 6.01 | 2.99 | 1.0 | 20.0 | 3.93E-07 |
| 10/19/2006 | 1:30 PM | 3600 | 14400 | 6.76 | 2.27 | 1.0 | 20.0 | 4.11E-07 |

Average Permeability = **4.4E-07** cm/sec

**Remarks:**

| | |
|---|---|
| **Test ID** | 12226 |

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**COEFFICIENT OF PERMEABILITY - ASTM D5084 (FLEXIBLE WALL)**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project** | Indiana Harbor Slurry Wall-East Chicago | | | | | | |
| **Client** | Environmental Quality Management, 1800 Carillon Boulevard, Cincinnati, OH 45240 | | | | | | |
| **File #** | 3794 | **Date Tested** | 10/20/2006 | **Tested by:** | NP | **QC by:** | SB |
| **Sample ID:** | ST # 05 | Date Recd. | 9/29/06 | **Location** | STA 82+85 | | |
| **Sample Description** | Gray SB Backfill | | | | | | |

## *Specimen Data*

***Initial***

| | | | | | |
|---|---|---|---|---|---|
| Diameter: | 7.25 | cm | Area, A: | 41.3 | sq cm |
| Height, L: | 6.06 | cm | Volume, V: | 250.2 | cu cm |
| Mass of Sample: | 436.3 | g | **Moisture Content:** | **21.6** | **%** |
| | | | **Wet Density** | **108.8** | **pcf** |
| | | | **Dry Density** | **89.5** | **pcf** |

***Final***

| | | | | | |
|---|---|---|---|---|---|
| Diameter: | 7.11 | cm | Area, A: | 39.7 | sq cm |
| Height, L: | 5.23 | cm | Volume, V: | 207.6 | cu cm |
| Mass of Sample: | 430.26 | g | **Moisture Content:** | **20.5** | **%** |
| | | | **Wet Density** | **129.3** | **pcf** |
| | | | **Dry Density** | **107.3** | **pcf** |
| | | | **Deg of Saturation** | **94.1** | |

## *Test Data*

| | | |
|---|---|---|
| Permeant: | De-aired Tap Water | |
| Cell Pressure | 17.6 | psi |
| Top Pressure | 13.8 | psi |
| Bottom Pressure | 15.3 | psi |
| Gradient: | 17.4 | |

| Date | Time | Elapsed Time (Sec) | Cumulative Time (Sec) | Burette Readings Outflow cc | Burette Readings Inflow cc | Outflow/Inflow Ratio | Fluid Temp. oC | Permeability cm/sec |
|---|---|---|---|---|---|---|---|---|
| 10/20/2006 | 9:15 AM | 0 | 0 | 3.17 | 6.08 | | 20.0 | --- |
| 10/20/2006 | 10:15 AM | 3600 | 3600 | 3.88 | 5.42 | 1.1 | 20.0 | 2.22E-07 |
| 10/20/2006 | 11:15 AM | 3600 | 7200 | 4.47 | 4.84 | 1.0 | 20.0 | 2.11E-07 |
| 10/20/2006 | 12:15 PM | 3600 | 10800 | 5.00 | 4.30 | 1.0 | 20.0 | 2.11E-07 |
| 10/20/2006 | 2:00 PM | 6300 | 17100 | 5.82 | 3.50 | 1.0 | 20.0 | 1.96E-07 |

Average Permeability = **2.1E-07** cm/sec

**Remarks:**

| | |
|---|---|
| **Test ID** | 12225 |

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**COEFFICIENT OF PERMEABILITY - ASTM D5084 (FLEXIBLE WALL)**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project** | Indiana Harbor Slurry Wall-East Chicago | | | | | | |
| **Client** | Environmental Quality Management, 1800 Carillon Boulevard, Cincinnati, OH 45240 | | | | | | |
| **File #** | 3794 | **Date Tested** | 10/19/2006 | **Tested by:** | NP | **QC by:** | SB |
| **Sample ID:** | ST # 04 | Date Recd. | 9/29/06 | **Location** | STA 83+85 | | |
| **Sample Description** | Gray SB Backfill | | | | | | |

## *Specimen Data*

***Initial***

| | | | | | |
|---|---|---|---|---|---|
| Diameter: | 7.25 | cm | Area, A: | 41.3 | sq cm |
| Height, L: | 7.00 | cm | Volume, V: | 289.0 | cu cm |
| Mass of Sample: | 505.9 | g | **Moisture Content:** | **23.7** | % |
| | | | **Wet Density** | 109.2 | **pcf** |
| | | | **Dry Density** | 88.3 | **pcf** |

***Final***

| | | | | | |
|---|---|---|---|---|---|
| Diameter: | 7.01 | cm | Area, A: | 38.6 | sq cm |
| Height, L: | 6.09 | cm | Volume, V: | 235.0 | cu cm |
| Mass of Sample: | 479.14 | g | **Moisture Content:** | **21.2** | % |
| | | | **Wet Density** | 127.2 | **pcf** |
| | | | **Dry Density** | 105.0 | **pcf** |
| | | | **Deg of Saturation** | 91.7 | |

## *Test Data*

| | | |
|---|---|---|
| Permeant: | De-aired Tap Water | |
| Cell Pressure | 18.3 | psi |
| Top Pressure | 10.0 | psi |
| Bottom Pressure | 11.5 | psi |
| Gradient: | 15.1 | |

| Date | Time | Elapsed Time (Sec) | Cumulative Time (Sec) | Burette Readings Outflow cc | Burette Readings Inflow cc | Outflow/Inflow Ratio | Fluid Temp. oC | Permeability cm/sec |
|---|---|---|---|---|---|---|---|---|
| 10/19/2006 | 9:30 AM | 0 | 0 | 2.93 | 6.04 | | 20.0 | --- |
| 10/19/2006 | 10:30 AM | 3600 | 3600 | 3.68 | 5.11 | 0.8 | 20.0 | 3.61E-07 |
| 10/19/2006 | 11:30 AM | 3600 | 7200 | 4.17 | 4.47 | 0.8 | 20.0 | 2.70E-07 |
| 10/19/2006 | 12:30 PM | 3600 | 10800 | 4.66 | 3.82 | 0.8 | 20.0 | 2.95E-07 |
| 10/19/2006 | 1:30 PM | 3600 | 14400 | 5.11 | 3.22 | 0.8 | 20.0 | 2.94E-07 |
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Average Permeability = **3.1E-07** cm/sec

**Remarks:**

| | |
|---|---|
| **Test ID** | 12224 |

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**COEFFICIENT OF PERMEABILITY - ASTM D5084 (FLEXIBLE WALL)**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project** | Indiana Harbor Slurry Wall-East Chicago | | | | | | |
| **Client** | Environmental Quality Management, 1800 Carillon Boulevard, Cincinnati, OH 45240 | | | | | | |
| **File #** | 3794 | **Date Tested** | 10/11/2006 | **Tested by:** | NP | **QC by:** | SB |
| **Sample ID:** | ST # 03 | Date Recd. | 9/29/06 | **Location** | STA 84-85 | | |
| **Sample Description** | Gray SB Backfill | | | | | | |

## *Specimen Data*

***Initial***

| | | | | | |
|---|---|---|---|---|---|
| Diameter: | 7.23 | cm | Area, A: | 41.1 | sq cm |
| Height, L: | 5.86 | cm | Volume, V: | 240.6 | cu cm |
| Mass of Sample: | 455.4 | g | **Moisture Content:** | **26.2** | **%** |
| | | | **Wet Density** | **118.1** | **pcf** |
| | | | **Dry Density** | **93.6** | **pcf** |

***Final***

| | | | | | |
|---|---|---|---|---|---|
| Diameter: | 6.97 | cm | Area, A: | 38.2 | sq cm |
| Height, L: | 5.56 | cm | Volume, V: | 212.1 | cu cm |
| Mass of Sample: | 423.90 | g | **Moisture Content:** | **22.7** | **%** |
| | | | **Wet Density** | **124.7** | **pcf** |
| | | | **Dry Density** | **101.6** | **pcf** |
| | | | **Deg of Saturation** | **90.6** | |

## *Test Data*

| | | |
|---|---|---|
| Permeant: | De-aired Tap Water | |
| Cell Pressure | 26.0 | psi |
| Top Pressure | 13.2 | psi |
| Bottom Pressure | 14.7 | psi |
| Gradient: | 18.0 | |

| Date | Time | Elapsed Time (Sec) | Cumulative Time (Sec) | Burette Readings Outflow cc | Burette Readings Inflow cc | Outflow/Inflow Ratio | Fluid Temp. oC | Permeability cm/sec |
|---|---|---|---|---|---|---|---|---|
| 10/11/2006 | 9:15 AM | 0 | 0 | 3.04 | 5.94 | | 20.0 | --- |
| 10/11/2006 | 10:15 AM | 3600 | 3600 | 3.16 | 5.84 | 1.2 | 20.0 | 3.17E-08 |
| 10/11/2006 | 11:15 AM | 3600 | 7200 | 3.28 | 5.73 | 1.1 | 20.0 | 3.53E-08 |
| 10/11/2006 | 12:15 PM | 3600 | 10800 | 3.39 | 5.60 | 0.8 | 20.0 | 4.23E-08 |
| 10/11/2006 | 1:15 PM | 3600 | 14400 | 3.54 | 5.45 | 1.0 | 20.0 | 4.96E-08 |
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| | | | | | | | | |

Average Permeability = **4.0E-08** cm/sec

**Remarks:**

**Test ID** 12223

**Great Lakes Soil & Environmental Consultants, Inc**
333 Shore Drive, Burr Ridge, IL 60521 Ph: (630) 321-0944 Fax: (630) 321-0945

**COEFFICIENT OF PERMEABILITY - ASTM D5084 (FLEXIBLE WALL)**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project** | Indiana Harbor Slurry Wall-East Chicago | | | | | | |
| **Client** | Environmental Quality Management, 1800 Carillon Boulevard, Cincinnati, OH 45240 | | | | | | |
| **File #** | 3794 | **Date Tested** | 10/19/2006 | **Tested by:** | NP | **QC by:** | SB |
| **Sample ID:** | ST # 02 | Date Recd. | 9/29/06 | **Location** | STA 85+70 | | |
| **Sample Description** | Gray SB Backfill | | | | | | |

## Specimen Data

***Initial***

| | | | | | |
|---|---|---|---|---|---|
| Diameter: | 7.25 | cm | Area, A: | 41.3 | sq cm |
| Height, L: | 7.23 | cm | Volume, V: | 298.5 | cu cm |
| Mass of Sample: | 520.9 | g | **Moisture Content:** | **28.5** | % |
| | | | **Wet Density** | **108.9** | pcf |
| | | | **Dry Density** | **84.7** | pcf |

***Final***

| | | | | | |
|---|---|---|---|---|---|
| Diameter: | 6.99 | cm | Area, A: | 38.4 | sq cm |
| Height, L: | 6.55 | cm | Volume, V: | 251.4 | cu cm |
| Mass of Sample: | 505.71 | g | **Moisture Content:** | **25.9** | % |
| | | | **Wet Density** | **125.5** | pcf |
| | | | **Dry Density** | **99.7** | pcf |
| | | | **Deg of Saturation** | **98.8** | |

## Test Data

| | | |
|---|---|---|
| Permeant: | De-aired Tap Water | |
| Cell Pressure | 13.8 | psi |
| Top Pressure | 10.0 | psi |
| Bottom Pressure | 11.5 | psi |
| Gradient: | 14.6 | |

| Date | Time | Elapsed Time (Sec) | Cumulative Time (Sec) | Burette Readings Outflow cc | Burette Readings Inflow cc | Outflow/Inflow Ratio | Fluid Temp. oC | Permeability cm/sec |
|---|---|---|---|---|---|---|---|---|
| 10/19/2006 | 9:30 AM | 0 | 0 | 2.99 | 6.00 | | 20.0 | --- |
| 10/19/2006 | 10:30 AM | 3600 | 3600 | 3.55 | 5.42 | 1.0 | 20.0 | 2.30E-07 |
| 10/19/2006 | 11:30 AM | 3600 | 7200 | 4.05 | 4.94 | 1.0 | 20.0 | 2.03E-07 |
| 10/19/2006 | 12:30 PM | 3600 | 10800 | 4.51 | 4.48 | 1.0 | 20.0 | 2.06E-07 |
| 10/19/2006 | 1:30 PM | 3600 | 14400 | 5.02 | 3.98 | 1.0 | 20.0 | 2.39E-07 |
| | | | | | | | | |
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Average Permeability = **2.2E-07** cm/sec

**Remarks:**

| | |
|---|---|
| **Test ID** | 12222 |

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**COEFFICIENT OF PERMEABILITY - ASTM D5084 (FLEXIBLE WALL)**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project** | Indiana Harbor Slurry Wall-East Chicago | | | | | | |
| **Client** | Environmental Quality Management, 1800 Carillon Boulevard, Cincinnati, OH 45240 | | | | | | |
| **File #** | 3794 | **Date Tested** | 10/12/2006 | **Tested by:** | NP | **QC by:** | SB |
| **Sample ID:** | ST # 01 | Date Recd. | 9/29/06 | **Location** | STA 86+70 | | |
| **Sample Description** | Gray SB Backfill | | | | | | |

## *Specimen Data*

***Initial***

| | | | | | |
|---|---|---|---|---|---|
| Diameter: | 7.25 | cm | Area, A: | 41.3 | sq cm |
| Height, L: | 7.08 | cm | Volume, V: | 292.3 | cu cm |
| Mass of Sample: | 506.8 | g | **Moisture Content:** | 23.7 | % |
| | | | **Wet Density** | 108.2 | pcf |
| | | | **Dry Density** | 87.5 | pcf |

***Final***

| | | | | | |
|---|---|---|---|---|---|
| Diameter: | 6.96 | cm | Area, A: | 38.0 | sq cm |
| Height, L: | 6.34 | cm | Volume, V: | 241.2 | cu cm |
| Mass of Sample: | 484.78 | g | **Moisture Content:** | 23.5 | % |
| | | | **Wet Density** | 125.4 | pcf |
| | | | **Dry Density** | 101.6 | pcf |
| | | | **Deg of Saturation** | 93.6 | |

## *Test Data*

| | | |
|---|---|---|
| Permeant: | De-aired Tap Water | |
| Cell Pressure | 18.3 | psi |
| Top Pressure | 10.0 | psi |
| Bottom Pressure | 11.5 | psi |
| Gradient: | 14.9 | |

| Date | Time | Elapsed Time (Sec) | Cumulative Time (Sec) | Burette Readings Outflow cc | Burette Readings Inflow cc | Outflow/Inflow Ratio | Fluid Temp. oC | Permeability cm/sec |
|---|---|---|---|---|---|---|---|---|
| 10/12/2006 | 9:15 AM | 0 | 0 | 3.00 | 5.99 | | 20.0 | --- |
| 10/12/2006 | 10:15 AM | 3600 | 3600 | 3.14 | 5.86 | 1.1 | 20.0 | 4.93E-08 |
| 10/12/2006 | 11:15 AM | 3600 | 7200 | 3.30 | 5.73 | 1.2 | 20.0 | 5.01E-08 |
| 10/12/2006 | 12:15 PM | 3600 | 10800 | 3.40 | 5.62 | 0.9 | 20.0 | 4.30E-08 |
| 10/12/2006 | 1:15 PM | 3600 | 14400 | 3.52 | 5.51 | 1.1 | 20.0 | 4.36E-08 |
| | | | | | | | | |
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| | | | | | | | | |

Average Permeability = **4.7E-08** cm/sec

**Remarks:**

| **Test ID** | 12221 |
|---|---|

# INITIAL BACKFILL SAMPLES

**Great Lakes Soil & Environmental Consultants, Inc**
333 Shore Drive, Burr Ridge, IL 60521 Ph: (630) 321-0944 Fax: (630) 321-0945

# COEFFICIENT OF PERMEABILITY - ASTM D5084 (FLEXIBLE WALL)

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project** | Indiana Harbor Slurry Wall-East Chicago | | | | | | |
| **Client** | Environmental Quality Management, 1800 Carillon Boulevard, Cincinnati, OH 45240 | | | | | | |
| **File #** | 3794 | **Date Tested** | 9/11/2006 | **Tested by:** | NP | **QC by:** | SB |
| **Sample ID:** | BS # 1 | Date Recd. | 9/7/06 | **Location** | STA 43+50 | | |
| **Sample Description** | Gray SB Backfill | | | | | | |

## *Specimen Data*

***Initial***

| | | | | | |
|---|---|---|---|---|---|
| Diameter: | 7.21 | cm | Area, A: | 40.8 | sq cm |
| Height, L: | 5.20 | cm | Volume, V: | 212.3 | cu cm |
| Mass of Sample: | 422.0 | g | **Moisture Content:** | **26.9** | % |
| | | | **Wet Density** | **124.0** | **pcf** |
| | | | **Dry Density** | **97.7** | **pcf** |

***Final***

| | | | | | |
|---|---|---|---|---|---|
| Diameter: | 7.02 | cm | Area, A: | 38.7 | sq cm |
| Height, L: | 4.62 | cm | Volume, V: | 178.8 | cu cm |
| Mass of Sample: | 397.81 | g | **Moisture Content:** | **15.4** | % |
| | | | **Wet Density** | **138.8** | **pcf** |
| | | | **Dry Density** | **120.3** | **pcf** |
| | | | **Deg of Saturation** | **99.2** | |

## *Test Data*

| | | |
|---|---|---|
| Permeant: | De-aired Tap Water | |
| Cell Pressure | 80.0 | psi |
| Top Pressure | 75.0 | psi |
| Bottom Pressure | 76.8 | psi |
| Gradient: | 24.3 | |

| Date | Time | Elapsed Time (Sec) | Cumulative Time (Sec) | Burette Readings Outflow cc | Burette Readings Inflow cc | Outflow/Inflow Ratio | Fluid Temp. oC | Permeability cm/sec |
|---|---|---|---|---|---|---|---|---|
| 9/11/2006 | 9:15 AM | 0 | 0 | 3.00 | 6.02 | | 20.0 | --- |
| 9/11/2006 | 10:15 AM | 3600 | 3600 | 3.22 | 5.82 | 1.1 | 20.0 | 4.84E-08 |
| 9/11/2006 | 11:30 AM | 4500 | 8100 | 3.44 | 5.61 | 1.0 | 20.0 | 4.15E-08 |
| 9/11/2006 | 12:30 PM | 3600 | 11700 | 3.62 | 5.42 | 0.9 | 20.0 | 4.78E-08 |
| 9/11/2006 | 2:00 PM | 5400 | 17100 | 3.86 | 5.17 | 1.0 | 20.0 | 4.29E-08 |

Average Permeability = **4.5E-08** cm/sec

**Remarks:**

| **Test ID** | 11715 |
|---|---|

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# COEFFICIENT OF PERMEABILITY - ASTM D5084 (FLEXIBLE WALL)

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project** | Indiana Harbor Slurry Wall-East Chicago | | | | | | |
| **Client** | Environmental Quality Management, 1800 Carillon Boulevard, Cincinnati, OH 45240 | | | | | | |
| **File #** | 3794 | **Date Tested** | 9/11/2006 | **Tested by:** | NP | **QC by:** | SB |
| **Sample ID:** | BS # 2 | Date Recd. 9/7/06 | **Location** | STA 44+50 | | | |
| **Sample Description** | Gray SB Backfill | | | | | | |

## *Specimen Data*

***Initial***

| | | | | | |
|---|---|---|---|---|---|
| Diameter: | 7.22 | cm | Area, A: | 40.9 | sq cm |
| Height, L: | 5.43 | cm | Volume, V: | 222.3 | cu cm |
| Mass of Sample: | 423.9 | g | **Moisture Content:** | **32.4** | % |
| | | | **Wet Density** | 119.0 | **pcf** |
| | | | **Dry Density** | 89.8 | **pcf** |

***Final***

| | | | | | |
|---|---|---|---|---|---|
| Diameter: | 7.02 | cm | Area, A: | 38.7 | sq cm |
| Height, L: | 4.62 | cm | Volume, V: | 178.8 | cu cm |
| Mass of Sample: | 397.81 | g | **Moisture Content:** | **15.6** | % |
| | | | **Wet Density** | 138.8 | **pcf** |
| | | | **Dry Density** | 120.1 | **pcf** |
| | | | **Deg of Saturation** | 99.9 | |

## *Test Data*

| | |
|---|---|
| Permeant: | De-aired Tap Water |
| Cell Pressure | 80.0 psi |
| Top Pressure | 75.0 psi |
| Bottom Pressure | 76.8 psi |
| Gradient: | 23.3 |

| Date | Time | Elapsed Time (Sec) | Cumulative Time (Sec) | Burette Readings Outflow cc | Burette Readings Inflow cc | Outflow/Inflow Ratio | Fluid Temp. oC | Permeability cm/sec |
|---|---|---|---|---|---|---|---|---|
| 9/11/2006 | 9:15 AM | 0 | 0 | 3.00 | 5.94 | | 20.0 | --- |
| 9/11/2006 | 10:15 AM | 3600 | 3600 | 3.23 | 5.73 | 1.1 | 20.0 | 5.31E-08 |
| 9/11/2006 | 11:30 AM | 4500 | 8100 | 3.48 | 5.51 | 1.1 | 20.0 | 4.55E-08 |
| 9/11/2006 | 12:30 PM | 3600 | 11700 | 3.70 | 5.33 | 1.2 | 20.0 | 4.75E-08 |
| 9/11/2006 | 2:00 PM | 5400 | 17100 | 3.97 | 5.10 | 1.2 | 20.0 | 4.14E-08 |

Average Permeability = **4.7E-08** cm/sec

**Remarks:**

| **Test ID** | 11716 |
|---|---|

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**COEFFICIENT OF PERMEABILITY - ASTM D5084 (FLEXIBLE WALL)**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project** | Indiana Harbor Slurry Wall-East Chicago | | | | | | |
| **Client** | Environmental Quality Management, 1800 Carillon Boulevard, Cincinnati, OH 45240 | | | | | | |
| **File #** | 3794 | **Date Tested** | 10/2/2006 | **Tested by:** | NP | **QC by:** | SB |
| **Sample ID:** | BS # 06 | Date Recd. | 9/21/06 | **Location** | STA 79+10 | | |
| **Sample Description** | Gray SB Backfill | | | | | | |

## *Specimen Data*

***Initial***

| | | | | | |
|---|---|---|---|---|---|
| Diameter: | 7.25 | cm | Area, A: | 41.3 | sq cm |
| Height, L: | 5.79 | cm | Volume, V: | 239.0 | cu cm |
| Mass of Sample: | 463.2 | g | **Moisture Content:** | 22.0 | % |
| | | | **Wet Density** | 120.9 | pcf |
| | | | **Dry Density** | 99.1 | pcf |

***Final***

| | | | | | |
|---|---|---|---|---|---|
| Diameter: | 7.09 | cm | Area, A: | 39.5 | sq cm |
| Height, L: | 5.43 | cm | Volume, V: | 214.4 | cu cm |
| Mass of Sample: | 446.47 | g | **Moisture Content:** | 19.8 | % |
| | | | **Wet Density** | 130.0 | pcf |
| | | | **Dry Density** | 108.5 | pcf |
| | | | **Deg of Saturation** | 93.5 | |

## *Test Data*

| | | |
|---|---|---|
| Permeant: | De-aired Tap Water | |
| Cell Pressure | 80.0 | psi |
| Top Pressure | 75.0 | psi |
| Bottom Pressure | 76.8 | psi |
| Gradient: | 21.9 | |

| Date | Time | Elapsed Time (Sec) | Cumulative Time (Sec) | Burette Readings Outflow cc | Burette Readings Inflow cc | Outflow/Inflow Ratio | Fluid Temp. oC | Permeability cm/sec |
|---|---|---|---|---|---|---|---|---|
| 10/2/2006 | 8:30 AM | 0 | 0 | 2.74 | 6.25 | | 20.0 | --- |
| 10/2/2006 | 9:30 AM | 3600 | 3600 | 3.14 | 5.91 | 1.2 | 20.0 | 8.91E-08 |
| 10/2/2006 | 10:30 AM | 3600 | 7200 | 3.45 | 5.62 | 1.1 | 20.0 | 7.85E-08 |
| 10/2/2006 | 12:00 PM | 5400 | 12600 | 3.88 | 5.19 | 1.0 | 20.0 | 8.04E-08 |
| 10/2/2006 | 1:30 PM | 5400 | 18000 | 4.26 | 4.79 | 0.9 | 20.0 | 7.81E-08 |
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Average Permeability = **8.2E-08** cm/sec

**Remarks:**

| | |
|---|---|
| **Test ID** | 11905 |

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333 Shore Drive, Burr Ridge, IL 60521 Ph: (630) 321-0944 Fax: (630) 321-0945

**COEFFICIENT OF PERMEABILITY - ASTM D5084 (FLEXIBLE WALL)**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project** | Indiana Harbor Slurry Wall-East Chicago | | | | | | |
| **Client** | Environmental Quality Management, 1800 Carillon Boulevard, Cincinnati, OH 45240 | | | | | | |
| **File #** | 3794 | **Date Tested** | 10/2/2006 | **Tested by:** | NP | **QC by:** | NP |
| **Sample ID:** | BS # 07 | Date Recd. | 9/21/06 | **Location** | STA 80+10 | | |
| **Sample Description** | Gray SB Backfill | | | | | | |

## *Specimen Data*

***Initial***

| | | | | | |
|---|---|---|---|---|---|
| Diameter: | 7.25 | cm | Area, A: | 41.3 | sq cm |
| Height, L: | 4.53 | cm | Volume, V: | 187.0 | cu cm |
| Mass of Sample: | 364.4 | g | **Moisture Content:** | **27.6** | % |
| | | | **Wet Density** | 121.6 | **pcf** |
| | | | **Dry Density** | 95.3 | **pcf** |

***Final***

| | | | | | |
|---|---|---|---|---|---|
| Diameter: | 6.96 | cm | Area, A: | 38.0 | sq cm |
| Height, L: | 4.33 | cm | Volume, V: | 164.7 | cu cm |
| Mass of Sample: | 344.30 | g | **Moisture Content:** | **21.3** | % |
| | | | **Wet Density** | 130.4 | **pcf** |
| | | | **Dry Density** | 107.5 | **pcf** |
| | | | **Deg of Saturation** | 98.3 | |

## *Test Data*

| | | |
|---|---|---|
| Permeant: | De-aired Tap Water | |
| Cell Pressure | 80.0 | psi |
| Top Pressure | 75.0 | psi |
| Bottom Pressure | 76.8 | psi |
| Gradient: | 27.9 | |

| Date | Time | Elapsed Time (Sec) | Cumulative Time (Sec) | Burette Readings Outflow cc | Burette Readings Inflow cc | Outflow/Inflow Ratio | Fluid Temp. oC | Permeability cm/sec |
|---|---|---|---|---|---|---|---|---|
| 10/2/2006 | 8:30 AM | 0 | 0 | 2.80 | 6.22 | | 20.0 | --- |
| 10/2/2006 | 9:30 AM | 3600 | 3600 | 3.16 | 5.91 | 1.2 | 20.0 | 6.37E-08 |
| 10/2/2006 | 10:30 AM | 3600 | 7200 | 3.48 | 5.60 | 1.0 | 20.0 | 6.58E-08 |
| 10/2/2006 | 12:00 PM | 5400 | 12600 | 3.79 | 5.26 | 0.9 | 20.0 | 4.96E-08 |
| 10/2/2006 | 1:30 PM | 5400 | 18000 | 4.02 | 4.98 | 0.8 | 20.0 | 4.21E-08 |
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Average Permeability = **5.5E-08** cm/sec

**Remarks:**

| **Test ID** | 11906 |
|---|---|

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333 Shore Drive, Burr Ridge, IL 60521 Ph: (630) 321-0944 Fax: (630) 321-0945

**COEFFICIENT OF PERMEABILITY - ASTM D5084 (FLEXIBLE WALL)**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project** | Indiana Harbor Slurry Wall-East Chicago | | | | | | |
| **Client** | Environmental Quality Management, 1800 Carillon Boulevard, Cincinnati, OH 45240 | | | | | | |
| **File #** | 3794 | **Date Tested** | 10/9/2006 | **Tested by:** | NP | **QC by:** | SB |
| **Sample ID:** | BS # 08 | Date Recd. 9/21/06 | **Location** | STA 81+10 | | | |
| **Sample Description** | Gray SB Backfill | | | | | | |

## Specimen Data

***Initial***

| | | | | | |
|---|---|---|---|---|---|
| Diameter: | 7.23 | cm | Area, A: | 41.1 | sq cm |
| Height, L: | 4.89 | cm | Volume, V: | 200.8 | cu cm |
| Mass of Sample: | 422.4 | g | **Moisture Content:** | **28.7** | % |
| | | | **Wet Density** | **131.3** | **pcf** |
| | | | **Dry Density** | **102.0** | **pcf** |

***Final***

| | | | | | |
|---|---|---|---|---|---|
| Diameter: | 6.97 | cm | Area, A: | 38.2 | sq cm |
| Height, L: | 4.82 | cm | Volume, V: | 183.9 | cu cm |
| Mass of Sample: | 393.90 | g | **Moisture Content:** | **19.0** | % |
| | | | **Wet Density** | **133.6** | **pcf** |
| | | | **Dry Density** | **112.3** | **pcf** |
| | | | **Deg of Saturation** | **99.1** | |

## Test Data

| | | |
|---|---|---|
| Permeant: | De-aired Tap Water | |
| Cell Pressure | 80.0 | psi |
| Top Pressure | 75.0 | psi |
| Bottom Pressure | 76.8 | psi |
| Gradient: | 25.9 | |

| Date | Time | Elapsed Time (Sec) | Cumulative Time (Sec) | Burette Readings Outflow cc | Burette Readings Inflow cc | Outflow/Inflow Ratio | Fluid Temp. oC | Permeability cm/sec |
|---|---|---|---|---|---|---|---|---|
| 10/9/2006 | 9:15 AM | 0 | 0 | 3.10 | 5.83 | | 20.0 | --- |
| 10/9/2006 | 10:15 AM | 3600 | 3600 | 3.41 | 5.58 | 1.2 | 20.0 | 5.75E-08 |
| 10/9/2006 | 11:15 AM | 3600 | 7200 | 3.73 | 5.28 | 1.1 | 20.0 | 7.11E-08 |
| 10/9/2006 | 12:15 PM | 3600 | 10800 | 3.96 | 5.06 | 1.0 | 20.0 | 5.35E-08 |
| 10/9/2006 | 1:30 PM | 4500 | 15300 | 4.24 | 4.80 | 1.1 | 20.0 | 5.19E-08 |

Average Permeability = **5.9E-08** cm/sec

**Remarks:**

| | |
|---|---|
| **Test ID** | 11907 |

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# COEFFICIENT OF PERMEABILITY - ASTM D5084 (FLEXIBLE WALL)

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project** | Indiana Harbor Slurry Wall-East Chicago | | | | | | |
| **Client** | Environmental Quality Management, 1800 Carillon Boulevard, Cincinnati, OH 45240 | | | | | | |
| **File #** | 3794 | **Date Tested** | 10/9/2006 | **Tested by:** | NP | **QC by:** | SB |
| **Sample ID:** | BS # 09 | Date Recd. | 9/21/06 | **Location** | STA 82+10 | | |
| **Sample Description** | Gray SB Backfill | | | | | | |

## *Specimen Data*

***Initial***

| | | | | | |
|---|---|---|---|---|---|
| Diameter: | 7.29 | cm | Area, A: | 41.7 | sq cm |
| Height, L: | 5.21 | cm | Volume, V: | 217.5 | cu cm |
| Mass of Sample: | 411.4 | g | **Moisture Content:** | **29.9** | % |
| | | | **Wet Density** | **118.0** | **pcf** |
| | | | **Dry Density** | **90.9** | **pcf** |

***Final***

| | | | | | |
|---|---|---|---|---|---|
| Diameter: | 6.98 | cm | Area, A: | 38.3 | sq cm |
| Height, L: | 4.84 | cm | Volume, V: | 185.2 | cu cm |
| Mass of Sample: | 379.00 | g | **Moisture Content:** | **24.5** | % |
| | | | **Wet Density** | **127.7** | **pcf** |
| | | | **Dry Density** | **102.6** | **pcf** |
| | | | **Deg of Saturation** | **100.0** | |

## *Test Data*

| | |
|---|---|
| Permeant: | De-aired Tap Water |
| Cell Pressure | 80.0 psi |
| Top Pressure | 75.0 psi |
| Bottom Pressure | 76.8 psi |
| Gradient: | 24.3 |

| Date | Time | Elapsed Time (Sec) | Cumulative Time (Sec) | Burette Readings Outflow cc | Burette Readings Inflow cc | Outflow/Inflow Ratio | Fluid Temp. oC | Permeability cm/sec |
|---|---|---|---|---|---|---|---|---|
| 10/9/2006 | 9:15 AM | 0 | 0 | 3.03 | 5.96 | | 20.0 | --- |
| 10/9/2006 | 10:15 AM | 3600 | 3600 | 3.42 | 5.62 | 1.1 | 20.0 | 8.15E-08 |
| 10/9/2006 | 11:15 AM | 3600 | 7200 | 3.75 | 5.30 | 1.0 | 20.0 | 7.94E-08 |
| 10/9/2006 | 12:15 PM | 3600 | 10800 | 3.99 | 5.06 | 1.0 | 20.0 | 6.13E-08 |
| 10/9/2006 | 1:30 PM | 4500 | 15300 | 4.28 | 4.80 | 1.1 | 20.0 | 5.45E-08 |
| | | | | | | | | |
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Average Permeability = **6.9E-08** cm/sec

**Remarks:**

| **Test ID** | 11908 |
|---|---|

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**COEFFICIENT OF PERMEABILITY - ASTM D5084 (FLEXIBLE WALL)**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project** | Indiana Harbor Slurry Wall-East Chicago | | | | | | |
| **Client** | Environmental Quality Management, 1800 Carillon Boulevard, Cincinnati, OH 45240 | | | | | | |
| **File #** | 3794 | **Date Tested** | 10/9/2006 | **Tested by:** | NP | **QC by:** | SB |
| **Sample ID:** | BS # 10 | Date Recd. | 9/21/06 | **Location** | STA 83+10 | | |
| **Sample Description** | Gray SB Backfill | | | | | | |

## *Specimen Data*

***Initial***

| | | | | | |
|---|---|---|---|---|---|
| Diameter: | 7.18 | cm | Area, A: | 40.5 | sq cm |
| Height, L: | 4.69 | cm | Volume, V: | 189.9 | cu cm |
| Mass of Sample: | 382.7 | g | **Moisture Content:** | **27.1** | % |
| | | | **Wet Density** | **125.8** | **pcf** |
| | | | **Dry Density** | **99.0** | **pcf** |

***Final***

| | | | | | |
|---|---|---|---|---|---|
| Diameter: | 6.93 | cm | Area, A: | 37.7 | sq cm |
| Height, L: | 4.64 | cm | Volume, V: | 175.0 | cu cm |
| Mass of Sample: | 359.67 | g | **Moisture Content:** | **23.2** | % |
| | | | **Wet Density** | **128.2** | **pcf** |
| | | | **Dry Density** | **104.1** | **pcf** |
| | | | **Deg of Saturation** | **98.4** | |

## *Test Data*

| | | |
|---|---|---|
| Permeant: | De-aired Tap Water | |
| Cell Pressure | 80.0 | psi |
| Top Pressure | 75.0 | psi |
| Bottom Pressure | 76.8 | psi |
| Gradient: | 27.0 | |

| Date | Time | Elapsed Time (Sec) | Cumulative Time (Sec) | Burette Readings Outflow cc | Burette Readings Inflow cc | Outflow/Inflow Ratio | Fluid Temp. oC | Permeability cm/sec |
|---|---|---|---|---|---|---|---|---|
| 10/9/2006 | 9:15 AM | 0 | 0 | 3.05 | 6.05 | | 20.0 | --- |
| 10/9/2006 | 10:15 AM | 3600 | 3600 | 3.30 | 5.83 | 1.1 | 20.0 | 4.85E-08 |
| 10/9/2006 | 11:15 AM | 3600 | 7200 | 3.52 | 5.62 | 1.0 | 20.0 | 4.73E-08 |
| 10/9/2006 | 12:15 PM | 3600 | 10800 | 3.68 | 5.46 | 1.0 | 20.0 | 3.67E-08 |
| 10/9/2006 | 1:30 PM | 4500 | 15300 | 3.88 | 5.27 | 1.1 | 20.0 | 3.55E-08 |
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Average Permeability = **4.2E-08** cm/sec

**Remarks:**

| **Test ID** | 11909 |
|---|---|

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# COEFFICIENT OF PERMEABILITY - ASTM D5084 (FLEXIBLE WALL)

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project** | Indiana Harbor Slurry Wall-East Chicago | | | | | | |
| **Client** | Environmental Quality Management, 1800 Carillon Boulevard, Cincinnati, OH 45240 | | | | | | |
| **File #** | 3794 | **Date Tested** | 9/18/2006 | **Tested by:** | NP | **QC by:** | SB |
| **Sample ID:** | BS # 03 | Date Recd. | 9/12/06 | **Location** | STA 84+10 | | |
| **Sample Description** | Gray SB Back fill | | | | | | |

## *Specimen Data*

***Initial***

| | | | | | |
|---|---|---|---|---|---|
| Diameter: | 7.26 | cm | Area, A: | 41.4 | sq cm |
| Height, L: | 5.06 | cm | Volume, V: | 209.5 | cu cm |
| Mass of Sample: | 405.0 | g | **Moisture Content:** | **28.5** | % |
| | | | **Wet Density** | 120.6 | **pcf** |
| | | | **Dry Density** | 93.8 | **pcf** |

***Final***

| | | | | | |
|---|---|---|---|---|---|
| Diameter: | 7.11 | cm | Area, A: | 39.7 | sq cm |
| Height, L: | 4.68 | cm | Volume, V: | 185.8 | cu cm |
| Mass of Sample: | 381.72 | g | **Moisture Content:** | **21.7** | % |
| | | | **Wet Density** | 128.2 | **pcf** |
| | | | **Dry Density** | 105.3 | **pcf** |
| | | | **Deg of Saturation** | 94.9 | |

## *Test Data*

| | | |
|---|---|---|
| Permeant: | De-aired Tap Water | |
| Cell Pressure | 80.0 | psi |
| Top Pressure | 75.0 | psi |
| Bottom Pressure | 76.8 | psi |
| Gradient: | 25.0 | |

| Date | Time | Elapsed Time (Sec) | Cumulative Time (Sec) | Burette Readings Outflow cc | Burette Readings Inflow cc | Outflow/Inflow Ratio | Fluid Temp. oC | Permeability cm/sec |
|---|---|---|---|---|---|---|---|---|
| 9/18/2006 | 9:00 AM | 0 | 0 | 3.14 | 5.70 | | 20.0 | --- |
| 9/18/2006 | 10:00 AM | 3599.9999 | 3600 | 3.65 | 5.23 | 1.1 | 20.0 | 1.13E-07 |
| 9/18/2006 | 11:00 AM | 3600 | 7200 | 4.03 | 4.86 | 1.0 | 20.0 | 9.30E-08 |
| 9/18/2006 | 12:00 PM | 3600 | 10800 | 4.33 | 4.54 | 0.9 | 20.0 | 8.34E-08 |
| 9/18/2006 | 1:00 PM | 3599.9999 | 14400 | 4.60 | 4.27 | 1.0 | 20.0 | 7.26E-08 |
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Average Permeability = **9.1E-08** cm/sec

**Remarks:**

| | |
|---|---|
| **Test ID** | 11769 |

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**COEFFICIENT OF PERMEABILITY - ASTM D5084 (FLEXIBLE WALL)**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project** | Indiana Harbor Slurry Wall-East Chicago | | | | | | |
| **Client** | Environmental Quality Management, 1800 Carillon Boulevard, Cincinnati, OH 45240 | | | | | | |
| **File #** | 3794 | **Date Tested** | 9/18/2006 | **Tested by:** | NP | **QC by:** | SB |
| **Sample ID:** | BS # 04 | Date Recd. | 9/12/06 | **Location** | STA 85+10 | | |
| **Sample Description** | Gray SB Backfill | | | | | | |

## *Specimen Data*

***Initial***

| | | | | | |
|---|---|---|---|---|---|
| Diameter: | 7.29 | cm | Area, A: | 41.7 | sq cm |
| Height, L: | 4.93 | cm | Volume, V: | 205.8 | cu cm |
| Mass of Sample: | 406.2 | g | **Moisture Content:** | **23.2** | % |
| | | | **Wet Density** | 123.2 | **pcf** |
| | | | **Dry Density** | 100.0 | **pcf** |

***Final***

| | | | | | |
|---|---|---|---|---|---|
| Diameter: | 7.11 | cm | Area, A: | 39.7 | sq cm |
| Height, L: | 4.71 | cm | Volume, V: | 187.0 | cu cm |
| Mass of Sample: | 389.34 | g | **Moisture Content:** | **20.7** | % |
| | | | **Wet Density** | 129.9 | **pcf** |
| | | | **Dry Density** | 107.6 | **pcf** |
| | | | **Deg of Saturation** | 95.8 | |

## *Test Data*

| | |
|---|---|
| Permeant: | De-aired Tap Water |
| Cell Pressure | 80.0 psi |
| Top Pressure | 75.0 psi |
| Bottom Pressure | 76.8 psi |
| Gradient: | 25.7 |

| Date | Time | Elapsed Time (Sec) | Cumulative Time (Sec) | Burette Readings | | Outflow/Inflow Ratio | Fluid Temp. oC | Permeability cm/sec |
|---|---|---|---|---|---|---|---|---|
| | | | | Outflow cc | Inflow cc | | | |
| 9/18/2006 | 9:00 AM | 0 | 0 | 2.14 | 6.58 | | 20.0 | --- |
| 9/18/2006 | 10:00 AM | 3599.9999 | 3600 | 2.47 | 6.21 | 0.9 | 20.0 | 7.82E-08 |
| 9/18/2006 | 11:00 AM | 3600 | 7200 | 2.81 | 5.83 | 0.9 | 20.0 | 8.29E-08 |
| 9/18/2006 | 12:00 PM | 3600 | 10800 | 3.19 | 5.45 | 1.0 | 20.0 | 8.59E-08 |
| 9/18/2006 | 1:00 PM | 3599.9999 | 14400 | 3.62 | 5.05 | 1.1 | 20.0 | 9.40E-08 |
| | | | | | | | | |
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Average Permeability = **8.5E-08** cm/sec

**Remarks:**

| | |
|---|---|
| **Test ID** | 11770 |

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**COEFFICIENT OF PERMEABILITY - ASTM D5084 (FLEXIBLE WALL)**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project** | Indiana Harbor Slurry Wall-East Chicago | | | | | | |
| **Client** | Environmental Quality Management, 1800 Carillon Boulevard, Cincinnati, OH 45240 | | | | | | |
| **File #** | 3794 | **Date Tested** | 9/18/2006 | **Tested by:** | NP | **QC by:** | SB |
| **Sample ID:** | BS # 05 | Date Recd. | 9/12/06 | **Location** | STA 86+10 | | |
| **Sample Description** | Gray SB Backfill | | | | | | |

## *Specimen Data*

***Initial***

| | | | | | |
|---|---|---|---|---|---|
| Diameter: | 7.26 | cm | Area, A: | 41.4 | sq cm |
| Height, L: | 6.16 | cm | Volume, V: | 255.0 | cu cm |
| Mass of Sample: | 492.8 | g | **Moisture Content:** | **26.1** | % |
| | | | **Wet Density** | 120.6 | pcf |
| | | | **Dry Density** | 95.6 | pcf |

***Final***

| | | | | | |
|---|---|---|---|---|---|
| Diameter: | 7.13 | cm | Area, A: | 39.9 | sq cm |
| Height, L: | 5.83 | cm | Volume, V: | 232.8 | cu cm |
| Mass of Sample: | 475.87 | g | **Moisture Content:** | **22.5** | % |
| | | | **Wet Density** | 127.6 | pcf |
| | | | **Dry Density** | 104.1 | pcf |
| | | | **Deg of Saturation** | 95.5 | |

## *Test Data*

| | |
|---|---|
| Permeant: | De-aired Tap Water |
| Cell Pressure | 80.0 psi |
| Top Pressure | 75.0 psi |
| Bottom Pressure | 76.8 psi |
| Gradient: | 20.6 |

| Date | Time | Elapsed Time (Sec) | Cumulative Time (Sec) | Burette Readings Outflow cc | Burette Readings Inflow cc | Outflow/Inflow Ratio | Fluid Temp. oC | Permeability cm/sec |
|---|---|---|---|---|---|---|---|---|
| 9/18/2006 | 9:00 AM | 0 | 0 | 3.12 | 5.82 | | 20.0 | --- |
| 9/18/2006 | 10:00 AM | 3599.9999 | 3600 | 3.34 | 5.62 | 1.1 | 20.0 | 5.74E-08 |
| 9/18/2006 | 11:00 AM | 3600 | 7200 | 3.50 | 5.46 | 1.0 | 20.0 | 4.67E-08 |
| 9/18/2006 | 12:00 PM | 3600 | 10800 | 3.64 | 5.30 | 0.9 | 20.0 | 4.75E-08 |
| 9/18/2006 | 1:00 PM | 3599.9999 | 14400 | 3.76 | 5.16 | 0.9 | 20.0 | 4.21E-08 |

Average Permeability = **4.8E-08** cm/sec

**Remarks:**

| | |
|---|---|
| **Test ID** | 11771 |

*Quality, Service & Commitment*

# INITIAL BENTONITE CERTIFICATES

MI SWACO

# LABORATORY ANALYSIS CERTIFICATION

GP-101

## GREYBULL PLANT

DATE TESTED 8/12/2006

| SOLD TO: | SHIP TO: |
|---|---|
| ENVIRONMENTAL QUALITY MANAGEMENT INC<br>1800 CARILLON BOULEVARD<br><br>CINCINNATI OH 45240<br>USA<br><br>SALES ORDER #: 367520 | ENVIRONMENTAL QUALITY<br>150890400<br>3500 INDIANAPOLIS BLVD<br>EAST CHICAGO IN 46312<br>USA |

| SHIPPING DATE: | RAILCAR OR TRUCK NUMBER: | PLANT OF ORIGIN: | PRODUCT ID: |
|---|---|---|---|
| 14-AUG-06 | TRIPLE T #645 ✓<br>+3 Loads Below. | GREYBULL | GEL |

**Note Our data for the above shipment shows the following test results.**

| Test or Property | API Spec. | Result | |
|---|---|---|---|
| Viscosity | 30 min. | 70 | ✓ |
| Plastic Viscosity (cP) | N/A | | |
| Yield Point (# / 100 ft2) | N/A | | |
| Filtrate Volume (cm3) | 15.0 max. | 13.0 | ✓ |
| > 75 micron (wt. %) | 4.0 max. | 2.0 | ✓ |

| Test or Property | API Spec. | Result | |
|---|---|---|---|
| Moisture (wt. %) | N/A | 9.2 | ✓ |
| Y.P. / P.V. Ratio | 3.0 max. | 1.68 | ✓ |
| | | | |
| | | | |
| | | | |

This certifies that the product shipped to the location as stated above meets the requirements of A.P.I. Specification 13A Sixteenth Edition Section 9 for "Drilling Grade Bentonite". This specification is the same as the previously used 13A Section 4 but numbered differently in the most recent revision entitled "Sixteenth edition, February 2004" which became effective July of 2004. Should you have any questions or require additional information please let us know at 1-307-765-4496.

4000# BAGS
Rec'd 8-16-06.

Signed 8/15/2006 Date

Approved by: Plant Manager

LabanaCert.doc (4/22/97)
Rev F (10/04)

S/O 367522
S/O 367523
S/O 367521

shipping date
14-Aug-06 – ATC TRANS #110
14-Aug-06 – Quality #28 ✓
14-Aug-06 – C Bar J #550 ✓

MI SWACO

# LABORATORY ANALYSIS CERTIFICATION

GP-101

## GREYBULL PLANT

DATE TESTED 8/4/2006

| SOLD TO: | SHIP TO: |
|---|---|
| ENVIRONMENTAL QUALITY MANAGEMENT INC<br>1800 CARILLON BOULEVARD<br><br>CINCINNATI OH 45240<br>USA<br><br>SALES ORDER #: HCIV00387240 | ENVIRONMENTAL QUALITY<br>150890400<br>3500 INDIANAPOLIS BLVD<br>EAST CHICAGO IN 46312<br>USA |

| SHIPPING DATE: | RAILCAR OR TRUCK NUMBER: | PLANT OF ORIGIN: | PRODUCT ID: |
|---|---|---|---|
| 8-4-06 | QUALITY 34 ✓ | GREYBULL | GEL |

**Note Our data for the above shipment shows the following test results.**

| Test or Property | API Spec. | Result | | Test or Property | API Spec. | Result | |
|---|---|---|---|---|---|---|---|
| Viscosity | 30 min. | 41 | ✓ | Moisture (wt. %) | N/A | 7.6 | ✓ |
| Plastic Viscosity (cP) | N/A | | | Y.P. / P.V. Ratio | 3.0 max. | 1.70 | ✓ |
| Yield Point (# / 100 ft2) | N/A | | | | | | |
| Filtrate Volume (cm3) | 15.0 max. | 13.0 | ✓ | | | | |
| > 75 micron (wt. %) | 4.0 max. | 1.6 | ✓ | | | | |

**This certifies that the product shipped to the location as stated above meets the requirements of A.P.I. Specification 13A Sixteenth Edition Section 9 for "Drilling Grade Bentonite". This specification is the same as the previously used 13A Section 4 but numbered differently in the most recent revision entitled "Sixteenth edition, February 2004" which became effective July of 2006. Should you have any questions or require additional information please let us know at 1-307-765-4490.**

8/9/2006

Signed Date

Approved by: Plant Manager

LebanaCert.doc (4/22/97)
Rev F (10/04)

100 # Bags
Rec'd 8-8-06

MI SWACO

# LABORATORY ANALYSIS CERTIFICATION

GP-101

## GREYBULL PLANT

DATE TESTED 8/7/2006

| SOLD TO: | SHIP TO: |
|---|---|
| ENVIRONMENTAL QUALITY MANAGEMENT INC<br>1800 CARILLON BOULEVARD<br><br>CINCINNATI OH 45240<br>USA<br><br>SALES ORDER #: HCIV00368098 | ENVIRONMENTAL QUALITY<br>150890400<br>3500 INDIANAPOLIS BLVD<br>EAST CHICAGO IN 46312<br>USA |

| SHIPPING DATE: | RAILCAR OR TRUCK NUMBER: | PLANT OF ORIGIN: | PRODUCT ID: |
|---|---|---|---|
| 8-8-06 | QUALITY 5 ✓ | GREYBULL | GEL |

**Note Our data for the above shipment shows the following test results.**

| Test or Property | API Spec. | Result | | Test or Property | API Spec. | Result | |
|---|---|---|---|---|---|---|---|
| Viscosity | 30 min. | 33 | ✓ | Moisture (wt. %) | N/A | 8.1 | ✓ |
| Plastic Viscosity (cP) | N/A | | | Y.P. / P.V. Ratio | 3.0 max. | 1.00 | ✓ |
| Yield Point (#/ 100 ft2) | N/A | | | | | | |
| Filtrate Volume (cm3) | 15.0 max. | 14.4 | ✓ | | | | |
| > 75 micron (wt. %) | 4.0 max. | 1.2 | ✓ | | | | |

**This certifies that the product shipped to the location as stated above meets the requirements of A.P.I. Specification 13A Sixteenth Edition Section 9 for "Drilling Grade Bentonite". This specification is the same as the previously used 13A Section 4 but numbered differently in the most recent revision entitled "Sixteenth edition, February 2004" which became effective July of 2004. Should you have any questions or require additional information please let us know at 1-303/705-4456.**

Signed 8/9/2006 Date

Approved by: Plant Manager

LabanaCert.doc (4/22/97)
Rev F (10/04)

100# Bags 5
8-14-06

MI SWACO

# LABORATORY ANALYSIS CERTIFICATION

GP-101

## GREYBULL PLANT

DATE TESTED 8/8/2006

| SOLD TO: | SHIP TO: |
|---|---|
| ENVIRONMENTAL QUALITY MANAGEMENT INC<br>1800 CARILLON BOULEVARD<br><br>CINCINNATI OH 45240<br>USA<br><br>SALES ORDER # HCIV00367508 | ENVIRONMENTAL QUALITY<br>150890400<br>3500 INDIANAPOLIS BLVD<br>EAST CHICAGO IN 46312<br>USA |

| SHIPPING DATE: | RAILCAR OR TRUCK NUMBER: | PLANT OF ORIGIN: | PRODUCT ID: |
|---|---|---|---|
| 8-9-06 | QUALITY 50 ✓ | GREYBULL | GEL |

**Note Our data for the above shipment shows the following test results.**

| Test or Property | API Spec. | Result | | Test or Property | API Spec. | Result | |
|---|---|---|---|---|---|---|---|
| Viscosity | 30 min. | 59 | ✓ | Moisture (wt. %) | N/A | 7.3 | ✓ |
| Plastic Viscosity (cP) | N/A | | | Y.P. / P.V. Ratio | 3.0 max. | 1.69 | ✓ |
| Yield Point (# / 100 ft2) | N/A | | | | | | |
| Filtrate Volume (cm3) | 15.0 max. | 13.0 | ✓ | | | | |
| > 75 micron (wt. %) | 4.0 max. | 2.1 | ✓ | | | | |

**This certifies that the product shipped to the location as stated above meets the requirements of A.P.I. Specification 13A Sixteenth Edition Section 9 for "Drilling Grade Bentonite". This specification is the same as the previously used 13A Section 4 but numbered differently in the most recent revision entitled "Sixteenth edition, February 2004" which became effective July of 2004. Should you have any questions or require additional information please let us know at 1-307-765-4490.**

8/10/2006

Signed Date

Approved by: Plant Manager

LabanaCert.doc (4/22/97)
Rev F (10/04)

4000# bags

Rcvd 8/14/06

MI SWACO

# LABORATORY ANALYSIS CERTIFICATION

GP-101

## GREYBULL PLANT

DATE TESTED 8/9/2006

| SOLD TO: | SHIP TO: |
|---|---|
| ENVIRONMENTAL QUALITY MANAGEMENT INC<br>1800 CARILLON BOULEVARD<br><br>CINCINNATI OH 45240<br>USA<br><br>SALES ORDER #: HCIV00387504 | ENVIRONMENTAL QUALITY<br>150890400<br>3500 INDIANAPOLIS BLVD<br>EAST CHICAGO IN 46312<br>USA |

| SHIPPING DATE: | RAILCAR OR TRUCK NUMBER: | PLANT OF ORIGIN: | PRODUCT ID: |
|---|---|---|---|
| 8-9-06 | CREECH 3 ✓ | GREYBULL | GEL |

**Note Our data for the above shipment shows the following test results.**

| Test or Property | API Spec. | Result | | Test or Property | API Spec. | Result | |
|---|---|---|---|---|---|---|---|
| Viscosity | 30 min. | 54 | ✓ | Moisture (wt. %) | N/A | 7.5 | ✓ |
| Plastic Viscosity (cP) | N/A | | | Y.P. / P.V. Ratio | 3.0 max. | 1.36 | ✓ |
| Yield Point (# / 100 ft2) | N/A | | | | | | |
| Filtrate Volume (cm3) | 15.0 max. | 13.0 | ✓ | | | | |
| > 75 micron (wt. %) | 4.0 max. | 1.5 | ✓ | | | | |

**This certifies that the product shipped to the location as stated above meets the requirements of A.P.I. Specification 13A Sixteenth Edition Section 9 for "Drilling Grade Bentonite". This specification is the same as the previously used 13A Section 4 but numbered differently in the most recent revision entitled "Sixteenth edition, February 2004" which became effective July of 2004. Should you have any questions or require additional information please let us know at 1-307-766-4400.**

Signed 8/10/2006 Date

Approved by: Plant Manager

LabanaCert.doc (4/22/97)
Rev F (10/04)

4000# bags

Rec'd 8/12/06

GP-101

MI SWACO

# LABORATORY ANALYSIS CERTIFICATION

## GREYBULL PLANT

DATE TESTED 8/10/2006

| SOLD TO: | SHIP TO: |
|---|---|
| ENVIRONMENTAL QUALITY MANAGEMENT INC<br>1800 CARILLON BOULEVARD<br><br>CINCINNATI OH 45240<br>USA<br><br>SALES ORDER #: 367509 | ENVIRONMENTAL QUALITY<br>150890400<br>3500 INDIANAPOLIS BLVD<br>EAST CHICAGO IN 46312<br>USA |

| SHIPPING DATE: | RAILCAR OR TRUCK NUMBER: | PLANT OF ORIGIN: | PRODUCT ID: |
|---|---|---|---|
| 10-AUG-06 | QUALITY # 47 ✓ | GREYBULL | GEL |

**Note Our data for the above shipment shows the following test results.**

| Test or Property | API Spec. | Result | | Test or Property | API Spec. | Result | |
|---|---|---|---|---|---|---|---|
| Viscosity | 30 min. | 48 | ✓ | Moisture (wt. %) | N/A | 8.1 | ✓ |
| Plastic Viscosity (cP) | N/A | | | Y.P. / P.V. Ratio | 3.0 max. | 1.43 | ✓ |
| Yield Point (# / 100 ft2) | N/A | | | | | | |
| Filtrate Volume (cm3) | 15.0 max. | 13.2 | ✓ | | | | |
| > 75 micron (wt. %) | 4.0 max. | 1.2 | ✓ | | | | |

**This certifies that the product shipped to the location as stated above meets the requirements of A.P.I. Specification 13A Sixteenth Edition Section 9 for "Drilling Grade Bentonite". This specification is the same as the previously used 13A Section 4 but numbered differently in the most recent revision entitled "Sixteenth edition, February 2004" which became effective July of 2004. Should you have any questions or require additional information please let us know at 1-307-765-4496.**

8/15/2006

Signed Date

Approved by: Plant Manager

LabanaCert.doc (4/22/97)
Rev F (10/04)

4000 # bags
Rcvd 8-14-06.

GP-101

MI SWACO

# LABORATORY ANALYSIS CERTIFICATION

## GREYBULL PLANT

DATE TESTED 8/19/2006

| SOLD TO: | SHIP TO: |
|---|---|
| ENVIRONMENTAL QUALITY MANAGEMENT INC<br>1800 CARILLON BOULEVARD<br><br>CINCINNATI OH 45240<br>USA<br><br>SALES ORDER #: 367525 | ENVIRONMENTAL QUALITY<br>150890400<br>3500 INDIANAPOLIS BLVD<br>EAST CHICAGO IN 46312<br>USA |

| SHIPPING DATE: | RAILCAR OR TRUCK NUMBER: | PLANT OF ORIGIN: | PRODUCT ID: |
|---|---|---|---|
| 08-24-06 | CRST #M0817 | GREYBULL | GEL |

**Note Our data for the above shipment shows the following test results.**

| Test or Property | API Spec. | Result |
|---|---|---|
| Viscosity | 30 min. | 59 |
| Plastic Viscosity (cP) | N/A | |
| Yield Point (# / 100 ft2) | N/A | |
| Filtrate Volume (cm3) | 15.0 max. | 13.2 |
| > 75 micron (wt. %) | 4.0 max. | 3.0 |

| Test or Property | API Spec. | Result |
|---|---|---|
| Moisture (wt. %) | N/A | 8.8 |
| Y.P. / P.V. Ratio | 3.0 max. | 1.69 |
| | | |
| | | |
| | | |

**This certifies that the product shipped to the location as stated above meets the requirements of A.P.I. Specification 13A Sixteenth Edition Section 9 for "Drilling Grade Bentonite". This specification is the same as the previously used 13A Section 4 but numbered differently in the most recent revision entitled "Sixteenth edition, February 2004" which became effective July of 2004. Should you have any questions or require additional information please let us know at 1-307-765-4496.**

8/24/2006

Signed Date

Approved by: Plant Manager

LabanaCert.doc (4/22/97)
Rev F (10/04)

4000 # Bags
Rec'd. 8/29/06

MI SWACO

# LABORATORY ANALYSIS CERTIFICATION

GP-101

## GREYBULL PLANT

DATE TESTED 8/19/2006

| SOLD TO: | SHIP TO: |
|---|---|
| ENVIRONMENTAL QUALITY MANAGEMENT INC<br>1800 CARILLON BOULEVARD<br><br>CINCINNATI OH 45240<br>USA<br><br>SALES ORDER #: 367524 | ENVIRONMENTAL QUALITY<br>150890400<br>3500 INDIANAPOLIS BLVD<br>EAST CHICAGO IN 46312<br>USA |

| SHIPPING DATE: | RAILCAR OR TRUCK NUMBER: | PLANT OF ORIGIN: | PRODUCT ID: |
|---|---|---|---|
| 08-24-06 | QUALITY # 80 / | GREYBULL | GEL |

**Note Our data for the above shipment shows the following test results.**

| Test or Property | API Spec. | Result |
|---|---|---|
| Viscosity | 30 min. | 59 ✓ |
| Plastic Viscosity (cP) | N/A | |
| Yield Point (# / 100 ft2) | N/A | |
| Filtrate Volume (cm3) | 15.0 max. | 13.2 ✓ |
| > 75 micron (wt. %) | 4.0 max. | 3.0 ✓ |

| Test or Property | API Spec. | Result |
|---|---|---|
| Moisture (wt. %) | N/A | 8.8 |
| Y.P. / P.V. Ratio | 3.0 max. | 1.69 ✓ |
| | | |
| | | |
| | | |

**This certifies that the product shipped to the location as stated above meets the requirements of A.P.I. Specification 13A Sixteenth Edition Section 9 for "Drilling Grade Bentonite". This specification is the same as the previously used 13A Section 4 but numbered differently in the most recent revision entitled "Sixteenth edition, February 2004" which became effective July of 2004. Should you have any questions or require additional information please let us know at 1-307-755-4496.**

Signed 8/25/2006 Date

Approved by: Plant Manager

LabansCert.doc (4/22/97)

Rev F (10/04)

4000 # BAGS
Rcvd 8/28/06.

MI SWACO

# LABORATORY ANALYSIS CERTIFICATION

GP-101

## GREYBULL PLANT

DATE TESTED 8/19/2006

| SOLD TO: | SHIP TO: |
|---|---|
| ENVIRONMENTAL QUALITY MANAGEMENT INC<br>1800 CARILLON BOULEVARD<br><br>CINCINNATI OH 45240<br>USA<br><br>SALES ORDER #: 375747 | ENVIRONMENTAL QUALITY<br>150890400<br>3500 INDIANAPOLIS BLVD<br>EAST CHICAGO IN 46312<br>USA |

| SHIPPING DATE: | RAILCAR OR TRUCK NUMBER: | PLANT OF ORIGIN: | PRODUCT ID: |
|---|---|---|---|
| 08-25-06 | MIKKELSON #6 | GREYBULL | GEL |

**Note Our data for the above shipment shows the following test results.**

| Test or Property | API Spec. | Result |
|---|---|---|
| Viscosity | 30 min. | 59 |
| Plastic Viscosity (cP) | N/A | |
| Yield Point (# / 100 ft2) | N/A | |
| Filtrate Volume (cm3) | 15.0 max. | 13.2 |
| > 75 micron (wt. %) | 4.0 max. | 3.0 |

| Test or Property | API Spec. | Result |
|---|---|---|
| Moisture (wt. %) | N/A | 8.8 |
| Y.P. / P.V. Ratio | 3.0 max. | 1.69 |
| | | |
| | | |
| | | |

**This certifies that the product shipped to the location as stated above meets the requirements of A.P.I. Specification 13A Sixteenth Edition Section 9 for "Drilling Grade Bentonite". This specification is the same as the previously used 13A Section 4 but numbered differently in the most recent revision entitled "Sixteenth edition, February 2004" which became effective July of 2004. Should you have any questions or require additional information please let us know at 1-307-765-4496.**

Signed 8/28/2006
Date

Approved by: Plant Manager

LabanaCert.doc (4/22/97)
Rev F (10/04)

4000 # BAGS
Rcvd 8-29-06

GP-101

MI SWACO

# LABORATORY ANALYSIS CERTIFICATION

## GREYBULL PLANT

DATE TESTED 8/15/2006

| SOLD TO: | SHIP TO: |
|---|---|
| ENVIRONMENTAL QUALITY MANAGEMENT INC<br>1800 CARILLON BOULEVARD<br><br>CINCINNATI OH 45240<br>USA<br><br>SALES ORDER #: 375748 | ENVIRONMENTAL QUALITY<br>150890400<br>3500 INDIANAPOLIS BLVD<br>EAST CHICAGO IN 46312<br>USA |

| SHIPPING DATE: | RAILCAR OR TRUCK NUMBER: | PLANT OF ORIGIN: | PRODUCT ID: |
|---|---|---|---|
| 08-28-06 | QUALITY # 5 | GREYBULL | GEL |

**Note Our data for the above shipment shows the following test results.**

| Test or Property | API Spec. | Result | | Test or Property | API Spec. | Result | |
|---|---|---|---|---|---|---|---|
| Viscosity | 30 min. | 34 | ✓ | Moisture (wt. %) | N/A | 8.8 | |
| Plastic Viscosity (cP) | N/A | | | Y.P. / P.V. Ratio | 3.0 max. | 0.83 | ✓ |
| Yield Point (# / 100 ft2) | N/A | | | | | | |
| Filtrate Volume (cm3) | 15.0 max. | 13.6 | ✓ | | | | |
| > 75 micron (wt. %) | 4.0 max. | 1.6 | ✓ | | | | |

**This certifies that the product shipped to the location as stated above meets the requirements of A.P.I. Specification 13A Sixteenth Edition Section 9 for "Drilling Grade Bentonite". This specification is the same as the previously used 13A Section 4 but numbered differently in the most recent revision entitled "Sixteenth edition, February 2004" which became effective July of 2004. Should you have any questions or require additional information please let us know at 1-307-765-4496.**

8/29/2006

Signed Date

Approved by: Plant Manager

LabaneCert.doc (4/22/97)
Rev F (10/04)

GP-101

MI SWACO

# LABORATORY ANALYSIS CERTIFICATION

## GREYBULL PLANT

DATE TESTED 8/19/2006

| SOLD TO: | SHIP TO: |
|---|---|
| ENVIRONMENTAL QUALITY MANAGEMENT INC<br>1800 CARILLON BOULEVARD<br><br>CINCINNATI OH 45240<br>USA<br><br>SALES ORDER #: 375746 | ENVIRONMENTAL QUALITY<br>150890400<br>3500 INDIANAPOLIS BLVD<br>EAST CHICAGO IN 46312<br>USA |

| SHIPPING DATE: | RAILCAR OR TRUCK NUMBER: | PLANT OF ORIGIN: | PRODUCT ID: |
|---|---|---|---|
| 08-25-06 | QUALITY # 15 | GREYBULL | GEL |

**Note Our data for the above shipment shows the following test results.**

| Test or Property | API Spec. | Result | | Test or Property | API Spec. | Result | |
|---|---|---|---|---|---|---|---|
| Viscosity | 30 min. | 59 | ✓ | Moisture (wt. %) | N/A | 8.8 | ✓ |
| Plastic Viscosity (cP) | N/A | | | Y.P. / P.V. Ratio | 3.0 max. | 1.69 | ✓ |
| Yield Point (# / 100 ft2) | N/A | | | | | | |
| Filtrate Volume (cm3) | 15.0 max. | 13.2 | ✓ | | | | |
| > 75 micron (wt. %) | 4.0 max. | 3.0 | ✓ | | | | |

**This certifies that the product shipped to the location as stated above meets the requirements of A.P.I. Specification 13A Sixteenth Edition Section 9 for "Drilling Grade Bentonite". This specification is the same as the previously used 13A Section 6 but numbered differently in the most recent revision entitled "Sixteenth edition, February 2004" which became effective July of 2004. Should you have any questions or require additional information please let us know at 1-307-765-4496.**

Signed 8/25/2006 Date

Approved by: Plant Manager

LabanaCert.doc (4/22/97)
Rev F (10/04)

Rcvd 8-28-06
400# Bags

GP-101

MI SWACO

# LABORATORY ANALYSIS CERTIFICATION

## GREYBULL PLANT

DATE TESTED 8/19/2006

| SOLD TO: | SHIP TO: |
|---|---|
| ENVIRONMENTAL QUALITY MANAGEMENT INC<br>1800 CARILLON BOULEVARD<br>CINCINNATI OH 45240<br>USA<br>SALES ORDER #: 367526 | ENVIRONMENTAL QUALITY<br>150890400<br>3500 INDIANAPOLIS BLVD<br>EAST CHICAGO IN 46312<br>USA |

| SHIPPING DATE: | RAILCAR OR TRUCK NUMBER: | PLANT OF ORIGIN: | PRODUCT ID: |
|---|---|---|---|
| 08-25-06 | QUALITY # 71 | GREYBULL | GEL |

**Note Our data for the above shipment shows the following test results.**

| Test or Property | API Spec. | Result |
|---|---|---|
| Viscosity | 30 min. | 59 |
| Plastic Viscosity (cP) | N/A | |
| Yield Point (# / 100 ft2) | N/A | |
| Filtrate Volume (cm3) | 15.0 max. | 13.2 |
| > 75 micron (wt. %) | 4.0 max. | 3.0 |

| Test or Property | API Spec. | Result |
|---|---|---|
| Moisture (wt. %) | N/A | 8.8 |
| Y.P. / P.V. Ratio | 3.0 max. | 1.69 |
| | | |
| | | |
| | | |

This certifies that the product shipped to the location as stated above meets the requirements of A.P.I. Specification 13A Sixteenth Edition Section 9 for "Drilling Grade Bentonite". This specification is the same as the previously used 13A Section 4 but numbered differently in the most recent revision entitled "Sixteenth edition, February 2004" which became effective July of 2004. Should you have any questions or require additional information please let us know at 1-307-765-4496.

8/25/2006

Signed Date

Approved by: Plant Manager

LabanaCert.doc (4/22/97)

Rev F (10/04)

Rcvd 8·28·06
4000 # BAGS.

# REWORK BENTONITE CERTIFICATES

# LABORATORY ANALYSIS/ CERTIFICATION

P.O. Box 832 Greybull, Wyoming 02426
307-765-4496

Date Tested: 07/16/06

| *SOLD TO:* | *SHIP TO:* |
|---|---|
| ENVIRONMENTAL QUALITY<br>1800 CARILLON BOULEVARD<br>CINCINNATI, OH 45240<br>SO: 423028 | ENVIRONMENTAL QUALITY<br><br>EAST CHICAGO<br>USA |

| SHIPPING DATE | RAILCAR OR TRUCK NUMBER | PLANT OF ORIGIN | PRODUCT |
|---|---|---|---|
| 07-16-06 | BNSF 421076 | Greybull | GEL |

Note: Our data for the above shipment shows the following test results:

| Test or Property | API Spec. | Result | | Test or Property | API Spec. | Result | |
|---|---|---|---|---|---|---|---|
| Viscosity | 30 min. | 44 | ✓ | Moisture (wt %) | 10.0 max. | 8.2 | |
| Plastic Viscosity (cP) | N/A | 12 | | Y.P. / P.V. Ratio | 3.0 max. | 1.66 | ✓ |
| Yield Point (# /100ft$^2$) | N/A | 20 | | | | | |
| Filtrate Volume (cm$^3$) | 15.0 max. | 13.6 | ✓ | | | | |
| >75 micron (wt. %) | 4.0 max. | 1.1 | ✓ | | | | |

This certifies that the product shipped to the location as stated above meets the requirements of A.P.I. Section 13-A; Section 9 for "Drilling Grade Bentonite".

S/O 423028
shipped 11/28/06
Carrier: DDS Express
#5833

Leah Cermenelli 12/5/06
Signed Date

# LABORATORY ANALYSIS/ CERTIFICATION

P.O. Box 832 Greybull, Wyoming 02426
307-765-4496

Date Tested: 06/16/06

| *SOLD TO:* | *SHIP TO:* |
|---|---|
| DEWIND WELLS AND DEWATERING<br>DBA DEWIND ENVIRONMENTAL<br>9150 96TH STREET<br><br>ZEELAND, MI 49464<br>SO:423031 | DEWIND WELLS AND DEWATERING<br><br>EAST CHICAGO, IN<br>USA |

| SHIPPING DATE | RAILCAR OR TRUCK NUMBER | PLANT OF ORIGIN | PRODUCT |
|---|---|---|---|
| 06-17-06 | BNSF 458333 | Greybull | GEL |

Note: Our data for the above shipment shows the following test results:

| Test or Property | | API Spec. | Result | Test or Property | | API Spec. | Result |
|---|---|---|---|---|---|---|---|
| Viscosity | | 30 min. | 42 ✓ | Moisture | (wt %) | 10.0 max. | 8.2 ✓ |
| Plastic Viscosity | (cP) | N/A | 13 | Y.P. / P.V. Ratio | | 3.0 max. | 1.23 ✓ |
| Yield Point | (#./100ft$^2$) | N/A | 16 | | | | |
| Filtrate Volume | (cm$^3$) | 15.0 max. | 13.4 ✓ | | | | |
| >75 micron | (wt. %) | 4.0 max. | 1.8 ✓ | | | | |

This certifies that the product shipped to the location as stated above meets the requirements of A.P.I. Section 13-A; Section 9 for "Drilling Grade Bentonite".

Leah Cermenelli 12/4/06
Signed Date

S/O
423031
shipped - 11/29/06
Tenn Steel Haulers #7654

# LABORATORY ANALYSIS/ CERTIFICATION

P.O. Box 832 Greybull, Wyoming 02426
307-765-4496

Date Tested: 07/22/06

| *SOLD TO:* | *SHIP TO:* |
|---|---|
| DEWIND WELLS AND DEWATERING<br>DBA DEWIND ENVIRONMENTAL<br>9150 96TH STREET<br><br>ZEELAND, MI 49464<br>SO:423033 | DEWIND WELLS AND DEWATERING<br><br>EAST CHICAGO, IN<br>USA |

| SHIPPING DATE | RAILCAR OR TRUCK NUMBER | PLANT OF ORIGIN | PRODUCT |
|---|---|---|---|
| 07-22-06 | BNSF 421964 | Greybull | GEL |

Note: Our data for the above shipment shows the following test results:

| Test or Property | | API Spec. | Result |
|---|---|---|---|
| Viscosity | | 30 min. | 50 |
| Plastic Viscosity | (cP) | N/A | 14 |
| Yield Point | (# /100ft$^2$) | N/A | 22 |
| Filtrate Volume | (cm$^3$) | 15.0 max. | 12.1 |
| >75 micron | (wt. %) | 4.0 max. | 0.1 |

| Test or Property | | API Spec. | Result |
|---|---|---|---|
| Moisture | (wt %) | 10.0 max. | 6.7 |
| Y.P. / P.V. Ratio | | 3.0 max. | 1.50 |
| | | | |
| | | | |
| | | | |

This certifies that the product shipped to the location as stated above meets the requirements of A.P.I. Section 13-A; Section 9 for "Drilling Grade Bentonite".

Leah Cermenelli 12/4/06
Signed Date

S/O
423033
Shipped - 11/29/06
Tenn steel Haulers #44220

# CONSTRUCTION LOG

## IHSWG Construction Log

| PERSONNEL | Name | Arrival Date | Departure Date | Calibration |
|---|---|---|---|---|
| | | | | |
| | Ben Letany | 6/6/2006 | 10/12/2006 | |
| | Sam Carrico | 6/6/2006 | 8/17/2006 | |
| | Ed Wise | 6/12/2006 | 10/5/2006 | |
| | Nick Michailides | 6/13/2006 | 9/27/2006 | |
| | Eric Bowman | 6/19/2006 | 10/6/2006 | |
| | Juan Boroquez | 6/16/2006 | 10/12/2006 | |
| | Jeff Monet | 7/5/2006 | 8/15/2006 | |
| | Rodney Koski | 6/20/2006 | 7/29/2006 | |
| | Bob Lackey | 7/10/2006 | 10/12/2006 | |
| | John Markos | 7/10/2006 | 8/15/2006 | |
| | Bill Riffet | 7/5/2006 | 10/6/2006 | |
| | Scott Dubord | 7/23/2006 | 8/7/2006 | |
| | John Bealor | 8/28/2006 | 10/6/2006 | |
| | Rodney King | 8/3/2006 | 8/11/2006 | |
| | Pat Sabaitis | 8/29/2006 | 9/16/2006 | |
| | Shannon Kirkland | 8/30/2006 | 9/15/2006 | |
| | Bob Covault | 8/28/2006 | 8/31/2006 | |
| | Bob Covault | 9/15/2006 | 9/18/2006 | |
| | Jeff Crawford | 9/26/2006 | 10/5/2006 | |
| | Roger Davis | 9/26/2006 | 10/3/2006 | |
| | Glenn Gentz | 9/25/2006 | 10/3/2006 | |
| | Richard Burns | 9/29/2006 | 10/2/2006 | |
| | Ben Letany | 12/1/2006 | 12/28/2006 | |
| | Todd Bramer | 12/1/2006 | 12/28/2006 | |
| | Nick Anderson | 12/1/2006 | 12/28/2006 | |
| | Jeff Sale | 12/1/2006 | 12/28/2006 | |
| | Bill Hudson | 12/1/2006 | 12/28/2006 | |
| | Ed Wise | 12/4/2006 | 12/28/2006 | |
| | Ed Wise | 2/19/2007 | 2/21/2007 | |
| | Todd Bramer | 2/19/2007 | 2/21/2007 | |
| | Jeff Sale | 2/19/2007 | 2/21/2007 | |
| | Nick Anderson | 2/19/2007 | 2/21/2007 | |
| | Bill Hudson | 2/19/2007 | 2/21/2007 | |
| | Jeff Crawford | 2/19/2007 | 2/21/2007 | |
| | Shannon Kirkland | 2/19/2007 | 2/21/2007 | |

| | | | | |
|---|---|---|---|---|
| **EQUIPMENT** | MIE-PDR 1000 | 6/6/2006 | 12/28/2006 | 6/6/2006 |
| | | | | 7/6/2006 |
| | | | | 7/14/2006 |
| | | | | 7/18/2006 |
| | | | | 7/27/2006 |
| | | | | 8/4/2006 |
| | | | | 8/8/2006 |
| | | | | 8/31/2006 |
| | | | | 9/1/2006 |
| | | | | 9/5/2006 |
| | | | | 9/6/2006 |
| | | | | 9/7/2006 |
| | Total Safety PDR | 12/5/2006 | 12/28/2006 | 12/5/2006 |
| | | | | 12/6/2006 |
| | | | | 12/7/2006 |
| | | | | 12/11/2006 |
| | | | | 12/12/2006 |
| | | | | 12/20/2006 |
| | Chevy Pickup | 6/5/2006 | 8/16/2006 | |
| | Crew Van | 6/5/2006 | 10/12/2006 | |
| | Linkbelt Loader | 6/6/2006 | 8/8/2006 | |
| | 10x50 trailer | 6/7/2006 | 10/6/2006 | |
| | 8x32 trailer | 6/7/2006 | 10/6/2006 | |
| | 45 k Dozer | 6/7/2006 | 8/11/2006 | |
| | 20' conex box | 6/9/2006 | 10/12/2006 | |
| | 45k excavator | 6/19/2006 | 10/10/2006 | |
| | Dump Truck 1210 | 6/19/2006 | 10/11/2006 | |
| | Hydraulic Comp. | 7/5/2006 | 8/3/2006 | |
| | 45 k excavator | 7/5/2006 | 8/2/2006 | |
| | Screener | 7/6/2006 | 8/3/2006 | |
| | Dump truck1201 | 7/10/2006 | 8/7/2006 | |
| | Dump truck1103 | 7/10/2006 | 8/7/2006 | |
| | Dump truck1104 | 7/10/2006 | 8/7/2006 | |
| | Trench box | 7/11/2006 | 8/8/2006 | |
| | Roller Compact. | 7/14/2006 | 8/11/2006 | |
| | Fusing Machine | 7/27/2006 | 8/19/2006 | |
| | Long Stick Excav. | 7/31/2006 | 8/19/2006 | |
| | 6" Trash Pump | 8/7/2006 | 8/16/2006 | |
| | 6k forklift | 8/8/2006 | 10/12/2006 | |
| | Mix plant | 8/10/2006 | 8/19/2006 | |
| | 40' flatbed | 8/11/2006 | 9/8/2006 | |
| | 30 ton crane | 8/28/2006 | 8/31/2006 | |
| | Dewind Trencher | 8/28/2006 | 9/18/2006 | |
| | 4" trash pump | 9/12/2006 | 10/7/2006 | |
| | 45 ton crane | 9/15/2006 | 9/18/2006 | |
| | Fusing Machine | 9/20/2006 | 10/5/2006 | |
| | 40k Dozer | 9/20/2006 | 10/7/2006 | |
| | Dewind Trencher | 12/1/2006 | 2/21/2007 | |
| | Loader | 12/1/2006 | 2/21/2007 | |
| | Mini-hoe | 12/1/2006 | 12/28/2006 | |
| | Batch Plant | 12/1/2006 | 12/28/2006 | |
| | Mini-hoe | 2/19/2007 | 2/21/2007 | |
| | Batch Plant | 2/19/2007 | 2/21/2007 | |
| | Excavator | 2/19/2007 | 2/21/2007 | |

# APPENDIX E

# FINAL CONTRACTOR CONSTRUCTION QUALITY CONTROL PLAN

# CONTRACTOR QUALITY CONTROL PLAN

Prepared for:

U.S. Army Corps of Engineers
Indiana Harbor & Canal Disposal Facility
Slurry Wall Gaps

Contract No. W912P6-06-C-0003
Submittal No. 01451-1.1

PN 030249.0001.0002.07

Prepared by:

Environmental Quality Management, Inc.
1800 Carillon Boulevard
Cincinnati, Ohio 45240

May 2006

**CONTRACTOR QUALITY CONTROL PLAN**

**Contract No. W912P6-06-C-0003**

Submittal No. 01451-1.1

I certify that this submittal has been reviewed in detail and is correct and in strict conformance with the contract drawings and specifications except as otherwise stated.

Ed Wise, CQC Systems Manager — Date: 5/3/6

Noted Exceptions:

None not previously approved by USACE

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# SECTION 1

# INTRODUCTION

## 1.1 Purpose

The primary purpose of this project is the installation of approximately 970 linear feet of slurry wall. This slurry wall will be installed in two segments. One segment is on the west side of the property between about Stations 78+50 to 86+90 (840 feet) and the other segment is on the east side between about Stations 43+30 and 44+60 (130 feet). These segments represent gaps in the west, north, and east sides of the slurry wall surrounding the site. These gaps exist because of right-of-way issues with the CSX Railroad that have recently been resolved. Prior to installation of the slurry wall, all obstructions along its path will be removed. Because the site was formerly used as a refinery, numerous pipes, conduits, and other obstructions may exist in the path of the cutoff wall. An ancillary task for this project involves the removal of about 625 linear feet of CSX railroad track on the eastern edge of the property.

The project site is located at 3500 Indianapolis Boulevard, East Chicago, Indiana, and is referred to as the Energy Cooperative Incorporated (ECI) property.

This Contractor Quality Control (CQC) Plan describes the personnel, procedures, control, instructions, tests, records, and forms to be used for all features of work. This plan was written in conformance with specification *Section 01451, Contractor Quality Control* of Indiana Harbor and Canal (IHC) Confined Disposal Facility (CDF) Slurry Wall Gaps, East Chicago, Indiana – Construction Documents, November 2005.

## 1.2 Organization

This plan contains nine sections. Section 2 provides background information on the ECI property, including a description of the site location and information describing the manufacturing that has taken place on the property. Section 3 describes the CQC organization for this project, its authority and responsibilities, and its commitment to follow a three-phase

CQC Plan. Section 4 summarizes the approach for scheduling, reviewing, certifying, and managing submittals including the approach for subcontractors, off-site fabricators, suppliers, and purchasing agents. Section 5 presents the control, verification, and acceptance procedures for CQC. Section 6 describes the three-phase control program and the procedures for tracking preparatory, initial, and follow-up control phases and control, verification, and acceptance tests including documentation. This section provides the procedures for tracking construction deficiencies from identification through acceptable corrective action. Section 7 includes a list of the definable features of work. Section 8 presents the procedures for completing the inspection. Section 9 presents documentation procedures.

# SECTION 2

# SITE LOCATION AND DESCRIPTION

## 2.1 Site Location

The Energy Cooperative Incorporated (ECI) property is located in Lake County Indiana (northwest Indiana), 20 miles southeast of downtown Chicago, Illinois and 1.5 miles northwest of the City of East Chicago, Indiana. Figure 1 provides a site location map of this ~160-acre property. The project site is bordered by the Lake George Canal to the south, Indianapolis Boulevard to the east, Cline Avenue to the north, and the Amoco Oil Company Refinery to the west. CSX Railroad tracks run parallel to the entire length of the west property line. A portion of these railroad tracks also diverges and bisects the property into a northern and a southern zone. The size of the northern zone is approximately 50 acres, and the southern zone is approximately 110 acres. The northern zone is connected to the southern zone via a right-of-way that crosses the bisecting railroad track near the eastern edge of the property.

## 2.2 Site Description

The ECI property was the location of a petroleum products refinery from 1918 to 1981. Peak production was approximately 140,000 barrels per day. The project parcel, termed the main refinery, contained the principal production area and also included storage, a marine loading area, rail loading areas, insecticide manufacturing, truck docking facilities, and an American Petroleum Institute (API) separator. The refinery operations included the production of mineral spirits, propane, leaded and unleaded gasoline, fuel oil, kerosene, asphalt and asphalt products, liquefied petroleum gas, grease, lubricating oils, paraffin wax, phenols, and sulfur. Between 1940 and 1958, pyrethrum extract consisting of dried heads of certain varieties of chrysanthemums was filtered on site. The filtered extract was combined with kerosene and used as an insecticide base to produce insecticide. The maximum annual production of insecticide

base occurred in 1944 when 49,359 barrels were produced. This accounted for 0.26 percent of the total plant throughput.

Former owners of the project site include Sinclair from 1918 to 1968, Atlantic Richfield Company (ARCO) from 1968 to 1976, and ECI from 1976 to 1981. Figure 2 shows the layout of the project site during ECI's ownership in 1977 while it operated as a refinery. In 1981, ECI filed for bankruptcy; in the late 1980s, all buildings and aboveground structures were razed in response to a court order. Several inches of clean topsoil were graded to cover the site. In 1989, the City of East Chicago became the owner of the site as payment for back taxes owed by ECI.

The site has open Resource Conservation and Recovery Act (RCRA) status because the court-approved closure of the facility was not comparable to a RCRA-approved closure. In addition, the site requires RCRA corrective action because soil and groundwater on site were contaminated from past industrial activities.

EQ installed about 7,500 linear feet of soil bentonite slurry wall along the west, north, and east boundaries (except at the two CSX crossings) of the site in 2003 and 2004. EQ also removed over 250 utility obstructions along the path of the slurry wall in 2002.

# SECTION 3

# CQC ORGANIZATION AND RESPONSIBILITY

## 3.1 Quality Control Organization

Figure 3 shows the CQC organization for the IHC Obstruction Removal project. The CQC staff will implement the three-phase control system (Preparatory, Initial, and Follow-up) specified in Section 01451 Part 3.6 of the Construction Specifications. Section 6 presents detailed information on this process.

## 3.2 CQC Staff

The CQC organization chart is presented in Figure 3. Resumes and copies of the CQC training certificates for key CQC personnel are presented in Appendix A. The following subsections present the name, qualifications, duties, responsibilities, and authorities of each person assigned a CQC function. EQ will maintain the CQC staff at full strength at all times. If it is necessary to make changes to the CQC staff, EQ will revise the CQC Plan to reflect the changes, and will submit the changes to the Contracting Officer for approval.

### 3.2.1 CQCSM

The CQCSM for this project will be Mr. Ed Wise. Mr. Wise is a chemical engineer with 1.5 years of slurry wall experience and 21 years of other relevant experience with focused experience on projects relating to hazardous wastes, Toxic Substances Control Act (TSCA), Comprehensive Environmental Response Compensation, and Liability Act (CERCLA), wastewater, air, and Occupational Safety and Health Act (OSHA). Mr. Wise served as the CQCSM for the IHC CDF Facility Investigation and Cutoff Wall project performed at this site between 2002 and 2004, and the IHC CDF Obstruction Removal Project performed in 2005. He successfully completed the CQC Management Training Class offered by the Corps of Engineers in 2002 and again in January 2005 to obtain training on the Quality Control Specifications (QCS)

system. As the CQCSM, Mr. Wise will be responsible for ensuring that the project is performed in accordance with the Construction Specifications and associated work plans. He will have the authority to adequately perform the function of the CQCSM, including the authority to stop work that is not in compliance with the Construction Specifications. The CQCSM will have no other duties in addition to quality control. Either the CQCSM or Assistant CQCSM will be on site at all times during construction. Both are direct employees of EQ.

It should be noted that the construction specifications require the Contractor Quality Control Safety Manager (CQCSM) to be a graduate engineer with 5 years of slurry wall experience, or to have 10 years experience in cutoff wall construction. In this regard, EQ request a deviation from the construction specifications to allow Mr. Wise to serve as CQCSM. This deviation was approved on 27APR06.

### 3.2.2 Assistant CQCSM

The Assistant CQCSM for this project will be Mr. Ben Letany. Mr. Letany has a BS from Ohio State University and 10 years of relevant construction experience. He successfully completed the CQC Management Training Class offered by the Corps of Engineers in 2003. It should be noted that the construction specifications require the assistant CQCSM to be a graduate engineer with 5 years of cutoff wall experience or to have10 years experience in cutoff wall construction. Although Mr. Letany is not a graduate engineer and only has 1.5 years of experience in cutoff wall construction, he served as the assistant CQCSM for the IHC CDF Obstruction Removal Project performed in 2005. EQ therefore requested a deviation from the construction specifications to allow Mr. Letany to serve as Assistant CQCSM. This deviation was approved on 27APR06 with the condition that Mr. Letany may not serve in the capacity of CQCSM for extended periods of time. EQ does not expect Mr. Letany to serve as Assistant CQCSM for more than three consecutive days. In the event that Mr. Letany serves as Assistant CQCSM for extended periods of time, the Government reserves the right to enforce the specified requirements of ten (10) years experience for the Assistant CQCSM as indicated in the contract specifications.

As the Assistant CQCSM, Mr. Letany will be responsible for ensuring that the project is performed in accordance with the Construction Specifications and associated work plans in the event that the CQCSM is unavailable on site. He will have the authority to perform the function of the CQCSM, including the authority to stop work that is not in compliance with the Construction Specifications.

### 3.2.3 Site Manager/Project Superintendent

Mr. Eric Bowman will serve as the Site Manager/Project Superintendent. Mr. Bowman has over 14 years experience in hazardous waste remediation (11 years in a management position), wastewater treatment, on-site volatilization systems, Resource Conservation and Recovery Act (RCRA) landfill construction and closures, buried drum removal, underground storage tank (UST) removal, erosion control systems (using rip rap, 2-ft x 2-ft x 8-ft concrete blocks, concrete lagging walls), road construction (asphalt, concrete, and rock), PCB incineration, supervision of specialty subcontractors, environmental sampling, and various media. Mr. Bowman served as the site manager for the IHC CDF Obstruction Removal Project performed in 2005. He is an equipment operator (dozers d-3 to d-8, trackhoes, rubber tire and track loaders, forklifts and cranes, etc.).

Under Multi-Delivery Order contracts, he has performed project estimating, RCRA landfill construction and closures, road construction, crane operation, heavy equipment operation, Level B site work, environmental sampling and monitoring, asbestos removal, construction oversight, site management (including performance as Site Safety Officer), low-level radiation remediation, monitoring/training, confined space entry, and wastewater treatment. He will have the overall responsibility for ensuring that the construction portion of the project is completed on schedule and in conformance with the Construction Specifications.

## 3.3 Letter to the CQC System Manager

Appendix B presents a copy of the letter to the CQC System Manager, signed by an authorized official of Environmental Quality Management, Inc. (EQ). This letter describes the

responsibilities and designates sufficient authorities to perform the functions of the CQCSM and authorizes the CQCSM to stop work that is not in compliance with the contract.

### 3.4 Letter to the CQC System Assistant Manager

Appendix B presents a copy of the letter to the CQC System Assistant Manager, signed by the CQC System Manager for EQ. This letter describes the responsibilities and designates all authorities of the CQC System Manager to the CQC Assistant Manager in the event a substitution is required, and extends to the authority to stop work that is not in compliance with the contract.

# SECTION 4

# SUBMITTAL PROCEDURES

## 4.1 Submittal Register

EQ will make submittals in accordance with the requirements of Specification Section 01330. ENG Form 4288 (Appendix C) will be used to track submittals. The Government has completed the initial entries in the Submittal Register, but additional submittals may be required. All submittals will be entered into the submittal register including those from subcontractors, off-site fabricators, suppliers, and purchasing agents. The approved submittal register will be used to control submittals throughout the life of the contract and will become the scheduling document. The submittal register and the progress schedule will be coordinated. EQ will maintain the submittal register for the project using the QCS software system.

The submittal register ENG Form 4288 is in Microsoft Excel format and will be updated as needed to ensure that it is current as submittals are made or returned. The register will allow EQ to ensure that submittals are properly scheduled to allow for CQCSM and Contracting Officer (CO) review and approval prior to ordering and/or performing.

As required by Section 1330, all submittals will be checked and approved by the CQCSM prior to submittal to the CO.

## 4.2 Transmittals

All submittals will be stamped, signed, and dated: any deviations will be clearly identified. The transmittal form (ENG Form 4025) will accompany all submittals. For any submittals that include proposed deviations, the column "variation" of the transmittal form will be checked. EQ will provide all submittals for this project in both paper (seven copies) and electronic (four copies) formats on Compact Disc to the CO. Upon completion of review of submittals requiring government approval, the submittals will be identified as having received approval. Five copies of the paper submittal will be retained by the CO, and two copies of the

paper submittal will be returned to EQ. After approval, EQ will provide to the CO the approved submittal in the appropriate electronic format within 5 calendar days. The appropriate electronic formats are Microsoft Excel for data tables, PDF format for Quality Assurance/Quality Control (QA/QC) or other documentation, and Microstation .DGN format for electronic drawings. Other types of documentation will be submitted in the formats contained in Section 1330.

# SECTION 5

# TESTS

This section summarizes the tests specified or required to verify that control measures are adequate to provide a product that conforms to contract requirements. A summary of tests to be performed is presented in Table 1. EQ has verified that the various testing procedures comply with the contract requirements. We have also verified that the laboratories and testing equipment are available and comply with testing standards. We will check test instrument calibration data against certified standards (where applicable) and will verify that recording forms and test identification control number system, including all of the test documentation requirements, have been prepared. Results of all tests taken, both passing and failing, will be recorded in the Daily CQC Management Report. This report will include a reference to the associated Specification Section, location of test samples, and a sequential control number identifying the test. Laboratory test reports will be submitted to the CO after they become available.

## 5.1 Testing Laboratories

### 5.1.1 USACE Approved Laboratories

To ensure that the data provided for waste characterization meets project data quality objectives, a laboratory meeting USACE validation requirements will be used. All analyses will be performed off-site by Test America (formerly Great Lakes Laboratories) in Burr Ridge, Illinois. Only specific laboratories with certification/accreditation for individual analysis will be allowed to perform these tests. (Note http://www.wes.army.mil/sl/MTC/VALStatesTbl.htm contains a listing of approved laboratories and analysis.) Alternate laboratories will only be used with the approval of USACE.

### 5.1.2 Capability Check

EQ will allow the Government to check laboratory equipment in the proposed laboratory for compliance with the standards set forth in the contract specifications, and to check the laboratory technician's testing procedures and techniques. Laboratories utilized for testing soils, bentonite slurries, and soil-bentonite backfill mixes and for performing all permeability testing will meet the criteria detailed in ASTM D 3740 and ASTM E 329 and will be a Corps of Engineers Validated Laboratory.

### 5.1.3 Capability Recheck

If the selected laboratory fails the capability check, EQ will be assessed a charge to reimburse the Government for each succeeding recheck of the laboratory or for the checking of a subsequently selected laboratory. Such costs will be deducted from the contract amount due.

### 5.1.4 On-site Laboratory

EQ will allow the Government to utilize EQ's control testing laboratory and equipment to make assurance tests, and to check EQ's testing procedures, techniques, and test results at no additional cost to the Government. Table 1 shows the tests to be performed and the QC limits for each. The test results will be obtained and reviewed prior to use. If the slump cone results are too high (>6 inches), additional bentonite will be added until the mix is compliant. If the slump cone results are too low (<2 inches), additional water will be added until the mix is compliant. Failure to maintain a density difference of 15 pcf between backfill and slurry can be caused by too much sand in the trench slurry (too high of a density) or by a low density backfill. Specific site conditions will be reviewed and the trench slurry will either be purged to reduce this density, or additional bentonite will be added to the backfill to increase this density. The bentonite content will not be chemically determined. It will be based on a fixed spacing of bags throughout the wall construction. Based on the mix design, bentonite will be added to the soil in the form of bentonite slurry and in dry form from 4,000-pound jumbo bags of bentonite (minimum 6% by dry weight). The jumbo bags of bentonite will be staged at intervals required to meet the minimum bentonite addition. The estimated interval between jumbo bags is determined based on a 100-pounds-per-cubic-foot (pcf) soil density. The width of the trench will

be 30 inches (in.) and the depth will be close to 36 feet (ft) (33 ft to clay plus 3 ft key-in depth). Using a 6% mix ratio, the spacing of jumbo bags will be approximately 7.4 feet. This was calculated by determining the weight of backfill material required (4,000 lbs bag ÷ 0.06 = 66,700 lbs backfill). The weight is then divided by the backfill density (66,700 lbs backfill ÷ 100 lbs backfill per $ft^3$ = 667 $ft^3$ of backfill) to get backfill volume. The spacing is calculated by dividing the backfill volume by the cross-sectional area of the trench (30 in. ÷ 12 in. per ft * 36 ft = 90 $ft^2$). This spacing is approximately 7.4 ft (667 $ft^3$ ÷ 90 $ft^2$ = 7.41 ft). This spacing will be reevaluated daily based on current site conditions and will be adjusted if wall conditions vary from those used in the preliminary calculations. This data will be recorded on the Daily Slurry Wall Quality Control Form (See Appendix C).

### 5.1.5 Furnishing or Transportation of Samples for Testing

Costs incidental to the transportation of samples or materials will be borne by EQ. Samples of materials for test verification and acceptance testing by the Government shall be delivered to the Corps of Engineers. Coordination for each specific test, exact delivery location address, and dates will be made through the Area Office.

## 5.2 Duplicate Samples

EQ will perform specified or required tests to verify that control measures are adequate to provide a product that conforms to contract requirements. EQ will furnish to the Government duplicate samples of test specimens for possible testing by the Government as requested. Testing will include operation and/or acceptance tests when specified. EQ will perform the following activities and will record and provide the following data:

- Verify that testing procedures comply with contract requirements.
- Verify that facilities and testing equipment are available and comply with testing standards.
- Check test instrument calibration data against certified standards.
- Verify that recording forms and the test identification control number system have been prepared, including all test documentation requirements.

- Record results of all tests taken, both passing and failing tests, on the CQC report for the date taken. The specification paragraph reference, the location where tests were taken, and the sequential control number identifying the test will be given. If approved by the CO, actual test reports may be submitted later with a reference to the test number and date taken. An information copy of tests performed by an off-site or commercial test facility will be provided directly to the CO.

# SECTION 6

# TRACKING PROCEDURES

After all required plans/documents/materials are approved/accepted, at least three phases of control will be conducted by the CQCSM for each definable feature of work: Preparatory Phase, Initial Phase, and Follow-up Control Phase. The USACE will be notified at least 48 hours in advance of the beginning of both the preparatory and initial control phases. Whenever one of the control phase meetings occur, a set of meeting minutes will be prepared by the CQCSM and attached to the Daily CQC Management Report (these meeting minutes will not be submitted under an ENG4025 Form or tracked on the ENG4288.)

During the First Preparatory Phase meeting between EQ and the government, a schedule of the work tasks requiring phase meetings will be agreed upon. This schedule will then be used to document the progress of work including the three phases of control (preparatory, initial, and follow-up) for each work task. The schedule will be updated as required and will be posted on the wall of the contractor's field trailer. A current copy of the schedule will be submitted along with the Daily CQC Management Report and Phase meeting minutes when these meetings occur.

## 6.1 Preparatory Phase

The preparatory phase will be performed prior to the beginning of work on each definable feature of work, after all appropriate plans/documents/materials for the work being included in the preparatory meeting are approved/accepted, and after copies are at the work site. This phase will include:

- A review of each paragraph of applicable specifications, reference codes, and standards. At the Preparatory Inspection, EQ will make available a copy of those sections of referenced codes and standards applicable to that portion of the work to be accomplished in the field. These copies will be maintained in the field and are available for use by USACE personnel until final acceptance of the work.

- A review of the applicable contract drawings.
- A check to ensure that all materials and/or equipment have been tested, submitted, and approved.
- Review of provisions that have been made to provide required control inspection and testing.
- Examination of the work area to ensure that all required preliminary work has been completed and is in compliance with the contract.
- A physical examination of required materials, equipment, and sample work to ensure that they are on hand, conform to approved shop drawings or submitted data, and are properly stored.
- A review of the appropriate activity hazard analysis to ensure safety requirements are met.
- Discussion of procedures for controlling the quality of the work, including repetitive deficiencies. Document construction tolerances and workmanship standards for that feature of work will be included.
- A check to ensure that the portion of the plan for the work to be performed has been accepted by the CO.
- Discussion of the initial control phase.
- Completion of Preparatory Phase Checklist (Appendix C).

## 6.2 Initial Phase

The initial phase will be accomplished at the beginning of a definable feature of work. The following will be accomplished:

- Check work to ensure that it is in full compliance with contract requirements. Review preparatory meeting minutes.
- Verify adequacy of controls to ensure full contract compliance. Verify required control inspection and testing.
- Establish level of workmanship and verify that it meets minimum acceptable workmanship standards. Compare with required sample panels as appropriate.
- Resolve all differences.

- Check safety to include compliance with and upgrading of the safety plan and the activity hazard analysis. Review the activity analysis with each worker.
- Repeat the initial phase for each new crew who will work on site, or any time acceptable specified quality standards are not being met.
- Complete Initial Inspection Checklist (Appendix C).

### 6.3 Follow-up Phase

Daily checks will be performed to ensure that control activities, including control testing, are providing continued compliance with contract requirements until completion of the particular feature of work. The checks will be made a matter of record in the CQC documentation. Final follow-up checks will be conducted, and all deficiencies corrected prior to the start of additional features of work that may be affected by the deficient work. EQ will not build upon nor conceal non-conforming work.

### 6.4 Additional Preparatory and Initial Phases

Additional preparatory and initial phases will be conducted on the same definable features of work if:

- The quality of ongoing work is unacceptable.
- There are changes in the applicable CQC staff, on-site production supervision, or work crew.
- Work on a definable feature is resumed after a substantial period of inactivity.
- Other problems develop.

### 6.5 Deficiency Procedure

This section establishes procedures for tracking construction deficiencies from identification through acceptable corrective action. These procedures will establish verification that identified deficiencies have been corrected.

Daily checks will be performed to ensure that control activities are providing continued compliance with contractual requirements and will be recorded on the daily CQC Management

Report. Final follow-up checks will be conducted at the completion of each work item and prior to the start of additional phases that may be affected by any deficiencies in previous work.

A deficiency-tracking list will be developed and a deficiency number associated with each problem (starting with Deficiency No. 1). This list will be posted in the on-site field trailer and will include the following items at a minimum: number, description, initial date, corrective action, and final date corrected. A copy of this list will be submitted along with the Daily CQC Management Report on any dates that a deficiency has occurred or been corrected.

# SECTION 7

# DEFINABLE WORK FEATURES

This section presents a list of definable features of work. The following features of work will be completed as part of this project:

1) Mobilization – Mobilization involves the setup of temporary site facilities, mobilization of personnel to the site, and the transportation of equipment to the site. Prior to the beginning of any excavation activity, the following tasks will be performed:

   - Mark the work area limits.

2) Erosion Control – Install temporary gravel construction entrance/exit decontamination pad and silt fencing. Initiate the program to control fugitive dust emissions. These measures will control water run-off and run-on, channel storm water into the Lake George Canal, and protect the Canal from sediment-laden runoff.

3) Security Fence – Replace defective sections of the perimeter fence.

4) Install and Furnish Field Offices – Provide temporary field offices for EQ and EQ's subcontractors. Furnish offices with desks, communications equipment, copiers, fax machines, and other supplies according to specification. Provide additional trailers to store light equipment and supplies. Install sanitary facilities, potable water, electricity, telephones, waste disposal receptacles for contaminated and uncontaminated construction materials, and a "lay-down" area for construction materials and signs. An equipment cleaning station will be constructed. The system of existing access roads on site will be expanded as necessary. New roads will be constructed of crushed aggregate with a similar design as the existing roads.

5) Install Project and Safety Signs – EQ will erect one project sign, one safety sign, and four safety warning signs. These signs will be maintained throughout the duration of the project.

6) Clearing and Grubbing – Clearing and grubbing activities will be performed on site as required.

7) Remove Segments of CSX Railroad Track – EQ will remove two segments of CSX Railroad track. The first is in the vicinity of Station 43+25 to 44+60. It starts at the fenceline, and will be removed 350 feet to the west. The second is due south of the first; it

starts approximately 75 feet from the fenceline and will be removed to the same end location as the first.

8) Storage, Transportation, and Disposal of Hazardous Material and Free Product Waste – Perform sampling, chain-of-custody, analytical, labeling, storage, inspection, training, and other procedures designed to ensure the management of these materials in accordance with applicable regulations. Provide containers for temporary storage of any water streams produced prior to the installation of the Oil Water Separator (OWS) system.

9) Site Survey Investigation – Provide site surveying to establish controls, and lay out the centerline of the observation trench/cutoff wall and fenceline offsets.

10) Dewatering Process – Install all piping, supports, fittings, equipment, pumps, tanks, and accessories needed to process all liquid collected during the inspection trench dewatering activities. Install OWS system with solids collection chamber. The separator will be comprised of a tank with an inlet compartment, an oil separation compartment, a solids collection chamber, and an outlet compartment.

11) Subsurface Inspection and Obstruction Removal – Perform all operations necessary for subsurface investigations, inspection trenching, and dewatering within a maximum of 5 feet on both sides of the cutoff wall centerline alignment. Remove all subsurface obstructions or buried structures that will prevent installation of the cutoff wall within a maximum of 5 feet on both sides of the cutoff wall centerline alignment. These obstructions are likely to include petroleum pipelines, gas lines, electric conduit/power lines, storm sewers, field tiles, manholes, sanitary sewers, underground storage tanks, concrete foundations and reinforced concrete slabs, abandoned dock wall piles, abandoned drainage and settling basin structures, and building and construction debris from previous on-site facilities.

12) Soil-bentonite slurry wall installation – A soil-bentonite slurry wall will be installed with a minimum width of 30 inches and an in-situ permeability of no more than $1.0 \times 10^{-7}$ cm/sec.

13) Demobilization – Demobilization involves the dismantling and removal of all construction equipment and temporary support facilities, including haul roads, work areas, structures, stockpiles of excess waste materials, and construction debris. Any areas for storage or other use will be restored to original or better condition.

# SECTION 8

# COMPLETION INSPECTION

## 8.1 Punch-Out Inspection

Near the end of the work, or any increment of the work established by a time stated in the Special Clause, "Commencement, Prosecution, and Completion of Work," or by the specifications, the CQCSM will conduct an inspection of the work. A punch list of items that do not conform to the approved drawings and specifications will be prepared and included in the CQC documentation, as required by Paragraph 3.8, Documentation of the Construction Specifications. The list of deficiencies will include the estimated date by which the deficiencies will be corrected. The CQCSM or staff will make a second inspection to ascertain that all deficiencies have been corrected. Once this is accomplished, EQ will notify the Government that the facility is ready for the Government Pre-Final Inspection.

## 8.2 Pre-Final Inspection

A Government Pre-Final Punch List may be developed as a result of this inspection. The CQCSM will ensure that all items on this list have been corrected before notifying the Government, so that a Final Inspection can be scheduled. Any items noted on the Pre-Final Inspection will be corrected in a timely manner. These inspections and any deficiency corrections required by this paragraph will be accomplished within the time slated for completion of the entire work, or any particular increment of the work if the project is divided into increments by separate completion dates.

## 8.3 Final Acceptance Inspection

EQ's Quality Control Inspection personnel plus the EQ Site Manager and the COR shall be in attendance at the Final Acceptance Inspection. Additional Government personnel including, but not limited to, those from other Federal agencies and major commands may also be in attendance. The Final Acceptance inspection will be formally scheduled by the COR based on results of the Pre-Final Inspection. Notice will be given to the COR at least 14 days prior to the Final Acceptance Inspection, and will include EQ's assurance that all specific items previously identified to EQ as being unacceptable, along with all remaining work performed under the contract, will be complete and acceptable by the date scheduled for the Final Acceptance Inspection. Failure to have all contract work acceptably complete for this inspection by EQ will be cause for the CO to bill EQ for the Government's additional inspection cost, in accordance with the contract clause titled "Inspection of Construction." All final and closeout submittals shall be in accordance with Section 01100 General Provisions of the Construction Specifications.

# SECTION 9

# DOCUMENTATION

EQ will maintain current records providing factual evidence that required quality control activities and/or tests have been performed. These records will include the work of subcontractors and suppliers, and will be in an acceptable format that includes, as a minimum, the following information:

- EQ/subcontractor and their area of responsibility.
- Operating plant/equipment with hours worked, idle, or down for repair.
- Work performed each day, giving location, description, and by whom. When Network Analysis (NAS) is used, identify each phase of work performed each day by the NAS activity number.
- Test and control activities performed with results and references to specifications and drawings requirements. The control phase will be identified (Preparatory, Initial, Follow-up). A list of deficiencies will be noted, along with corrective action(s).
- Quantity of materials received at the site with statement as to acceptability, storage, and reference to specifications/drawings requirements.
- Submittals and deliverables reviewed, with contract reference, by whom, and action taken.
- Off-site surveillance activities, including actions taken.
- Job safety evaluations stating what was checked, the results, and the instructions or corrective actions.
- Instructions given/received, and conflicts in plans and/or specifications.
- Contractor's verification statement.

These records shall indicate a description of trades working on the project, the number of personnel working, weather conditions encountered, and any delays encountered. These records will cover both conforming an deficient features, and will include a statement that equipment and

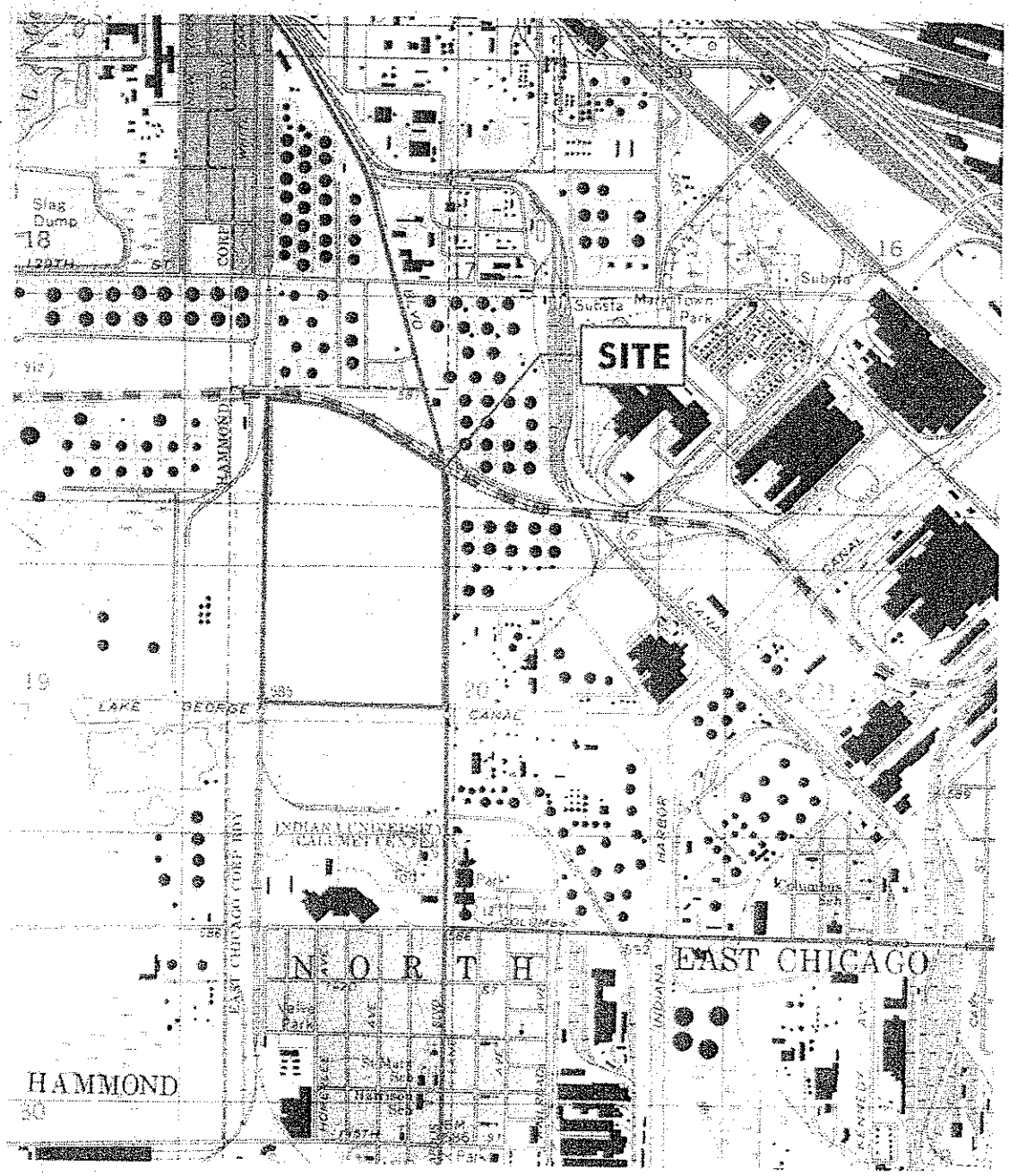
materials incorporated in the work and workmanship comply with the contract. The original and one copy of these records in report form will be furnished to the Government daily within 12 hours after the date covered by the report, except that reports need not be submitted for days on which no work is performed. As a minimum, one report will be prepared and submitted for every 7 days of work and on the last day of a no-work period. All calendar days will be accounted for throughout the life of the contract. The first report following a day of no work will be for that day only. Reports will be signed and dated by the CQCSM. The report from the CQCSM will include copies of test reports and copies of reports prepared by all subordinate quality control personnel.

## 9.1 Forms

EQ will use a variety of forms to ensure compliance with the Construction Specifications and related work plans. These are included in Appendix C and are titled:

- Daily Soil Bentonite Slurry Wall Quality Control Form (5 pages)
- As-Built Profile (4 pages)
- Weekly Heavy Equipment Inspection Checklist
- Site Sign-In Log
- Confined Space Entry Permit
- Daily Safety Meeting Attendance Form
- Hot Work Permit
- Sampling Equipment Calibration Log
- Heat Stress physiological Monitoring Log
- Respiratory Protection Fit Test Record
- Injury Report

# FIGURES




Scale 1:24000

1 2 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 .5 0 1 KILOMETER

QUADRANGLE LOCATION

N

**Reference:**
Harbor & Canal CDF
Subsurface Investigation & Cutoff Wall
3500 Indianapolis Boulevard
East Chicago, IN 46312
Contract No. DACW 27-02-C-0003

**Date:** February 2006

**BASE MAP SOURCE:**
USGS 7 1/2 minute topographic quadrangle map. Whiting, Indiana 1998.

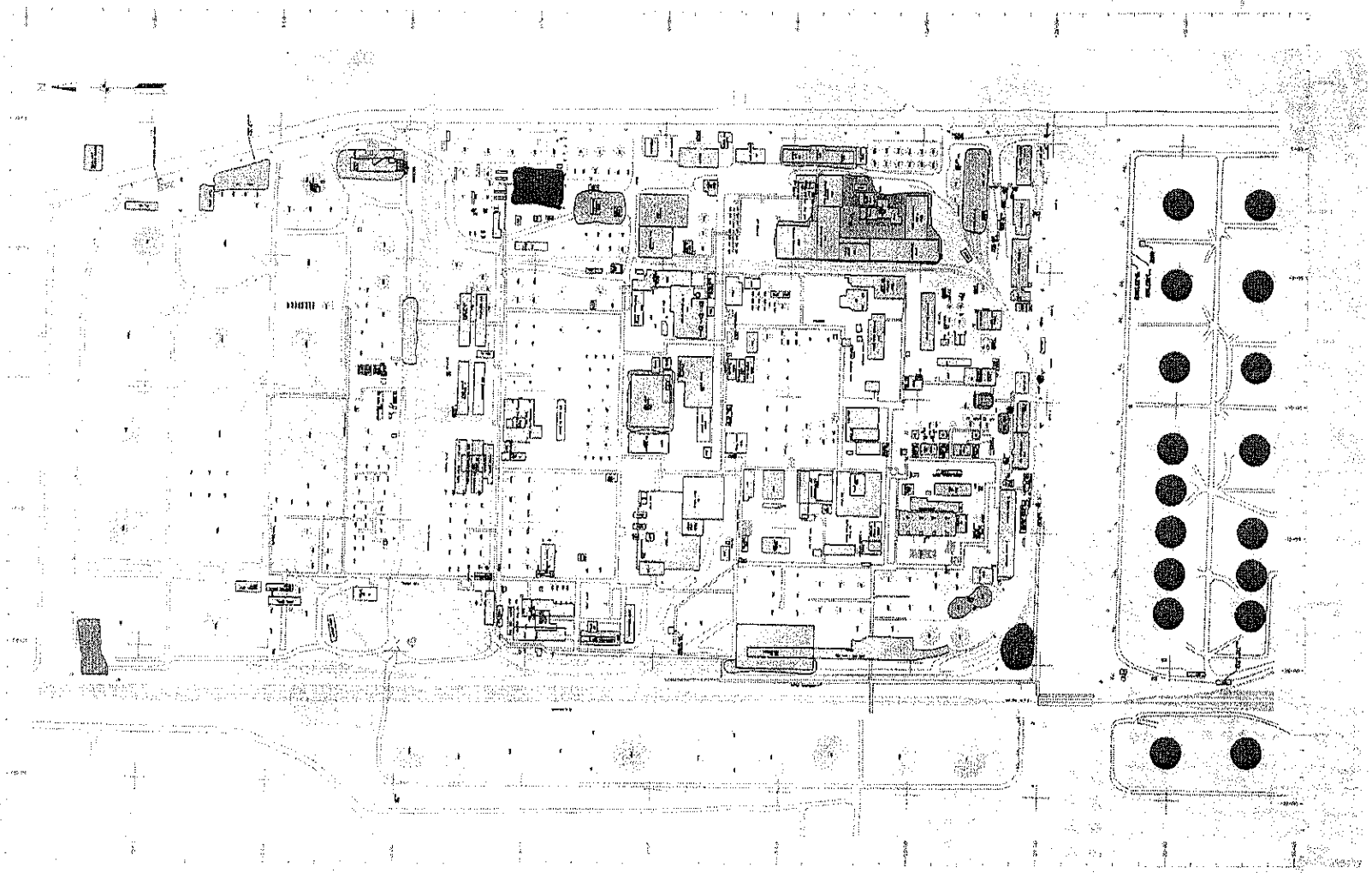
Environmental Quality Management, Inc.
1800 Carillon Boulevard
Cincinnati, Ohio 45240
Phone: (513) 825-7500
Fax: (513) 825-7485

| | | |
|---|---|---|
| DRAWN | SRL | 3/12/02 |
| CHECKED | JAW | 3/12/02 |
| APPROVED | FDH | 3/12/02 |

SCALE: 1:24000

# Site Location Map
ICH CDF Slurry Wall Gaps

| ORIGINAL SIZE | PROJECT NO. | DWG NO. | REV |
|---|---|---|---|
| A | 030249 | FIGURE 1 | |



0 100' 300' 800'
50' 200' 400'

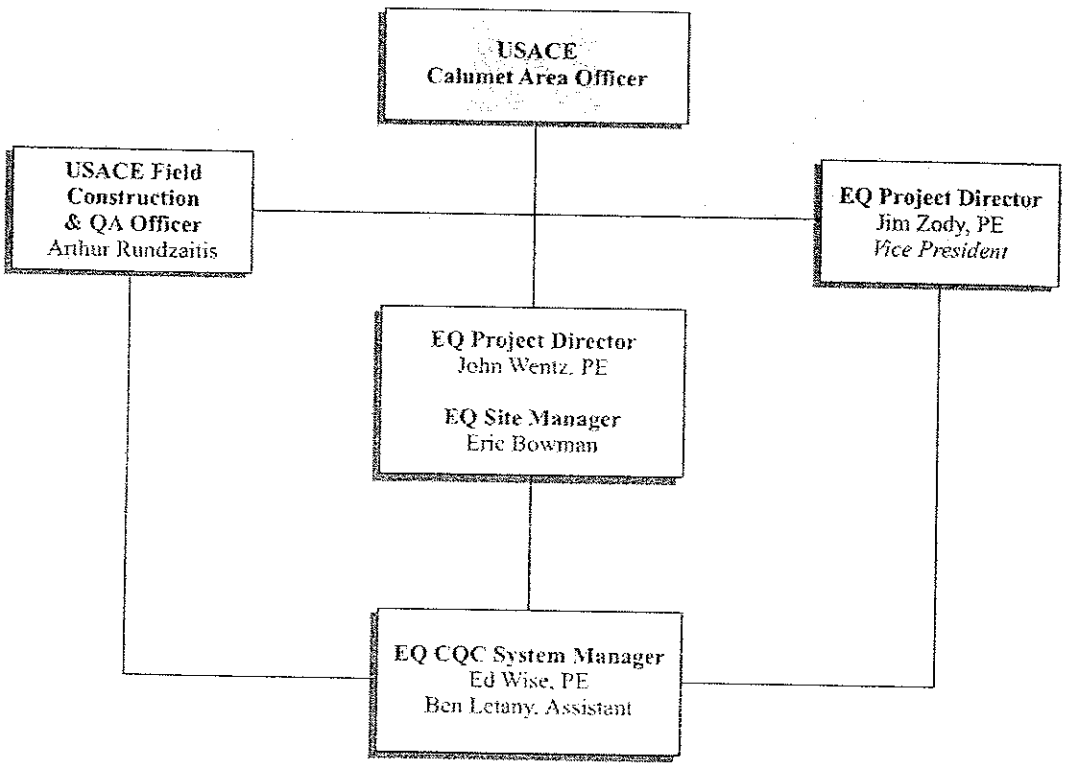
| REV | DESCRIPTION | DATE | APPROVED |
|---|---|---|---|
| | | | |
| | REVISIONS | | |

ENVIRONMENTAL QUALITY MANAGEMENT, INC.
1800 CARILLON BLVD.
CINCINNATI, OHIO 45240
P (513)825-7500
F (513)825-7485

| | | |
|---|---|---|
| DRAWN | D.TOMO | 12/07/06 |
| CHECKED | E.MIRE | 12/07/06 |
| APPROVED | J.WENTZ | 12/07/06 |
| SCALE: | AS NOTED | |

IHC CDF OBSTRUCTION REMOVAL
ECI SITE PLAN
1977

| PROJ. MGR. | PROJECT NO. | DWG NO. | REV |
|---|---|---|---|
| B | 030249 | FIGURE 2 | 0 |




| REV | DESCRIPTION | DATE | APPROVED |
|---|---|---|---|
| | | | |

REVISIONS

Environmental Quality Management, Inc.
1800 Carillon Boulevard
Cincinnati, Ohio 45240
Phone: (513) 825-7500
Fax: (513) 825-7495

| | | |
|---|---|---|
| DRAWN | SRL | 1/26/05 |
| CHECKED | TC | 1/26/05 |
| APPROVED | | |

SCALE: N/A

CQC Organization
Indiana Harbor & Canal CFD,
Slurry Wall Gaps

| ORIGINAL SIZE | PROJECT NO. | DWG NO. | REV |
|---|---|---|---|
| A | 030249 | Fig 3 | |

# TABLES

## TABLE 1. SUMMARY OF TESTS TO BE PERFORMED

| Property | Requirement | Minimum Frequency | Test Method |
|---|---|---|---|
| **Bentonite Powder** | | | |
| YP/PV Ratio | 1.5 maximum | 1 per truck load | API Spec 13A |
| Plastic Viscosity | >10 | 1 per truck load | API Spec 13A |
| Filtrate Loss | <12.5 $cm^3$ | 1 per truck load | API Spec 13A |
| Moisture Content | <10% | 1 per truck load | ASTM D 2216 |
| **Chemical Analysis of Water** | | | |
| pH | 6.0 < pH < 8.0 | 1 test for each source | API RP 13B-1 |
| Hardness | Total Hardness < 150 mg/L | 1 test for each source | API RP 13B-1 |
| Total Dissolved Solids | TDS < 500 mg/L | 1 test for each source | EPA 600/4-79/020, Method 160.3 |
| **Initial Bentonite Slurry** | | | |
| Viscosity | >40 seconds | 2 per shift | API RP 13B-1 |
| Density | >64 pcf and ≤95 pcf | 2 per shift | API RP 13B-1 |
| Filtrate Loss | <20 $cm^3$ in 30 min @ 100 psi | 2 per shift | API RP 13B-1 |
| pH | 6.5 ≤ pH ≤ 10 | 2 per shift | API RP 13B-1 |
| **In-Trench Bentonite Slurry** | | | |
| Density | >64 and ≤95 pcf | 2 per shift, 2 depths | API RP 13B-1 |
| Viscosity | 40s≤ V ≤90s | 2 per shift, 2 depths | API RP 13B-1 |
| Sand Content | 30% Maximum | 2 per shift, 2 depths | API RP 13B-1 |
| pH | 6.5 ≤ pH ≤ 10 | 2 per shift, 2 depths | API RP 13B-1 |
| Filtrate Loss | <25 $cm^3$ | 2 per shift, 2 depths | API RP 13B-1 |
| **Backfill Material** | | | |
| Grain Size | For record | 1/100 LF; min 1/shift | ASTM D 422 |
| Atterberg Limits | For record | 1/100 LF; min 1/shift | ASTM D 4318 |
| Moisture Content | For Record | 1/100 LF; min 1/shift | ASTM D 2216 |
| **Soil-Bentonite Backfill Material** | | | |
| Grain Size | For Record | 1/100 LF; min 1/shift | ASTM D 422 |
| Atterberg Limits | For Record | 1/100 LF; min 1/shift | ASTM D 4318 |
| Slump Cone | 2 to 6 inches | 1/100 LF; min 1/shift | ASTM D 143 |
| Density | At least 16 pcf > in-trench slurry | 1/100 LF; min 1/shift | ASTM D 698 |
| Bentonite Content | Min 6% dry bentonite by weight | min 1/shift | Field Calculated |
| Permeability[1] | $1.0 \times 10^{-7}$ cm/s maximum performed @ maximum effective confining pressure of 0.5 tsf | 1/100 LF; min 1/shift | ASTM D 2434 & ASTM D 5084 |

Note: 1. The permeability tests shall use the water to be used for mixing during construction as permeate.

# APPENDIX A

## RESUMES AND CQC TRAINING CERTIFICATES OF CQC PERSONNEL

Environmental Quality Management, Inc.

**BEN J. LETANY, FCA**

## Education

B.S., Wildlife Management, Ohio State University, 1996

## Areas of Specialization

- Hazardous Waste Cleanup
- Health and Safety
- Air monitoring
- QA/QC
- Field Cost Administration

## Professional Experience

Mr. Letany served as the Site Safety officer on the Gary, Indiana Airport project. He was in charge of site orientation training, hot work permitting, and daily site safety tool box meetings.

His air monitoring experience at several sites including Indiana Harbor and Canal-CDF includes real-time particulate monitoring via DataRam, real time VOC/LEL/Oxygen monitoring via multi-rae five gas meter, and construction emissions air monitoring for PCBs and BTEX compounds via SKC personal sampling air pumps.

Mr. Letany has served as a CQC staff member at the USACE Indiana Harbor and Canal-CDF project and QA/QC system manager/Site supervisor at the Chicago Shoreline Restoration project.

As a Field Supervisor at Tinker Air Force Base in Oklahoma City, Oklahoma, he was responsible for treating and removing lead-contaminated soil.

Mr. Letany previously worked as a Cleanup Technician at Procter & Gamble in Cincinnati, Carey Electronics in Springfield, Ohio, and NOS in Louisville, Kentucky. He also worked for a construction company as an Underground Utility Line Technician. His duties included the operation of a trencher, Ditch Witch, and underground gas and electric line locator in installing underground cable and telephone lines. He was also responsible for reconstruction of damaged landscapes.

Mr. Letany works on various EPA Superfund hazardous waste sites in Region 5 as a Field Cost Administrator. His duties include daily use of the Removal Cost Management System to track cleanup costs. He is responsible for procuring and scheduling subcontracted services as well as purchasing or renting all onsite equipment and materials needed during operations and for daily tracking of EQ-owned equipment and hours worked by onsite personnel. He also reviews vendor invoices and coordinates this information with EQ Headquarters.

## Education

B.S., Chemical Engineering, Michigan Technological University, May 1980
MBA, Northern Kentucky University, In Progress

## Areas of Specialization

- Hazardous and PCB Waste Characterization and Remediation
  - Superfund RI/FS, RD, and RA
  - Water and Wastewater Treatability, Treatment System Design, Troubleshooting, for Industrial, Emergency, and Remedial Activities
  - Hazardous Waste and Wastewater Permitting
- Due Diligence and Compliance
  - Contingency Planning: SPCC, SWP3, TOMP, BMP
  - Innovative Treatment Technology Development for Hazardous Waste and Waste Water

## Professional Experience

Mr. Wise is a Chemical Engineer with 19 years of environmental engineering experience. His technical experience is focused at projects relating to hazardous waste, TSCA, CERCLA, wastewater, air, and OSHA. This includes remediation, permitting, compliance, and general management issues. He has extensive experience in site characterization and remediation, multifaceted compliance audits, pre-acquisition due diligence audits, and agency/attorney/public interaction for permitting and regulatory interpretation projects.

Mr. Wise has performed numerous site characterization and remediation projects. The constituents of concern have included; Polychlorinated Biphenyl's (PCBs), heavy metals, Polynuclear Aromatic Hydrocarbons (PAH's), halogenated solvents, non-halogenated solvents, dioxin/dibenzofurans, low-level radioactive/mixed waste, biohazardous waste and others. He has extensive experience with PCBs from lubricants and transformer fluids. This includes detailed analysis of fate and transport mechanisms, site characterization, interpretation of analytical data, remedial action plan preparation, agency negotiation, and remediation oversight. He has performed projects at a wide variety of industrial and governmental sites. They include interstate natural gas pipeline, refinery, petrochemical, integrated steel, military (base and major contractors), and a wide variety of manufacturing firms.

He has extensive experience with the interstate natural gas pipeline industry and has performed projects at over 80 different compressor stations and 20 metering and reduction sites. These projects have included development and implementation of site characterization work plans

(including surface and sub-surface soils, groundwater, as well as permeable and impermeable surfaces), QA/QC (i.e. data validation), remedial alternative review, development of remedial action plans, oversight of remediation (including verification sampling), and agency/attorney interaction. Constituents of concern included PCBs, mercury, chromium, arsenic, lead, petroleum hydrocarbons, non-halogenated solvents, and others. Mr. Wise assisted with the development of the technical requirements of Texas Eastern's PCB Consent Decree. The remedial cost for this project was estimated at $400 million, and it involved a $10 million penalty (the largest of its kind at the time). He has also performed wastewater characterization, treatment system design, installation, operation, and trouble shooting resulting in the installation of 11 wastewater treatment plants for natural gas compressor stations. In addition, Mr. Wise has prepared over 75 SPCC plans for stations located throughout the eastern U.S. He is intimately familiar with typical operations and procedures associated with the industry.

Mr. Wise has extensive experience in wastewater characterization and treatment system design. This includes a variety of physical/chemical and biological treatment systems. The constituents of concern have included PCBs, total suspended solids, heavy metals, oil and grease, pH, biological oxygen demand, phenolics, cyanide, organic nitrogen compounds, and a wide variety of organic compounds. System sizes ranged from 10 to 5,000 gpm. Mr. Wise developed analytical programs (including QA/QC) for characterization, interpreted data, reviewed appropriate treatment systems (including treatability studies), designed systems and specified equipment, selected contractors, and oversaw system fabrication/installation, start-up, operator training, and de-bugging. He has also performed numerous projects related to upgrades or expansion of existing systems.

Mr. Wise also has in-depth experience in due diligence or pre-acquisition auditing. This has involved well over 100 transactions and included Phase I, Phase II, agency negotiation, remediation, etc. tasks. The projects were very diverse and ranged in size from vacant tracts through a $6 billion transaction of a major chemical corporation. Applicable industries included, integrated steel, chemical, automotive salvage yards, clothing dry cleaners, equipment manufacturers, gasoline stations, and many others.

Mr. Wise has performed numerous multi-discipline compliance audits covering a wide variety of environmental, fire protection, and health and safety issues. He has developed site specific audit checklists, conducted/supervised audits, prepared reports, and consulted with clients on prioritizing action items. Industries that were audited include specialty chemical manufacturer's, integrated steel mills, cement kilns, precious metal foundries, and a diverse assortment of manufacturing facilities.

Mr. Wise also has performed work on over 15 CERCLA (Superfund sites). This has included review of the hazard ranking system analysis, remedial investigation, feasibility studies, review and negotiation of records of decision, remedial design, and remedial action. He has also reviewed a wide variety of technologies including: disposal, incineration, biodegradation,

recovery, carbon absorption, stripping, separation, and many others. The work included a site affected with PCBs from a transformer salvage operation, two abandoned creosote and pentachlorophenol wood treating sites, a formed heavy metal reclamation site, and several former commercial industrial waste disposal sites.

Mr. Wise has performed projects in 29 different states throughout the continental U.S. In addition to federal regulations, he is familiar with a wide variety of state and local regulations. This includes projects relating to site characterization/remediation (RCRA, TSCA and CERCLA), permitting, and regulatory compliance matters. He has extensive experience in assisting attorneys and has provided expert witness testimony.

Mr. Wise also developed a process for rendering a hazardous waste scrubber sludge non-hazardous by the fixation of lead and cadmium. This included identification and development of an innovative phosphate fixation technology. Mr. Wise evaluated the process system, obtained representative samples, performed treatability studies, and reviewed the analytical data. He then performed a conceptual and detailed design (including equipment specification) and supervised the installation and start-up. The capital cost of this project was $70,000 and resulted in an annual cost savings of about $750,000.

Mr. Wise has assisted in the preparation/submission of four RCRA Part B permit applications including the preparation of all of the associated plans and subsections for one or more application. The applications were for a Naval DOD facility in Corpus Christi, a creosote wood treating facility in northern Texas, and two chemical plants in the Houston area.

Mr. Wise has prepared six RCRA closure plans ranging in complexity from a single underground storage tank to a complete creosote wood treating facility containing surface impoundments, storage tanks (above and below grade), waste piles, process equipment, and contaminated surface soils. In most cases preparation of the closure plan was preceeded by thorough soil and hydro geological evaluations.

Mr. Wise also has extensive experience in performing economic evaluations on various remedial and treatment options. This includes cost estimating for various options (capital and operating expenses), as well as performing risk and economic analysis. These economic analysis have included net present value, return on investment, effective rate of return, and others. These studies have enabled management to make sound economic decisions relating to environmental matters.

**Selected Publications**

RCRA Surface Impoundment Options for Creosote and Pentachlorophenol Wood Treating Facilities - Edward D. Wise, presented at the 1986 American Wood Preservers Association Meeting, Philadelphia, PA.

Total Recycle of Flue Gas Scrubber Water From a Steelmaking Process - Edward D. Wise and Carl Batliner, presented at the 1984 National Water Pollution Control Federation Symposium, New Orleans, LA.

Application of Armco's Phosphate Fixation Technology on Open Hearth Wet Scrubber Sludge - Edward D. Wise and Carl Batliner, presented at the 1983 joint U.S. EPA - American Iron and Steel Institute Symposium, Chicago, IL.

## Education

B.S., Geology, University of Toledo, 1984
Certified Hazardous Materials Manager, No. 7161, 1995
Certified Professional, Ohio VAP (CP217)
35-Hour UST Installation/Removal Training, 1992
RCRA Onsite Hazardous Waste Management Training, 1993

## Areas of Specialization

- Site Cleanup and Remediation
- Emergency Response Services
- Decommissioning and Demolition
- Design, Installation, and Operation of Treatment Systems

## Professional Experience

Mr. Bowman's 14 years of professional experience has involved the management and performance of a wide variety of technical projects. These included more than 120 remediation projects involving oil, petroleum, and hazardous/toxic constituents at CERCLA, RCRA, TSCA, and UST sites.

As Response Manger on the EPA Region 5 ERCS contract, Mr. Bowman managed the decontamination of 97 residences contaminated with methyl parathion in Chicago, Illinois, directed the overall activities of two Response Managers and 35 laborers which comprised four full-time decontamination crews. He was responsible for managing moving and storage crews and providing site security. He coordinated the residential decontamination schedule with USACE relocation specialist, and established site security for each unoccupied dwelling. Decontamination activities included limited structural demolition, wet decontamination of affected surfaces, and the application of sealer paints to chemically encapsulate the residual methyl parathion. Mr. Bowman maintained constant communications with decontamination teams to ensure the timely delivery of supplies and support services.

Mr. Bowman managed remediation activities at a Muskegon, Michigan site, including characterization and bulking 150 drums of solid and liquid wastes, stabilization of 9,000 cubic yards of lead-contaminated soil, removal of 20 ASTs ranging in size from 500,000 to 3.2 million gallons, and transfer of 1.2 million gallons of petroleum-contaminated liquid to a WWTP. He performed treatability studies to determine reagent mixture to stabilize lead- and benzene-contaminated sludge and soil. He excavated 35,000 cubic yards of petroleum-contaminated

waste from two lagoons and 6 pits and recycled 4,300 tons of scrap steel, utilizing hydraulic excavators equipped with demolition shears to size tank salvage. The onsite stabilization saved $180,000 versus offsite treatment.

As a Project Manager, Mr. Bowman managed the excavation and removal of 3,800 buried drums located in a 3.5-acre uncontrolled dump site in Jackson, Michigan. Drums were exhumed, sampled, characterized, and segregated based on compatibility characteristics. Drums contained both flammable and nonflammable wastes. A drum shredding unit was used to shred drums subsequent to bulking and disposal. Approximately 2,600 cubic yards of nonhazardous drum contents and impacted soils were transported offsite and landfilled, while 140 cubic yards of benzene-contaminated waste was transported offsite for stabilization and disposal. The shredding operation saved the client $300,000 in disposal costs by volume reduction of bulk materials versus microencapsulation disposal.

Mr. Bowman managed the removal action at a 42,000 square foot former file cabinet manufacturing facility in Chicago, Illinois. The facility was contaminated with lead, mercury, acids, bases, and paint wastes. He managed the collection, staging, and characterization of 600 drums and containers, and segregation of 500 cubic yards of special waste and debris. He implemented the use of a power screen to separate uncontaminated debris from the special waste, saving $30,000 in disposal costs. The collection of the wastes required extensive structural demolition using specially equipped hydraulic excavators to remove roofing and I-beam supports. Mr. Bowman supervised the transportation and disposal of all waste streams, and prepared and administered site work plans and health and safety plans. He completed the project three months ahead of schedule and $600,000 less than the original estimate.

# U.S. ARMY CORPS OF ENGINEERS

PROFESSIONAL DEVELOPMENT SUPPORT CENTER
HUNTSVILLE, ALABAMA

## *CERTIFICATE*

***This is to certify that***

## BEN LETANY

*has completed the Corps of Engineers Training Course*

## CONSTRUCTION QUALITY MANAGEMENT FOR CONTRACTORS

Given at Chicago, Ill. (Location) By Chicago (Instructional District) 18 APRIL 2003 (Date)

Leon B. Turner
Facilitator

THIS CERTIFICATE EXPIRES FIVE YEARS FROM DATE OF ISSUE

Chief, USACE Professional Development Support Center

# U.S. ARMY CORPS OF ENGINEERS

PROFESSIONAL DEVELOPMENT SUPPORT CENTER
HUNTSVILLE, ALABAMA

## *CERTIFICATE*

## Ed Wise

*has completed the Corps of Engineers Training Course*

## CONSTRUCTION QUALITY MANAGEMENT FOR CONTRACTORS

(STATE OF FLORIDA, Construction Industry Licensing Board COURSE # 004F0384-1B)
(12 CEHs of 16 CEH requirement, 1 CEH for Business Practices (site safety, workman's comp., financing CEHs not included)
(STATE OF FLORIDA, Board of Architecture and Interior Design COURSE # AR.04.579 - 17 Hours, Level of Instruction - Advanced)

*is awarded continuing education credits as*
*indicated for 16 hours of organized instruction*

Certified Provider #199309
1.3 CEUs

Registered Provider #I009
39 LUs

Registered Provider
13 PDHs

Given at West Palm Beach, FL By Jacksonville District June 19 & 20, 2002
Location Instructional District Date

Joseph Tavares
Joseph Tavares
Facilitator
CESAJ-CO-CQ (904) 232-3446

THIS CERTIFICATE EXPIRES FIVE YEARS FROM DATE OF ISSUE

Chief, USACE Professional Development Support Center

# APPENDIX B

## LETTER TO THE CQC SYSTEM MANAGER
## LETTER TO THE CQC ASSISTANT MANAGER

**Environmental Quality Management, Inc.**
1800 Carillon Boulevard
Cincinnati, Ohio 45240
(513) 825-7500
fax (513) 825-7495
www.eqm.com

January 26, 2005

Mr. Edward D. Wise
Contractor Quality Control System Manager
Environmental Quality Management, Inc.
1800 Carillon Boulevard
Cincinnati, Ohio 45240

RE: Quality Control System Manager Responsibility and Authority
Indiana Harbor and Canal Confined Disposal Facility Obstruction Removal
USACE Contract W912P6-04-C-0006
EQ PN 030244.0001.0001.05

Dear Mr. Wise:

This is a Letter of Direction to you outlining your duties and responsibilities as our Quality Control System Manager on the above referenced project.

You will be responsible for preparing and maintaining the Submittal Register Form 4288 for the duration of the project. You are required to check all shop drawings for accurate dimensions and to ensure compliance to applicable specifications and drawings as to the quality of materials being proposed for this project. This also applies to all subcontractors, offsite fabricators, and suppliers.

You will make, on a continuing basis, sufficient daily follow-ups to ensure that all workmanship and materials in the construction of this project are in conformance with the specifications and drawings.

You will be responsible for all testing as required by the specifications. Qualified individuals onsite will perform the tests and the results will be supplied to you for your review and approval as outlined in the Site CQC Plan.

You will be present during all testing and coordinate all such tests as required in accordance with the specifications and the Corps of Engineers Representative.

The quality control system will include three phases of control and tests: Preparatory Phase, Initial Phase, and Follow-up Phase. You are directed to Section 01451, paragraph 3.6, for specific instructions outlining these control phases. All control phases and tests shall be recorded daily on the Quality Control Report and submitted to the Government Representative on the following workday covered by the report. All test results shall be submitted in compliance with the procedures identified in Section 01312, Quality Control System, by using the Government-furnished Resident Management System (RMS) for Windows and the Contractor Module of RMS referred to as QCS and Section 01330 Submittal Procedures.

You are directed to review in their entirety, the Indiana Harbor CQC Plan as well as the Project Specifications, Amendments and Drawings. If there is an item no understood, you are to consult your Quality Control Support Team.

You are hereby authorized to stop work that is not in compliance with the Contract.

Sincerely,

ENVIRONMENTAL QUALITY MANAGEMENT, INC.

James G. Zody, P.E.
Project Director for Indiana Harbor and Canal CDF Project
Vice President

JGZ:sp

cc: J. Wentz
USACE

**Environmental Quality Management, Inc.**
1800 Carillon Boulevard
Cincinnati, Ohio 45240
(513) 825-7500
fax (513) 825-7495
www.eqm.com

January 26, 2005

Mr. Ben Letany
Assistant Contractor Quality Control System Manager
Environmental Quality Management, Inc.
1800 Carillon Boulevard
Cincinnati, Ohio 45240

RE: Quality Control System Manager Responsibility and Authority
Indiana Harbor and Canal Confined Disposal Facility Obstruction Removal
USACE Contract W912P6-04-C-0006
EQ PN 030244.0001.0001.05

Dear Mr. Letany:

This is a Letter of Direction to you outlining your duties and responsibilities as the Assistant Quality Control System Manager on the above referenced project, in the event you are required as a substitute for the Quality Control System Manager.

You will be responsible for preparing and maintaining the Submittal Register Form 4288 for the duration of your substitution. You are required to check all shop drawings for accurate dimensions and to ensure compliance to applicable specifications and drawings as to the quality of materials being proposed for this project. This also applies to all subcontractors, offsite fabricators, and suppliers.

You will make, on a continuing basis, sufficient daily follow-ups to ensure that all workmanship and materials in the construction of this project are in conformance with the specifications and drawings.

You will be responsible for all testing as required by the specifications. Qualified individuals onsite will perform the tests and the results will be supplied to you for your review and approval as outlined in the Site CQC Plan.

You will be present during all testing and coordinate all such tests as required in accordance with the specifications and the Corps of Engineers Representative.

The quality control system will include three phases of control and tests: Preparatory Phase, Initial Phase, and Follow-up Phase. You are directed to Section 01451, paragraph 3.6, for specific instructions outlining these control phases. All control phases and tests shall be recorded daily on the Quality Control Report and submitted to the Government Representative on the following workday covered by the report. All test results shall be submitted in compliance with the procedures identified in Section 01312, Quality Control System, by using the Government-furnished Resident Management System (RMS) for Windows and the Contractor Module of RMS referred to as QCS and Section 01330 Submittal Procedures.

You are directed to review in their entirety, the Indiana Harbor CQC Plan as well as the Project Specifications, Amendments and Drawings. If there is an item no understood, you are to consult your Quality Control Support Team.

You are hereby authorized to stop work that is not in compliance with the Contract.

Sincerely,

ENVIRONMENTAL QUALITY MANAGEMENT, INC.

Jim G. Zody, P.E.
Project Director for Indiana Harbor and Canal CDF Project
Vice President

JGZ:sp

cc: J. Wentz
USACE

# APPENDIX C

# FORMS

# ENVIRONMENTAL QUALITY MANAGEMENT

## DAILY SOIL-BENTONITE SLURRY WALL QUALITY CONTROL FORM

DATE: _____ JOB NAME: IHCDF Slurry Wall Gaps JOB NUMBER: 030249

WEATHER: _____ RIG NUMBER: _____

### SLURRY

WITHIN TRENCH

| STATION | DEPTH | DENSITY | SAND | FILTRATE LOSS | VISCOSITY | pH |
|---|---|---|---|---|---|---|
| | feet | lb/ft$^3$ | % | cm$^3$ | seconds | S.U. |
| | 2.00 | | | | | |
| | 35.00 | | | | | |
| | 2.00 | | | | | |
| | 35.00 | | | | | |
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West Trench

OMMENTS:

### BACKFILL

| STATION | MOISTURE | FULL GRAIN SIZE | #200 SIEVE FINES | ATTERBURG |
|---|---|---|---|---|
| | % | | % | |
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### SOIL-BENTONITE BACKFILL

| STATION | SLUMP CONE | FULL GRAIN SIZE | #200 SIEVE FINES | ATTERBURG | PERMEABILITY | PERM. DUPLICATE |
|---|---|---|---|---|---|---|
| | inches | | % | | API | TAKEN FOR D5084? |
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| DRY BENTONITE ADDITION | | |
|---|---|---|
| | TONS | % |
| TODAY | | |
| TO DATE | | |
| BORROW % | CY | |

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| pH CALIBRATIONS PERFORMED TODAY? | |
| BALANCE CALIBRATIONS PERFORMED TODAY? | |
| FUNNEL CALIBRATIONS PERFORMED TODAY? | |

# ENVIRONMENTAL QUALITY MANAGEMENT

## DAILY SOIL-BENTONITE SLURRY WALL QUALITY CONTROL FORM

DATE: 01/00/00 JOB NAME: IHCDF Slurry Wall Gaps JOB NUMBER: 030249

WEATHER: RIG NUMBER:

### SLURRY

WITHIN TRENCH

| STATION | DEPTH | DENSITY | SAND | FILTRATE LOSS | VISCOSITY | pH |
|---|---|---|---|---|---|---|
| | feet | lb/ft$^3$ | % | cm$^3$ | seconds | S.U. |
| | 2.00 | | | | | |
| | 34.00 | | | | | |
| | 2.00 | | | | | |
| | 34.00 | | | | | |
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East Trench

OMMENTS:

### BACKFILL

| STATION | MOISTURE | FULL GRAIN SIZE | #200 SIEVE FINES | ATTERBURG |
|---|---|---|---|---|
| | % | | % | |
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### SOIL-BENTONITE BACKFILL

| STATION | SLUMP CONE | FULL GRAIN SIZE | #200 SIEVE FINES | ATTERBURG | PERMEABILITY | PERM. DUPLICATE |
|---|---|---|---|---|---|---|
| | inches | | % | | API | TAKEN FOR D5084? |
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OMMENTS

| DRY BENTONITE ADDITION | | |
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| TODAY | | |
| TO DATE | | |
| BORROW % | CY | |

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| pH CALIBRATIONS PERFORMED TODAY? | |
| BALANCE CALIBRATIONS PERFORMED TODAY? | |
| FUNNEL CALIBRATIONS PERFORMED TODAY? | |

# ENVIRONMENTAL QUALITY MANAGEMENT

## DAILY SOIL-BENTONITE SLURRY WALL QUALITY CONTROL FORM

DATE: 01/00/00 JOB NAME: IHCDF Slurry Wall Gaps JOB NUMBER: 030249

### SLURRY BATCH PLANT

| TIME | DENSITY | VISCOSITY | FILTRATE LOSS | pH |
|---|---|---|---|---|
| Military | $lb/ft^3$ | seconds | $cm^3$ | S.U. |
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|---|---|
| FUNNEL CALIBRATIONS PERFORMED TODAY? | |
| pH METER CALIBRATIONS PERFORMED TODAY? | |
| BALANCE CALIBRATIONS PERFORMED TODAY? | |

# ENVIRONMENTAL QUALITY MANAGEMENT

## DAILY SOIL-BENTONITE SLURRY WALL QUALITY CONTROL FORM

DATE: ______________ JOB NAME: IHCHF Slurry Wall Gaps JOB NUMBER: 030249

WEATHER: ______________ RIG NUMBER: ______

| EXCAVATION | | | | | | |
|---|---|---|---|---|---|---|
| TATION | DEPTH | | | | | |
| | TOP KEY | BOT EXCAVATION | AVG DEPTH | LENGTH | AREA | WIDTH |
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| BACKFILL SLOPE | | |
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| STATION | START OF SHIFT | END OF SHIFT |
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OMMENTS

est Trench

ntonite jumbo bag spacing was recalculated and was ft today. Show calculation below.

# ENVIRONMENTAL QUALITY MANAGEMENT

## DAILY SOIL-BENTONITE SLURRY WALL QUALITY CONTROL FORM

DATE: ____________________ JOB NAME: IHCDF Slurry Wall Gaps JOB NUMBER: 030249

WEATHER: ____________________ RIG NUMBER: ____________

| EXCAVATION | | | | | | |
|---|---|---|---|---|---|---|
| TATION | DEPTH | | | | | |
| | TOP KEY | BOT EXCAVATION | AVG DEPTH | LENGTH | AREA | WIDTH |
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SF TO DATE ____________

| BACKFILL SLOPE | | |
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| STATION | START OF SHIFT | END OF SHIFT |
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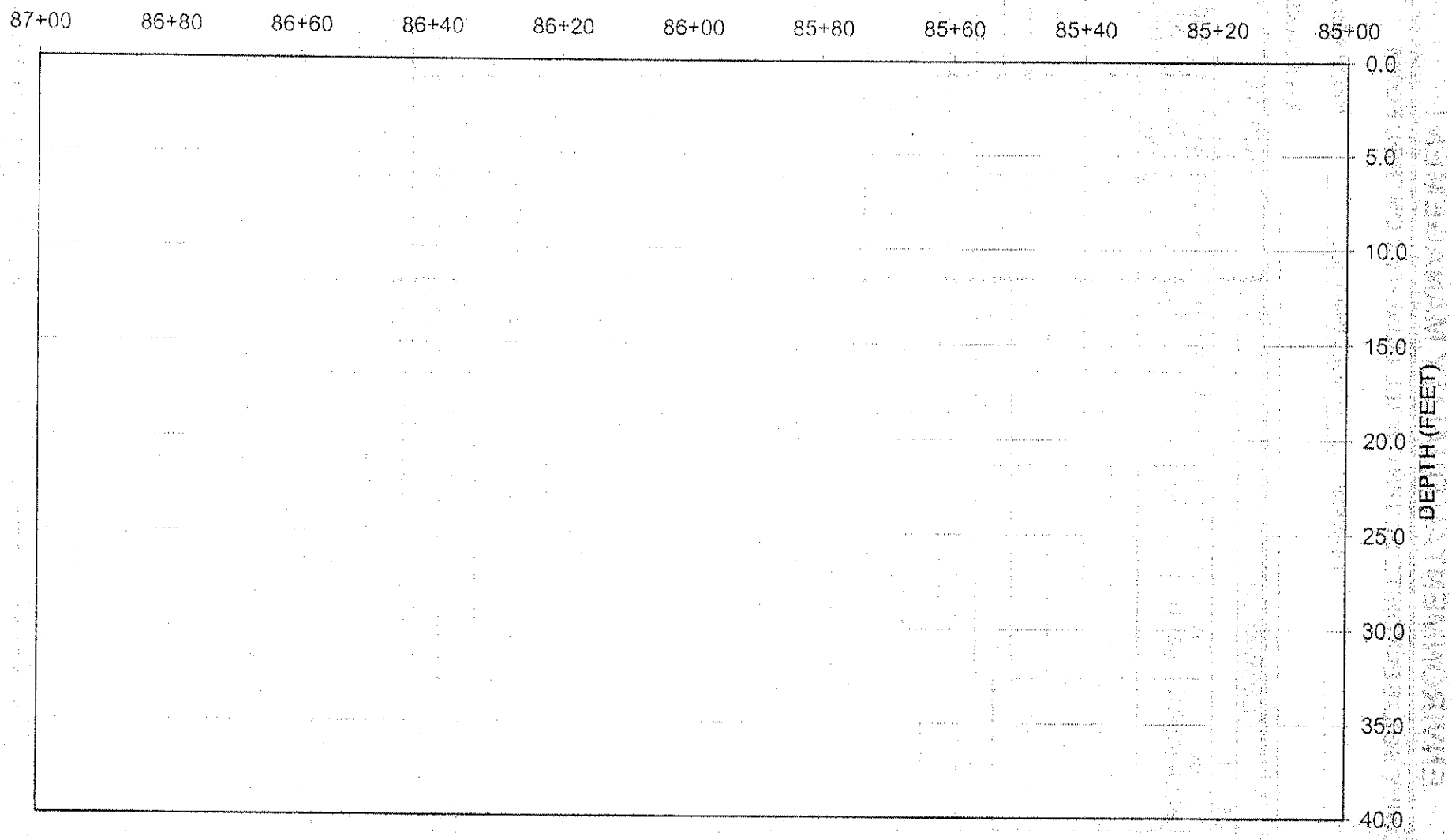
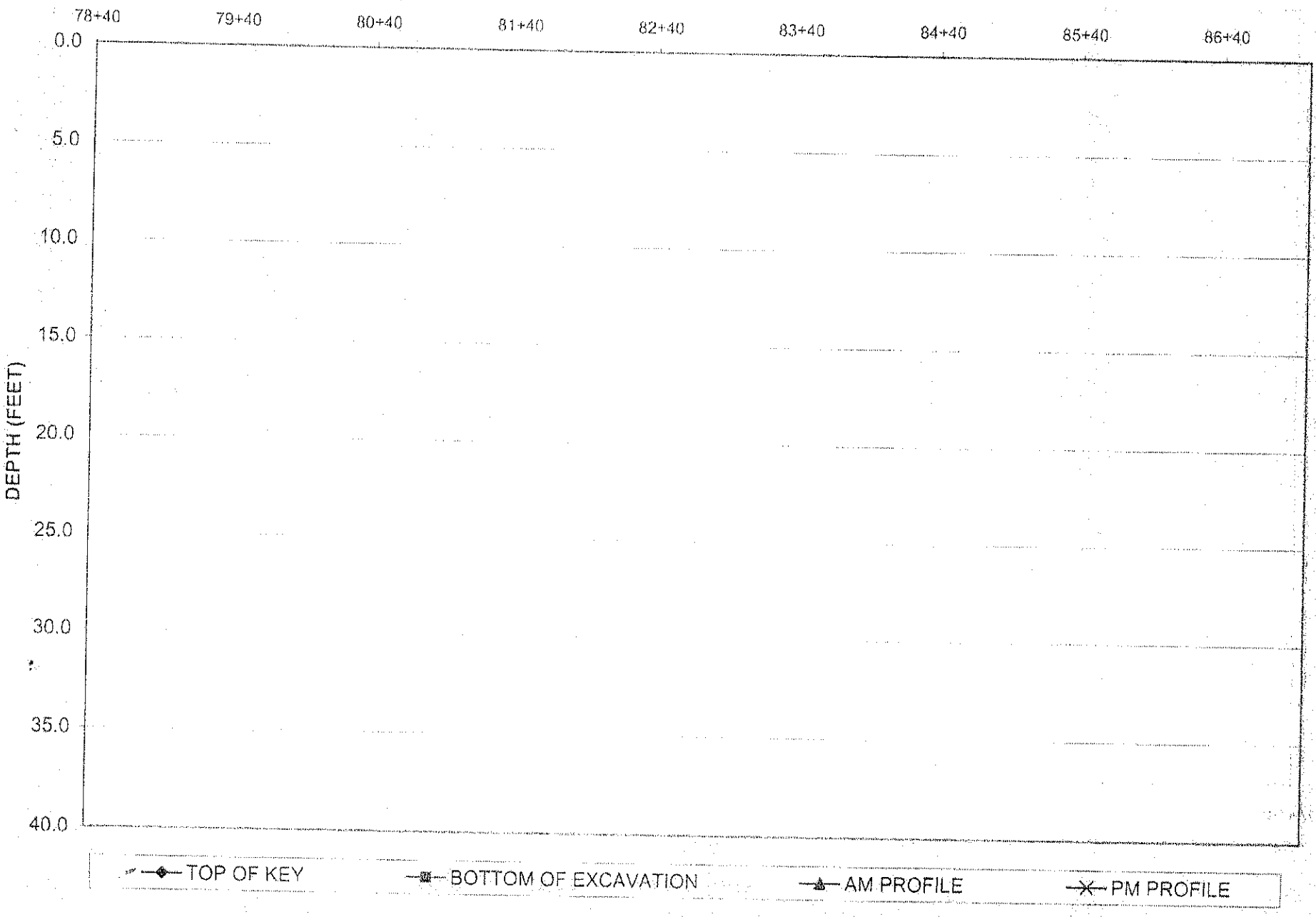
ɿntonite jumbo bag spacing was recalculated and was ft today. Show calculation below.

# AS-BUILT PROFILE: WEST TRENCH (00/00/06)

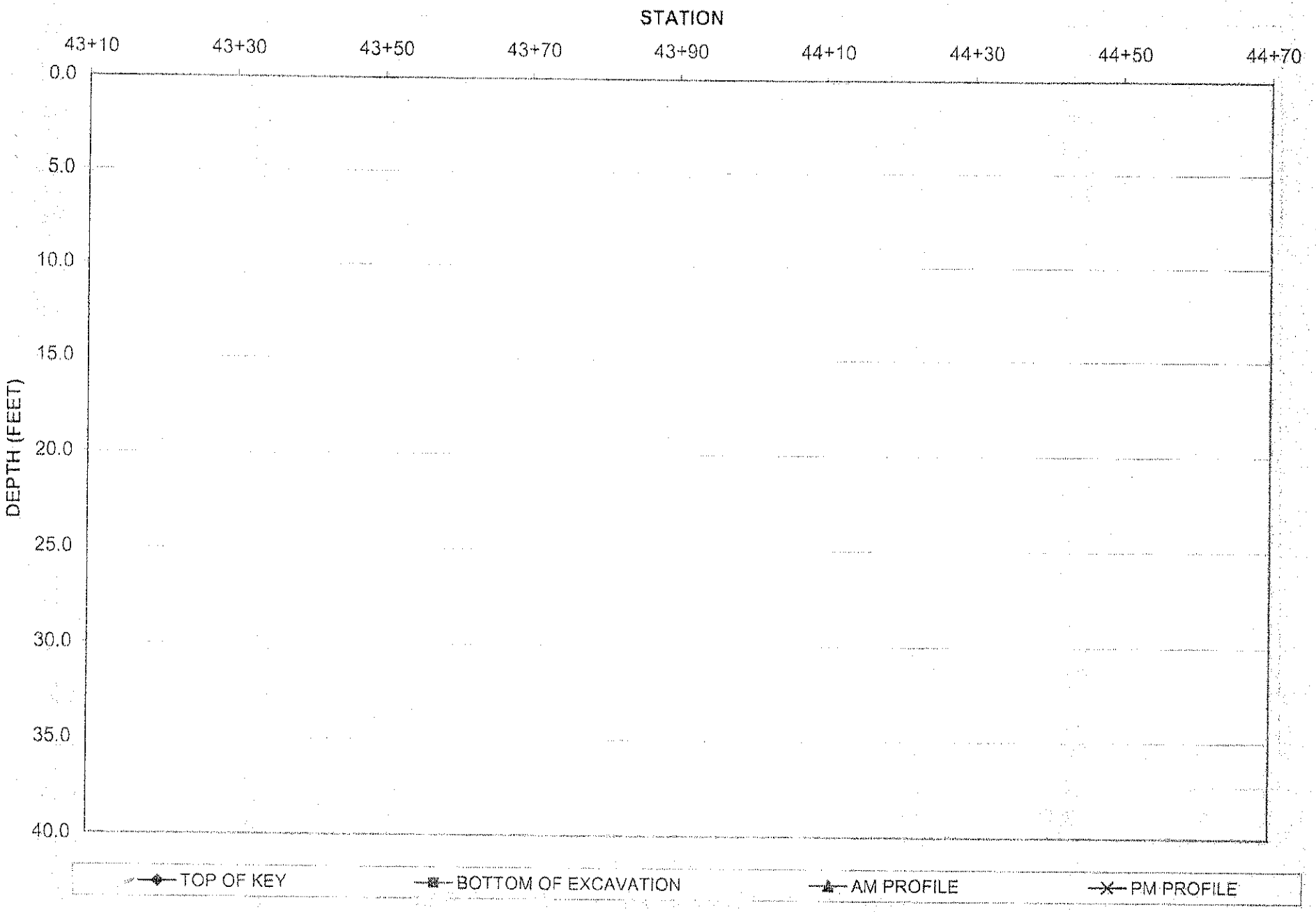
STATION



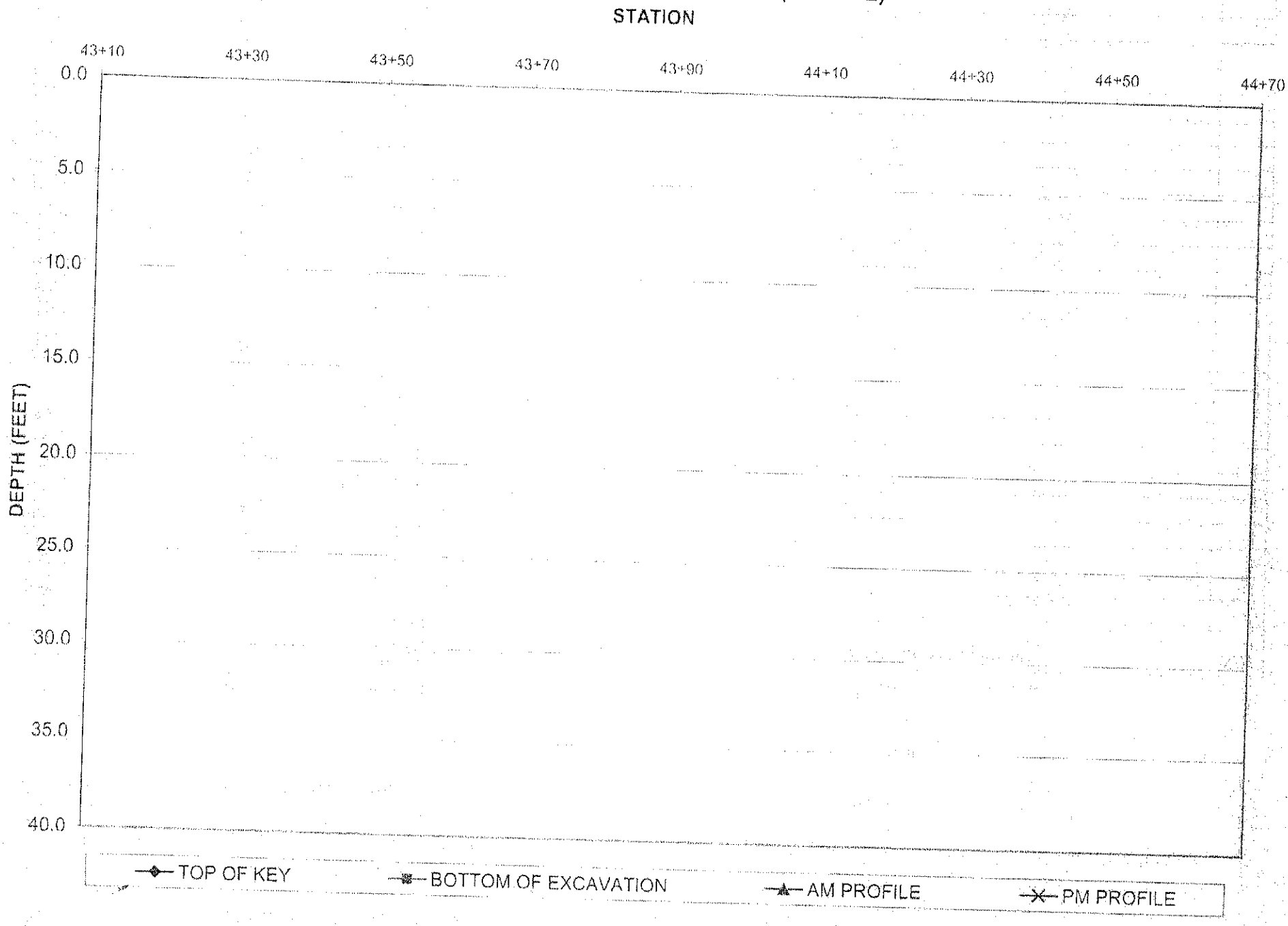
# AS-BUILT PROFILE: WEST TRENCH (TO DATE)



## AS-BUILT PROFILE: EAST TRENCH (00/00/06)



# AS-BUILT PROFILE: EAST TRENCH (TO DATE)



Weekly Heavy Equipment Maintenance Checklist

Check all items daily, prior to commencement of work.

- Report unsatisfactory items to site supervisor **immediately** if item effects proper and safe operation of equipment. Suspend operation of equipment until unsatisfactory item is repaired.
- Report unsatisfactory items **not effecting** safe operations to the supervisor no later than end of workday.

Operator name: Equipment ID: Date: Time: Location:

| ITEM | Satisfactory | Unsatisfactory - Operational | Unsatisfactory -- Non-operational | Problem Description | N/A |
|---|---|---|---|---|---|
| Engine Oil Level | | | | | |
| Fan Belts | | | | | |
| Fuel Oil | | | | | |
| Gauges / Indicators | | | | | |
| Lights | | | | | |
| Limit Switches | | | | | |
| Brakes | | | | | |
| Leaks (fuel-oil-water) | | | | | |
| Warning Devices (back-up alarm / horns) | | | | | |
| Walkways / Ladders / Handrails | | | | | |
| Glass / Windows | | | | | |
| Housekeeping | | | | | |
| Lubrication | | | | | |
| Coolant / Antifreeze | | | | | |
| Battery | | | | | |
| Tires Wheels | | | | | |
| Fire Extinguisher | | | | | |
| Mirrors | | | | | |
| Other | | | | | |
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SITE SIGN IN LOG (ALL PERSONNEL ENTERING THE SITE)
INDIANA HARBOR CDF PROJECT
ENVIRONMENTAL QUALITY MANAGEMENT

DATE: _____

| Name of Entrant (Printed) | Name of Entrant (Signed) | Company Representing | Level of PPE | Reason for Entering Site | Time on Site | Time off Site | Authorized by: |
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# CONFINED SPACE ENTRY PERMIT

Date Valid: _____ From: _____ A.M./P.M. To: _____ A.M./P.M. Permit No.: _____

Confined Space Description: _____

Purpose of Entry: _____

Hazards: _____

Authorized Entrants: _____

Attendant: _____ Fire Watch (Hot Work): _____

PRE-ENTRY ATMOSPHERIC TESTING

| | | PEL | Reading | Time | Intervals |
|---|---|---|---|---|---|
| 1. | Oxygen | ≤ 19.5 - ≥23.5% | | | |
| 2. | Flammability | ≤ 10% LEL | | | |
| 3. | Carbon Monoxide | 25 ppm | | | |
| 4. | | | | | |
| 5. | | | | | |
| 6. | | | | | |

ACCEPTABLE ENTRY CONDITIONS

| | | | | | |
|---|---|---|---|---|---|
| | Lock & Tag | | Ventilation | | ISOLATION/LOCKOUT |
| | Lighting | | Communications | | Water |
| | Barricades | | Fire Extinguisher | | Electrical |
| | Posting | | Emergency Plan | | Mechanical |
| | Pre-Entry Briefing | | Other* | | Hydraulic |
| | | | | | Other* |

*Specify: _____

SAFETY EQUIPMENT

| Respirators | | Clothing | | Other | |
|---|---|---|---|---|---|
| | SCBA | | Hard Hat | | Overall* | | Life Line |
| | Airline/Egress | | Safety Shoes | | Chem. Suit* | | & Harness |
| | Egress Only | | Safety Glasses | | Gloves* | | Tripod |
| | APR | | Goggles | | Overboots | | & Pulley |
| | Other* | | Ear Plugs | | Other* | | Wristlets |

*Specify: _____

RESCUE & EMERGENCY SERVICES

Type of Emergency/Rescue Team required: On-site _____ Off-site _____ Phone _____

CONTRACTOR NOTIFICATION: Permit Conditions _____ Potential Hazards _____

PERMIT AUTHORIZATION/CANCELLATION

I certify that I have inspected the work area for safety and reviewed all safety precautions recorded on this permit.

Entry Supervisor: _____ Signature: _____ Date: _____

I certify that this permit is no longer valid and shall not be utilized for further entry procedures.

Entry Supervisor: _____ Signature: _____ Date: _____

Reason: _____

# DAILY SAFETY MEETING ATTENDANCE FORM

**ENVIRONMENTAL QUALITY MANAGEMENT**
**Rickenbacker ANGB Pumphouses 898/899**
**AFCEE Contract F451624-94-D-8071 D.O. 8**

**DATE:** _____ - _____ - _____

**TOPIC(S):** _____

**PRESENTED BY:** _____

I have been informed, understand, and will abide by the information and procedures set forth in todays safety meeting.

| Printed Name | Signature | Company |
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# HOT WORK PERMIT

This permit must be completed and authorized prior to commencing hot work in any area not specifically designated for hot work. This permit must be displayed in the permitted work area while hot work is performed and is void 30 minutes after work ceases or at shift's end, whichever comes first. Once this permit has expired, it must be returned to the Safety Representative or Safety Files.

Permit issued to: _____ Start time: _____ AM/PM, for this date only: _____ 19 _____

Project site/location: _____

Work to be performed: ___ welding; ___ cutting; ___ grinding; ___ hot equipment operation; describe: _____

## PRE-WORK CHECKLIST

| | Yes | or N/A |
|---|---|---|
| 1. Operations/site personnel are informed of work to be performed. | ___ | ___ |
| 2. Project personnel are trained/debriefed in work to be performed | ___ | ___ |
| 3. All required PPE (i.e., flame-retardant clothing, tinted eye protection, etc.) is available (Type: _____) | ___ | ___ |
| 4. All necessary portable fire extinguishers are provided (Type: _____) | ___ | ___ |
| 5. All existing fire-suppression systems are operable (Type: _____) | ___ | ___ |
| 6. A Fire Watch, which will remain for 30 minutes after hot work ends, is established. | ___ | ___ |
| 7. Surrounding equipment and operations are safe for hot work. | ___ | ___ |
| 8. Manholes, basins, and other floor/wall openings are covered. | ___ | ___ |
| 9. Combustible items within 35 feet of hot work area have been removed or are otherwise covered with wetted tarpaulins or fire curtains. | ___ | ___ |

| | Yes | or N/A |
|---|---|---|
| 10. Open vessels or lines within 35 feet of hot work are protected. | ___ | ___ |
| 11. All necessary grounding/bonding wire is in place. | ___ | ___ |
| 12. Energized utilities are locked and tagged out. | ___ | ___ |
| 13. All tanks/lines/valves are disconnected, blanked, or locked out. | ___ | ___ |
| 14. Equipment and all attached piping has been cleaned and purged (with: Water, Steam, Inert Gas, or Air). | ___ | ___ |
| 15. Flammable dusts, vapors, liquids, and residues have been removed. | ___ | ___ |
| 16. Flammable gases > 10% of LEL have been purged. | ___ | ___ |
| 17. All requirements for Confined Space Entry have been met. | ___ | ___ |

Completed by: _____ Date: _____

## ATMOSPHERIC TESTING RESULTS

Testing frequency: initial and _____ continuous, or _____ periodic (every _____ min.); ___ Atmospheric testing is not required.

| Exact Test Location: | Time | % LEL | % Oxygen | Others | | Tester's Initials |
|---|---|---|---|---|---|---|
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(Space is provided on the back of this form for additional results)

Special Instructions: _____

Local Emergency Response/Fire Department Phone Number: _____

Work Area Inspected and Permit Issued by: _____ Date: _____ Safety Rep Authorization: _____ Date: _____

(Signature) (Signature)

# SAMPLING EQUIPMENT CALIBRATION LOG

Site Name: _____ Project No.: _____

| DATE/TIME | INSTRUMENT (Mfg./Model) | CALIBRATED BY | STANDARD (concent.-units) | METER READING | COMMENTS/ AMBIENT CONDITIONS |
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Page _____ of _____

# HEAT STRESS PHYSIOLOGICAL MONITORING LOG

Site: _____ Date: _____ Safety Representative: _____

Ambient Conditions: _____ Start work area temp: _____ Stop work area temp: _____

| NAME | REPRESENTING | AGE | MEDICAL NOTES | TIME IN | ORAL TEMP | HEART RATE | BODY WGT. | TIME OUT | ORAL TEMP | HEART RATE | BODY WGT. |
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Notation/Comments: _____

Page ____ of ____

# INJURY REPORT

Injured's name _____ Sex ____ S.S. No. _____ Birthdate _____

Home address _____ City _____ State _____ Zip _____ Phone _____

Job title _____ Hire date _____ Hourly wage _____

Date of incident _____ Time _____ Time reported _____ To whom? _____

Client name _____ Client address _____ Time shift began _____

Exact location of incident _____ Did employee leave work? No Yes When _____

Has employee returned to work? No Yes When _____ Did employee miss a regularly scheduled shift? No Yes

Doctor/Hospital name _____ Address _____

Witness name(s) _____ Statement Attached? No Yes

Nature of injury _____ Exact body part _____

Medical attention: None First aid on site Doctor's Office Hospital ER Hospitalized

Job assignment at time of incident _____ Job _____

Describe incident _____

What unsafe physical condition or unsafe act caused the incident? _____

What corrective action has been taken to prevent recurrence? _____

Supervisor/Foreman _____ _____ _____

Print Signature Date

## HEALTH AND SAFETY

Concur with action taken? No Yes Remarks _____

OSHA Classification:

Incident only First aid No lost workdays Lost workdays Restricted activity Fatality

Days away from work _____ Days restricted work _____ Total days charged _____

Name _____ _____ _____

Print Signature Date

# RESPIRATORY PROTECTION FIT TEST RECORD

Employee Name: _____ SS#: _____ Job: _____

Fit test conducted by: _____ Date: _____

Frequency of respiratory protection use: _____ daily basis _____ occasionally _____ rarely

Employee has received appropriate respiratory protection training: _____ yes _____ no

Conditions which could affect respirator fit:

_____ razor stubble _____ side burns _____ dentures absent

_____ beard _____ facial scar _____ other (specify:) _____

_____ mustache _____ glasses _____ none

Respirator (s) selected:

1. Manufacturer: _____
   Model _____
   Size ____ SM ____ MD ____ LG ____ XL ____ NA
   Face ____ 1/4 ____ 1/2 ____ Full ____ Hood
   Air _____ purifying (power) _____ supplied
   _____ purifying (non-power)
   Comments _____

1. Manufacturer: _____
   Model _____
   Size ____ SM ____ MD ____ LG ____ XL ____ NA
   Face ____ 1/4 ____ 1/2 ____ Full ____ Hood
   Air _____ purifying (power) _____ supplied
   _____ purifying (non-power)
   Comments _____

Fit checks:

Negative Pressure : _____ pass _____ fail _____ NA

Positive Pressure: _____ pass _____ fail _____ NA

Fit test:

Quantitative Fit Factor _____

Qualitative (Isoamyl Acetate) _____ pass _____ fail _____ NA

Qualitative (Stannic Oxychloride) _____ pass _____ fail _____ NA

Comments: _____

_____

Acknowledgment of test results:

_____

(Employee's Signature) (Date)

_____

(Test Conductor's Signature) (Date)

Note: The results of this test indicate the performance of the listed respiratory protective device(s) as fitted on the employee under controlled conditions. The device may not provide adequate protection under other conditions. Consult your safety professional if there are questions. Improper use, maintenance, or application may reduce or eliminate protection.

NA - Not Applicable

# APPENDIX F

# DAILY CONSTRUCTION QUALITY CONTROL REPORTS

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
# DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
6



DATE
06 Mar 2006 - Monday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912P6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Weather Not Entered

## QC NARRATIVES

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
Preliminary Notice to Proceed was received 28Feb06. This is the first report and represents the period of 28Feb06 to 06Mar06. No field work took place (no one was on-site). Office tasks such as work plan preparation were underway.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
None.

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None.

**Safety Inspection / Safety Meetings:**
None, no field work was underway.

**Safety: (Inspections made, Deficiencies noted):**
None.

**Safety: Corrective Action taken:**
None.

## PREP/INITIAL DATES (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

## ACTIVITY START/FINISH

**No activities were started or finished today**

## QC REQUIREMENTS

**No QC requirements were completed today**

## QA/QC PUNCH LIST (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

## CONTRACTORS ON SITE (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

| CONTRACTORS QUALITY CONTROL REPORT (QCR)<br>DAILY LOG OF CONSTRUCTION - CIVIL | REPORT NUMBER<br>6 Page 2 of 2<br>DATE<br>06 Mar 2006 - Monday |
|---|---|
| PROJECT<br>Indiana Harbor CDF, Slurry Wall Gaps | CONTRACT NUMBER<br>W912P6-06-C-0003 NA |

**LABOR HOURS**

**No labor hours were Reported today**

Total hours worked to date: 0.0

**EQUIPMENT HOURS**

**No equipment hours were Reported today**

Total operating hours to date: 0.0

**ACCIDENT REPORTING** (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contra plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 6/5/6 | 6/15/06 | |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 13



DATE 13 Mar 2006 - Monday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912P6-06-C-0003 NA

CONTRACTOR Environmental Quality Management Inc

WEATHER Weather Not Entered

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
No field work took place (no one was on-site). Office tasks such as work plan preparation were underway. This is the second report and represents the period of 07Mar06 to 13Mar06.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
None.

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None.

**Safety Inspection / Safety Meetings:**
None, no field work was underway.

**Safety: (Inspections made, Deficiencies noted):**
None.

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

| CONTRACTORS QUALITY CONTROL REPORT (QCR)<br>DAILY LOG OF CONSTRUCTION - CIVIL | REPORT NUMBER<br>13 Page 2 of 2<br>DATE<br>13 Mar 2006 - Monday |
|---|---|
| PROJECT<br>Indiana Harbor CDF, Slurry Wall Gaps | CONTRACT NUMBER<br>W912P6-06-C-0003 NA |

**LABOR HOURS**

**No labor hours were Reported today**

Total hours worked to date: 0.0

**EQUIPMENT HOURS**

**No equipment hours were Reported today**

Total operating hours to date: 0.0

**ACCIDENT REPORTING** (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION

**On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contra plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| [illegible] | 6/5/6 | EB | 6/15/06 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
20



DATE
20 Mar 2006 - Monday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912F6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Weather Not Entered

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
No field work took place (no one was on-site). Office tasks such as work plan preparation were underway. This is the third report and represents the period of 14Mar06 to 20Mar06.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
None.

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None.

**Safety Inspection / Safety Meetings:**
None, no field work was underway.

**Safety: (Inspections made, Deficiencies noted):**
None.

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

| CONTRACTORS QUALITY CONTROL REPORT (QCR)<br>DAILY LOG OF CONSTRUCTION - CIVIL | REPORT NUMBER<br>20 Page 2 of 2<br>DATE<br>20 Mar 2006 - Monday |
|---|---|
| PROJECT<br>Indiana Harbor CDF, Slurry Wall Gaps | CONTRACT NUMBER<br>W912P6-06-C-0003 NA |

**LABOR HOURS**

**No labor hours were Reported today**

Total hours worked to date: 0.0

**EQUIPMENT HOURS**

**No equipment hours were Reported today**

Total operating hours to date: 0.0

**ACCIDENT REPORTING** (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contra plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 6/5/6 | | 6/15/06 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
27



DATE
27 Mar 2006 - Monday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912P6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Weather Not Entered

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
No field work took place (no one was on-site). Office tasks such as work plan preparation were underway. This is the fourth report and represents the period of 21Mar06 to 27Mar06.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
None.

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None.

**Safety Inspection / Safety Meetings:**
None, no field work was underway.

**Safety: (Inspections made, Deficiencies noted):**
None.

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
27 

DATE
27 Mar 2006 - Monday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912P6-06-C-0003 NA

**LABOR HOURS**

**No labor hours were Reported today**

Total hours worked to date: 0.0

**EQUIPMENT HOURS**

**No equipment hours were Reported today**

Total operating hours to date: 0.0

**ACCIDENT REPORTING** (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contra plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 6/5/6 | | 6/15/06 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
34 

DATE
03 Apr 2006 - Monday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912P6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Weather Not Entered

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
No field work took place (no one was on-site). Office tasks such as work plan preparation were underway. This is the fifth report and represents the period of 28Mar06 to 03Apr06.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
None.

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None.

**Safety Inspection / Safety Meetings:**
None, no field work was underway.

**Safety: (Inspections made, Deficiencies noted):**
None.

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

| CONTRACTORS QUALITY CONTROL REPORT (QCR)<br>DAILY LOG OF CONSTRUCTION - CIVIL | REPORT NUMBER<br>34 Page 2 of 2<br>DATE<br>03 Apr 2006 - Monday |
|---|---|
| PROJECT<br>Indiana Harbor CDF, Slurry Wall Gaps | CONTRACT NUMBER<br>W912P6-06-C-0003 NA |

**LABOR HOURS**

**No labor hours were Reported today**

Total hours worked to date: 0.0

**EQUIPMENT HOURS**

**No equipment hours were Reported today**

Total operating hours to date: 0.0

**ACCIDENT REPORTING** (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contr plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 6/5/6 | | 6/13/06 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
41



DATE
10 Apr 2006 - Monday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912F6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Weather Not Entered

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
No field work took place (no one was on-site). Office tasks such as work plan preparation were underway. This is the sixth report and represents the period of 04Apr06 to 10Apr06.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
None.

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None.

**Safety Inspection / Safety Meetings:**
None, no field work was underway.

**Safety: (Inspections made, Deficiencies noted):**
None.

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 41 

DATE 10 Apr 2006 - Monday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912P6-06-C-0003 NA

**LABOR HOURS**

**No labor hours were Reported today**

Total hours worked to date: 0.0

**EQUIPMENT HOURS**

**No equipment hours were Reported today**

Total operating hours to date: 0.0

**ACCIDENT REPORTING** (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contr plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 6/5/6 | GB | 6/15/06 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 48



DATE 17 Apr 2006 - Monday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912F6-06-C-0003 NA

CONTRACTOR Environmental Quality Management Inc

WEATHER Weather Not Entered

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
No field work took place (no one was on-site). Office tasks such as work plan preparation were underway. This is the seventh report and represents the period of 11Apr06 to 17Apr06.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
None.

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None.

**Safety Inspection / Safety Meetings:**
None, no field work was underway.

**Safety: (Inspections made, Deficiencies noted):**
None.

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

| CONTRACTORS QUALITY CONTROL REPORT (QCR)<br>DAILY LOG OF CONSTRUCTION - CIVIL | REPORT NUMBER<br>48 Page 2 of 2<br>DATE<br>17 Apr 2006 - Monday |
|---|---|
| PROJECT<br>Indiana Harbor CDF, Slurry Wall Gaps | CONTRACT NUMBER<br>W912P6-06-C-0003 NA |

**LABOR HOURS**

**No labor hours were Reported today**

Total hours worked to date: 0.0

**EQUIPMENT HOURS**

**No equipment hours were Reported today**

Total operating hours to date: 0.0

**ACCIDENT REPORTING** (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contr plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 6/5/6 | | 6/15/06 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
55 

DATE
24 Apr 2006 - Monday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912P6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Weather Not Entered

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
No field work took place (no one was on-site). Office tasks such as work plan preparation were underway. This is the eighth report and represents the period of 18Apr06 to 24Apr06.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
None.

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None.

**Safety Inspection / Safety Meetings:**
None, no field work was underway.

**Safety: (Inspections made, Deficiencies noted):**
None.

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

| CONTRACTORS QUALITY CONTROL REPORT (QCR)<br>DAILY LOG OF CONSTRUCTION - CIVIL | REPORT NUMBER<br>55 Page 2 of 2<br>DATE<br>24 Apr 2006 - Monday |
|---|---|
| PROJECT<br>Indiana Harbor CDF, Slurry Wall Gaps | CONTRACT NUMBER<br>W912F6-06-C-0003 NA |

**LABOR HOURS**

**No labor hours were Reported today**

Total hours worked to date: 0.0

**EQUIPMENT HOURS**

**No equipment hours were Reported today**

Total operating hours to date: 0.0

**ACCIDENT REPORTING** (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contra plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 6/5/6 | Eric Bolen | 6/15/06 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
62 

DATE
01 May 2006 - Monday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912P6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Weather Not Entered

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
No field work took place (no one was on-site). Office tasks such as work plan preparation were underway. This is the ninth report and represents the period of 25Apr06 to 01May06.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
None.

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None.

**Safety Inspection / Safety Meetings:**
None, no field work was underway.

**Safety: (Inspections made, Deficiencies noted):**
None.

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

| CONTRACTORS QUALITY CONTROL REPORT (QCR)<br>DAILY LOG OF CONSTRUCTION - CIVIL | REPORT NUMBER<br>62 Page 2 of 2<br>DATE<br>01 May 2006 - Monday |
|---|---|
| PROJECT<br>Indiana Harbor CDF, Slurry Wall Gaps | CONTRACT NUMBER<br>W912P6-06-C-0003 NA |

**LABOR HOURS**

**No labor hours were Reported today**

Total hours worked to date: 0.0

**EQUIPMENT HOURS**

**No equipment hours were Reported today**

Total operating hours to date: 0.0

**ACCIDENT REPORTING** (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contra plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 6/5/6 | | 6/15/06 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
69



DATE
08 May 2006 - Monday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912P6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Weather Not Entered

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
No field work took place (no one was on-site). Office tasks such as work plan preparation were underway. This is the 10th report and represents the period of 02May06 to 08May06.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
None.

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None.

**Safety Inspection / Safety Meetings:**
None, no field work was underway.

**Safety: (Inspections made, Deficiencies noted):**
None.

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

| CONTRACTORS QUALITY CONTROL REPORT (QCR)<br>DAILY LOG OF CONSTRUCTION - CIVIL | REPORT NUMBER<br>69 Page 2 of 2<br>DATE<br>08 May 2006 - Monday |
|---|---|
| PROJECT<br>Indiana Harbor CDF, Slurry Wall Gaps | CONTRACT NUMBER<br>W912F6-06-C-0003 NA |

**LABOR HOURS**

**No labor hours were Reported today**

Total hours worked to date: 0.0

**EQUIPMENT HOURS**

**No equipment hours were Reported today**

Total operating hours to date: 0.0

**ACCIDENT REPORTING** (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contra plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 6/15/6 | | 6/15/06 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
76



DATE
15 May 2006 - Monday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912F6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Weather Not Entered

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
No field work took place (no one was on-site). Office tasks such as work plan preparation were underway. This is the 11th report and represents the period of 09May06 to 15May06.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
None.

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None.

**Safety Inspection / Safety Meetings:**
None, no field work was underway.

**Safety: (Inspections made, Deficiencies noted):**
None.

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 76 

DATE 15 May 2006 - Monday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912P6-06-C-0003 NA

**LABOR HOURS**

No labor hours were Reported today

Total hours worked to date: 0.0

**EQUIPMENT HOURS**

No equipment hours were Reported today

Total operating hours to date: 0.0

**ACCIDENT REPORTING** (Describe accidents)

No accidents reported today

CONTRACTOR CERTIFICATION On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contr plans and specifications, to the best of my knowledge, except as noted above.

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 6/5/6 | | 6/15/06 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
84



DATE
23 May 2006 - Tuesday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912P6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Weather Not Entered

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
No field work took place (no one was on-site). Office tasks such as work plan preparation were underway. This is the 12th report and represents the period of 16May06 to 23May06.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
None.

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None.

**Safety Inspection / Safety Meetings:**
None, no field work was underway.

**Safety: (Inspections made, Deficiencies noted):**
None.

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

| CONTRACTORS QUALITY CONTROL REPORT (QCR)<br>DAILY LOG OF CONSTRUCTION - CIVIL | REPORT NUMBER<br>84 Page 2 of 2<br>DATE<br>23 May 2006 - Tuesday |
|---|---|
| PROJECT<br>Indiana Harbor CDF, Slurry Wall Gaps | CONTRACT NUMBER<br>W912P6-06-C-0003 NA |

**LABOR HOURS**

**No labor hours were Reported today**

Total hours worked to date: 0.0

**EQUIPMENT HOURS**

**No equipment hours were Reported today**

Total operating hours to date: 0.0

**ACCIDENT REPORTING** (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contr plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 6/5/6 | | 6/15/06 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
90



DATE
29 May 2006 - Monday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912P6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Weather Not Entered

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
No field work took place (no one was on-site). Office tasks such as work plan preparation were underway. This is the 13th report and represents the period of 24May06 to 29May06.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
None.

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None.

**Safety Inspection / Safety Meetings:**
None, no field work was underway.

**Safety: (Inspections made, Deficiencies noted):**
None.

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

| CONTRACTORS QUALITY CONTROL REPORT (QCR)<br>DAILY LOG OF CONSTRUCTION - CIVIL | REPORT NUMBER<br>90 Page 2 of 2<br>DATE<br>29 May 2006 - Monday |
|---|---|
| PROJECT<br>Indiana Harbor CDF, Slurry Wall Gaps | CONTRACT NUMBER<br>W912P6-06-C-0003 NA |

**LABOR HOURS**

**No labor hours were Reported today**

Total hours worked to date: 0.0

**EQUIPMENT HOURS**

**No equipment hours were Reported today**

Total operating hours to date: 0.0

**ACCIDENT REPORTING** (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contr plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 6/5/6 | | 6/15/06 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
96 

DATE
04 Jun 2006 - Sunday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912P6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Weather Not Entered

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
No field work took place (no one was on-site). Office tasks such as work plan preparation were underway. This is the 14th report and represents the period of 30May06 to 04Jun06.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
None.

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None.

**Safety Inspection / Safety Meetings:**
None, no field work was underway.

**Safety: (Inspections made, Deficiencies noted):**
None.

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

| CONTRACTORS QUALITY CONTROL REPORT (QCR)<br>DAILY LOG OF CONSTRUCTION - CIVIL | REPORT NUMBER<br>96 Page 2 of 2<br>DATE<br>04 Jun 2006 - Sunday |
|---|---|
| PROJECT<br>Indiana Harbor CDF, Slurry Wall Gaps | CONTRACT NUMBER<br>W912P6-06-C-0003 NA |

**LABOR HOURS**

**No labor hours were Reported today**

Total hours worked to date: 0.0

**EQUIPMENT HOURS**

**No equipment hours were Reported today**

Total operating hours to date: 0.0

**ACCIDENT REPORTING** (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contr plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 6/5/6 | | 6/15/06 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
97 

DATE
05 Jun 2006 - Monday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912P6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Weather Not Entered

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
No field work took place (no one was on-site). Office tasks such as work plan preparation were underway. Sam Carrico and Ben Letany Mobilized to the site. Daily reports will commence.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
None.

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None.

**Safety Inspection / Safety Meetings:**
None, no field work was underway.

**Safety: (Inspections made, Deficiencies noted):**
None.

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**The following activity was started today:**

| Activity No | Description |
|---|---|
| 0001-14 | Mobe-Trench Excavation & Screening |

**No activities were finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

| CONTRACTORS QUALITY CONTROL REPORT (QCR)<br>DAILY LOG OF CONSTRUCTION - CIVIL | REPORT NUMBER<br>97 Page 2 of 2<br>DATE<br>05 Jun 2006 - Monday |
|---|---|
| PROJECT<br>Indiana Harbor CDF, Slurry Wall Gaps | CONTRACT NUMBER<br>W912P6-06-C-0003 NA |

**No Punch List items were corrected today**

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

**LABOR HOURS**

**No labor hours were Reported today**

Total hours worked to date: 0.0

**EQUIPMENT HOURS**

**No equipment hours were Reported today**

Total operating hours to date: 0.0

**ACCIDENT REPORTING** (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contr plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 6/6/6 | | 6/15/06 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
98 

DATE
06 Jun 2006 - Tuesday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912F6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Weather Caused No Delay
Temperature Min 62 °F, Max 83 °F; No Precipitation; No Wind

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
Field work began. Sam Carrico and Ben Letany were on site. A 3.5 Yd rubber tire loader was mobilized to the site. Construction of the trailer pad was completed. Work was also performed on extending the N/W road. 13 loads of 3 by 2 slag and 4 loads of 53 size slag was received.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
Ben Letany, Sam Carrico.

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None.

**Safety Inspection / Safety Meetings:**
Ben Letany conducted a safety tailgate meeting (note the attached).

**Safety: (Inspections made, Deficiencies noted):**
None.

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**Today was the first day on site for the following 2 contractors:**
EQM

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 98 

DATE 06 Jun 2006 - Tuesday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912P6-06-C-0003 NA

Maintenance Dynamics

**No contractors had their last day on site today**

**LABOR HOURS**

**The following labor hours were Reported today:**

| Employer | Labor Classification | | Number of Employees | Hours Worked |
|---|---|---|---|---|
| EQM | SAFETY ENGINEER - ON SITE | | 1.0 | 9.0 |
| Maintenance Dynamics | OPERATING ENGINEER | | 1.0 | 8.0 |
| Total hours worked to date: | 17.0 | Total | 2.0 | 17.0 |

**EQUIPMENT HOURS**

**The following equipment hours were Reported today:**

| Serial Number | Description | | Standby Hours | Operating Hours |
|---|---|---|---|---|
| LCAJ37365 | 3.5 Yd Rubber Tire Loader | | 0.0 | 8.0 |
| Total operating hours to date: 8.0 | | Total | 0.0 | 8.0 |

**ACCIDENT REPORTING** (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contr plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 6/7/6 | | 6/15/06 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
# DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
99 

DATE
07 Jun 2006 - Wednesday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912P6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Weather Caused No Delay
Temperature Min 65 °F, Max 83 °F; No Precipitation; No Wind

## QC NARRATIVES

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
Field work began. A 40k Track Dozer and a 10 by 50 office trailer were mobilized to the site. Work continued on extending the NW road. 16 loads of 12 grade slag were received.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
Ben Letany, Sam Carrico.

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None.

**Safety Inspection / Safety Meetings:**
Ben Letany conducted a safety tailgate meeting (note the attached).

**Safety: (Inspections made, Deficiencies noted):**
None.

**Safety: Corrective Action taken:**
None.

## PREP/INITIAL DATES (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

## ACTIVITY START/FINISH

**The following activity was started today:**

| Activity No | Description |
|---|---|
| 0002-02 | Office Setup |

**No activities were finished today**

## QC REQUIREMENTS

**No QC requirements were completed today**

## QA/QC PUNCH LIST (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 99 

DATE 07 Jun 2006 - Wednesday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912P6-06-C-0003 NA

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

**LABOR HOURS**

**The following labor hours were Reported today:**

| Employer | Labor Classification | | Number of Employees | Hours Worked |
|---|---|---|---|---|
| EQM | SAFETY ENGINEER - ON SITE | | 1.0 | 10.5 |
| Maintenance Dynamics | OPERATING ENGINEER | | 1.0 | 10.5 |
| Total hours worked to date: | 38.0 | Total | 2.0 | 21.0 |

**EQUIPMENT HOURS**

**The following equipment hours were Reported today:**

| Serial Number | Description | | Standby Hours | Operating Hours |
|---|---|---|---|---|
| LCAJ37365 | 3.5 Yd Rubber Tire Loader | | 5.0 | 5.5 |
| N4DC95160 | 40 K Track Dozer | | 5.0 | 5.5 |
| Total operating hours to date: 19.0 | | Total | 10.0 | 11.0 |

**ACCIDENT REPORTING** (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contr plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| [signature] | 6/8/6 | [signature] | 6/15/06 |

| CONTRACTORS QUALITY CONTROL REPORT (QCR)<br>DAILY LOG OF CONSTRUCTION - CIVIL | REPORT NUMBER<br>100 Page 1 of 2<br>DATE<br>08 Jun 2006 - Thursday |
|---|---|
| PROJECT<br>Indiana Harbor CDF, Slurry Wall Gaps | CONTRACT NUMBER<br>W912P6-06-C-0003 NA |
| CONTRACTOR<br>Environmental Quality Management Inc | WEATHER<br>Weather Caused No Delay<br>Temperature Min 60 °F, Max 82 °F; No Precipitation; No Wind |

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
Work continued on extending the perimeter road on the west side road. 23 loads of various grades ( 3x2, I2, and 53) of slag were received and used.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
Ben Letany, Sam Carrico.

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None.

**Safety Inspection / Safety Meetings:**
Ben Letany conducted a safety tailgate meeting (note the attached).

**Safety: (Inspections made, Deficiencies noted):**
None.

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 100 

DATE 08 Jun 2006 - Thursday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912F6-06-C-0003 NA

**LABOR HOURS**

**The following labor hours were Reported today:**

| Employer | Labor Classification | | Number of Employees | Hours Worked |
|---|---|---|---|---|
| EQM | SAFETY ENGINEER - ON SITE | | 1.0 | 10.5 |
| Maintenance Dynamics | OPERATING ENGINEER | | 1.0 | 10.5 |
| Total hours worked to date: | 59.0 | Total | 2.0 | 21.0 |

**EQUIPMENT HOURS**

**The following equipment hours were Reported today:**

| Serial Number | Description | | Standby Hours | Operating Hours |
|---|---|---|---|---|
| LCAJ37365 | 3.5 Yd Rubber Tire Loader | | 5.0 | 5.5 |
| N4DC95160 | 40 K Track Dozer | | 5.0 | 5.5 |
| Total operating hours to date: 30.0 | | Total | 10.0 | 11.0 |

**ACCIDENT REPORTING** (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contr plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| [signature] | 06/15/06 | [initials] | 6/15/06 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 101 

DATE 09 Jun 2006 - Friday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912P6-06-C-0003 NA

CONTRACTOR Environmental Quality Management Inc

WEATHER
Weather Caused No Delay
Temperature Min 53 °F, Max 67 °F, 0.11 IN Precipitation, No Wind

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
Work continued on extending the perimeter road on the west side of the site. 27 loads of various grades ( 3x2, 12, 53, fines) of slag were received and used.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
Ben Letany, Sam Carrico.

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None.

**Safety Inspection / Safety Meetings:**
Ben Letany conducted a safety tailgate meeting (note the attached).

**Safety: (Inspections made, Deficiencies noted):**
None.

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 101 

DATE 09 Jun 2006 - Friday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912F6-06-C-0003 NA

**LABOR HOURS**

**The following labor hours were Reported today:**

| Employer | Labor Classification | | Number of Employees | Hours Worked |
|---|---|---|---|---|
| EQM | SAFETY ENGINEER - ON SITE | | 1.0 | 10.5 |
| Maintenance Dynamics | OPERATING ENGINEER | | 1.0 | 10.5 |
| Total hours worked to date: | 80.0 | Total | 2.0 | 21.0 |

**EQUIPMENT HOURS**

**The following equipment hours were Reported today:**

| Serial Number | Description | | Standby Hours | Operating Hours |
|---|---|---|---|---|
| LCAJ37365 | 3.5 Yd Rubber Tire Loader | | 5.0 | 5.5 |
| N4DC95160 | 40 K Track Dozer | | 5.0 | 5.5 |
| Total operating hours to date: 41.0 | | Total | 10.0 | 11.0 |

**ACCIDENT REPORTING** (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contr plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| [signature] | 05 JUN 06 | GB | 6/15/06 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
104 

DATE
12 Jun 2006 - Monday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912P6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Weather Caused No Delay
Temperature Min 54 °F, Max 68 °F; No Precipitation; No Wind

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
Work continued on extending the perimeter road on the west side of the site. 16 loads of various grades ( 3x2, I2, 53, fines) of slag were received and used. Ed Wise arrived on site.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
Ed Wise, Ben Letany, and Sam Carrico (Maintenance Dynamics).

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None.

**Safety Inspection / Safety Meetings:**
Ben Letany conducted a safety tailgate meeting (note the attached).

**Safety: (Inspections made, Deficiencies noted):**
None.

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 104 

DATE 12 Jun 2006 - Monday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912P6-06-C-0003 NA

**LABOR HOURS**

**The following labor hours were Reported today:**

| Employer | Labor Classification | | Number of Employees | Hours Worked |
|---|---|---|---|---|
| ECM | SAFETY ENGINEER - ON SITE | | 1.0 | 11.0 |
| ECM | CONSTRUCTION INSPECTOR | | 1.0 | 11.5 |
| Maintenance Dynamics | OPERATING ENGINEER | | 1.0 | 12.0 |
| | | Total | 3.0 | 34.5 |

Total hours worked to date: 114.5

**EQUIPMENT HOURS**

**The following equipment hours were Reported today:**

| Serial Number | Description | | Standby Hours | Operating Hours |
|---|---|---|---|---|
| LCAJ37365 | 3.5 Yd Rubber Tire Loader | | 5.0 | 5.5 |
| N4DC95160 | 40 K Track Dozer | | 5.0 | 5.5 |
| | | Total | 10.0 | 11.0 |

Total operating hours to date: 52.0

**ACCIDENT REPORTING** (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the cont plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| [signature] | 15 JUN 06 | [signature] | 6/15/06 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
105 

DATE
13 Jun 2006 - Tuesday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912F6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Weather Caused No Delay
Temperature Min 52 °F, Max 74 °F, No Precipitation; No Wind

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
Work continued on extending the perimeter road on the west side of the site. 26 loads of various grades ( 3x2, 12, 53, fines) of slag were received and used.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
Ed Wise, Ben Letany, and Sam Carrico (Maintenance Dynamics).

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None.

**Safety Inspection / Safety Meetings:**
Ben Letany conducted a safety tailgate meeting (note the attached).

**Safety: (Inspections made, Deficiencies noted):**
None.

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 105 

DATE 13 Jun 2006 - Tuesday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912P6-06-C-0003 NA

**LABOR HOURS**

**The following labor hours were Reported today:**

| Employer | Labor Classification | | Number of Employees | Hours Worked |
|---|---|---|---|---|
| EQM | SAFETY ENGINEER - ON SITE | | 1.0 | 11.0 |
| EQM | CONSTRUCTION INSPECTOR | | 1.0 | 11.5 |
| Maintenance Dynamics | OPERATING ENGINEER | | 1.0 | 11.5 |
| Total hours worked to date: | 148.5 | Total | 3.0 | 34.0 |

**EQUIPMENT HOURS**

**The following equipment hours were Reported today:**

| Serial Number | Description | | Standby Hours | Operating Hours |
|---|---|---|---|---|
| LCAJ37365 | 3.5 Yd Rubber Tire Loader | | 5.0 | 5.5 |
| N4DC95160 | 40 K Track Dozer | | 5.0 | 5.5 |
| Total operating hours to date: 63.0 | | Total | 10.0 | 11.0 |

**ACCIDENT REPORTING** (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contr plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| [signature] | 15 JUN 06 | [signature] | 6/15/06 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 106 

DATE 14 Jun 2006 - Wednesday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912F6-06-C-0003 NA

CONTRACTOR Environmental Quality Management Inc

WEATHER
Weather Caused No Delay
Temperature Min 56 °F, Max 78 °F, No Precipitation; No Wind

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
Work continued on extending the perimeter road on the west side of the site. 28 loads of various grades ( 3x2, I2, 53, fines) of slag were received and used. EQ began clearing and grubbing of the west gaps segment. Topsoil was "wind rowed" about 2-5 feet from the toe of the new dike to form a barrier between it and our work and ensure we do not interfere with the new dike.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
Ed Wise, Ben Letany, and Sam Carrico (Maintenance Dynamics).

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None.

**Safety Inspection / Safety Meetings:**
Ben Letany conducted a safety tailgate meeting (note the attached).

**Safety: (Inspections made, Deficiencies noted):**
None.

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 106 

DATE 14 Jun 2006 - Wednesday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912P6-06-C-0003 NA

**LABOR HOURS**

**The following labor hours were Reported today:**

| Employer | Labor Classification | | Number of Employees | Hours Worked |
|---|---|---|---|---|
| EQM | SAFETY ENGINEER - ON SITE | | 1.0 | 11.0 |
| EQM | CONSTRUCTION INSPECTOR | | 1.0 | 11.5 |
| Maintenance Dynamics | OPERATING ENGINEER | | 1.0 | 11.5 |
| Total hours worked to date: | 182.5 | Total | 3.0 | 34.0 |

**EQUIPMENT HOURS**

**The following equipment hours were Reported today:**

| Serial Number | Description | | Standby Hours | Operating Hours |
|---|---|---|---|---|
| LCAJ37365 | 3.5 Yd Rubber Tire Loader | | 5.0 | 5.5 |
| N4DC95160 | 40 K Track Dozer | | 5.0 | 5.5 |
| Total operating hours to date: 74.0 | | Total | 10.0 | 11.0 |

**ACCIDENT REPORTING** (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contra plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 15 Jun 06 | | 6/15/06 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 107 

DATE 15 Jun 2006 - Thursday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912F6-06-C-0003 NA

CONTRACTOR Environmental Quality Management Inc

WEATHER
Weather Caused No Delay
Temperature Min 69 °F, Max 89 °F; No Precipitation; No Wind

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
EQ completed work on extending the perimeter road on the west/northwest side of the site. 22 loads of various grades ( 3x2, I2, 53, fines) of slag were received and used. EQ continued clearing and grubbing of the west gaps segment. Topsoil was "wind rowed" about 2-5 feet from the toe of the new dike to form a barrier between it and our work and ensure we do not interfere with the new dike. EQ began construction of the "loop road" to the screener/scale area. Miler electric was onsite to connect power to the office trailers. Eric Bowman and Andy Lucas were on site in addition to normal personnel. Arthur Rundzitis verbally instructed EQ not to bring on the 53 grade slag item as he did not feel USACE would execute that line item of the contract.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
Eric Bowman, Ed Wise, Ben Letany, Andy Lucas (H&S), Sam Carrico (Maintenance Dynamics), three representatives of Task Force Security, and two representatives of Miler Electric.

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
Arthur Rundzitis instructed Ed Wise not to deliver any 53 grade slag to the site. He said he felt USACE would not execute that line item of the contract. EQ will contact USACE in 30-60 days to verify that USACE does not want this material.

**Safety Inspection / Safety Meetings:**
Ben Letany conducted a safety tailgate meeting (note the attached).

**Safety: (Inspections made, Deficiencies noted):**
None.

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 107 

DATE 15 Jun 2006 - Thursday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912F6-06-C-0003 NA

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

**LABOR HOURS**

**The following labor hours were Reported today:**

| Employer | Labor Classification | | Number of Employees | Hours Worked |
|---|---|---|---|---|
| EQM | SAFETY ENGINEER - ON SITE | | 2.0 | 10.0 |
| EQM | SUPER - JOB | | 1.0 | 11.0 |
| EQM | CONSTRUCTION INSPECTOR | | 1.0 | 11.5 |
| Maintenance Dynamics | OPERATING ENGINEER | | 1.0 | 11.5 |
| Task Force | TRAFFIC CONTROL SIGNALER | | 3.0 | 8.0 |
| Total hours worked to date: | 234.5 | Total | 8.0 | 52.0 |

**EQUIPMENT HOURS**

**The following equipment hours were Reported today:**

| Serial Number | Description | | Standby Hours | Operating Hours |
|---|---|---|---|---|
| LCAJ37365 | 3.5 Yd Rubber Tire Loader | | 5.0 | 5.5 |
| N4DC95160 | 40 K Track Dozer | | 5.0 | 5.5 |
| Total operating hours to date: 85.0 | | Total | 10.0 | 11.0 |

**ACCIDENT REPORTING** (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contra plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| [signature] | 15 Jun 06 | [signature] | 6/15/06 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
108 

DATE
16 Jun 2006 - Friday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912P6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Weather Caused No Delay
Temperature Min 74 °F, Max 91 °F; No Precipitation; No Wind

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
EQ continued grading of the perimeter road to the NW side of the site. We completed clearing and grubbing of the west gaps segment. Topsoil was "wind rowed" about 2-5 feet from the toe of the new dike to form a barrier between it and our work and ensure we do not interfere with the new dike. Miller Electric continued with power hookup.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
Eric Bowman, Ed Wise, Ben Letany, Sam Carrico (Maintenance Dynamics), three representatives of Task Force Security, and two representatives of Miller Electric.

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
Nope.

**Safety Inspection / Safety Meetings:**
Ben Letany conducted a safety tailgate meeting (note the attached).

**Safety: (Inspections made, Deficiencies noted):**
None.

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 108 

DATE 16 Jun 2006 - Friday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912F6-06-C-0003 NA

**LABOR HOURS**

**The following labor hours were Reported today:**

| Employer | Labor Classification | | Number of Employees | Hours Worked |
|---|---|---|---|---|
| EQM | SAFETY ENGINEER - ON SITE | | 1.0 | 10.0 |
| EQM | SUPER - JOB | | 1.0 | 10.0 |
| EQM | CONSTRUCTION INSPECTOR | | 1.0 | 10.0 |
| Maintenance Dynamics | OPERATING ENGINEER | | 1.0 | 10.0 |
| Miller Electric | ELECTRICIAN | | 2.0 | 8.0 |
| Task Force | TRAFFIC CONTROL SIGNALER | | 3.0 | 8.0 |
| Total hours worked to date: | 290.5 | Total | 9.0 | 56.0 |

**EQUIPMENT HOURS**

**The following equipment hours were Reported today:**

| Serial Number | Description | | Standby Hours | Operating Hours |
|---|---|---|---|---|
| LCAJ37365 | 3.5 Yd Rubber Tire Loader | | 5.0 | 5.5 |
| N4DC95160 | 40 K Track Dozer | | 5.0 | 5.5 |
| Total operating hours to date: 96.0 | | Total | 10.0 | 11.0 |

**ACCIDENT REPORTING** (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the c[illegible] plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| [illegible] | 06/19/06 | [illegible] | 6/19/06 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
111



DATE
19 Jun 2006 - Monday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912P6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Weather Caused No Delay
Temperature Min 68 °F, Max 86 °F, No Precipitation; No Wind

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
EQ demolished the fence segment on the west side that will be replaced. The opening was temporarily sealed with "snow" fence. The inset fence on the east CSX track area was removed. Arthur Rundzaitis (USACE) indicated he thought USACE will not want to replace the adjacent segment of perimeter fence and will verify this. EQ discovered that the fence subcontractor (Illiana) did not have the proper fence material certification. They will acquire new material with the proper certification. This may take 7-10 business days. In the interim, the temporary perimeter "snow" fence will be inspected daily. EQ also began transporting the "grubbed" material from the west segment to the screener area. The west segment was deemed too congested to use the space for the soil. Silt fence will be installed to form a barrier between our work area nad the new dike. A ILinkbelt excavator was delivered to the site. Miller Electric continued with power hookup. Nick Michailides (site SSHO) arrived on-site. Andy Lucas was on-site.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
Eric Bowman, Ed Wise, Nick Michailides, Ben Letany, Andy Lucas, two representatives of Maintenance Dynamics, three representatives of Task Force Security, and one representative of Miller Electric.

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
Arthur Rundzaitis indicated (again) that he felt USACE would not replace the east perimeter fence segment. He will verify this in the next few days.

**Safety Inspection / Safety Meetings:**
Ben Letany conducted a safety tailgate meeting (note the attached).

**Safety: (Inspections made, Deficiencies noted):**
None.

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 111 

DATE 19 Jun 2006 - Monday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912P6-06-C-0003 NA

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

**LABOR HOURS**

**The following labor hours were Reported today:**

| Employer | Labor Classification | | Number of Employees | Hours Worked |
|---|---|---|---|---|
| Andy Lucas, Inc. | SAFETY ENGINEER - ON SITE | | 1.0 | 8.0 |
| EQM | SAFETY ENGINEER - ON SITE | | 1.0 | 12.0 |
| EQM | SUPER - JOB | | 1.0 | 12.0 |
| EQM | CONSTRUCTION INSPECTOR | | 1.0 | 12.0 |
| EQM | CONSTRUCTION-RECORDS CLERK | | 1.0 | 12.0 |
| Maintenance Dynamics | LABORERS | | 0.0 | 12.0 |
| Maintenance Dynamics | OPERATING ENGINEER | | 1.0 | 12.0 |
| Miller Electric | ELECTRICIAN | | 1.0 | 8.0 |
| Task Force | TRAFFIC CONTROL SIGNALER | | 3.0 | 8.0 |
| Total hours worked to date: | 386.5 | Total | 10.0 | 96.0 |

**EQUIPMENT HOURS**

**The following equipment hours were Reported today:**

| Serial Number | Description | | Standby Hours | Operating Hours |
|---|---|---|---|---|
| LCAJ37365 | 3.5 Yd Rubber Tire Loader | | 9.0 | 3.0 |
| N4DC95160 | 40 K Track Dozer | | 12.0 | 0.0 |
| 21003-1741 | Medium Track Excavator | | 3.0 | 9.0 |
| Total operating hours to date: | 108.0 | Total | 24.0 | 12.0 |

**ACCIDENT REPORTING** (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contra plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| [signature] | 06/20/06 | [signature] | 6/20/06 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
112 

DATE
20 Jun 2006 - Tuesday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912P6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Weather Caused No Delay
Temperature Min 68 °F, Max 77 °F, No Precipitation; No Wind

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
EQ continued demolishing of the east "inset" fence at the CSX crossing. We completed transporting the "grubbed" material from the west segment to the screener area. EQ began demolishion of the former CSX track on the east side of the site. NIPSCO was on-site to discuss connecting "line" power.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
Eric Bowman, Ed Wise, Nick Michailides, Ben Letany, Andy Lucas, three representatives of Maintenance Dynamics, three representatives of Task Force Security, and one representative of Miller Electric. An additional operator from maitenance Dynamics was added at about 11:00.

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
Arthur Rundzaitis indicated (again) that he felt USACE would not replace the east perimeter fence segment. He will verify this in the next few days.

**Safety Inspection / Safety Meetings:**
Ben Letany conducted a safety tailgate meeting (note the attached).

**Safety: (Inspections made, Deficiencies noted):**
None.

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 112 

DATE 20 Jun 2006 - Tuesday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912F6-06-C-0003 NA

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

**LABOR HOURS**

**The following labor hours were Reported today:**

| Employer | Labor Classification | | Number of Employees | Hours Worked |
|---|---|---|---|---|
| Andy Lucas, Inc. | SAFETY ENGINEER - ON SITE | | 0.0 | 8.0 |
| EQM | SAFETY ENGINEER - ON SITE | | 1.0 | 12.0 |
| EQM | SUPER - JOB | | 1.0 | 12.0 |
| EQM | CONSTRUCTION INSPECTOR | | 1.0 | 12.0 |
| EQM | CONSTRUCTION-RECORDS CLERK | | 1.0 | 12.0 |
| Maintenance Dynamics | LABORERS | | 1.0 | 12.0 |
| Maintenance Dynamics | TRUCK DRIVER, GROUP 1 | | 1.0 | 12.0 |
| Maintenance Dynamics | OPERATING ENGINEER | | 2.0 | 12.0 |
| Miller Electric | ELECTRICIAN | | 0.0 | 0.0 |
| Task Force | TRAFFIC CONTROL SIGNALER | | 3.0 | 8.0 |
| Total hours worked to date: | 486.5 | Total | 11.0 | 100.0 |

**EQUIPMENT HOURS**

**The following equipment hours were Reported today:**

| Serial Number | Description | | Standby Hours | Operating Hours |
|---|---|---|---|---|
| LCAJ37365 | 3.5 Yd Rubber Tire Loader | | 5.0 | 7.0 |
| N4DC95160 | 40 K Track Dozer | | 12.0 | 0.0 |
| 21003-1741 | Medium Track Excavator | | 0.0 | 12.0 |
| Total operating hours to date: | 127.0 | Total | 17.0 | 19.0 |

**ACCIDENT REPORTING** (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contr plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| [signature] | 21 Jun 06 | GB | 6/21/06 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 113 

DATE 21 Jun 2006 - Wednesday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912F6-06-C-0003 NA

CONTRACTOR Environmental Quality Management Inc

WEATHER
Weather Caused No Delay
Temperature Min 68 °F, Max 91 °F; No Precipitation; 12 MPH Wind

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
EQ continued removal of debris from the east "inset" fence at the CSX crossing. We continued with construction of the decontamination pad. We also worked in the debris stockpile area in an effort to consolidate the area and create more space and recover piping.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
Eric Bowman, Ed Wise, Nick Mchailides, Ben Letany, four representatives of Maintenance Dynamics, and three representatives of Task Force Security.

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None.

**Safety Inspection / Safety Meetings:**
Nick Mchailides conducted a safety tailgate meeting.

**Safety: (Inspections made, Deficiencies noted):**
None.

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)
**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**
**No activities were started or finished today**

**QC REQUIREMENTS**
**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)
**No QC Punch List items were issued today**
**No Punch List items were corrected today**

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)
**No contractors had their first or last day on site today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 113 

DATE 21 Jun 2006 - Wednesday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912P6-06-C-0003 NA

### LABOR HOURS

The following labor hours were Reported today:

| Employer | Labor Classification | | Number of Employees | Hours Worked |
|---|---|---|---|---|
| Andy Lucas, Inc. | SAFETY ENGINEER - ON SITE | | 0.0 | 0.0 |
| EQM | SAFETY ENGINEER - ON SITE | | 1.0 | 11.0 |
| EQM | SUPER - JOB | | 1.0 | 11.0 |
| EQM | CONSTRUCTION INSPECTOR | | 1.0 | 12.0 |
| EQM | CONSTRUCTION-RECORDS CLERK | | 1.0 | 11.0 |
| Maintenance Dynamics | LABORERS | | 1.0 | 11.0 |
| Maintenance Dynamics | TRUCK DRIVER, GROUP 1 | | 1.0 | 11.0 |
| Maintenance Dynamics | OPERATING ENGINEER | | 2.0 | 11.0 |
| Miller Electric | ELECTRICIAN | | 0.0 | 0.0 |
| Task Force | TRAFFIC CONTROL SIGNALER | | 3.0 | 8.0 |
| Total hours worked to date: | 572.5 | Total | 11.0 | 86.0 |

### EQUIPMENT HOURS

The following equipment hours were Reported today:

| Serial Number | Description | | Standby Hours | Operating Hours |
|---|---|---|---|---|
| LCAJ37365 | 3.5 Yd Rubber Tire Loader | | 0.0 | 11.0 |
| N4DC95160 | 40 K Track Dozer | | 11.0 | 0.0 |
| 21003-1741 | Medium Track Excavator | | 0.0 | 11.0 |
| Total operating hours to date: | 149.0 | Total | 11.0 | 22.0 |

### ACCIDENT REPORTING (Describe accidents)

No accidents reported today

CONTRACTOR CERTIFICATION On behalf of the contractor, I certify that this Report is complete and correct and all equipment a material used and work performed during this Reporting period are in compliance with the cont plans and specifications, to the best of my knowledge, except as noted above.

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 22 JUN 06 | Ernie Bowen | 6/22/06 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
114 

DATE
22 Jun 2006 - Thursday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912P6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Weather Caused No Delay
Temperature Min 62 °F, Max 91 °F, No Precipitation; 9 MPH Wind

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
EQ completed removal of debris from the east "inset" fence at the CSX crossing. We continued with construction of the decontamination pad, completed removal of grubbed soil from the west segment, and continued with demolishion of the railroad tracks. Tom Mnihan (Griffin Dewatering) was on-site to discuss the dewatering system. The wells will be installed on the outside of the wall for both segments. They will be on-site 26Jun06 to start installation of the system.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
Eric Bowman, Ed Wise, Nick Mchailides, Ben Letany, four representatives of Maintenance Dynamics, and three representatives of Task Force Security.

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None.

**Safety Inspection / Safety Meetings:**
Nick Mchailides conducted a safety tailgate meeting.

**Safety: (Inspections made, Deficiencies noted):**
None.

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 114 

DATE 22 Jun 2006 - Thursday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912P6-06-C-0003 NA

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

**LABOR HOURS**

**The following labor hours were Reported today:**

| Employer | Labor Classification | Number of Employees | Hours Worked |
|---|---|---|---|
| Andy Lucas, Inc. | SAFETY ENGINEER - ON SITE | 0.0 | 0.0 |
| EQM | SAFETY ENGINEER - ON SITE | 1.0 | 12.0 |
| EQM | SUPER - JOB | 1.0 | 12.0 |
| EQM | CONSTRUCTION INSPECTOR | 1.0 | 12.0 |
| EQM | CONSTRUCTION-RECORDS CLERK | 1.0 | 12.0 |
| Maintenance Dynamics | LABORERS | 1.0 | 12.0 |
| Maintenance Dynamics | TRUCK DRIVER, GROUP 1 | 1.0 | 8.0 |
| Maintenance Dynamics | OPERATING ENGINEER | 2.0 | 12.0 |
| Miller Electric | ELECTRICIAN | 0.0 | 0.0 |
| Task Force | TRAFFIC CONTROL SIGNALER | 3.0 | 8.0 |
| Total hours worked to date: | 660.5 | Total 11.0 | 88.0 |

**EQUIPMENT HOURS**

**The following equipment hours were Reported today:**

| Serial Number | Description | Standby Hours | Operating Hours |
|---|---|---|---|
| LCAJ37365 | 3.5 Yd Rubber Tire Loader | 0.0 | 12.0 |
| N4DC95160 | 40 K Track Dozer | 12.0 | 0.0 |
| 21003-1741 | Medium Track Excavator | 0.0 | 12.0 |
| Total operating hours to date: | 173.0 | Total 12.0 | 24.0 |

**ACCIDENT REPORTING** (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contrac plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| [signature] | 23 JUN 06 | [initials] | 6/23/06 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
115 

DATE
23 Jun 2006 - Friday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912F6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Weather Caused No Delay
Temperature Min 60 °F, Max 72 °F; No Precipitation; No Wind

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
EQ completed construction of the decontamination pad, and continued with demolishion of the railroad tracks. We also began transportation of the Yelomine pipe for the dewatering system and the 4" hdpe pipe for the slurry/water supply systems from Tieerra.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
Eric Bowman, Ed Wise, Nick Michailides, Ben Letany, four representatives of Maintenance Dynamics, and three representatives of Task Force Security.

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None.

**Safety Inspection / Safety Meetings:**
Nick Michailides conducted a safety tailgate meeting.

**Safety: (Inspections made, Deficiencies noted):**
None.

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 115 

DATE 23 Jun 2006 - Friday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912F6-06-C-0003 NA

### LABOR HOURS

The following labor hours were Reported today:

| Employer | Labor Classification | | Number of Employees | Hours Worked |
|---|---|---|---|---|
| Andy Lucas, Inc. | SAFETY ENGINEER - ON SITE | | 0.0 | 0.0 |
| EQM | SAFETY ENGINEER - ON SITE | | 1.0 | 10.0 |
| EQM | SUPER - JOB | | 1.0 | 10.0 |
| EQM | CONSTRUCTION INSPECTOR | | 1.0 | 10.0 |
| EQM | CONSTRUCTION-RECORDS CLERK | | 1.0 | 10.0 |
| Maintenance Dynamics | LABORERS | | 1.0 | 10.0 |
| Maintenance Dynamics | TRUCK DRIVER, GROUP 1 | | 1.0 | 10.0 |
| Maintenance Dynamics | OPERATING ENGINEER | | 2.0 | 10.0 |
| Miller Electric | ELECTRICIAN | | 0.0 | 0.0 |
| Task Force | TRAFFIC CONTROL SIGNALER | | 3.0 | 8.0 |
| Total hours worked to date: | 738.5 | Total | 11.0 | 78.0 |

### EQUIPMENT HOURS

The following equipment hours were Reported today:

| Serial Number | Description | | Standby Hours | Operating Hours |
|---|---|---|---|---|
| LCAJ37365 | 3.5 Yd Rubber Tire Loader | | 0.0 | 12.0 |
| N4DC95160 | 40 K Track Dozer | | 12.0 | 0.0 |
| 21003-1741 | Medium Track Excavator | | 0.0 | 12.0 |
| XYZ | Dump Truck | | 0.0 | 12.0 |
| Total operating hours to date: 209.0 | | Total | 12.0 | 36.0 |

### ACCIDENT REPORTING (Describe accidents)

No accidents reported today

CONTRACTOR CERTIFICATION On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as noted above.

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 26 JUN 06 | | 6.27.06 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
118 

DATE
26 Jun 2006 - Monday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912P6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Weather Caused No Delay
Temperature Min 59 °F, Max 72 °F, No Precipitation; 10 MPH Wind

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
EQ continued with demolishon of the railroad tracks. Demolishon was complete. Transportation of the debris remains. Griffin was on site and began fusing of the 4" hdpe slurry/water supply piping. The underground utility meeting with local utilities was held. No new external utilities were identified. The only external utility believed to be present is the SBC fiber optic lines in the SE corner of the site.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
Ed Wise, Nick Michailides, Ben Letany, Andy Lucas, four representatives of Maintenance Dynamics, and three representatives of Task Force Security.

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None.

**Safety Inspection / Safety Meetings:**
Nick Michailides conducted a safety tailgate meeting.

**Safety: (Inspections made, Deficiencies noted):**
None.

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**The following activity was started today:**

| Activity No | Description |
|---|---|
| 0006-01 | Dewatering Process System Installation |

**No activities were finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 118 

DATE 26 Jun 2006 - Monday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912F6-06-C-0003 NA

**No Punch List items were corrected today**

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**Today was the first day on site for the following contractor:**
Griffin

**No contractors had their last day on site today**

**LABOR HOURS**

**The following labor hours were Reported today:**

| Employer | Labor Classification | | Number of Employees | Hours Worked |
|---|---|---|---|---|
| Andy Lucas, Inc. | SAFETY ENGINEER - ON SITE | | 1.0 | 8.0 |
| EQM | SAFETY ENGINEER - ON SITE | | 1.0 | 12.0 |
| EQM | SUPER - JOB | | 1.0 | 12.0 |
| EQM | CONSTRUCTION INSPECTOR | | 1.0 | 12.0 |
| EQM | CONSTRUCTION-RECORDS CLERK | | 1.0 | 12.0 |
| Griffin | LABORER, PLUMBING | | 2.0 | 8.0 |
| Maintenance Dynamics | LABORERS | | 1.0 | 12.0 |
| Maintenance Dynamics | TRUCK DRIVER, GROUP 1 | | 1.0 | 12.0 |
| Maintenance Dynamics | OPERATING ENGINEER | | 2.0 | 12.0 |
| Miller Electric | ELECTRICIAN | | 0.0 | 0.0 |
| Task Force | TRAFFIC CONTROL SIGNALER | | 3.0 | 8.0 |
| Total hours worked to date: | 846.5 | Total | 14.0 | 108.0 |

**EQUIPMENT HOURS**

**The following equipment hours were Reported today:**

| Serial Number | Description | | Standby Hours | Operating Hours |
|---|---|---|---|---|
| LCAJ37365 | 3.5 Yd Rubber Tire Loader | | 0.0 | 12.0 |
| N4DC95160 | 40 K Track Dozer | | 12.0 | 0.0 |
| 21003-1741 | Medium Track Excavator | | 0.0 | 12.0 |
| XYZ | Dump Truck | | 0.0 | 12.0 |
| Total operating hours to date: 245.0 | | Total | 12.0 | 36.0 |

**ACCIDENT REPORTING** (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contr plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 26 Jun 06 | | 6·26·06 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 119 

DATE 27 Jun 2006 - Tuesday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912F6-06-C-0003 NA

CONTRACTOR Environmental Quality Management Inc

WEATHER Weather Caused No Delay
Temperature Min 64 °F, Max 75 °F; No Precipitation; 7 MPH Wind

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
EQ installed erosion control (silt fence) on the eastern edge of the site and began work on the western edge. Arthur Rundzaitis concurred with EQs recommendation that the western edge silt fence be installed on the inside edge of the perimeter road. The silt fence was installed by cutting a 6-12 inch groove with a trackhoe, installing the fence, then manually filling in around the fence. This will provide the best possible protection. EQ will overlap the existing erosion control by 5 feet on the east- south end. and install it to the road crossover to the north of this segment. The western segment will overlap 20-30 feet on each end, since space allows. John Wentz was on site was onsite for a "kick off" meeting. The Operators Union (150) BA was also onsite No unresolvable issues were discussed. The City of East Chicago gave approval to the electrical connections. The MD teamster was not on site due to a lack of need. Griffin continued with assembly of the "jetting" water supply line. This piping will also be used for freash water and slurry supply.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
John Wentz, Ed Wise, Nick Michailides, Ben Letany, three representatives of Maintenance Dynamics, two representatives of Griffin, and three representatives of Task Force Security.

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
Arthur Rundzaitis indicated that USACE did not want the eastern segment of fence replacement performed. EQ concurred that this was a waste of money. USACE will advise if they want EQ to demo and replace this segment. Mr. Rundzaitis also said he would like the silt fence on the west side installed inside of the road. EQ concurred with this.

**Safety Inspection / Safety Meetings:**
Nick Michailides conducted a safety tailgate meeting.

**Safety: (Inspections made, Deficiencies noted):**
None.

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**Preparatory inspections were held today for the following 5 features:**
Clearing and Grubbing
Install Project/Safety Signs
Install/Furnish Field Offices
Mobilization
Security Fence

**No initial inspections were held today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 119 

DATE 27 Jun 2006 - Tuesday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912P6-06-C-0003 NA

**ACTIVITY START/FINISH**

The following activity was started today:

| Activity No | Description |
|---|---|
| 0004-01 | Erosion Control Installaiton |

No activities were finished today

**QC REQUIREMENTS**

No QC requirements were completed today

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

No QC Punch List items were issued today

No Punch List items were corrected today

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

No contractors had their first or last day on site today

**LABOR HOURS**

The following labor hours were Reported today:

| Employer | Labor Classification | | Number of Employees | Hours Worked |
|---|---|---|---|---|
| Andy Lucas, Inc. | SAFETY ENGINEER - ON SITE | | 0.0 | 0.0 |
| EQM | SAFETY ENGINEER - ON SITE | | 1.0 | 12.0 |
| EQM | SUPER - JOB | | 0.0 | 0.0 |
| EQM | CONSTRUCTION INSPECTOR | | 1.0 | 12.0 |
| EQM | CONSTRUCTION-RECORDS CLERK | | 1.0 | 12.0 |
| Griffin | LABORER, PLUMBING | | 2.0 | 8.0 |
| Maintenance Dynamics | LABORERS | | 1.0 | 12.0 |
| Maintenance Dynamics | TRUCK DRIVER, GROUP 1 | | 0.0 | 0.0 |
| Maintenance Dynamics | OPERATING ENGINEER | | 2.0 | 12.0 |
| Miler Electric | ELECTRICIAN | | 0.0 | 0.0 |
| Task Force | TRAFFIC CONTROL SIGNALER | | 3.0 | 8.0 |
| Total hours worked to date: | 922.5 | Total | 11.0 | 76.0 |

**EQUIPMENT HOURS**

The following equipment hours were Reported today:

| Serial Number | Description | | Standby Hours | Operating Hours |
|---|---|---|---|---|
| LCAJ37365 | 3.5 Yd Rubber Tire Loader | | 0.0 | 12.0 |
| N4DC95160 | 40 K Track Dozer | | 0.0 | 12.0 |
| 21003-1741 | Medium Track Excavator | | 12.0 | 0.0 |
| XYZ | Dump Truck | | 12.0 | 0.0 |
| Total operating hours to date: 269.0 | | Total | 24.0 | 24.0 |

**ACCIDENT REPORTING** (Describe accidents)

No accidents reported today

CONTRACTOR CERTIFICATION On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contra plans and specifications, to the best of my knowledge, except as noted above.

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 6/28/6 | | 7/6/06 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
120 

DATE
28 Jun 2006 - Wednesday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912P6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Weather Caused No Delay
Temperature Min 59 °F, Max 80 °F; No Precipitation; 9 MPH Wind

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
EQ continued with installation of erosion control (silt fence) on the western edge of the site. The silt fence was installed by cutting a 6-12 inch groove with a trackhoe, installing the fence, then manually filling in around the fence. This will provide the best possible protection. EQ will overlap the existing erosion control by 20-30 feet on each end. Griffin continued with assembly of the "jetting" water supply line. This piping will also be used for freash water and slurry supply. The scale was delivered, set up, and calibrated. It will be operated on a generator with a power supply conditioner. Nipsco was on-site and connected the permanent power to the office trailers. Two tandem axle tractor trailer dump truck s were delivered to the site, but were unused.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
Ed Wise, Nick Mchailides, Ben Letany, three representatives of Maintenance Dynamics, two representatives of Griffin, four representatives of Allied Scale, one representative of Miller Electric, and three representatives of Task Force Security.

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None.

**Safety Inspection / Safety Meetings:**
Nick Mchailides conducted a safety tailgate meeting.

**Safety: (Inspections made, Deficiencies noted):**
None.

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started today**

**The following 2 activities were finished today:**

| Activity No | Description |
|---|---|
| 0002-02 | Office Setup |
| 0002-03 | Utility Connections |

**QC REQUIREMENTS**

**No QC requirements were completed today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 120 

DATE 28 Jun 2006 - Wednesday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912F6-06-C-0003 NA

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

No QC Punch List items were issued today

No Punch List items were corrected today

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

Today was the first day on site for the following contractor:
Allied Scale

No contractors had their last day on site today

**LABOR HOURS**

The following labor hours were Reported today:

| Employer | Labor Classification | Number of Employees | Hours Worked |
|---|---|---|---|
| Allied Scale | ELECTRICIAN | 4.0 | 8.0 |
| Andy Lucas, Inc. | SAFETY ENGINEER - ON SITE | 0.0 | 0.0 |
| EGM | SAFETY ENGINEER - ON SITE | 1.0 | 12.0 |
| EGM | SUPER - JOB | 0.0 | 0.0 |
| EGM | CONSTRUCTION INSPECTOR | 1.0 | 12.0 |
| EGM | CONSTRUCTION-RECORDS CLERK | 1.0 | 12.0 |
| Griffin | LABORER, PLUMBING | 2.0 | 8.0 |
| Maintenance Dynamics | LABORERS | 1.0 | 12.0 |
| Maintenance Dynamics | TRUCK DRIVER, GROUP 1 | 0.0 | 0.0 |
| Maintenance Dynamics | OPERATING ENGINEER | 2.0 | 12.0 |
| Miller Electric | ELECTRICIAN | 1.0 | 2.0 |
| Task Force | TRAFFIC CONTROL SIGNALER | 3.0 | 8.0 |
| | Total | 16.0 | 86.0 |

Total hours worked to date: 1,008.5

**EQUIPMENT HOURS**

The following equipment hours were Reported today:

| Serial Number | Description | Standby Hours | Operating Hours |
|---|---|---|---|
| LCAJ37365 | 3.5 Yd Rubber Tire Loader | 6.0 | 6.0 |
| N4DC95160 | 40 K Track Dozer | 0.0 | 12.0 |
| 21003-1741 | Medium Track Excavator | 0.0 | 12.0 |
| XYZ | Dump Truck | 12.0 | 0.0 |
| DEF | Tandem Axle Tractor Trailer Dump Truck #2 | 2.0 | 0.0 |
| | Total | 20.0 | 30.0 |

Total operating hours to date: 299.0

**ACCIDENT REPORTING** (Describe accidents)

No accidents reported today

CONTRACTOR CERTIFICATION On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contra plans and specifications, to the best of my knowledge, except as noted above.

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| [signature] | 6/29/6 | [signature] | 7/6/06 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
121 

DATE
29 Jun 2006 - Thursday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912P6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Weather Caused No Delay
Temperature Min 82 °F, Max 53 °F; No Precipitation; No Wind

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
EQ completed installation of erosion control (silt fence) on the western edge of the site. The silt fence was installed by cutting a 6-12 inch groove with a trackhoe, installing the fence, then manually filling in around the fence. This will provide the best possible protection. Griffin continued with assembly of the "jetting" water supply line. This piping will also be used for freash water and slurry supply. Miler ran the electric line for the slurry plant.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
Ed Wise, Nick Michailides, Ben Letany, three representatives of Maintenance Dynamics, eight representatives of Griffin, two representatives of Miler Electric, and three representatives of Task Force Security.

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None.

**Safety Inspection / Safety Meetings:**
Nick Michailides conducted a safety tailgate meeting.

**Safety: (Inspections made, Deficiencies noted):**
None.

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**The following 2 activities were started today:**

| Activity No | Description |
|---|---|
| 0002-04-01 | Recurring Utilities/Lease Month 1 |
| 0004-02-01 | Erosion Control O&M Month 1 |

**No activities were finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 121 

DATE 29 Jun 2006 - Thursday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912F6-06-C-0003 NA

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

**LABOR HOURS**

**The following labor hours were Reported today:**

| Employer | Labor Classification | | Number of Employees | Hours Worked |
|---|---|---|---|---|
| Allied Scale | ELECTRICIAN | | 0.0 | 0.0 |
| Andy Lucas, Inc. | SAFETY ENGINEER - ON SITE | | 0.0 | 0.0 |
| EQM | SAFETY ENGINEER - ON SITE | | 1.0 | 12.0 |
| EQM | SUPER - JOB | | 0.0 | 0.0 |
| EQM | CONSTRUCTION INSPECTOR | | 1.0 | 12.0 |
| EQM | CONSTRUCTION-RECORDS CLERK | | 1.0 | 12.0 |
| Griffin | LABORER, PLUMBING | | 8.0 | 8.0 |
| Maintenance Dynamics | LABORERS | | 1.0 | 12.0 |
| Maintenance Dynamics | TRUCK DRIVER, GROUP 1 | | 0.0 | 0.0 |
| Maintenance Dynamics | OPERATING ENGINEER | | 2.0 | 12.0 |
| Miller Electric | ELECTRICIAN | | 2.0 | 4.0 |
| Task Force | TRAFFIC CONTROL SIGNALER | | 3.0 | 8.0 |
| Total hours worked to date: | 1,088.5 | Total | 19.0 | 80.0 |

**EQUIPMENT HOURS**

**The following equipment hours were Reported today:**

| Serial Number | Description | | Standby Hours | Operating Hours |
|---|---|---|---|---|
| LCAJ37365 | 3.5 Yd Rubber Tire Loader | | 0.0 | 12.0 |
| N4DC95160 | 40 K Track Dozer | | 6.0 | 6.0 |
| 21003-1741 | Medium Track Excavator | | 0.0 | 12.0 |
| XYZ | Dump Truck | | 12.0 | 0.0 |
| ABC | Tandem Axle Tractor Trailer Dump Truck #1 | | 12.0 | 0.0 |
| DEF | Tandem Axle Tractor Trailer Dump Truck #2 | | 12.0 | 0.0 |
| GHI | Dump truck | | 12.0 | 0.0 |
| Total operating hours to date: 329.0 | | Total | 54.0 | 30.0 |

**ACCIDENT REPORTING** (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contrac plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| [signature] | 6/30/6 | [initials] | 6/30/06 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
122 

DATE
30 Jun 2006 - Friday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912F6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Weather Caused No Delay
Temperature Min 60 °F, Max 86 °F, No Precipitation, No Wind

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
EQ completed installation of the loop road around the infiltration gallery. We also began excavation and stockpiling of makeup backfill. The remaining excess "grubbed" material from the west side was transported to the stockpile area.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
Ed Wise, Nick Michailides, Ben Letany, seven representatives of Maintenance Dynamics, two representatives of Griffin, and three representatives of Task Force Security.

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None.

**Safety Inspection / Safety Meetings:**
Nick Michailides conducted a safety tailgate meeting.

**Safety: (Inspections made, Deficiencies noted):**
None.

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 122 

DATE 30 Jun 2006 - Friday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912F6-06-C-0003 NA

**LABOR HOURS**

**The following labor hours were Reported today:**

| Employer | Labor Classification | | Number of Employees | Hours Worked |
|---|---|---|---|---|
| Allied Scale | ELECTRICIAN | | 0.0 | 0.0 |
| Andy Lucas, Inc. | SAFETY ENGINEER - ON SITE | | 0.0 | 0.0 |
| EQM | SAFETY ENGINEER - ON SITE | | 1.0 | 12.0 |
| EQM | SUPER - JOB | | 0.0 | 0.0 |
| EQM | CONSTRUCTION INSPECTOR | | 1.0 | 12.0 |
| EQM | CONSTRUCTION-RECORDS CLERK | | 1.0 | 12.0 |
| Griffin | LABORER, PLUMBING | | 2.0 | 8.0 |
| Maintenance Dynamics | LABORERS | | 1.0 | 12.0 |
| Maintenance Dynamics | TRUCK DRIVER, GROUP 1 | | 1.0 | 12.0 |
| Maintenance Dynamics | OPERATING ENGINEER | | 5.0 | 12.0 |
| Miller Electric | ELECTRICIAN | | 0.0 | 0.0 |
| Task Force | TRAFFIC CONTROL SIGNALER | | 3.0 | 8.0 |
| Total hours worked to date: | 1,176.5 | Total | 15.0 | 88.0 |

**EQUIPMENT HOURS**

**The following equipment hours were Reported today:**

| Serial Number | Description | | Standby Hours | Operating Hours |
|---|---|---|---|---|
| LCAJ37365 | 3.5 Yd Rubber Tire Loader | | 0.0 | 12.0 |
| N4DC95160 | 40 K Track Dozer | | 6.0 | 6.0 |
| 21003-1741 | Medium Track Excavator | | 0.0 | 12.0 |
| XYZ | Dump Truck | | 12.0 | 0.0 |
| ABC | Tandem Axle Tractor Trailer Dump Truck #1 | | 12.0 | 0.0 |
| DEF | Tandem Axle Tractor Trailer Dump Truck #2 | | 12.0 | 0.0 |
| GHI | Dump truck | | 12.0 | 0.0 |
| Total operating hours to date: 329.0 | | Total | 54.0 | 30.0 |

**ACCIDENT REPORTING** (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contra plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 7/5/6 | GB | 7/5/06 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
127 

DATE
05 Jul 2006 - Wednesday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912F6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Weather Caused No Delay
Temperature Min 63 °F, Max 77 °F, No Precipitation; No Wind

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
EQ continued excavation and stockpiling of mekeup backfill. Griffin continued to construct the dewatering system. A Cat 320 excavator was delivered. Ramirez and Marsch delivered their work trailer. Andy Lucas was on site. No work was performed over the 070106 to 070406 holiday weekend.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
Eric Bowman, Ed Wise, Nick Mchailides, Ben Letany, five representatives of Maintenance Dynamics, four representatives of Griffin, and three representatives of Task Force Security.

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None.

**Safety Inspection / Safety Meetings:**
Nick Mchailides conducted a safety tailgate meeting.

**Safety: (Inspections made, Deficiencies noted):**
None.

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**Today was the first day on site for the following contractor:**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 127 

DATE 05 Jul 2006 - Wednesday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912F6-06-C-0003 NA

Ramierez & Marsch

**No contractors had their last day on site today**

**LABOR HOURS**

**The following labor hours were Reported today:**

| Employer | Labor Classification | Number of Employees | Hours Worked |
|---|---|---|---|
| Allied Scale | ELECTRICIAN | 0.0 | 0.0 |
| Andy Lucas, Inc. | SAFETY ENGINEER - ON SITE | 1.0 | 8.0 |
| EQM | SAFETY ENGINEER - ON SITE | 1.0 | 12.0 |
| EQM | SUPER - JOB | 1.0 | 12.0 |
| EQM | CONSTRUCTION INSPECTOR | 1.0 | 12.0 |
| EQM | CONSTRUCTION-RECORDS CLERK | 1.0 | 12.0 |
| Griffin | LABORER, PLUMBING | 4.0 | 8.0 |
| Maintenance Dynamics | LABORERS | 1.0 | 12.0 |
| Maintenance Dynamics | TRUCK DRIVER, GROUP 1 | 0.0 | 0.0 |
| Maintenance Dynamics | OPERATING ENGINEER | 4.0 | 12.0 |
| Miller Electric | ELECTRICIAN | 0.0 | 0.0 |
| Ramierez & Marsch | LABORER, PLUMBING | 4.0 | 3.0 |
| Task Force | TRAFFIC CONTROL SIGNALER | 3.0 | 8.0 |
| Total hours worked to date: | 1,275.5 | Total 21.0 | 99.0 |

**EQUIPMENT HOURS**

**The following equipment hours were Reported today:**

| Serial Number | Description | Standby Hours | Operating Hours |
|---|---|---|---|
| LCAJ37365 | 3.5 Yd Rubber Tire Loader | 0.0 | 12.0 |
| N4DC95160 | 40 K Track Dozer | 12.0 | 0.0 |
| 21003-1741 | Medium Track Excavator | 1.0 | 12.0 |
| XYZ | Dump Truck | 12.0 | 0.0 |
| ABC | Tandem Axle Tractor Trailer Dump Truck #1 | 12.0 | 0.0 |
| DEF | Tandem Axle Tractor Trailer Dump Truck #2 | 12.0 | 0.0 |
| GHI | Dump truck | 12.0 | 0.0 |
| JKL | Excavator | 12.0 | 0.0 |
| Total operating hours to date: 383.0 | | Total 73.0 | 24.0 |

**ACCIDENT REPORTING** (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 7/6/6 | | 7/6/06 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
128 

DATE
06 Jul 2006 - Thursday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912P6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Weather Caused No Delay
Temperature Min 53 °F, Max 82 °F; No Precipitation; 9 MPH Wind

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
EQ continued excavation and stockpiling of makeup backfill. Griffin continued to construct the dewatering system. The iron railroad track from the demo of the east segment was decontaminated. The oil Water Sepearator was transported to the infiltration gallery area. The screener was delivered and set up.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
Eric Bowman, Ed Wise, Nick Mchailides, Ben Letany, five representatives of Maintenance Dynamics, six representatives of Griffin, and three representatives of Task Force Security.

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None.

**Safety Inspection / Safety Meetings:**
Nick Mchailides conducted a safety tailgate meeting.

**Safety: (Inspections made, Deficiencies noted):**
None.

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 128 

DATE 06 Jul 2006 - Thursday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912F6-06-C-0003 NA

### LABOR HOURS

**The following labor hours were Reported today:**

| Employer | Labor Classification | | Number of Employees | Hours Worked |
|---|---|---|---|---|
| Allied Scale | ELECTRICIAN | | 0.0 | 0.0 |
| Andy Lucas, Inc. | SAFETY ENGINEER - ON SITE | | 0.0 | 0.0 |
| EQM | SAFETY ENGINEER - ON SITE | | 1.0 | 12.0 |
| EQM | SUPER - JOB | | 1.0 | 12.0 |
| EQM | CONSTRUCTION INSPECTOR | | 1.0 | 12.0 |
| EQM | CONSTRUCTION-RECORDS CLERK | | 1.0 | 12.0 |
| Griffin | LABORER, PLUMBING | | 6.0 | 8.0 |
| Maintenance Dynamics | LABORERS | | 1.0 | 12.0 |
| Maintenance Dynamics | TRUCK DRIVER, GROUP 1 | | 0.0 | 0.0 |
| Maintenance Dynamics | OPERATING ENGINEER | | 4.0 | 12.0 |
| Miller Electric | ELECTRICIAN | | 0.0 | 0.0 |
| Ramierez & Marsch | LABORER, PLUMBING | | 0.0 | 0.0 |
| Task Force | TRAFFIC CONTROL SIGNALER | | 3.0 | 8.0 |
| Total hours worked to date: | 1,363.5 | Total | 18.0 | 88.0 |

### EQUIPMENT HOURS

**The following equipment hours were Reported today:**

| Serial Number | Description | | Standby Hours | Operating Hours |
|---|---|---|---|---|
| LCAJ37365 | 3.5 Yd Rubber Tire Loader | | 0.0 | 12.0 |
| N4DC95160 | 40 K Track Dozer | | 12.0 | 0.0 |
| 21003-1741 | Medium Track Excavator | | 0.0 | 12.0 |
| XYZ | Dump Truck | | 12.0 | 0.0 |
| ABC | Tandem Axle Tractor Trailer Dump Truck #1 | | 12.0 | 0.0 |
| DEF | Tandem Axle Tractor Trailer Dump Truck #2 | | 12.0 | 0.0 |
| GHI | Dump truck | | 12.0 | 0.0 |
| JKL | Excavator | | 0.0 | 12.0 |
| 123 | Power Screener | | 8.0 | 0.0 |
| Total operating hours to date: 419.0 | | Total | 68.0 | 36.0 |

### ACCIDENT REPORTING (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| [signature] | 7/6/6 | GB | 7/6/06 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 129 

DATE 07 Jul 2006 - Friday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912F6-06-C-0003 NA

CONTRACTOR Environmental Quality Managerrent Inc

WEATHER
Weather Caused No Delay
Temperature Mn 59 °F, Max 84 °F, No Precipitation; No Wind

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
EQ continued excavation., stockpiling, and screening of makeup backfill. Griffin continued to construct the dewatering system

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
Eric Bowman, Ed Wise, Nick Mchailides, Ben Letany, five representatives of Maintenance Dynamics (four operators, one laborer), three representatives of Griffin, and three representatives of Task Force Security.

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None.

**Safety Inspection / Safety Meetings:**
Nick Mchailides conducted a safety tailgate meeting.

**Safety: (Inspections made, Deficiencies noted):**
None.

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 129 

DATE 07 Jul 2006 - Friday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912F6-06-C-0003 NA

### LABOR HOURS

The following labor hours were Reported today:

| Employer | Labor Classification | | Number of Employees | Hours Worked |
|---|---|---|---|---|
| Allied Scale | ELECTRICIAN | | 0.0 | 0.0 |
| Andy Lucas, Inc. | SAFETY ENGINEER - ON SITE | | 0.0 | 0.0 |
| BQM | SAFETY ENGINEER - ON SITE | | 1.0 | 12.0 |
| BQM | SUPER - JOB | | 1.0 | 12.0 |
| BQM | CONSTRUCTION INSPECTOR | | 1.0 | 12.0 |
| BQM | CONSTRUCTION-RECORDS CLERK | | 1.0 | 12.0 |
| Griffin | LABORER, PLUMBING | | 3.0 | 8.0 |
| Maintenance Dynamics | LABORERS | | 1.0 | 12.0 |
| Maintenance Dynamics | TRUCK DRIVER, GROUP 1 | | 0.0 | 0.0 |
| Maintenance Dynamics | OPERATING ENGINEER | | 3.0 | 12.0 |
| Miller Electric | ELECTRICIAN | | 0.0 | 0.0 |
| Ramirez & Marsch | LABORER, PLUMBING | | 0.0 | 0.0 |
| Task Force | TRAFFIC CONTROL SIGNALER | | 3.0 | 8.0 |
| Total hours worked to date: | 1,451.5 | Total | 14.0 | 88.0 |

### EQUIPMENT HOURS

The following equipment hours were Reported today:

| Serial Number | Description | | Standby Hours | Operating Hours |
|---|---|---|---|---|
| LCAJ37365 | 3.5 Yd Rubber Tire Loader | | 0.0 | 12.0 |
| N4DC95160 | 40 K Track Dozer | | 12.0 | 0.0 |
| 21003-1741 | Medium Track Excavator | | 0.0 | 12.0 |
| XYZ | Dump Truck | | 12.0 | 0.0 |
| ABC | Tandem Axle Tractor Trailer Dump Truck #1 | | 12.0 | 0.0 |
| DEF | Tandem Axle Tractor Trailer Dump Truck #2 | | 12.0 | 0.0 |
| GHI | Dump truck | | 12.0 | 0.0 |
| JKL | Excavator | | 0.0 | 12.0 |
| 123 | Power Screener | | 0.0 | 12.0 |
| Griffin Excavator | Excavator | | 0.0 | 8.0 |
| Total operating hours to date: 475.0 | | Total | 60.0 | 56.0 |

### ACCIDENT REPORTING (Describe accidents)

No accidents reported today

CONTRACTOR CERTIFICATION On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as noted above.

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 7/10/6 | | 7/10/06 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 130 

DATE 08 Jul 2006 - Saturday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912F6-06-C-0003 NA

CONTRACTOR Environmental Quality Management Inc

WEATHER
Weather Caused No Delay
Temperature Min 67 °F, Max 85 °F, No Precipitation; No Wind

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
Griffin continued construction of the dewatering system. No other work was performed.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
Ben Letany, three representatives of Griffin, and three representatives of Task Force Security.

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None.

**Safety Inspection / Safety Meetings:**
Ben Letany conducted a safety tailgate meeting.

**Safety: (Inspections made, Deficiencies noted):**
None.

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 130 

DATE 08 Jul 2006 - Saturday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912F6-06-C-0003 NA

### LABOR HOURS

The following labor hours were Reported today:

| Employer | Labor Classification | Number of Employees | Hours Worked |
|---|---|---|---|
| Allied Scale | ELECTRICIAN | 0.0 | 0.0 |
| Andy Lucas, Inc. | SAFETY ENGINEER - ON SITE | 0.0 | 0.0 |
| EQM | SAFETY ENGINEER - ON SITE | 1.0 | 12.0 |
| EQM | SUPER - JOB | 0.0 | 0.0 |
| EQM | CONSTRUCTION INSPECTOR | 0.0 | 0.0 |
| EQM | CONSTRUCTION-RECORDS CLERK | 0.0 | 0.0 |
| Griffin | LABORER, PLUMBING | 3.0 | 8.0 |
| Maintenance Dynamics | LABORERS | 0.0 | 0.0 |
| Maintenance Dynamics | TRUCK DRIVER, GROUP 1 | 0.0 | 0.0 |
| Maintenance Dynamics | OPERATING ENGINEER | 0.0 | 0.0 |
| Miller Electric | ELECTRICIAN | 0.0 | 0.0 |
| Ramierez & Marsch | LABORER, PLUMBING | 0.0 | 0.0 |
| Task Force | TRAFFIC CONTROL SIGNALER | 3.0 | 8.0 |
| Total hours worked to date: | 1,479.5 | Total 7.0 | 28.0 |

### EQUIPMENT HOURS

The following equipment hours were Reported today:

| Serial Number | Description | Standby Hours | Operating Hours |
|---|---|---|---|
| LCAJ37365 | 3.5 Yd Rubber Tire Loader | 8.0 | 0.0 |
| N4DC95160 | 40 K Track Dozer | 8.0 | 0.0 |
| 21003-1741 | Medium Track Excavator | 8.0 | 0.0 |
| XYZ | Dump Truck | 8.0 | 0.0 |
| ABC | Tandem Axle Tractor Trailer Dump Truck #1 | 8.0 | 0.0 |
| DEF | Tandem Axle Tractor Trailer Dump Truck #2 | 8.0 | 0.0 |
| GHI | Dump truck | 8.0 | 0.0 |
| JKL | Excavator | 8.0 | 0.0 |
| 123 | Power Screener | 8.0 | 0.0 |
| Griffin Excavator | Excavator | 0.0 | 8.0 |
| Total operating hours to date: 483.0 | | Total 72.0 | 8.0 |

### ACCIDENT REPORTING (Describe accidents)

No accidents reported today

CONTRACTOR CERTIFICATION On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as noted above.

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| [signature] | 7/10/6 | [initials] | 7/10/06 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
132 

DATE
10 Jul 2006 - Monday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912F6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Weather Caused No Delay
Temperature Min 67 °F, Max 80 °F, No Precipitation, No Wind

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
EQ continued screening of makeup backfill. We also began excavation of the upper portion of the centerline in the Station 78+50 area. Work was discontinued as the aquifer had not been depressed sufficiently. Griffin completed construction of the dewatering system. Dewatering was commenced early am and will proceed on a two shift basis (11pm-7am, and 7am to 3pm).

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
Eric Bowman, Ed Wise, Ben Letany, Andy Lucas, seven representatives of Maintenance Dynamics (four operators, two teamsters, one laborer), four representatives of Griffin, and three representatives of Task Force Security.

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None.

**Safety Inspection / Safety Meetings:**
Ben Letany conducted a safety tailgate meeting.

**Safety: (Inspections made, Deficiencies noted):**
None.

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**The following 2 activities were started today:**

| Activity No | Description |
|---|---|
| 0006-02 | Dewatering Process System O&M |
| 0009-01 | Obstruction Investigation & Inspection Trench |

**No activities were finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 132 

DATE 10 Jul 2006 - Monday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912F6-06-C-0003 NA

**No Punch List items were corrected today**

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

**LABOR HOURS**

**The following labor hours were Reported today:**

| Employer | Labor Classification | | Number of Employees | Hours Worked |
|---|---|---|---|---|
| Allied Scale | ELECTRICIAN | | 0.0 | 0.0 |
| Andy Lucas, Inc. | SAFETY ENGINEER - ON SITE | | 1.0 | 8.0 |
| EQM | SAFETY ENGINEER - ON SITE | | 1.0 | 12.0 |
| EQM | SUPER - JOB | | 1.0 | 12.0 |
| EQM | CONSTRUCTION INSPECTOR | | 1.0 | 12.0 |
| EQM | CONSTRUCTION-RECORDS CLERK | | 0.0 | 0.0 |
| Griffin | LABORER, PLUMBING | | 4.0 | 8.0 |
| Maintenance Dynamics | LABORERS | | 1.0 | 12.0 |
| Maintenance Dynamics | TRUCK DRIVER, GROUP 1 | | 2.0 | 12.0 |
| Maintenance Dynamics | OPERATING ENGINEER | | 4.0 | 12.0 |
| Miller Electric | ELECTRICIAN | | 0.0 | 0.0 |
| Ramierez & Marsch | LABORER, PLUMBING | | 0.0 | 0.0 |
| Task Force | TRAFFIC CONTROL SIGNALER | | 3.0 | 8.0 |
| Total hours worked to date: | 1,575.5 | Total | 18.0 | 96.0 |

**EQUIPMENT HOURS**

**The following equipment hours were Reported today:**

| Serial Number | Description | | Standby Hours | Operating Hours |
|---|---|---|---|---|
| LCAJ37365 | 3.5 Yd Rubber Tire Loader | | 0.0 | 12.0 |
| N4DC95160 | 40 K Track Dozer | | 12.0 | 0.0 |
| 21003-1741 | Medium Track Excavator | | 0.0 | 12.0 |
| XYZ | Dump Truck | | 12.0 | 0.0 |
| ABC | Tandem Axle Tractor Trailer Dump Truck #1 | | 0.0 | 12.0 |
| DEF | Tandem Axle Tractor Trailer Dump Truck #2 | | 0.0 | 12.0 |
| GHI | Dump truck | | 12.0 | 0.0 |
| JKL | Excavator | | 0.0 | 12.0 |
| 123 | Power Screener | | 0.0 | 12.0 |
| Griffin Excavator | Excavator | | 0.0 | 8.0 |
| Total operating hours to date: 563.0 | | Total | 36.0 | 80.0 |

**ACCIDENT REPORTING** (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the co[illegible] plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| [illegible] | 7/11/6 | [illegible] | 7/11/06 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 133 

DATE 11 Jul 2006 - Tuesday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912P6-06-C-0003 NA

CONTRACTOR Environmental Quality Management Inc

WEATHER Weather Caused Non-Critical Delay
Temperature Min 69 °F, Max 78 °F, 0.75 IN Precipitation, No Wind

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
EQ continued excavation of the upper portion of the centerline. The excavation was completed in the Station 78+50 to 80+00 area (150 linear feet). The excavated material had a high sand content and very little debris. No obstructions were found in this segment. Debris was limited and was predominantly railroad ties. EQ continued screening of backfill. Debris from the makeup material (infiltration gallery) was segregated. Griffin completed installation of the dewatering wells in the southern portion of the system. These were not connected to the system as they were too far south to be of use. EQ decided that we should start dewatering 24/7 as the aquifer was not adequately depressed.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
Eric Bowman, Ed Wise, Ben Letany, nine representatives of Maintenance Dynamics (four operators, four teamsters, one laborer), six representatives of Griffin, and three representatives of Task Force Security.

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
Make up material from the infiltration gallery area has been screened. The oversized, refuse, has been stockpiled. The debris stockpile is nearing capacity and EQ requested permission to dispose of the oversized material back in the original excavation. Arthur Rundzaitis approved this action.

**Safety Inspection / Safety Meetings:**
Ben Letany conducted a safety tailgate meeting.

**Safety: (Inspections made, Deficiencies noted):**
None.

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 133 

DATE 11 Jul 2006 - Tuesday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912F6-06-C-0003 NA

No Punch List items were corrected today

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

No contractors had their first or last day on site today

**LABOR HOURS**

The following labor hours were Reported today:

| Employer | Labor Classification | Number of Employees | Hours Worked |
|---|---|---|---|
| Allied Scale | ELECTRICIAN | 0.0 | 0.0 |
| Andy Lucas, Inc. | SAFETY ENGINEER - ON SITE | 0.0 | 0.0 |
| EQM | SAFETY ENGINEER - ON SITE | 1.0 | 12.0 |
| EQM | SUPER - JOB | 1.0 | 12.0 |
| EQM | CONSTRUCTION INSPECTOR | 1.0 | 12.0 |
| EQM | CONSTRUCTION-RECORDS CLERK | 0.0 | 0.0 |
| Griffin | LABORER, PLUMBING | 6.0 | 8.0 |
| Maintenance Dynamics | LABORERS | 1.0 | 12.0 |
| Maintenance Dynamics | TRUCK DRIVER, GROUP 1 | 4.0 | 12.0 |
| Maintenance Dynamics | OPERATING ENGINEER | 4.0 | 12.0 |
| Miller Electric | ELECTRICIAN | 0.0 | 0.0 |
| Ramierez & Marsch | LABORER, PLUMBING | 0.0 | 0.0 |
| Task Force | TRAFFIC CONTROL SIGNALER | 3.0 | 8.0 |
| Total hours worked to date: | 1,663.5 | Total 21.0 | 88.0 |

**EQUIPMENT HOURS**

The following equipment hours were Reported today:

| Serial Number | Description | Standby Hours | Operating Hours |
|---|---|---|---|
| LCAJ37365 | 3.5 Yd Rubber Tire Loader | 0.0 | 12.0 |
| N4DC95160 | 40 K Track Dozer | 0.0 | 12.0 |
| 21003-1741 | Medium Track Excavator | 12.0 | 0.0 |
| XYZ | Dump Truck | 0.0 | 12.0 |
| ABC | Tandem Axle Tractor Trailer Dump Truck #1 | 0.0 | 12.0 |
| DEF | Tandem Axle Tractor Trailer Dump Truck #2 | 0.0 | 12.0 |
| GHI | Dump truck | 0.0 | 12.0 |
| JKL | Excavator | 0.0 | 12.0 |
| 123 | Power Screener | 0.0 | 12.0 |
| Griffin Excavator | Excavator | 0.0 | 8.0 |
| Total operating hours to date: 667.0 | | Total 12.0 | 104.0 |

**ACCIDENT REPORTING** (Describe accidents)

No accidents reported today

CONTRACTOR CERTIFICATION On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as noted above.

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| [signature] | 7/12/6 | [signature] | 7/12/06 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
# DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
134 

DATE
12 Jul 2006 - Wednesday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912P6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Weather Caused No Delay
Temperature Min 66 °F, Max 78 °F; 0.1 IN Precipitation; 10 MPH Wind

## QC NARRATIVES

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
EQ continued excavation of the upper portion of the centerline on the western side of the site. The excavation was completed in the Station 80+00 to 80+75 area (75 linear feet). A total of 225 feet has been cleared to the 6 foot depth. One obstruction was found in todays segment ( a 4" pipe at Sta 80+15). This is the only obstruction found to date. Debris was limited and was predominantly railroad ties and brick. The concentration of debris appears to be increasing as the excavation proceeds southward. EQ continued screening of backfill. Griffin began set up for installation of the dewatering system on the east side. Griffin also performed dewatering on a 24 hour basis. EQ also installed an earthen berm on the east segment at the former CSX crossing. This will control the migration of any water from the installation of the dewatering system, and other sources. A portion of the decontaminated railroad track was shipped off site (one truck load, with one remaining).

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
Eric Bowman, Ed Wise, Ben Letany, nine representatives of Maintenance Dynamics (four operators, four teamsters, one laborer), six representatives of Griffin, and three representatives of Task Force Security.

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None.

**Safety Inspection / Safety Meetings:**
Ben Letany conducted a safety tailgate meeting.

**Safety: (Inspections made, Deficiencies noted):**
None.

**Safety: Corrective Action taken:**
None.

## PREP/INITIAL DATES (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

## ACTIVITY START/FINISH

**No activities were started or finished today**

## QC REQUIREMENTS

**No QC requirements were completed today**

## QA/QC PUNCH LIST (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 134 

DATE 12 Jul 2006 - Wednesday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912F6-06-C-0003 NA

**No Punch List items were corrected today**

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

**LABOR HOURS**

**The following labor hours were Reported today:**

| Employer | Labor Classification | Number of Employees | Hours Worked |
|---|---|---|---|
| Allied Scale | ELECTRICIAN | 0.0 | 0.0 |
| Andy Lucas, Inc. | SAFETY ENGINEER - ON SITE | 0.0 | 0.0 |
| EQM | SAFETY ENGINEER - ON SITE | 1.0 | 12.0 |
| EQM | SUPER - JOB | 1.0 | 12.0 |
| EQM | CONSTRUCTION INSPECTOR | 1.0 | 12.0 |
| EQM | CONSTRUCTION-RECORDS CLERK | 0.0 | 0.0 |
| Griffin | LABORER, PLUMBING | 6.0 | 8.0 |
| Maintenance Dynamics | LABORERS | 1.0 | 12.0 |
| Maintenance Dynamics | TRUCK DRIVER, GROUP 1 | 4.0 | 12.0 |
| Maintenance Dynamics | OPERATING ENGINEER | 4.0 | 12.0 |
| Miller Electric | ELECTRICIAN | 0.0 | 0.0 |
| Ramierez & Marsch | LABORER, PLUMBING | 0.0 | 0.0 |
| Task Force | TRAFFIC CONTROL SIGNALER | 3.0 | 8.0 |
| Total hours worked to date: | 1,751.5 | Total 21.0 | 88.0 |

**EQUIPMENT HOURS**

**The following equipment hours were Reported today:**

| Serial Number | Description | Standby Hours | Operating Hours |
|---|---|---|---|
| LCAJ37365 | 3.5 Yd Rubber Tire Loader | 0.0 | 12.0 |
| N4DC95160 | 40 K Track Dozer | 8.0 | 4.0 |
| 21003-1741 | Medium Track Excavator | 6.0 | 6.0 |
| XYZ | Dump Truck | 0.0 | 12.0 |
| ABC | Tandem Axle Tractor Trailer Dump Truck #1 | 0.0 | 12.0 |
| DEF | Tandem Axle Tractor Trailer Dump Truck #2 | 0.0 | 12.0 |
| GHI | Dump truck | 0.0 | 12.0 |
| JKL | Excavator | 0.0 | 12.0 |
| 123 | Power Screener | 0.0 | 12.0 |
| Griffin Excavator | Excavator | 4.0 | 4.0 |
| Total operating hours to date: 765.0 | | Total 18.0 | 98.0 |

**ACCIDENT REPORTING** (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contrac plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| [signature] | 7/13/6 | [initials] | 7/13/06 |

SLURRY WALL
OBSTRUCTION REMOVAL SUMMARY PAGE 1
INDIANA HARBOR CDF
ENVIRONMENTAL QUALITY MANAGEMENT

| Date Removed | Station | Type | Contained | EQ ID # | Month Inv | Size | Material | Elevation Top | Elevation Bottom | Plug Type | Outside Wall Northing | Outside Wall Easting | Inside Wall Northing | Inside Wall Easting | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 80+15 | Pipe | | 300 | | 4" | Steel | | | | | | | | Shallow <1ft deep |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
135 

DATE
13 Jul 2006 - Thursday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912F6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Weather Caused No Delay
Temperature Min 68 °F, Max 81 °F; No Precipitation; No Wind

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
EQ continued excavation of the upper portion of the centerline on the western side of the site. The excavation was completed in the Station 80+75 to 82+00 area (125 linear feet). A total of 350 feet has been cleared to the 6 foot depth. Three obstructions were found in todays segment ( a 12" pipe, an 8" pipe, both appear to be hydrocarbon, and a conduit bank, potentially containing several conduits). A total of four obsrtucions have been found to date. Note the attached summary table. The amount of obstructions is significantly less than expected. Debris was limited and was predominantly railroad ties and brick. The concentration of debris appears to be increasing as the excavation proceeds southward. EQ continued screening of backfill and transported screened fill to the area of the excavation. Griffin continued with of the installation of the dewatering system on the east side. The extraqction wells were installed and the header piping was put in place. Griffin also performed dewatering on a 24 hour basis. EQ received the Trench Box certification (note copy attached).

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
Eric Bowman, Ed Wise, eight representatives of Maintenance Dynamics (three operators, four teamsters, one laborer), six representatives of Griffin, and three representatives of Task Force Security.

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None.

**Safety Inspection / Safety Meetings:**
Eric Bowman conducted a safety tailgate meeting.

**Safety: (Inspections made, Deficiencies noted):**
None.

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 135 

DATE 13 Jul 2006 - Thursday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912F6-06-C-0003 NA

No Punch List items were corrected today

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

No contractors had their first or last day on site today

**LABOR HOURS**

The following labor hours were Reported today:

| Employer | Labor Classification | | Number of Employees | Hours Worked |
|---|---|---|---|---|
| Allied Scale | ELECTRICIAN | | 0.0 | 0.0 |
| Andy Lucas, Inc. | SAFETY ENGINEER - ON SITE | | 0.0 | 0.0 |
| EQM | SAFETY ENGINEER - ON SITE | | 1.0 | 12.0 |
| EQM | SUPER - JOB | | 0.0 | 0.0 |
| EQM | CONSTRUCTION INSPECTOR | | 1.0 | 12.0 |
| EQM | CONSTRUCTION-RECORDS CLERK | | 0.0 | 0.0 |
| Griffin | LABORER, PLUMBING | | 6.0 | 8.0 |
| Maintenance Dynamics | LABORERS | | 1.0 | 12.0 |
| Maintenance Dynamics | TRUCK DRIVER, GROUP 1 | | 4.0 | 12.0 |
| Maintenance Dynamics | OPERATING ENGINEER | | 3.0 | 12.0 |
| Miler Electric | ELECTRICIAN | | 0.0 | 0.0 |
| Ramierez & Marsch | LABORER, PLUMBING | | 0.0 | 0.0 |
| Task Force | TRAFFIC CONTROL SIGNALER | | 3.0 | 8.0 |
| Total hours worked to date: | 1,827.5 | Total | 19.0 | 76.0 |

**EQUIPMENT HOURS**

The following equipment hours were Reported today:

| Serial Number | Description | | Standby Hours | Operating Hours |
|---|---|---|---|---|
| LCAJ37365 | 3.5 Yd Rubber Tire Loader | | 0.0 | 12.0 |
| N4DC95160 | 40 K Track Dozer | | 12.0 | 0.0 |
| 21003-1741 | Medium Track Excavator | | 12.0 | 0.0 |
| XYZ | Dump Truck | | 0.0 | 12.0 |
| ABC | Tandem Axle Tractor Trailer Dump Truck #1 | | 0.0 | 12.0 |
| DEF | Tandem Axle Tractor Trailer Dump Truck #2 | | 0.0 | 12.0 |
| GHI | Dump truck | | 0.0 | 12.0 |
| JKL | Excavator | | 0.0 | 12.0 |
| 123 | Power Screener | | 0.0 | 12.0 |
| Griffin Excavator | Excavator | | 4.0 | 4.0 |
| Total operating hours to date: 853.0 | | Total | 28.0 | 88.0 |

**ACCIDENT REPORTING** (Describe accidents)

No accidents reported today

CONTRACTOR CERTIFICATION On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as noted above.

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 14 Jul 06 | | 7/14/06 |

SLURRY WALL GAPS
OBSTRUCTION REMOVAL SUMMARY PAGE 1
INDIANA HARBOR CDF
ENVIRONMENTAL QUALITY MANAGEMENT

| Date Removed | Station | Type | Contained | EQ ID # | Month Inv | Size | Material | Elevation Top | Elevation Bottom | Plug Type | Outside Wall Northing | Outside Wall Easting | Inside Wall Northing | Inside Wall Easting | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 80+15 | Pipe | | 300 | | 4" | Steel | | | | | | | | Shallow <1ft deep |
| | 81+42 | Pipe | | 301 | | 12" | Steel | | | | | | | | About 5 ft deep |
| | 81+43 | Pipe | | 302 | | 8". | Steel | | | | | | | | About 5 ft deep |
| | 81+50 | Conduit | | 303 | | 1' by 2' | Concrete | | | | | | | | Conduit encased in red concrete |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 136 

DATE 14 Jul 2006 - Friday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912F6-06-C-0003 NA

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

**LABOR HOURS**

**The following labor hours were Reported today:**

| Employer | Labor Classification | | Number of Employees | Hours Worked |
|---|---|---|---|---|
| Allied Scale | ELECTRICIAN | | 0.0 | 0.0 |
| Andy Lucas, Inc. | SAFETY ENGINEER - ON SITE | | 0.0 | 0.0 |
| EQM | SAFETY ENGINEER - ON SITE | | 1.0 | 8.0 |
| EQM | SUPER - JOB | | 1.0 | 12.0 |
| EQM | CONSTRUCTION INSPECTOR | | 1.0 | 12.0 |
| EQM | CONSTRUCTION-RECORDS CLERK | | 0.0 | 0.0 |
| Griffin | LABORER, PLUMBING | | 3.0 | 8.0 |
| Maintenance Dynamics | LABORERS | | 1.0 | 12.0 |
| Maintenance Dynamics | TRUCK DRIVER, GROUP 1 | | 4.0 | 12.0 |
| Maintenance Dynamics | OPERATING ENGINEER | | 3.0 | 12.0 |
| Miller Electric | ELECTRICIAN | | 0.0 | 0.0 |
| Ramierez & Marsch | LABORER, PLUMBING | | 0.0 | 0.0 |
| Task Force | TRAFFIC CONTROL SIGNALER | | 3.0 | 8.0 |
| Total hours worked to date: | 1,911.5 | Total | 17.0 | 84.0 |

**EQUIPMENT HOURS**

**The following equipment hours were Reported today:**

| Serial Number | Description | | Standby Hours | Operating Hours |
|---|---|---|---|---|
| LCAJ37365 | 3.5 Yd Rubber Tire Loader | | 0.0 | 12.0 |
| N4DC95160 | 40 K Track Dozer | | 10.0 | 2.0 |
| 21003-1741 | Medium Track Excavator | | 0.0 | 12.0 |
| XYZ | Dump Truck | | 0.0 | 12.0 |
| ABC | Tandem Axle Tractor Trailer Dump Truck #1 | | 0.0 | 12.0 |
| DEF | Tandem Axle Tractor Trailer Dump Truck #2 | | 0.0 | 12.0 |
| GHI | Dump truck | | 0.0 | 12.0 |
| JKL | Excavator | | 12.0 | 0.0 |
| 123 | Power Screener | | 0.0 | 12.0 |
| Griffin Excavator | Excavator | | 8.0 | 0.0 |
| rmo | Roller Compactor | | 8.0 | 0.0 |
| Total operating hours to date: 939.0 | | Total | 38.0 | 86.0 |

**ACCIDENT REPORTING** (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| [signature] | 15 Jul 06 | [initials] | 7/15/06 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
136 

DATE
14 Jul 2006 - Friday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912F6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Weather Caused No Delay
Temperature Mn 71 °F, Max 91 °F; 0.05 IN Precipitation; 10 MPH Wind

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
EQ completed excavation of the first segemtn of upper portion of the centerline on the western side of the site. The excavation was completed in the Station 82+00 83+25 area (125 linear feet). A total of 475 feet has been cleared to the 6 foot depth. No new obstructions were found. A total of four obsrtucions have been found to date. Note the attached summary table. The amount of obstructions is significantly less than expected. Debris was limited and was predominantly railroad ties and brick. The concentration of debris appears to be stabilizing as the excavation proceeds. EQ continued screening of backfill and transported screened fill to the area of the excavation. Griffin performed dewatering on a 24 hour basis. ramirez and Marsch completed the installation of the fresh water valve and backflow preventer. Fresh water is now available on site. A roller compactor was received.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
Eric Bowman, Ed Wise, Nick Mchailides, eight representatives of Maintenance Dynamics (three operators, four teamsters, one laborer), three representatives of Griffin deatering, and three representatives of Task Force Security.

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None.

**Safety Inspection / Safety Meetings:**
Eric Bowman conducted a safety tailgate meeting.

**Safety: (Inspections made, Deficiencies noted):**
None.

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

SLURRY WA[illegible]S
OBSTRUCTION REMOVAL SUMMARY PAGE 1
INDIANA HARBOR CDF
ENVIRONMENTAL QUALITY MANAGEMENT

| Date Removed | Station | Type | Contained | EQ ID # | Month Inv | Size | Material | Elevation Top | Elevation Bottom | Plug Type | Outside Wall Northing | Outside Wall Easting | Inside Wall Northing | Inside Wall Easting | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 80+15 | Pipe | | 300 | | 4" | Steel | | | | | | | | Shallow <1ft deep |
| | 81+42 | Pipe | | 301 | | 12" | Steel | | | | | | | | About 5 ft deep |
| | 81+43 | Pipe | | 302 | | 8" | Steel | | | | | | | | About 5 ft deep |
| | 81+50 | Conduit | | 303 | | 1' by 2' | Concrete | | | | | | | | Conduit encased in red concrete |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
137 

DATE
15 Jul 2006 - Saturday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912F6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Weather Caused No Delay
Temperature Min 73 °F, Max 96 °F, No Precipitation, No Wind

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
Oversized screened debris from the west segment was weighed and transported to the Debris stockpile. Note the attached weigh tickets and summary table. Grading and berming was performed to control the water on site. Griffin continued deatering on a 24 hour basis.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
Eric Bowman, Ed Wise, Nick Michailides, six representatives of Maintenance Dynamics (three operators, two teamsters, one laborer), three representatives of Griffin deatering, and three representatives of Task Force Security.

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None.

**Safety Inspection / Safety Meetings:**
Nick Michailides conducted a safety tailgate meeting.

**Safety: (Inspections made, Deficiencies noted):**
None.

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 137 

DATE 15 Jul 2006 - Saturday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912F6-06-C-0003 NA

### LABOR HOURS

The following labor hours were Reported today:

| Employer | Labor Classification | Number of Employees | Hours Worked |
|---|---|---|---|
| Allied Scale | ELECTRICIAN | 0.0 | 0.0 |
| Andy Lucas, Inc. | SAFETY ENGINEER - ON SITE | 0.0 | 0.0 |
| EQM | SAFETY ENGINEER - ON SITE | 1.0 | 12.0 |
| EQM | SUPER - JOB | 1.0 | 12.0 |
| EQM | CONSTRUCTION INSPECTOR | 1.0 | 12.0 |
| EQM | CONSTRUCTION-RECORDS CLERK | 0.0 | 0.0 |
| Griffin | LABORER, PLUMBING | 3.0 | 8.0 |
| Maintenance Dynamics | LABORERS | 1.0 | 12.0 |
| Maintenance Dynamics | TRUCK DRIVER, GROUP 1 | 2.0 | 8.0 |
| Maintenance Dynamics | OPERATING ENGINEER | 3.0 | 12.0 |
| Miller Electric | ELECTRICIAN | 0.0 | 0.0 |
| Ramierez & Marsch | LABORER, PLUMBING | 0.0 | 0.0 |
| Task Force | TRAFFIC CONTROL SIGNALER | 3.0 | 8.0 |
| | Total | 15.0 | 84.0 |

Total hours worked to date: 1,995.5

### EQUIPMENT HOURS

The following equipment hours were Reported today:

| Serial Number | Description | Standby Hours | Operating Hours |
|---|---|---|---|
| LCAJ37365 | 3.5 Yd Rubber Tire Loader | 0.0 | 12.0 |
| N4DC95160 | 40 K Track Dozer | 10.0 | 2.0 |
| 21003-1741 | Medium Track Excavator | 0.0 | 12.0 |
| XYZ | Dump Truck | 0.0 | 8.0 |
| ABC | Tandem Axle Tractor Trailer Dump Truck #1 | 8.0 | 0.0 |
| DEF | Tandem Axle Tractor Trailer Dump Truck #2 | 8.0 | 0.0 |
| GHI | Dump truck | 0.0 | 8.0 |
| JKL | Excavator | 12.0 | 0.0 |
| 123 | Power Screener | 0.0 | 12.0 |
| Griffin Excavator | Excavator | 8.0 | 0.0 |
| rmo | Roller Compactor | 8.0 | 0.0 |
| | Total | 54.0 | 54.0 |

Total operating hours to date: 993.0

### ACCIDENT REPORTING (Describe accidents)

No accidents reported today

CONTRACTOR CERTIFICATION On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as noted above.

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 18 Jul 06 | | 7/18/06 |

Summary of Debris Weigh Tickets
IHCDF Slurry Wall Gaps
15-Jul-06

| Load # | Net Weight |
|---|---|
| 1 | 10.76 |
| 2 | 9.82 |
| 3 | 11.18 |
| 4 | 12.15 |
| 5 | 12.56 |
| 6 | 12.03 |
| 7 | 12.55 |
| 8 | 12.78 |
| 9 | 12.31 |
| 10 | 12.9 |
| 11 | 11.83 |
| 12 | 13.03 |
| 13 | 12.89 |
| 14 | 13.71 |
| 15 | 12.96 |
| 16 | 12.89 |
| 17 | 12.89 |
| 18 | 12.67 |
| 19 | 12.25 |
| 20 | 12.58 |
| 21 | 11.89 |
| 22 | 11.55 |
| 23 | 12.04 |
| 24 | 11.49 |
| 25 | 12.45 |
| 26 | 11.7 |
| 27 | 13.18 |
| 28 | 10.66 |
| 29 | 9.99 |
| 30 | 11.37 |
| 31 | 5.26 |
| 32 | 7.02 |
| 33 | 8.57 |
| 34 | 8.63 |
| Total | 392.54 |

Load #1

071506

07:00 AM

EDW

ID 0002 11:55 06/27/06
IN WT. 026220LB
ID 0002 11:55 06/27/06
GROSS 047740LB
TARE W 026220LB
NET 021520LB
TONS 0010.76
01

ID 0003 11:55 06/27/06
IN WT. 023860LB
ID 0003 11:55 06/27/06
GROSS 043500LB
TARE W 023860LB
NET 019640LB
TONS 0009.82
01

Load #2
071506
07:03 AM
EOW

Load #3
071506
0713 Am
EDW

ID 0004 11:55 06/27/06
IN WT. 026260LB
ID 0004 11:55 06/27/06
GROSS 048620LB
TARE W 026260LB
NET 022360LB
TONS 0011.18
01

ID 0005 11:55 06/27/06
IN WT. 024300LB
ID 0005 11:55 06/27/06
GROSS 048600LB
TARE W 024300LB
NET 024300LB
TONS 0012.15
01

Load #4
071506
0717 Am
EDW

ID 0006 11:55 06/27/06
IN WT. 026500LB

ID 0006 11:55 06/27/06
GROSS 051620LB
TARE W 026500LB
NET 025120LB
TONS 0012.56
01

Load #5
071506
0727 A
EDW

ID 0007 11:55 06/27/06
IN WT. 023980LB
ID 0007 11:55 06/27/06
GROSS 048040LB
TARE W 023980LB
NET 024060LB
TONS 0012.03
01

Load #6
071506
0732 Am
EDW

ID 0009 11:55 06/27/06
IN WT. 024100LB

ID 0009 11:55 06/27/06
GROSS 049200LB
TARE W 024100LB
NET 025100LB
TONS 0012.55
01

Load #7
071506
0746 AM
EDW

ID 0008 11:55 06/27/06
IN WT. 051660LB

ID 0008 11:55 06/27/06
GROSS 051660LB
TARE W 026100LB
NET 025560LB
TONS 0012.78
01

Load #8

071506
0748 Am
EOW

ID 0010 11:55 06/27/06
IN WT. 024160LB
ID 0010 11:55 06/27/06
GROSS 048780LB
TARE W 024160LB
NET 024620LB
TONS 0012.31
01

Load #9
071506
08:01 Am
EDW.

ID 0011 11:55 06/27/06
IN WT. 026140LB

Load #10
071506
0805
EDW

Printer Malfunction

| | |
|---|---|
| In wt | 26140 |
| Loaded | 51940 |
| Net Wt | 25800 |
| | 12.9 Tons |

ID 0000 11:55 06/27/06
GROSS 051940LB

ID 0012 11:55 06/27/06
IN WT. 023980LB
ID 0012 11:55 06/27/06
GROSS 047640LB
TARE W 023980LB
NET 023660LB
TONS 0011.83
01

Load #11
071506
0816
EDW

ID 0013 11:55 06/27/06
IN WT. 025980LB
ID 0013 11:55 06/27/06
GROSS 052040LB
TARE W 025980LB
NET 026060LB
TONS 0013.03
01

Load #12
071506
0830
EDW

ID 0014 11:55 06/27/06
IN WT. 024060LB
ID 0014 11:55 06/27/06
GROSS 049840LB
TARE W 024060LB
NET 025780LB
TONS 0012.89
01

Load #13
071506
0838
EDW

ID 0015 11:55 06/27/06
IN WT. 025960LB
ID 0015 11:55 06/27/06
GROSS 053380LB
TARE W 025960LB
NET 027420LB
TONS 0013.71
01

Load #14
071506
0832
EDW

ID 0016 11:55 06/27/06
IN WT. 024000LB

ID 0016 11:55 06/27/06
GROSS 049920LB
TARE W 024000LB
NET 025920LB
TONS 0012.96
01

Load #15

071506

0844

EDW

ID 0017 11:55 06/27/06
IN WT. 026040LB
ID 0017 11:55 06/27/06
GROSS 051820LB
TARE W 026040LB
NET 025780LB
TONS 0012.89
01

Load #16
071506
0847
EDW

ID 0018 11:55 06/27/06
IN WT. 024020LB
ID 0018 11:55 06/27/06
GROSS 049800LB
TARE W 024020LB
NET 025780LB
TONS 0012.89
01

Load #17
071506
0857
EDW

ID 0019 11:55 06/27/06
IN WT. 026340LB
ID 0019 11:55 06/27/06
GROSS 051680LB
TARE W 026340LB
NET 025340LB
TONS 0012.67
01

Load #18
071506
0901
EDW

ID 0020 11:55 06/27/06
IN WT. 024040LB
ID 0020 11:55 06/27/06
GROSS 048540LB
TARE W 024040LB
NET 024500LB
TONS 0012.25
01

Load #19
071506
0935
EDW

ID 0021 11:55 06/27/06
GROSS 051500LB
TARE W 085340LB
NET 025160LB
TOTS 0012.90LB
01

Printer Misfeed

| | |
|---|---|
| Gross | 51500 |
| Tare from Precision Load | 26,340 |
| | 25,160 |

1

Load 20
071506
0939
EDW

ID 0000 11:55 06/27/06
GROSS 051500LB

ID 0022 11:55 06/27/06
IN WT. 024100LB
ID 0022 11:55 06/27/06
GROSS 047880LB
TARE W 024100LB
NET 023780LB
TONS 0011.89
01

Load 21
071506
0950
EPW

ID 0023 11:55 06/27/06
IN WT. 026000LB

ID 0023 11:55 06/27/06
GROSS 049100LB
TARE W 026000LB
NET 023100LB
TONS 0011.55
01

Load 22
071506
0957
EOW

ID 0024 11:55 06/27/06
IN WT. 024020LB
ID 0024 11:55 06/27/06
GROSS 048100LB
TARE W 024020LB
NET 024080LB
TONS 0012.04
01

Load 23
071506
0959
EDW

ID 0025 11:55 06/27/06
IN WT. 025980LB
ID 0025 11:55 06/27/06
GROSS 048960LB
TARE W 025980LB
NET 022980LB
TONS 0011.49
01

Load 24
071506
1005
EDW

ID 0026 11:55 06/27/06
IN WT. 023980LB
ID 0026 11:55 06/27/06
GROSS 048880LB
TARE W 023980LB
NET 024900LB
TONS 0012.45
01

Load 25
071506
1018
EDW

ID 0027 11:55 06/27/06
IN WT. 026000LB
ID 0027 11:55 06/27/06
GROSS 049400LB
TARE W 026000LB
NET 023400LB
TONS 0011.70
01

Load 26

071506
1021
EDM

ID 0000 11:55 06/27/06
GROSS 049340LB

23 980 Tare

26360

Driver Forgot to
Get Tare weight
used Last load

Load 27
071506
1031
EOW

ID 0028 11:55 06/27/06
IN WT. 025920LB
ID 0028 11:55 06/27/06
GROSS 047240LB
TARE W 025920LB
NET 021320LB
TONS 0010.66
01

Load 28

071506
1033
EOW

ID 0029 11:55 06/27/06
IN WT. 023960LB
ID 0029 11:55 06/27/06
GROSS 043940LB
TARE W 023960LB
NET 019980LB
TONS 0009.99
01

Load 24
071506
1044
EDW

ID 0030 11:55 06/27/06
IN WT. 025980LB
ID 0030 11:55 06/27/06
GROSS 048720LB
TARE W 025980LB
NET 022740LB
TONS 0011.37
01

Load 30

071506
1049
EDW

Last Screened Debris Load

ID 0031 11:55 06/27/06
IN WT. 023960LB
ID 0031 11:55 06/27/06
GROSS 034480LB
TARE W 023960LB
NET 010520LB
TONS 0005.26
01

Load 31
071506
1101
EDW

First Timber Load

ID 0032 11:55 06/27/06
IN WT. 025940LB
ID 0032 11:55 06/27/06
GROSS 039980LB
TARE W 025940LB
NET 014040LB
TONS 0007.02
01

Load 32
071506
11:07
EDW

ID 0033 11:55 06/27/06
IN WT. 023980LB
ID 0033 11:55 06/27/06
GROSS 041120LB
TARE W 023980LB
NET 017140LB
TONS 0008.57
01

Load 33
0715 06
11:19
EDW

ID 0034 11:55 06/27/06
IN WT. 025840LB
ID 0034 11:55 06/27/06
GROSS 043100LB
TARE W 025840LB
NET 017260LB
TONS 0008.63
01

Load 34
071506
11:30
EDW

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
139 

DATE
17 Jul 2006 - Monday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912F6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Weather Caused No Delay
Temperature Mn 72 °F, Max 94 °F, No Precipitation; No Wind

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
EQ completed excavation of the first segment of the lower portion of the centerline on the western side of the site between about Station 78+50 to 81+50. (300 linear feet). Excavation was difficult near the 78+50 area due to high groundwater migrating around the end of the existing slurry wall. No new obstructions were found. A total of four obsrtucions have been found to date. Three obstructions were removed (300, 301, and 302). 301 and 302 were difficult due to the fact they were sleeved. Note the attached summary table. Backfilling of the upper section of the northern segment was begun. Griffin performed dewatering on a 24 hour basis.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
Eric Bowman, Ed Wise, Nick Michailides, Ben Letany, Andy Lucas, five representatives of Maintenance Dynamics (four operators, Four representatives of Ramirez and Marsch (three pipe fitters, one electrician), three representatives of Griffin deatering, and three representatives of Task Force Security.

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None.

**Safety Inspection / Safety Meetings:**
Nick Michailides conducted a safety tailgate meeting.

**Safety: (Inspections made, Deficiencies noted):**
None.

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 139 

DATE 17 Jul 2006 - Monday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912P6-06-C-0003 NA

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

**LABOR HOURS**

**The following labor hours were Reported today:**

| Employer | Labor Classification | | Number of Employees | Hours Worked |
|---|---|---|---|---|
| Allied Scale | ELECTRICIAN | | 0.0 | 0.0 |
| Andy Lucas, Inc. | SAFETY ENGINEER - ON SITE | | 1.0 | 8.0 |
| EQM | SAFETY ENGINEER - ON SITE | | 1.0 | 12.0 |
| EQM | SUPER - JOB | | 1.0 | 12.0 |
| EQM | CONSTRUCTION INSPECTOR | | 1.0 | 12.0 |
| EQM | CONSTRUCTION-RECORDS CLERK | | 1.0 | 12.0 |
| Griffin | LABORER, PLUMBING | | 3.0 | 8.0 |
| Maintenance Dynamics | LABORERS | | 1.0 | 12.0 |
| Maintenance Dynamics | TRUCK DRIVER, GROUP 1 | | 0.0 | 0.0 |
| Maintenance Dynamics | OPERATING ENGINEER | | 4.0 | 12.0 |
| Miller Electric | ELECTRICIAN | | 0.0 | 0.0 |
| Ramierez & Marsch | LABORER, PLUMBING | | 3.0 | 8.0 |
| Ramierez & Marsch | ELECTRICIAN | | 1.0 | 8.0 |
| Task Force | TRAFFIC CONTROL SIGNALER | | 3.0 | 8.0 |
| Total hours worked to date: | 2,107.5 | Total | 20.0 | 112.0 |

**EQUIPMENT HOURS**

**The following equipment hours were Reported today:**

| Serial Number | Description | | Standby Hours | Operating Hours |
|---|---|---|---|---|
| LCAJ37365 | 3.5 Yd Rubber Tire Loader | | 0.0 | 12.0 |
| N4DC95160 | 40 K Track Dozer | | 10.0 | 2.0 |
| 21003-1741 | Medium Track Excavator | | 0.0 | 12.0 |
| XYZ | Dump Truck | | 0.0 | 12.0 |
| ABC | Tandem Axle Tractor Trailer Dump Truck #1 | | 0.0 | 12.0 |
| DEF | Tandem Axle Tractor Trailer Dump Truck #2 | | 0.0 | 12.0 |
| GHI | Dump truck | | 0.0 | 12.0 |
| JKL | Excavator | | 12.0 | 0.0 |
| 123 | Power Screener | | 0.0 | 12.0 |
| Griffin Excavator | Excavator | | 8.0 | 0.0 |
| rmo | Roller Compactor | | 8.0 | 0.0 |
| Total operating hours to date: | 1,079.0 | Total | 38.0 | 86.0 |

**ACCIDENT REPORTING** (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 18 Jul 06 | | 7/18/06 |

SLURRY WALL GAPS
OBSTRUCTION REMOVAL SUMMARY PAGE 1
INDIANA HARBOR CDF
ENVIRONMENTAL QUALITY MANAGEMENT

| Date Removed | Station | Type | Contained | EQ ID # | Month Inv | Size | Material | Elevation Top | Elevation Bottom | Plug Type | Outside Wall Northing | Outside Wall Easting | Inside Wall Northing | Inside Wall Easting | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7/17/2006 | 80+15 | Pipe | | 300 | | 4" | Steel | | | | | | | | Shallow <1ft deep |
| 7/17/2006 | 81+42 | Pipe | | 301 | | 12" | Steel | | | | | | | | About 5 ft deep |
| 7/17/2006 | 81+43 | Pipe | | 302 | | 8" | Steel | | | | | | | | About 5 ft deep |
| | 81+50 | Conduit | | 303 | | 1' by 2' | Concrete | | | | | | | | Conduit encased in red concrete |
| | | | | | | | | | | | | | | | |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
140 

DATE
18 Jul 2006 - Tuesday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912R6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Weather Caused No Delay
Temperature Min 66 °F, Max 85 °F, No Precipitation; No Wind

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
EQ completed excavation of the lower portion of the centerline on the western side of the site between about Station 78+50 to 81+50. (475 linear feet total). No new obstructions were found. A total of four obsrtucions have been found to date. The electrical conduit (obstruction 303) was removed. Only one conduit was in the concrete. All four obstructions have been removed. Note the attached summary table. Backfilling of the upper section of the northern segment was continued. Griffin performed dewatering on a 24 hour basis. Griffin began dewatering for the next segment. EQ consulted with natalie Mills and Arthur Rundzaitis regarding the large amount of debris screened from the excavation. Ed Wise calculated the percentage as about 28.6%. This is in line with the earlier work. The installation method is the same. Arthur Rundzaitis and Ed Wise agreed that the stepping of the excavation would be minimized. EQ believes this is necessary to stabilize the slope, but will make every effort to minimize this. We do not believe this has added substantially to the amount of debris screened.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
Eric Bowman, Ed Wise, Nick Michailides, Ben Letany, nine representatives of Maintenance Dynamics (four operators, four teamsters, one laborer). Four representatives of Ramirez and Marsch (three pipe fitters, one electrician), three representatives of Griffin deatering, and three representatives of Task Force Security.

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
Note activites in progress section.

**Safety Inspection / Safety Meetings:**
Nick Michailides conducted a safety tailgate meeting.

**Safety: (Inspections made, Deficiencies noted):**
None.

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 140 

DATE 18 Jul 2006 - Tuesday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912F6-06-C-0003 NA

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

No QC Punch List items were issued today

No Punch List items were corrected today

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

No contractors had their first or last day on site today

**LABOR HOURS**

The following labor hours were Reported today:

| Employer | Labor Classification | | Number of Employees | Hours Worked |
|---|---|---|---|---|
| Allied Scale | ELECTRICIAN | | 0.0 | 0.0 |
| Andy Lucas, Inc. | SAFETY ENGINEER - ON SITE | | 0.0 | 0.0 |
| EQM | SAFETY ENGINEER - ON SITE | | 1.0 | 12.0 |
| EQM | SUPER - JOB | | 1.0 | 12.0 |
| EQM | CONSTRUCTION INSPECTOR | | 1.0 | 12.0 |
| EQM | CONSTRUCTION-RECORDS CLERK | | 1.0 | 12.0 |
| Griffin | LABORER, PLUMBING | | 3.0 | 8.0 |
| Maintenance Dynamics | LABORERS | | 1.0 | 12.0 |
| Maintenance Dynamics | TRUCK DRIVER, GROUP 1 | | 4.0 | 12.0 |
| Maintenance Dynamics | OPERATING ENGINEER | | 4.0 | 12.0 |
| Miller Electric | ELECTRICIAN | | 0.0 | 0.0 |
| Ramierez & Marsch | LABORER, PLUMBING | | 3.0 | 4.0 |
| Ramierez & Marsch | ELECTRICIAN | | 1.0 | 4.0 |
| Task Force | TRAFFIC CONTROL SIGNALER | | 3.0 | 8.0 |
| Total hours worked to date: | 2,215.5 | Total | 23.0 | 108.0 |

**EQUIPMENT HOURS**

The following equipment hours were Reported today:

| Serial Number | Description | | Standby Hours | Operating Hours |
|---|---|---|---|---|
| LCAJ37365 | 3.5 Yd Rubber Tire Loader | | 0.0 | 12.0 |
| N4DC95160 | 40 K Track Dozer | | 0.0 | 12.0 |
| 21003-1741 | Medium Track Excavator | | 0.0 | 12.0 |
| XYZ | Dump Truck | | 0.0 | 12.0 |
| ABC | Tandem Axle Tractor Trailer Dump Truck #1 | | 0.0 | 12.0 |
| DEF | Tandem Axle Tractor Trailer Dump Truck #2 | | 0.0 | 12.0 |
| GHI | Dump truck | | 0.0 | 12.0 |
| JKL | Excavator | | 0.0 | 12.0 |
| 123 | Power Screener | | 0.0 | 12.0 |
| Griffin Excavator | Excavator | | 8.0 | 0.0 |
| mno | Roller Compactor | | 8.0 | 0.0 |
| Total operating hours to date: 1,187.0 | | Total | 16.0 | 108.0 |

**ACCIDENT REPORTING** (Describe accidents)

No accidents reported today

CONTRACTOR CERTIFICATION On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as noted above.

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 18 JUL 06 | | 7/18/06 |

SLURRY WALL GAPS
OBSTRUCTION REMOVAL SUMMARY PAGE 1
INDIANA HARBOR CDF
ENVIRONMENTAL QUALITY MANAGEMENT

| Date | | | | EQ | Month | | | Elevation | | Plug | Outside Wall | | Inside Wall | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Removed | Station | Type | Contained | ID # | Inv | Size | Material | Top | Bottom | Type | Northing | Easting | Northing | Easting | Comments |
| 7/17/2006 | 80+15 | Pipe | | 300 | | 4" | Steel | 1.0 | 1.3 | Mech | | | | | Shallow <1ft deep |
| 7/17/2006 | 81+42 | Pipe | | 301 | | 12" | Steel | 5.0 | 6.0 | Mech | | | | | About 5 ft deep |
| 7/17/2006 | 81+43 | Pipe | | 302 | | 8" | Steel | 5.0 | 6.0 | Mech | | | | | About 5 ft deep |
| 7/18/2006 | 81+50 | Conduit | | 303 | | 1' by 2' | Concrete | 1.0 | 2.0 | Mech | | | | | Conduit encased in red concrete |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
141 

DATE
19 Jul 2006 - Wednesday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912F6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Weather Caused No Delay
Temperature Min 76 °F, Max 87 °F, No Precipitation; No Wind

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
EQ completed excavation of the upper portion of the centerline on the western side of the site between about Station 83+25 to 84+50. (125 linear feet). One conduit bank was found at Station 84+15. A total of five obsrtucions have been found to date. A large concrete foundation was found at Station 84+40. Note the attached summary table. EQ screened excavated soil. Backfilling of the upper section of the northern segment continued. The excavation has been completely backfilled to about Station 79+50. Griffin performed dewatering on a 24 hour basis. Water has been accumulating and ponding throughout the northern portion of the site. EQ reduced dewatering on the northern segment to abate this. We also brought a 4" water pump onsite. It will be used to pump water to the southern part of the site. No water has escaped the site.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
Eric Bowman, Ed Wise, Nick Mchailides, Ben Letany, nine representatives of Maintenance Dynamics (four operators, four teamsters, one laborer). three representatives of Griffin deatering, and three representatives of Task Force Security.

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
Note activites in progress section.

**Safety Inspection / Safety Meetings:**
Nick Mchailides conducted a safety tailgate meeting.

**Safety: (Inspections made, Deficiencies noted):**
None.

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 141 

DATE 19 Jul 2006 - Wednesday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912F6-06-C-0003 NA

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

**LABOR HOURS**

**The following labor hours were Reported today:**

| Employer | Labor Classification | | Number of Employees | Hours Worked |
|---|---|---|---|---|
| Allied Scale | ELECTRICIAN | | 0.0 | 0.0 |
| Andy Lucas, Inc. | SAFETY ENGINEER - ON SITE | | 0.0 | 0.0 |
| EQM | SAFETY ENGINEER - ON SITE | | 1.0 | 12.0 |
| EQM | SUPER - JOB | | 1.0 | 12.0 |
| EQM | CONSTRUCTION INSPECTOR | | 1.0 | 12.0 |
| EQM | CONSTRUCTION-RECORDS CLERK | | 1.0 | 12.0 |
| Griffin | LABORER, PLUMBING | | 3.0 | 8.0 |
| Maintenance Dynamics | LABORERS | | 1.0 | 12.0 |
| Maintenance Dynamics | TRUCK DRIVER, GROUP 1 | | 4.0 | 12.0 |
| Maintenance Dynamics | OPERATING ENGINEER | | 4.0 | 12.0 |
| Miller Electric | ELECTRICIAN | | 0.0 | 0.0 |
| Ramierez & Marsch | LABORER, PLUMBING | | 0.0 | 0.0 |
| Ramierez & Marsch | ELECTRICIAN | | 0.0 | 0.0 |
| Task Force | TRAFFIC CONTROL SIGNALER | | 3.0 | 8.0 |
| Total hours worked to date: | 2,315.5 | Total | 19.0 | 100.0 |

**EQUIPMENT HOURS**

**The following equipment hours were Reported today:**

| Serial Number | Description | | Standby Hours | Operating Hours |
|---|---|---|---|---|
| LCAJ37365 | 3.5 Yd Rubber Tire Loader | | 0.0 | 12.0 |
| N4DC95160 | 40 K Track Dozer | | 0.0 | 12.0 |
| 21003-1741 | Medium Track Excavator | | 0.0 | 12.0 |
| XYZ | Dump Truck | | 0.0 | 12.0 |
| ABC | TandemAxle Tractor Trailer Dump Truck #1 | | 0.0 | 12.0 |
| DEF | TandemAxle Tractor Trailer Dump Truck #2 | | 0.0 | 12.0 |
| GHI | Dump truck | | 0.0 | 12.0 |
| JKL | Excavator | | 0.0 | 12.0 |
| 123 | Power Screener | | 0.0 | 12.0 |
| Griffin Excavator | Excavator | | 8.0 | 0.0 |
| rmo | Roller Compactor | | 0.0 | 12.0 |
| Total operating hours to date: | 1,307.0 | Total | 8.0 | 120.0 |

**ACCIDENT REPORTING** (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 7/20/6 | | 7/20/06 |

SLURRY WAL[illegible]S
OBSTRUCTION REMOVAL SUMMARY PAGE 1
INDIANA HARBOR CDF
ENVIRONMENTAL QUALITY MANAGEMENT

| Date | | | | EQ | Month | | | Elevation | | Plug | Outside Wall | | Inside Wall | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Removed | Station | Type | Contained | ID # | Inv | Size | Material | Top | Bottom | Type | Northing | Easting | Northing | Easting | Comments |
| 7/17/2006 | 80+15 | Pipe | | 300 | | 4" | Steel | 1.0 | 1.3 | Mech | | | | | Shallow <1ft deep |
| 7/17/2006 | 81+42 | Pipe | | 301 | | 12" | Steel | 5.0 | 6.0 | Mech | | | | | About 5 ft deep |
| 7/17/2006 | 81+43 | Pipe | | 302 | | 8" | Steel | 5.0 | 6.0 | Mech | | | | | About 5 ft deep |
| 7/18/2006 | 81+50 | Conduit | | 303 | | 1' by 2' | Concrete | 1.0 | 2.0 | Mech | | | | | Conduit encased in red concrete |
| | 84+15 | Conduit | | 304 | | 1' by 2' | Concrete | 1.0 | 2.0 | | | | | | Conduit encased in red concrete |
| | 84+40 | Concrete | | NA | | | Concrete | | | | | | | | Large concrete structure |
| | | | | | | | | | | | | | | | |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
142 

DATE
20 Jul 2006 - Thursday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912F6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Weather Caused Critical Delay
Temperature Min 69 °F, Max 81 °F; 1 IN Precipitation; No Wind

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
Heavy rains and thunderstorms prohibited EQs ability to perform substantial work. EQ connected the 4" transfer pump to route recovered groundwater to the southern portion of the site. Water levels remain high, but no water has exited the site. Griffin performed dewatering on a 24 hour basis.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
Eric Bowman, Ed Wise, Nick Mchailides, Ben Letany, nine representatives of Maintenance Dynamics (four operators, four teamsters, one laborer). three representatives of Griffin deatering, and three representatives of Task Force Security.

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
Ed Wise received notice from Arthur Rundzaitis that he had received Ed's phone message of 19JUL06 regarding the discovery of the concrete structure at station 84+40.

**Safety Inspection / Safety Meetings:**
Nick Mchailides conducted a safety tailgate meeting.

**Safety: (Inspections made, Deficiencies noted):**
None.

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 142 

DATE 20 Jul 2006 - Thursday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912P6-06-C-0003 NA

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

**LABOR HOURS**

**The following labor hours were Reported today:**

| Employer | Labor Classification | | Number of Employees | Hours Worked |
|---|---|---|---|---|
| Allied Scale | ELECTRICIAN | | 0.0 | 0.0 |
| Andy Lucas, Inc. | SAFETY ENGINEER - ON SITE | | 0.0 | 0.0 |
| EQM | SAFETY ENGINEER - ON SITE | | 1.0 | 8.0 |
| EQM | SUPER - JOB | | 1.0 | 8.0 |
| EQM | CONSTRUCTION INSPECTOR | | 1.0 | 8.0 |
| EQM | CONSTRUCTION-RECORDS CLERK | | 1.0 | 8.0 |
| Griffin | LABORER, PLUMBING | | 3.0 | 8.0 |
| Maintenance Dynamics | LABORERS | | 1.0 | 8.0 |
| Maintenance Dynamics | TRUCK DRIVER, GROUP 1 | | 4.0 | 8.0 |
| Maintenance Dynamics | OPERATING ENGINEER | | 4.0 | 8.0 |
| Miller Electric | ELECTRICIAN | | 0.0 | 0.0 |
| Ramierez & Marsch | LABORER, PLUMBING | | 0.0 | 0.0 |
| Ramierez & Marsch | ELECTRICIAN | | 0.0 | 0.0 |
| Task Force | TRAFFIC CONTROL SIGNALER | | 3.0 | 8.0 |
| Total hours worked to date: | 2,387.5 | Total | 19.0 | 72.0 |

**EQUIPMENT HOURS**

**The following equipment hours were Reported today:**

| Serial Number | Description | | Standby Hours | Operating Hours |
|---|---|---|---|---|
| LCAJ37365 | 3.5 Yd Rubber Tire Loader | | 8.0 | 0.0 |
| N4DC95160 | 40 K Track Dozer | | 8.0 | 0.0 |
| 21003-1741 | Medium Track Excavator | | 8.0 | 0.0 |
| XYZ | Dump Truck | | 8.0 | 0.0 |
| ABC | Tandem Axle Tractor Trailer Dump Truck #1 | | 8.0 | 0.0 |
| DEF | Tandem Axle Tractor Trailer Dump Truck #2 | | 8.0 | 0.0 |
| GHI | Dump truck | | 8.0 | 0.0 |
| JKL | Excavator | | 8.0 | 0.0 |
| 123 | Power Screener | | 8.0 | 0.0 |
| Griffin Excavator | Excavator | | 8.0 | 0.0 |
| rmo | Roller Compactor | | 8.0 | 0.0 |
| Total operating hours to date: 1,307.0 | | Total | 88.0 | 0.0 |

**ACCIDENT REPORTING** (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 7/21/6 | | 7/21/06 |

| CONTRACTORS QUALITY CONTROL REPORT (QCR)<br>DAILY LOG OF CONSTRUCTION - CIVIL | REPORT NUMBER<br>143 Page 1 of 2<br>DATE<br>21 Jul 2006 - Friday |
|---|---|
| PROJECT<br>Indiana Harbor CDF, Slurry Wall Gaps | CONTRACT NUMBER<br>W912F6-06-C-0003 NA |
| CONTRACTOR<br>Environmental Quality Management Inc | WEATHER<br>Weather Caused No Delay<br>Temperature Min 66 °F, Max 79 °F, 0.03 IN Precipitation; No Wind |

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
EQ continued with backfilling of the northern segment of the west area. Excavation of the shallow segment of the southern segment also continued. EQ has found six obstuctions in this area (ten total for the west area). A conduit bank at Station 84+45, four small pipes (2-4") in the vicinity of Station 84+45+ and a large, 24' line. The 24" line appears to be a former crude oil line and is deep in the trench, about 6-7 feet. It enters from the inside of the site, curves inward and exits back into the site. Both cut points will be towards the inside of the site. Based upon its size and depth, EQ is concerned that it will be full and may require evacuation of substantial amounts of material. Griffin performed dewatering on a 24 hour basis.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
Eric Bowman, Ed Wise, Nick Mchailides, Ben Letany, Andy Lucas, nine representatives of Maintenance Dynamics (four operators, four teamsters, one laborer). three representatives of Griffin dewatering, and three representatives of Task Force Security.

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
Nick Mchailides conducted a safety tailgate meeting.

**Safety: (Inspections made, Deficiencies noted):**
None.

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 143 

DATE 21 Jul 2006 - Friday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912P6-06-C-0003 NA

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

**LABOR HOURS**

**The following labor hours were Reported today:**

| Employer | Labor Classification | | Number of Employees | Hours Worked |
|---|---|---|---|---|
| Allied Scale | ELECTRICIAN | | 0.0 | 0.0 |
| Andy Lucas, Inc. | SAFETY ENGINEER - ON SITE | | 0.0 | 8.0 |
| EQM | SAFETY ENGINEER - ON SITE | | 1.0 | 12.0 |
| EQM | SUPER - JOB | | 1.0 | 12.0 |
| EQM | CONSTRUCTION INSPECTOR | | 1.0 | 12.0 |
| EQM | CONSTRUCTION-RECORDS CLERK | | 1.0 | 12.0 |
| Griffin | LABORER, PLUMBING | | 3.0 | 8.0 |
| Maintenance Dynamics | LABORERS | | 1.0 | 12.0 |
| Maintenance Dynamics | TRUCK DRIVER, GROUP 1 | | 4.0 | 12.0 |
| Maintenance Dynamics | OPERATING ENGINEER | | 4.0 | 12.0 |
| Miller Electric | ELECTRICIAN | | 0.0 | 0.0 |
| Ramierez & Marsch | LABORER, PLUMBING | | 0.0 | 0.0 |
| Ramierez & Marsch | ELECTRICIAN | | 0.0 | 0.0 |
| Task Force | TRAFFIC CONTROL SIGNALER | | 3.0 | 8.0 |
| Total hours worked to date: | 2,495.5 | Total | 19.0 | 108.0 |

**EQUIPMENT HOURS**

**The following equipment hours were Reported today:**

| Serial Number | Description | | Standby Hours | Operating Hours |
|---|---|---|---|---|
| LCAJ37365 | 3.5 Yd Rubber Tire Loader | | 0.0 | 12.0 |
| N4DC95160 | 40 K Track Dozer | | 8.0 | 0.0 |
| 21003-1741 | Medium Track Excavator | | 0.0 | 12.0 |
| XYZ | Dump Truck | | 0.0 | 12.0 |
| ABC | Tandem Axle Tractor Trailer Dump Truck #1 | | 0.0 | 12.0 |
| DEF | Tandem Axle Tractor Trailer Dump Truck #2 | | 0.0 | 12.0 |
| GHI | Dump truck | | 0.0 | 12.0 |
| JKL | Excavator | | 8.0 | 12.0 |
| 123 | Power Screener | | 0.0 | 0.0 |
| Griffin Excavator | Excavator | | 8.0 | 0.0 |
| mno | Roller Compactor | | 0.0 | 12.0 |
| Total operating hours to date: | 1,403.0 | Total | 24.0 | 96.0 |

**ACCIDENT REPORTING** (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| [signature] | 7/27/6 | [initials] | 7/27/06 |

SLURRY WALL GAPS
OBSTRUCTION REMOVAL SUMMARY PAGE 1
INDIANA HARBOR CDF
ENVIRONMENTAL QUALITY MANAGEMENT

| Date Removed | Station | Type | Contained | EQ ID # | Month Inv | Size | Material | Elevation Top | Elevation Bottom | Plug Type | Outside Wall Northing | Outside Wall Easting | Inside Wall Northing | Inside Wall Easting | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7/17/2006 | 80+15 | Pipe | | 300 | | 4" | Steel | 1.0 | 1.3 | Mech | | | | | Shallow <1ft deep |
| 7/17/2006 | 81+42 | Pipe | | 301 | | 12" | Steel | 5.0 | 6.0 | Mech | | | | | About 5 ft deep |
| 7/17/2006 | 81+43 | Pipe | | 302 | | 8" | Steel | 5.0 | 6.0 | Mech | | | | | About 5 ft deep |
| 7/18/2006 | 81+50 | Conduit | | 303 | | 1' by 2' | Concrete | 1.0 | 2.0 | Mech | | | | | Conduit encased in red concrete |
| | 84+15 | Conduit | | 304 | | 1' by 2' | Concrete | 1.0 | 2.0 | | | | | | Conduit encased in red concrete |
| | 84+40 | Concrete | | NA | | | Concrete | 1.0 | 3.0 | | | | | | Large concrete structure |
| | 84+45 | Pipe | | 305 | | 4" | Steel | 3.0 | 3.3 | | | | | | Approx parrallel pipe meanders into trench, inside only |
| | 84+46 | Pipe | | 306 | | 3" | Steel | 3.0 | 3.3 | | | | | | Approx parrallel pipe meanders into trench, inside only |
| | 84+47 | Pipe | | 307 | | 4" | Steel | 3.0 | 3.3 | | | | | | Approx parrallel pipe meanders into trench, inside only |
| | 84+55 | Pipe | | 308 | | 2" | Steel | 3.0 | 3.3 | | | | | | Approx parrallel pipe meanders into trench, inside only |
| | 85+45 to 85+80 | Pipe | | 309 | | 24" | Steel | 5.0 | 7.0 | | | | | | Large deep pipe, potentially crude oil supply. |
| | | Conduit | | NA | | 8" | Steel | 1.0 | 2.0 | | | | | | Two conduits encased in 8" pipe, not counted per A. Rundzaitis |

| CONTRACTORS QUALITY CONTROL REPORT (QCR)<br>DAILY LOG OF CONSTRUCTION - CIVIL | REPORT NUMBER<br>144 Page 1 of 2<br>DATE<br>22 Jul 2006 - Saturday |
|---|---|
| PROJECT<br>Indiana Harbor CDF, Slurry Wall Gaps | CONTRACT NUMBER<br>W912P6-06-C-0003 NA |
| CONTRACTOR<br>Environmental Quality Management Inc | WEATHER<br>Weather Caused No Delay<br>Temperature Min 63 °F, Max 81 °F; 0.01 IN Precipitation; No Wind |

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
EQ continued with backfilling of the northern segment of the west area. Excavation of the shallow segment of the southern segment also continued. EQ has found six obstuctions in this area (ten total for the west area). A conduit bank at Station 84+45, four small pipes (2-4") in the vicinity of Station 84+45+ and a large, 24' line. The 24" line appears to be a former crude oil line and is deep in the trench, about 6-7 feet. It enters from the inside of the site, curves inward and exits back into the site. Both cut points will be towards the inside of the site. Based upon its size and depth, EQ is concerned that it will be full and may require evacuation of substantial amounts of material. Griffin performed dewatering on a 24 hour basis.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
Eric Bowman, Nick Mchailides, Ben Letany, nine representatives of Maintenance Dynamics (four operators, four teamsters, one laborer). three representatives of Griffin deatering, and three representatives of Task Force Security.

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
Nick Mchailides conducted a safety tailgate meeting.

**Safety: (Inspections made, Deficiencies noted):**
None.

**Safety: Corrective Action taken:**
None.

**PREP/INTIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 144 

DATE 22 Jul 2006 - Saturday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912F6-06-C-0003 NA

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

**LABOR HOURS**

**The following labor hours were Reported today:**

| Employer | Labor Classification | | Number of Employees | Hours Worked |
|---|---|---|---|---|
| Allied Scale | ELECTRICIAN | | 0.0 | 0.0 |
| Andy Lucas, Inc. | SAFETY ENGINEER - ON SITE | | 0.0 | 0.0 |
| EQM | SAFETY ENGINEER - ON SITE | | 1.0 | 12.0 |
| EQM | SUPER - JOB | | 1.0 | 12.0 |
| EQM | CONSTRUCTION INSPECTOR | | 1.0 | 12.0 |
| EQM | CONSTRUCTION-RECORDS CLERK | | 1.0 | 12.0 |
| Griffin | LABORER, PLUMBING | | 3.0 | 8.0 |
| Maintenance Dynamics | LABORERS | | 1.0 | 12.0 |
| Maintenance Dynamics | TRUCK DRIVER, GROUP 1 | | 4.0 | 12.0 |
| Maintenance Dynamics | OPERATING ENGINEER | | 4.0 | 12.0 |
| Miller Electric | ELECTRICIAN | | 0.0 | 0.0 |
| Ramierez & Marsch | LABORER, PLUMBING | | 0.0 | 0.0 |
| Ramierez & Marsch | ELECTRICIAN | | 0.0 | 0.0 |
| Task Force | TRAFFIC CONTROL SIGNALER | | 3.0 | 8.0 |
| Total hours worked to date: | 2,587.5 | Total | 19.0 | 100.0 |

**EQUIPMENT HOURS**

**The following equipment hours were Reported today:**

| Serial Number | Description | | Standby Hours | Operating Hours |
|---|---|---|---|---|
| LCAJ37365 | 3.5 Yd Rubber Tire Loader | | 0.0 | 12.0 |
| NHDC95160 | 40 K Track Dozer | | 8.0 | 0.0 |
| 21003-1741 | Medium Track Excavator | | 0.0 | 12.0 |
| XYZ | Dump Truck | | 0.0 | 12.0 |
| ABC | Tandem Axle Tractor Trailer Dump Truck #1 | | 0.0 | 12.0 |
| DEF | Tandem Axle Tractor Trailer Dump Truck #2 | | 0.0 | 12.0 |
| GHI | Dump truck | | 0.0 | 12.0 |
| JKL | Excavator | | 8.0 | 12.0 |
| 123 | Power Screener | | 0.0 | 0.0 |
| Griffin Excavator | Excavator | | 8.0 | 0.0 |
| rmo | Roller Compactor | | 0.0 | 12.0 |
| Total operating hours to date: | 1,499.0 | Total | 24.0 | 96.0 |

**ACCIDENT REPORTING** (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contr plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 7/27/6 | | 7/27/06 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 146 

DATE 24 Jul 2006 - Monday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912P6-06-C-0003 NA

CONTRACTOR Environmental Quality Management Inc

WEATHER
Weather Caused No Delay
Temperature Min 69 °F, Max 89 °F, No Precipitation, No Wind

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
EQ continued with backfilling of the northern segment of the west area. Excavation of the shallow segment of the southern segment also continued. EQ has found six obstuctions in this area (ten total for the west area). A conduit bank at Station 84+45, four small pipes (2-4") in the vicinity of Station 84+45+ and a large, 24' line. The 24" line appears to be a former crude oil line and is deep in the trench, about 6-7 feet. It enters from the inside of the site, curves inward and exits back into the site. Both cut points will be towards the inside of the site. Based upon its size and depth, EQ is concerned that it will be full and may require evacuation of substantial amounts of material. Great Lakes was on site to perform compaction testing of the northern segent. All results have been above 95% to date. Griffin performed dewatering on a 24 hour basis.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
Eric Bowman, Ed Wise, Nick Mchailides, Ben Letany, nine representatives of Maintenance Dynamics (four operators, four teamsters, one laborer). three representatives of Griffin deatering, and three representatives of Task Force Security.

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
Nick Mchailides conducted a safety tailgate meeting.

**Safety: (Inspections made, Deficiencies noted):**
None.

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 146 

DATE 24 Jul 2006 - Monday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912P6-06-C-0003 NA

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

**LABOR HOURS**

**The following labor hours were Reported today:**

| Employer | Labor Classification | | Number of Employees | Hours Worked |
|---|---|---|---|---|
| Allied Scale | ELECTRICIAN | | 0.0 | 0.0 |
| Andy Lucas, Inc. | SAFETY ENGINEER - ON SITE | | 0.0 | 0.0 |
| EGM | SAFETY ENGINEER - ON SITE | | 1.0 | 12.0 |
| EGM | SUPER - JOB | | 1.0 | 12.0 |
| EGM | CONSTRUCTION INSPECTOR | | 1.0 | 12.0 |
| EGM | CONSTRUCTION-RECORDS CLERK | | 1.0 | 12.0 |
| Griffin | LABORER, PLUMBING | | 3.0 | 8.0 |
| Maintenance Dynamics | LABORERS | | 1.0 | 12.0 |
| Maintenance Dynamics | TRUCK DRIVER, GROUP 1 | | 4.0 | 12.0 |
| Maintenance Dynamics | OPERATING ENGINEER | | 4.0 | 12.0 |
| Miller Electric | ELECTRICIAN | | 0.0 | 0.0 |
| Ramierez & Marsch | LABORER, PLUMBING | | 0.0 | 0.0 |
| Ramierez & Marsch | ELECTRICIAN | | 0.0 | 0.0 |
| Task Force | TRAFFIC CONTROL SIGNALER | | 3.0 | 8.0 |
| Total hours worked to date: | 2,695.5 | Total | 19.0 | 100.0 |

**EQUIPMENT HOURS**

**The following equipment hours were Reported today:**

| Serial Number | Description | | Standby Hours | Operating Hours |
|---|---|---|---|---|
| LCAJ37365 | 3.5 Yd Rubber Tire Loader | | 0.0 | 12.0 |
| N4DC95160 | 40 K Track Dozer | | 8.0 | 0.0 |
| 21003-1741 | Medium Track Excavator | | 0.0 | 12.0 |
| XYZ | Dump Truck | | 0.0 | 12.0 |
| ABC | Tandem Axle Tractor Trailer Dump Truck #1 | | 0.0 | 12.0 |
| DEF | Tandem Axle Tractor Trailer Dump Truck #2 | | 0.0 | 12.0 |
| GHI | Dump truck | | 0.0 | 12.0 |
| JKL | Excavator | | 8.0 | 12.0 |
| 123 | Power Screener | | 0.0 | 0.0 |
| Griffin Excavator | Excavator | | 8.0 | 0.0 |
| rmo | Roller Compactor | | 0.0 | 12.0 |
| Total operating hours to date: 1,595.0 | | Total | 24.0 | 96.0 |

**ACCIDENT REPORTING** (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 7/27/6 | | 7/27/06 |

SLURRY WALL GAPS
OBSTRUCTION REMOVAL SUMMARY PAGE 1
INDIANA HARBOR CDF
ENVIRONMENTAL QUALITY MANAGEMENT

| Date Removed | Station | Type | Contained | EQ ID # | Month Inv | Size | Material | Elevation Top | Elevation Bottom | Plug Type | Outside Wall Northing | Outside Wall Easting | Inside Wall Northing | Inside Wall Easting | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7/17/2006 | 80+15 | Pipe | | 300 | | 4" | Steel | 1.0 | 1.3 | Mech | | | | | Shallow <1ft deep |
| 7/17/2006 | 81+42 | Pipe | | 301 | | 12" | Steel | 5.0 | 6.0 | Mech | | | | | About 5 ft deep |
| 7/17/2006 | 81+43 | Pipe | | 302 | | 8" | Steel | 5.0 | 6.0 | Mech | | | | | About 5 ft deep |
| 7/18/2006 | 81+50 | Conduit | | 303 | | 1' by 2' | Concrete | 1.0 | 2.0 | Mech | | | | | Conduit encased in red concrete |
| | 84+15 | Conduit | | 304 | | 1' by 2' | Concrete | 1.0 | 2.0 | | | | | | Conduit encased in red concrete |
| | 84+40 | Concrete | | NA | | | Concrete | 1.0 | 3.0 | | | | | | Large concrete structure |
| | 84+45 | Pipe | | 305 | | 4" | Steel | 3.0 | 3.3 | | | | | | Approx parralel pipe meanders into trench, inside only |
| | 84+46 | Pipe | | 306 | | 3" | Steel | 3.0 | 3.3 | | | | | | Approx parralel pipe meanders into trench, inside only |
| | 84+47 | Pipe | | 307 | | 4" | Steel | 3.0 | 3.3 | | | | | | Approx parralel pipe meanders into trench, inside only |
| | 84+55 | Pipe | | 308 | | 2" | Steel | 3.0 | 3.3 | | | | | | Approx parralel pipe meanders into trench, inside only |
| | 85+45 to 85+80 | Pipe | | 309 | | 24" | Steel | 5.0 | 7.0 | | | | | | Large deep pipe, potentially crude oil supply. |
| | | Conduit | | NA | | 8" | Steel | 1.0 | 2.0 | | | | | | Two conduits encased in 8" pipe, not counted per A. Rundzaitis |

| CONTRACTORS QUALITY CONTROL REPORT (QCR)<br>DAILY LOG OF CONSTRUCTION - CIVIL | REPORT NUMBER<br>147 Page 1 of 2<br>DATE<br>25 Jul 2006 - Tuesday |
|---|---|
| PROJECT<br>Indiana Harbor CDF, Slurry Wall Gaps | CONTRACT NUMBER<br>W912P6-06-C-0003 NA |
| CONTRACTOR<br>Environmental Quality Management Inc | WEATHER<br>Weather Caused No Delay<br>Temperature Min 74 °F, Max 91 °F; No Precipitation; No Wind |

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
Eq continued with backfilling of the northern segmant. Great Lakes was on site to perform compaction testing on this segemt. All final results have been above 95% to date. Griffin performed dewatering on a 24 hour basis.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
Eric Bowman, Ed Wise, Nick Michailides, nine representatives of Maintenance Dynamics (four operators, four teamsters, one laborer). three representatives of Griffin deatering, and three representatives of Task Force Security.

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
Nick Michailides conducted a safety tailgate meeting.

**Safety: (Inspections made, Deficiencies noted):**
None.

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 147 

DATE 25 Jul 2006 - Tuesday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912F6-06-C-0003 NA

### LABOR HOURS

The following labor hours were Reported today:

| Employer | Labor Classification | | Number of Employees | Hours Worked |
|---|---|---|---|---|
| Allied Scale | ELECTRICIAN | | 0.0 | 0.0 |
| Andy Lucas, Inc. | SAFETY ENGINEER - ON SITE | | 0.0 | 0.0 |
| EQM | SAFETY ENGINEER - ON SITE | | 1.0 | 12.0 |
| EQM | SUPER - JOB | | 1.0 | 12.0 |
| EQM | CONSTRUCTION INSPECTOR | | 1.0 | 12.0 |
| EQM | CONSTRUCTION-RECORDS CLERK | | 0.0 | 0.0 |
| Griffin | LABORER, PLUMBING | | 3.0 | 8.0 |
| Maintenance Dynamics | LABORERS | | 1.0 | 12.0 |
| Maintenance Dynamics | TRUCK DRIVER, GROUP 1 | | 4.0 | 12.0 |
| Maintenance Dynamics | OPERATING ENGINEER | | 4.0 | 12.0 |
| Miller Electric | ELECTRICIAN | | 0.0 | 0.0 |
| Ramierez & Marsch | LABORER, PLUMBING | | 0.0 | 0.0 |
| Ramierez & Marsch | ELECTRICIAN | | 0.0 | 0.0 |
| Task Force | TRAFFIC CONTROL SIGNALER | | 3.0 | 8.0 |
| Total hours worked to date: | 2,783.5 | Total | 18.0 | 88.0 |

### EQUIPMENT HOURS

The following equipment hours were Reported today:

| Serial Number | Description | | Standby Hours | Operating Hours |
|---|---|---|---|---|
| LCAJ37365 | 3.5 Yd Rubber Tire Loader | | 0.0 | 12.0 |
| N4DC95160 | 40 K Track Dozer | | 8.0 | 0.0 |
| 21003-1741 | Medium Track Excavator | | 0.0 | 12.0 |
| XYZ | Dump Truck | | 0.0 | 12.0 |
| ABC | Tandem Axle Tractor Trailer Dump Truck #1 | | 0.0 | 12.0 |
| DEF | Tandem Axle Tractor Trailer Dump Truck #2 | | 0.0 | 12.0 |
| GHI | Dump truck | | 0.0 | 12.0 |
| JKL | Excavator | | 8.0 | 12.0 |
| 123 | Power Screener | | 0.0 | 0.0 |
| Griffin Excavator | Excavator | | 8.0 | 0.0 |
| mno | Roller Compactor | | 0.0 | 12.0 |
| Total operating hours to date: 1,691.0 | | Total | 24.0 | 96.0 |

### ACCIDENT REPORTING (Describe accidents)

No accidents reported today

CONTRACTOR CERTIFICATION On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as noted above.

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 7/27/6 | | 7/27/06 |

SLURRY WALL GAPS
OBSTRUCTION REMOVAL SUMMARY PAGE 1
INDIANA HARBOR CDF
ENVIRONMENTAL QUALITY MANAGEMENT

| Date Removed | Station | Type | Contained | EQ ID # | Month Inv | Size | Material | Elevation Top | Elevation Bottom | Plug Type | Outside Wall Northing | Outside Wall Easting | Inside Wall Northing | Inside Wall Easting | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7/17/2006 | 80+15 | Pipe | | 300 | | 4" | Steel | 1.0 | 1.3 | Mech | | | | | Shallow <1ft deep |
| 7/17/2006 | 81+42 | Pipe | | 301 | | 12" | Steel | 5.0 | 6.0 | Mech | | | | | About 5 ft deep |
| 7/17/2006 | 81+43 | Pipe | | 302 | | 8" | Steel | 5.0 | 6.0 | Mech | | | | | About 5 ft deep |
| 7/18/2006 | 81+50 | Conduit | | 303 | | 1' by 2' | Concrete | 1.0 | 2.0 | Mech | | | | | Conduit encased in red concrete |
| | 84+15 | Conduit | | 304 | | 1' by 2' | Concrete | 1.0 | 2.0 | | | | | | Conduit encased in red concrete |
| | 84+40 | Concrete | | NA | | | Concrete | 1.0 | 3.0 | | | | | | Large concrete structure |
| | 84+45 | Pipe | | 305 | | 4" | Steel | 3.0 | 3.3 | | | | | | Approx parrallel pipe meanders into trench, inside only |
| | 84+46 | Pipe | | 306 | | 3" | Steel | 3.0 | 3.3 | | | | | | Approx parrallel pipe meanders into trench, inside only |
| | 84+47 | Pipe | | 307 | | 4" | Steel | 3.0 | 3.3 | | | | | | Approx parrallel pipe meanders into trench, inside only |
| | 84+55 | Pipe | | 308 | | 2" | Steel | 3.0 | 3.3 | | | | | | Approx parrallel pipe meanders into trench, inside only |
| | 85+45 to 85+80 | Pipe | | 309 | | 24" | Steel | 5.0 | 7.0 | | | | | | Large deep pipe, potentially crude oil supply. |
| | | Conduit | | NA | | 8" | Steel | 1.0 | 2.0 | | | | | | Two conduits encased in 8" pipe, not counted per A. Rundzaitis |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
148 

DATE
26 Jul 2006 - Wednesday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912P6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Weather Caused Critical Delay
Temperature Min 72 °F, Max 82 °F; No Precipitation; No Wind

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
Anticipated heavy rains caused a shutdown. DLZ surveyed the cut points for the remaining obstructions. No other project related work was performed. Griffin performed dewatering on a 24 hour basis.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
Eric Bowman, Ed Wise, Nick Mchailides, nine representatives of Maintenance Dynamics (four operators, four teamsters, one laborer). three representatives of Griffin deatering, and three representatives of Task Force Security.

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
Nick Mchailides conducted a safety tailgate meeting.

**Safety: (Inspections made, Deficiencies noted):**
None.

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 148 

DATE 26 Jul 2006 - Wednesday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912P6-06-C-0003 NA

### LABOR HOURS

**The following labor hours were Reported today:**

| Employer | Labor Classification | | Number of Employees | Hours Worked |
|---|---|---|---|---|
| Allied Scale | ELECTRICIAN | | 0.0 | 0.0 |
| Andy Lucas, Inc. | SAFETY ENGINEER - ON SITE | | 0.0 | 0.0 |
| EQM | SAFETY ENGINEER - ON SITE | | 1.0 | 8.0 |
| EQM | SUPER - JOB | | 1.0 | 8.0 |
| EQM | CONSTRUCTION INSPECTOR | | 1.0 | 8.0 |
| EQM | CONSTRUCTION-RECORDS CLERK | | 1.0 | 8.0 |
| Griffin | LABORER, PLUMBING | | 3.0 | 8.0 |
| Maintenance Dynamics | LABORERS | | 1.0 | 2.0 |
| Maintenance Dynamics | TRUCK DRIVER, GROUP 1 | | 4.0 | 2.0 |
| Maintenance Dynamics | OPERATING ENGINEER | | 4.0 | 2.0 |
| Miller Electric | ELECTRICIAN | | 0.0 | 0.0 |
| Ramierez & Marsch | LABORER, PLUMBING | | 0.0 | 0.0 |
| Ramierez & Marsch | ELECTRICIAN | | 0.0 | 0.0 |
| Task Force | TRAFFIC CONTROL SIGNALER | | 3.0 | 8.0 |
| Total hours worked to date: | 2,837.5 | Total | 19.0 | 54.0 |

### EQUIPMENT HOURS

**The following equipment hours were Reported today:**

| Serial Number | Description | | Standby Hours | Operating Hours |
|---|---|---|---|---|
| LCAJ37365 | 3.5 Yd Rubber Tire Loader | | 8.0 | 0.0 |
| N4DC95160 | 40 K Track Dozer | | 8.0 | 0.0 |
| 21003-1741 | Medium Track Excavator | | 8.0 | 0.0 |
| XYZ | Dump Truck | | 8.0 | 0.0 |
| ABC | Tandem Axle Tractor Trailer Dump Truck #1 | | 8.0 | 0.0 |
| DEF | Tandem Axle Tractor Trailer Dump Truck #2 | | 8.0 | 0.0 |
| GHI | Dump truck | | 8.0 | 0.0 |
| JKL | Excavator | | 8.0 | 0.0 |
| 123 | Power Screener | | 8.0 | 0.0 |
| Griffin Excavator | Excavator | | 8.0 | 0.0 |
| rmo | Roller Compactor | | 8.0 | 0.0 |
| Total operating hours to date: 1,691.0 | | Total | 88.0 | 0.0 |

### ACCIDENT REPORTING (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contrac plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENTS INITIALS | DATE |
|---|---|---|---|
| | 7/27/6 | | 7/27/06 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER: 149 

DATE: 27 Jul 2006 - Thursday

PROJECT: Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER: W912P6-06-C-0003 NA

CONTRACTOR: Environmental Quality Management Inc

WEATHER: Weather Caused Non-Critical Delay
Temperature Mn 72 °F, Max 85 °F, No Precipitation; No Wind

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
EQ continued with backfilling of the western segment. No compaction testing was performed. Griffin performed dewatering on a 24 hour basis. Haevy rains cut work short at about 5:00 pm

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
Eric Bowman, Ed Wise, Nick Mchailides, ten representatives of Maintenance Dynamics (five operators, four teamsters, one laborer). three representatives of Griffin deatering, and three representatives of Task Force Security.

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
Nick Mchailides conducted a safety tailgate meeting.

**Safety: (Inspections made, Deficiencies noted):**
None.

**Safety: Corrective Action taken:**
None.

**PREP/INTIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 149 

DATE 27 Jul 2006 - Thursday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912F6-06-C-0003 NA

### LABOR HOURS

The following labor hours were Reported today:

| Employer | Labor Classification | Number of Employees | Hours Worked |
|---|---|---|---|
| Allied Scale | ELECTRICIAN | 0.0 | 0.0 |
| Andy Lucas, Inc. | SAFETY ENGINEER - ON SITE | 0.0 | 0.0 |
| EQM | SAFETY ENGINEER - ON SITE | 1.0 | 11.0 |
| EQM | SUPER - JOB | 1.0 | 11.0 |
| EQM | CONSTRUCTION INSPECTOR | 1.0 | 11.0 |
| EQM | CONSTRUCTION-RECORDS CLERK | 0.0 | 0.0 |
| Griffin | LABORER, PLUMBING | 3.0 | 8.0 |
| Maintenance Dynamics | LABORERS | 1.0 | 11.0 |
| Maintenance Dynamics | TRUCK DRIVER, GROUP 1 | 4.0 | 11.0 |
| Maintenance Dynamics | OPERATING ENGINEER | 5.0 | 11.0 |
| Miller Electric | ELECTRICIAN | 0.0 | 0.0 |
| Ramierez & Marsch | LABORER, PLUMBING | 0.0 | 0.0 |
| Ramierez & Marsch | ELECTRICIAN | 0.0 | 0.0 |
| Task Force | TRAFFIC CONTROL SIGNALER | 3.0 | 8.0 |
| | Total | 19.0 | 82.0 |

Total hours worked to date: 2,919.5

### EQUIPMENT HOURS

The following equipment hours were Reported today:

| Serial Number | Description | Standby Hours | Operating Hours |
|---|---|---|---|
| LCAJ37365 | 3.5 Yd Rubber Tire Loader | 0.0 | 11.0 |
| N4DC95160 | 40 K Track Dozer | 0.0 | 11.0 |
| 21003-1741 | Medium Track Excavator | 0.0 | 11.0 |
| XYZ | Dump Truck | 0.0 | 11.0 |
| ABC | Tandem Axle Tractor Trailer Dump Truck #1 | 0.0 | 11.0 |
| DEF | Tandem Axle Tractor Trailer Dump Truck #2 | 0.0 | 11.0 |
| GHI | Dump truck | 0.0 | 11.0 |
| JKL | Excavator | 8.0 | 0.0 |
| 123 | Power Screener | 8.0 | 0.0 |
| Griffin Excavator | Excavator | 8.0 | 0.0 |
| rmo | Roller Compactor | 0.0 | 11.0 |
| | Total | 24.0 | 88.0 |

Total operating hours to date: 1,779.0

### ACCIDENT REPORTING (Describe accidents)

No accidents reported today

CONTRACTOR CERTIFICATION On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contra plans and specifications, to the best of my knowledge, except as noted above.

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 7/31/6 | | 7/31/06 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
150 

DATE
28 Jul 2006 - Friday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912F6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Weather Caused No Delay
Temperature Min 73 °F, Max 91 °F; No Precipitation; No Wind

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
EQ continued backfilling of the shallow excavation. We continued with the deep inspection to approximately Station 85+00. Debris screened from the southern end of the west segment was also weighed and transported to the debris stockpile. 301.69 tons of material were transported. A total of 694.23 tons have been removed and transported. (note the attached summary table and weigh tickets). Ramirez and Marsch removed 5 obstructions (304 a conduit, 305 a 4" pipe, 306 a 3" pipe, 307 a 3" pipe and 308 a 1.25" pipe). Please note the attached summary table. None contained any hazardous substances (minor amounts of water). We also discovered the 20" line was broken at a coupling and was empty. High LEL and voc contents in the area prohibited us from attempting removal of this line. This will be done 072906. Griffin performed dewatering on a 24 hour basis.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
Eric Bowman, Ed Wise, Nick Mchailides, ten representatives of Maintenance Dynamics (five operators, four teamsters, one laborer). three representatives of Griffin deatering, three representatives of Ramirez and Marsch, and three representatives of Task Force Security.

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
Nick Mchailides conducted a safety tailgate meeting.

**Safety: (Inspections made, Deficiencies noted):**
None.

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 150 

DATE 28 Jul 2006 - Friday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912P6-06-C-0003 NA

**No Punch List items were corrected today**

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

**LABOR HOURS**

**The following labor hours were Reported today:**

| Employer | Labor Classification | Number of Employees | Hours Worked |
|---|---|---|---|
| Allied Scale | ELECTRICIAN | 0.0 | 0.0 |
| Andy Lucas, Inc. | SAFETY ENGINEER - ON SITE | 0.0 | 0.0 |
| EQM | SAFETY ENGINEER - ON SITE | 1.0 | 12.0 |
| EQM | SUPER - JOB | 1.0 | 12.0 |
| EQM | CONSTRUCTION INSPECTOR | 1.0 | 12.0 |
| EQM | CONSTRUCTION-RECORDS CLERK | 0.0 | 0.0 |
| Griffin | LABORER, PLUMBING | 3.0 | 8.0 |
| Maintenance Dynamics | LABORERS | 1.0 | 12.0 |
| Maintenance Dynamics | TRUCK DRIVER, GROUP 1 | 4.0 | 12.0 |
| Maintenance Dynamics | OPERATING ENGINEER | 4.0 | 12.0 |
| Miller Electric | ELECTRICIAN | 0.0 | 0.0 |
| Ramierez & Marsch | LABORER, PLUMBING | 0.0 | 0.0 |
| Ramierez & Marsch | ELECTRICIAN | 0.0 | 0.0 |
| Task Force | TRAFFIC CONTROL SIGNALER | 3.0 | 8.0 |
| | Total | 18.0 | 88.0 |

Total hours worked to date: 3,007.5

**EQUIPMENT HOURS**

**The following equipment hours were Reported today:**

| Serial Number | Description | Standby Hours | Operating Hours |
|---|---|---|---|
| LCAJ37365 | 3.5 Yd Rubber Tire Loader | 0.0 | 12.0 |
| N4DC95160 | 40 K Track Dozer | 0.0 | 12.0 |
| 21003-1741 | Medium Track Excavator | 0.0 | 12.0 |
| XYZ | Dump Truck | 0.0 | 12.0 |
| ABC | Tandem Axle Tractor Trailer Dump Truck #1 | 0.0 | 12.0 |
| DEF | Tandem Axle Tractor Trailer Dump Truck #2 | 0.0 | 12.0 |
| GHI | Dump truck | 0.0 | 12.0 |
| JKL | Excavator | 0.0 | 12.0 |
| 123 | Power Screener | 8.0 | 0.0 |
| Griffin Excavator | Excavator | 8.0 | 0.0 |
| mno | Roller Compactor | 0.0 | 12.0 |
| | Total | 16.0 | 108.0 |

Total operating hours to date: 1,887.0

**ACCIDENT REPORTING** (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contra plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 7/31/c | | 7/31/06 |

Summary of Debris Weigh Tickets
IHCDF Slurry Wall Gaps
Through 07/28/06

| 07/15/06 Material | |
|---|---|
| Load # | Net Weight |
| 1 | 10.76 |
| 2 | 9.82 |
| 3 | 11.18 |
| 4 | 12.15 |
| 5 | 12.56 |
| 6 | 12.03 |
| 7 | 12.55 |
| 8 | 12.78 |
| 9 | 12.31 |
| 10 | 12.90 |
| 11 | 11.83 |
| 12 | 13.03 |
| 13 | 12.89 |
| 14 | 13.71 |
| 15 | 12.96 |
| 16 | 12.89 |
| 17 | 12.89 |
| 18 | 12.67 |
| 19 | 12.25 |
| 20 | 12.58 |
| 21 | 11.89 |
| 22 | 11.55 |
| 23 | 12.04 |
| 24 | 11.49 |
| 25 | 12.45 |
| 26 | 11.70 |
| 27 | 13.18 |
| 28 | 10.66 |
| 29 | 9.99 |
| 30 | 11.37 |
| 31 | 5.26 |
| 32 | 7.02 |
| 33 | 8.57 |
| 34 | 8.63 |
| Total | 392.54 |

| 07/28/06 Material | |
|---|---|
| Load # | Net Weight |
| 36 | 15.94 |
| 37 | 26.45 |
| 38 | 16.66 |
| 39 | 18.16 |
| 40 | 15.18 |
| 41 | 21.16 |
| 42 | 14.26 |
| 43 | 23.23 |
| 44 | 11.86 |
| 45 | 21.10 |
| 46 | 15.78 |
| 47 | 23.86 |
| 48 | 13.96 |
| 49 | 24.50 |
| 50 | 11.88 |
| 51 | 17.50 |
| 52 | 10.21 |
| Total | 301.69 |

**Grand Total** 694.23

ID 0036 11:55 06/27/06
IN WT. 022400LB
ID 0036 11:55 06/27/06
GROSS 054280LB
TARE W 022400LB
NET 031880LB
TONS 0015.94
01

072806
0738
Zm

ID 0037 11:55 06/27/06
IN WT. 035760LB
ID 0037 11:55 06/27/06
GROSS 088660LB
TARE W 035760LB
NET 052900LB
TONS 0026.45
01

072806
07:44 A

ID 0038 11:55 06/27/06
[illegible]
TARE [illegible]
NET 033120LB
TONS 0016.56
01

072806
0758

Printer Spay
16.66 Tons Net

ID 0000 11:55 06/27/06
GROSS 055340LB

ID 0039 11:55 06/27/06
IN WT. 035840LB
ID 0039 11:55 06/27/06
GROSS 072160LB
TARE W 035840LB
NET 036320LB
TONS 0018.16
01

07 2806
0807

ID 0040 11:55 06/27/06
IN WT. 022480LB
ID 0040 11:55 06/27/06
GROSS 052840LB
TARE W 022480LB
NET 030360LB
TONS 0015.18
01

072806
0813

ID 0041 11:55 06/27/06
IN WT. 035780LB
ID 0041 11:55 06/27/06
GROSS 078100LB
TARE W 035780LB
NET 042320LB
TONS 0021.16
01

072806
0817

ID 0042 11:55 06/27/06
IN WT. 022760LB

ID 0042 11:55 06/27/06
GROSS 051280LB
TARE W 022760LB
NET 028520LB
TONS 0014.26
01

072806
0829

ID 0043 11:55 06/27/06
IN WT. 035780LB
ID 0043 11:55 06/27/06
GROSS 082240LB
TARE W 035780LB
NET 046460LB
TONS 0023.23
01

072806
0844

ID 0044 11:55 06/27/06
IN WT. 022680LB
ID 0044 11:55 06/27/06
GROSS 046400LB
TARE W 022680LB
NET 023720LB
TONS 0011.86
01

072806
0847
ZW

ID 0045 11:55 06/27/06
IN WT. 035660LB
ID 0045 11:55 06/27/06
GROSS 077860LB
TARE W 035660LB
NET 042200LB
TONS 0021.10
01

077806
0907

ID 0046 11:55 06/27/06
IN WT. 022780LB
ID 0046 11:55 06/27/06
GROSS 054340LB
TARE W 022780LB
NET 031560LB
TONS 0015.78
01

072806
0905

ID 0047 11:55 06/27/06
IN WT. 035680LB
ID 0047 11:55 06/27/06
GROSS 083400LB
TARE W 035680LB
NET 047720LB
TONS 0023.86
01

072806
0930

ID 0048 11:55 06/27/06
IN WT. 022880LB
ID 0048 11:55 06/27/06
GROSS 050800LB
TARE W 022880LB
NET 027920LB
TONS 0013.96
01

077806
0937

ID 0049 11:55 06/27/06
IN WT. 035640LB

ID 0049 11:55 06/27/06
GROSS 084640LB
TARE W 035640LB
NET 049000LB
TONS 0024.50
01

072806
0939

ID 0050 11:55 06/27/06
IN WT. 022960LB
ID 0050 11:55 06/27/06
GROSS 046720LB
TARE W 022960LB
NET 023760LB
TONS 0011.88
01

072806
0943

ID 0051 11:55 06/27/06
IN WT. 035660LB
ID 0051 11:55 06/27/06
GROSS 070660LB
TARE W 035660LB
NET 035000LB
TONS 0017.50
01

072806
0957
ZN

ID 0052 11:55 06/27/06
IN WT. 022960LB
ID 0052 11:55 06/27/06
GROSS 043380LB
TARE W 022960LB
NET 020420LB
TONS 0010.21
01

072806
1004

SLURRY WALL
OBSTRUCTION REMOVAL SUMMARY PAGE 1
INDIANA HARBOR CDF
ENVIRONMENTAL QUALITY MANAGEMENT

| Date Removed | Station | Type | Contained | EQ ID # | Month Inv | Size | Material | Elevation Top | Elevation Bottom | Plug Type | Outside Wall Northing | Outside Wall Easting | Inside Wall Northing | Inside Wall Easting | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7/17/2006 | 80+15 | Pipe | Empty | 300 | | 4" | Steel | 1.0 | 1.3 | Mech | | | | | Shallow <1ft deep |
| 7/17/2006 | 81+42 | Pipe | Empty | 301 | | 12" | Steel | 5.0 | 6.0 | Mech | | | | | About 5 ft deep |
| 7/17/2006 | 81+43 | Pipe | Empty | 302 | | 8" | Steel | 5.0 | 6.0 | Mech | | | | | About 5 ft deep |
| 7/18/2006 | 81+50 | Conduit | Wire | 303 | | 1' by 2' | Concrete | 1.0 | 2.0 | Mech | | | | | Single conduit encased in red concrete |
| 7/28/2006 | 84+15 | Conduit | Wire | 304 | | 1' by 2' | Concrete | 1.0 | 2.0 | Mech | | | | | Single conduit encased in red concrete |
| NA | 84+40 | Concrete | NA | NA | | | Concrete | 1.0 | 3.0 | NA | | | | | Large concrete structure |
| 7/28/2006 | 84+45 | Pipe | Empty | 305 | | 4" | Steel | 3.0 | 3.3 | Mech | | | | | Approx parrallel pipe meanders into trench, inside only |
| 7/28/2006 | 84+46 | Pipe | Empty | 306 | | 3" | Steel | 3.0 | 3.3 | Mech | | | | | Approx parrallel pipe meanders into trench, inside only |
| 7/28/2006 | 84+47 | Pipe | Empty | 307 | | 4" | Steel | 3.0 | 3.3 | Mech | | | | | Approx parrallel pipe meanders into trench, inside only |
| 7/28/2006 | 84+55 | Pipe | Empty | 308 | | 1.5" | Steel | 3.0 | 3.3 | Mech | | | | | Approx parrallel pipe meanders into trench, inside only |
| | 85+45 to 85+80 | Pipe | Empty | 309 | | 20" | Steel | 5.0 | 7.0 | | | | | | Large deep pipe, potentially crude oil supply. |
| NA | 86+00 | Conduit | | NA | | 8" | Steel | 1.0 | 2.0 | | | | | | Two 1" conduits encased in 8" pipe, not counted per A. Rundzaitis |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
151 

DATE
29 Jul 2006 - Saturday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912P6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Weather Caused No Delay
Temperature Min 76 °F, Max 94 °F; No Precipitation; No Wind

QC NARRATIVES

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
The 20" pipe (#309), was found to be emitting unsafe levels of VOC. The SSHO would not allow workers to enter the excavation unless they used supplied air. This equipment was not availble. EQ over excavated the area and bent both ends of the pipe inward towards the site. The entire length of pipe was outside of the normal excavation. Sand was then packed in the pipe to form a barrier for vapor movement and the ends were grouted up. All obstructions from the west segment have now been removed (note the attached summary table). We also continued with backfilling of the shallow excavation and completed the deep excavation. Griffin performed dewatering on a 24 hour basis.

Were there any Delays in Work Progress today?
No

Work Force, Personnel On Site
Ed Wise, Nick Michailides, Ben Lelany, ten representatives of Maintenance Dynamics (five operators, four teamsters, one laborer), three representatives of Griffin dectering, three representatives of Ramirez and Marsch, and three representatives of Task Force Security.

General Comments:
None. See activities in progress above.

Verbal instructions given by Government:
None

**Safety Inspection / Safety Meetings:**
Nick Mchailides conducted a safety tailgate meeting.

**Safety: (Inspections made, Deficiencies noted):**
None.

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

QC REQUIREMENTS

No QC requirements were completed today

QA/QC PUNCH LIST (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

No QC Punch List items were issued today

No Punch List items were corrected today

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 151 

DATE 29 Jul 2006 - Saturday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912P6-06-C-0003 NA

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

No contractors had their first or last day on site today

**LABOR HOURS**

The following labor hours were Reported today:

| Employer | Labor Classification | | Number of Employees | Hours Worked |
|---|---|---|---|---|
| Allied Scale | ELECTRICIAN | | 0.0 | 0.0 |
| Andy Lucas, Inc. | SAFETY ENGINEER - ON SITE | | 0.0 | 0.0 |
| EQM | SAFETY ENGINEER - ON SITE | | 1.0 | 10.0 |
| EQM | SUPER - JOB | | 0.0 | 0.0 |
| EQM | CONSTRUCTION INSPECTOR | | 1.0 | 10.0 |
| EQM | CONSTRUCTION-RECORDS CLERK | | 0.0 | 0.0 |
| Griffin | LABORER, PLUMBING | | 3.0 | 8.0 |
| Maintenance Dynamics | LABORERS | | 1.0 | 10.0 |
| Maintenance Dynamics | TRUCK DRIVER, GROUP 1 | | 4.0 | 10.0 |
| Maintenance Dynamics | OPERATING ENGINEER | | 4.0 | 10.0 |
| Miller Electric | ELECTRICIAN | | 0.0 | 0.0 |
| Ramierez & Marsch | LABORER, PLUMBING | | 3.0 | 8.0 |
| Ramierez & Marsch | ELECTRICIAN | | 0.0 | 0.0 |
| Task Force | TRAFFIC CONTROL SIGNALER | | 3.0 | 8.0 |
| Total hours worked to date: | 3,081.5 | Total | 20.0 | 74.0 |

**EQUIPMENT HOURS**

The following equipment hours were Reported today:

| Serial Number | Description | | Standby Hours | Operating Hours |
|---|---|---|---|---|
| LCAJ37365 | 3.5 Yd Rubber Tire Loader | | 0.0 | 10.0 |
| N4DC95160 | 40 K Track Dozer | | 0.0 | 10.0 |
| 21003-1741 | Medium Track Excavator | | 0.0 | 10.0 |
| XYZ | Dump Truck | | 0.0 | 10.0 |
| ABC | TandemAxle Tractor Trailer Dump Truck #1 | | 0.0 | 10.0 |
| DEF | TandemAxle Tractor Trailer Dump Truck #2 | | 0.0 | 10.0 |
| GHI | Dump truck | | 0.0 | 10.0 |
| JKL | Excavator | | 0.0 | 10.0 |
| 123 | Power Screener | | 8.0 | 0.0 |
| Griffin Excavator | Excavator | | 8.0 | 0.0 |
| mno | Roller Compactor | | 0.0 | 10.0 |
| Total operating hours to date: | 1,977.0 | Total | 16.0 | 90.0 |

**ACCIDENT REPORTING** (Describe accidents)

No accidents reported today

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 8/1/6 | | 8/1/06 |

SLURRY WALL GAPS
OBSTRUCTION REMOVAL SUMMARY PAGE 1
INDIANA HARBOR CDF
ENVIRONMENTAL QUALITY MANAGEMENT

| Date Removed | Station | Type | Contained | EQ ID # | Month Inv | Size | Material | Elevation Top | Elevation Bottom | Plug Type | Outside Wall Northing | Outside Wall Easting | Inside Wall Northing | Inside Wall Easting | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7/17/2006 | 80+15 | Pipe | Empty | 300 | | 4" | Steel | 1.0 | 1.3 | Mech | | | | | Shallow <1ft deep |
| 7/17/2006 | 81+42 | Pipe | Empty | 301 | | 12" | Steel | 5.0 | 6.0 | Mech | | | | | About 5 ft deep |
| 7/17/2006 | 81+43 | Pipe | Empty | 302 | | 8" | Steel | 5.0 | 6.0 | Mech | | | | | About 5 ft deep |
| 7/18/2006 | 81+50 | Conduit | Wire | 303 | | 1' by 2' | Concrete | 1.0 | 2.0 | Mech | | | | | Single conduit encased in red concrete |
| 7/28/2006 | 84+15 | Conduit | Wire | 304 | | 1' by 2' | Concrete | 1.0 | 2.0 | Grout | | | | | Single conduit encased in red concrete |
| NA | 84+40 | Concrete | NA | NA | | | Concrete | 1.0 | 3.0 | NA | | | | | Large concrete structure |
| 7/28/2006 | 84+45 | Pipe | Empty | 305 | | 4" | Steel | 3.0 | 3.3 | Mech | | | | | Approx parrallel pipe meanders into trench, inside only |
| 7/28/2006 | 84+46 | Pipe | Empty | 306 | | 3" | Steel | 3.0 | 3.3 | Mech | | | | | Approx parrallel pipe meanders into trench, inside only |
| 7/28/2006 | 84+47 | Pipe | Empty | 307 | | 4" | Steel | 3.0 | 3.3 | Mech | | | | | Approx parrallel pipe meanders into trench, inside only |
| 7/28/2006 | 84+55 | Pipe | Empty | 308 | | 1.5" | Steel | 3.0 | 3.3 | Mech | | | | | Approx parrallel pipe meanders into trench, inside only |
| 7/29/2006 | 85+45 to 85+80 | Pipe | Empty | 309 | | 20" | Steel | 5.0 | 7.0 | Grout | | | | | This pipe could not be cut due to high levels of VOC, note QC report |
| NA | 86+00 | Conduit | | NA | | 8" | Steel | 1.0 | 2.0 | NA | | | | | Two 1" conduits encased in 8" pipe, not counted per A. Rundzaitis |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
153 

DATE
31 Jul 2006 - Monday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912P6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Weather Caused No Delay
Temperature Min 78 °F, Max 96 °F, No Precipitation; No Wind

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
EQ continued backfilling of the shallow excavation. We also excavated and screened additional material from the infiltration gallery. Removed debris was segregated and will not be weighed for payment. Griffin performed dewatering on a 24 hour basis and completed installation of the dewatering system on the east segment. Dewatering of this segment also began..

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
Eric Bowman, Ed Wise, Nick Michailides, Ben Letany, ten representatives of Maintenance Dynamics (five operators, four teamsters, one laborer). five representatives of Griffin deatering, and three representatives of Task Force Security.

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
Nick Michailides conducted a safety tailgate meeting.

**Safety: (Inspections made, Deficiencies noted):**
None.

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 153 

DATE 31 Jul 2006 - Monday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912P6-06-C-0003 NA

### LABOR HOURS

**The following labor hours were Reported today:**

| Employer | Labor Classification | Number of Employees | Hours Worked |
|---|---|---|---|
| Allied Scale | ELECTRICIAN | 0.0 | 0.0 |
| Andy Lucas, Inc. | SAFETY ENGINEER - ON SITE | 0.0 | 0.0 |
| EQM | SAFETY ENGINEER - ON SITE | 1.0 | 12.0 |
| EQM | SUPER - JOB | 1.0 | 12.0 |
| EQM | CONSTRUCTION INSPECTOR | 1.0 | 12.0 |
| EQM | CONSTRUCTION-RECORDS CLERK | 0.0 | 0.0 |
| Griffin | LABORER, PLUMBING | 5.0 | 8.0 |
| Maintenance Dynamics | LABORERS | 1.0 | 12.0 |
| Maintenance Dynamics | TRUCK DRIVER, GROUP 1 | 4.0 | 12.0 |
| Maintenance Dynamics | OPERATING ENGINEER | 4.0 | 12.0 |
| Miller Electric | ELECTRICIAN | 0.0 | 0.0 |
| Ramierez & Marsch | LABORER, PLUMBING | 0.0 | 0.0 |
| Ramierez & Marsch | ELECTRICIAN | 0.0 | 0.0 |
| Task Force | TRAFFIC CONTROL SIGNALER | 3.0 | 8.0 |
| | Total | 20.0 | 88.0 |

Total hours worked to date: 3,169.5

### EQUIPMENT HOURS

**The following equipment hours were Reported today:**

| Serial Number | Description | Standby Hours | Operating Hours |
|---|---|---|---|
| LCAJ37365 | 3.5 Yd Rubber Tire Loader | 0.0 | 12.0 |
| N4DC95160 | 40 K Track Dozer | 0.0 | 12.0 |
| 21003-1741 | Medium Track Excavator | 0.0 | 12.0 |
| XYZ | Dump Truck | 0.0 | 12.0 |
| ABC | Tandem Axle Tractor Trailer Dump Truck #1 | 0.0 | 12.0 |
| DEF | Tandem Axle Tractor Trailer Dump Truck #2 | 0.0 | 12.0 |
| GHI | Dump truck | 0.0 | 12.0 |
| JKL | Excavator | 0.0 | 12.0 |
| 123 | Power Screener | 0.0 | 12.0 |
| Griffin Excavator | Excavator | 8.0 | 0.0 |
| rmo | Roller Compactor | 0.0 | 12.0 |
| | Total | 8.0 | 120.0 |

Total operating hours to date: 2,097.0

### ACCIDENT REPORTING (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contr: plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE 8/1/6 | SUPERINTENDENT'S INITIALS | DATE 8/1/06 |
|---|---|---|---|

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
154 

DATE
01 Aug 2006 - Tuesday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912F6-06-C-0003, NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Weather Caused No Delay
Temperature Min 75 °F, Max 96 °F; No Precipitation; No Wind

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
EQ completed backfilling of the shallow excavation on the west side. Compaction testing for this segment was completed. Verbal results were all acceptable. EQ also completed excavation of the shallow component of the east segment. Two sets of buried railroad tracks were found in the Station 43+95 to 44+02 area. This material was screened. We also excavated additional material from the infiltration gallery (this material was not screened. Griffin performed dewatering on a 24 hour basis for the east segment. Dewatering of the west segment was discontinued at 3:00 pm

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
Eric Bowman, Ed Wise, Nick Mchailides, Ben Letany, ten representatives of Maintenance Dynamics (five operators, four teamsters, one laborer). One representative of Great Lakes Laboratories, five representatives of Griffin deatering, and three representatives of Task Force Security.

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
Nick Mchailides conducted a safety tailgate meeting.

**Safety: (Inspections made, Deficiencies noted):**
None.

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 154 

DATE 01 Aug 2006 - Tuesday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912F6-06-C-0003 NA

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

**LABOR HOURS**

**The following labor hours were Reported today:**

| Employer | Labor Classification | Number of Employees | Hours Worked |
|---|---|---|---|
| Allied Scale | ELECTRICIAN | 0.0 | 0.0 |
| Andy Lucas, Inc. | SAFETY ENGINEER - ON SITE | 0.0 | 0.0 |
| EQM | SAFETY ENGINEER - ON SITE | 1.0 | 12.0 |
| EQM | SUPER - JOB | 1.0 | 12.0 |
| EQM | CONSTRUCTION INSPECTOR | 1.0 | 12.0 |
| EQM | CONSTRUCTION-RECORDS CLERK | 0.0 | 0.0 |
| Great Lakes Labs | ENVIRON-CNTRL-SYS INST/SER | 1.0 | 8.0 |
| Griffin | LABORER, PLUMBING | 5.0 | 8.0 |
| Maintenance Dynamics | LABORERS | 1.0 | 12.0 |
| Maintenance Dynamics | TRUCK DRIVER, GROUP 1 | 4.0 | 12.0 |
| Maintenance Dynamics | OPERATING ENGINEER | 4.0 | 12.0 |
| Miller Electric | ELECTRICIAN | 0.0 | 0.0 |
| Ramierez & Marsch | LABORER, PLUMBING | 0.0 | 0.0 |
| Ramierez & Marsch | ELECTRICIAN | 0.0 | 0.0 |
| Task Force | TRAFFIC CONTROL SIGNALER | 3.0 | 8.0 |
| Total hours worked to date: 3,265.5 | Total | 21.0 | 96.0 |

**EQUIPMENT HOURS**

**The following equipment hours were Reported today:**

| Serial Number | Description | Standby Hours | Operating Hours |
|---|---|---|---|
| LCAJ37365 | 3.5 Yd Rubber Tire Loader | 0.0 | 12.0 |
| N4DC95160 | 40 K Track Dozer | 0.0 | 12.0 |
| 21003-1741 | Medium Track Excavator | 0.0 | 12.0 |
| XYZ | Dump Truck | 0.0 | 12.0 |
| ABC | Tandem Axle Tractor Trailer Dump Truck #1 | 0.0 | 12.0 |
| DEF | Tandem Axle Tractor Trailer Dump Truck #2 | 0.0 | 12.0 |
| GHI | Dump truck | 0.0 | 12.0 |
| JKL | Excavator | 0.0 | 12.0 |
| 123 | Power Screener | 0.0 | 12.0 |
| Griffin Excavator | Excavator | 8.0 | 0.0 |
| mmo | Roller Compactor | 0.0 | 12.0 |
| Total operating hours to date: 2,217.0 | Total | 8.0 | 120.0 |

**ACCIDENT REPORTING** (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| [signature] | 8/2/6 | [initials] | 8/2/06 |

SLURRY WAL[illegible]
OBSTRUCTION [illegible]OVAL SUMMARY PAGE 1
INDIANA HARBOR CDF
ENVIRONMENTAL QUALITY MANAGEMENT

| Date Removed | Station | Type | Contained | EQ ID # | Month Inv | Size | Material | Elevation Top | Elevation Bottom | Plug Type | Outside Wall Northing | Outside Wall Easting | Inside Wall Northing | Inside Wall Easting | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **WEST SEGMENT** | | | | | | | | | | | | | | | |
| 7/17/2006 | 80+15 | Pipe | Empty | 300 | | 4" | Steel | 1.0 | 1.3 | Mech | | | | | Shallow <1ft deep |
| 7/17/2006 | 81+42 | Pipe | Empty | 301 | | 12" | Steel | 5.0 | 6.0 | Mech | | | | | About 5 ft deep |
| 7/17/2006 | 81+43 | Pipe | Empty | 302 | | 8" | Steel | 5.0 | 6.0 | Mech | | | | | About 5 ft deep |
| 7/18/2006 | 81+50 | Conduit | Wire | 303 | | 1' by 2' | Concrete | 1.0 | 2.0 | Mech | | | | | Single conduit encased in red concrete |
| 7/28/2006 | 84+15 | Conduit | Wire | 304 | | 1' by 2' | Concrete | 1.0 | 2.0 | Grout | | | | | Single conduit encased in red concrete |
| NA | 84+40 | Concrete | NA | NA | | | Concrete | 1.0 | 3.0 | NA | | | | | Large concrete structure |
| 7/28/2006 | 84+45 | Pipe | Empty | 305 | | 4" | Steel | 3.0 | 3.3 | Mech | | | | | Approx parrallel pipe meanders into trench, inside only |
| 7/28/2006 | 84+46 | Pipe | Empty | 306 | | 3" | Steel | 3.0 | 3.3 | Mech | | | | | Approx parrallel pipe meanders into trench, inside only |
| 7/28/2006 | 84+47 | Pipe | Empty | 307 | | 4" | Steel | 3.0 | 3.3 | Mech | | | | | Approx parrallel pipe meanders into trench, inside only |
| 7/28/2006 | 84+55 | Pipe | Empty | 308 | | 1.5" | Steel | 3.0 | 3.3 | Mech | | | | | Approx parrallel pipe meanders into trench, inside only |
| 7/29/2006 | 85+45 to 85+80 | Pipe | Empty | 309 | | 20" | Steel | 5.0 | 7.0 | Grout | | | | | This pipe could not be cut due to high levels of VOC, note QC report |
| NA | 86+00 | Conduit | | NA | | 8" | Steel | 1.0 | 2.0 | NA | | | | | Two 1" conduits encased in 8" pipe, not counted per A. Rundzaitis |
| | | | | | | | | | | | | | | | |
| **EAST SEGMENT** | | | | | | | | | | | | | | | |
| | 43+95 to 44+02 | RR Track | NA | NA | | NA | Steel | 1.0 | 2.0 | NA | | | | | Two sets of buried railroad tracks |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
155 

DATE
02 Aug 2006 - Wednesday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912P6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Weather Caused No Delay
Temperature Min 72 °F, Max 95 °F; No Precipitation; No Wind

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
EQ began removal of the railroad tracks in the east segment. We also continued with excavation of additional makeup material from the infiltration gallery. This material was screened. The oversized material was transported back into the infiltration gallery (not weighed for payment). The fine material was transported to stockpiles adjacent to the east excavation. Griffin performed dewatering on a 24 hour basis for the east segment. The Belt Link Long stick excavator was received 080106. Andy Lucas was on-site

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
Eric Bowman, Ed Wise, Nick Mchailides, Ben Letany, ten representatives of Maintenance Dynamics (five operators, four teamsters, one laborer). three representatives of Griffin dewatering, Andy lucas, and three representatives of Task Force Security.

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
Nick Mchailides conducted a safety tailgate meeting.

**Safety: (Inspections made, Deficiencies noted):**
None.

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 155 

DATE 02 Aug 2006 - Wednesday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912P6-06-C-0003 NA

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

**LABOR HOURS**

**The following labor hours were Reported today:**

| Employer | Labor Classification | | Number of Employees | Hours Worked |
|---|---|---|---|---|
| Allied Scale | ELECTRICIAN | | 0.0 | 0.0 |
| EQM | SAFETY ENGINEER - ON SITE | | 1.0 | 12.0 |
| EQM | SUPER - JOB | | 1.0 | 12.0 |
| EQM | CONSTRUCTION INSPECTOR | | 1.0 | 12.0 |
| EQM | CONSTRUCTION-RECORDS CLERK | | 1.0 | 12.0 |
| Great Lakes Labs | ENVIRON-CNTRL-SYS INST/SER | | 0.0 | 0.0 |
| Griffin | LABORER, PLUMBING | | 3.0 | 24.0 |
| Maintenance Dynamics | LABORERS | | 1.0 | 12.0 |
| Maintenance Dynamics | TRUCK DRIVER, GROUP 1 | | 4.0 | 48.0 |
| Maintenance Dynamics | OPERATING ENGINEER | | 5.0 | 60.0 |
| Miler Electric | ELECTRICIAN | | 0.0 | 0.0 |
| Ramierez & Marsch | LABORER, PLUMBING | | 0.0 | 0.0 |
| Ramierez & Marsch | ELECTRICIAN | | 0.0 | 0.0 |
| Task Force | TRAFFIC CONTROL SIGNALER | | 3.0 | 24.0 |
| US Industrial Hygien | SAFETY ENGINEER - ON SITE | | 1.0 | 8.0 |
| Total hours worked to date: | 3,489.5 | Total | 21.0 | 224.0 |

**EQUIPMENT HOURS**

**The following equipment hours were Reported today:**

| Serial Number | Description | | Standby Hours | Operating Hours |
|---|---|---|---|---|
| LCAJ37365 | 3.5 Yd Rubber Tire Loader | | 0.0 | 12.0 |
| N4DC95160 | 40 K Track Dozer | | 0.0 | 12.0 |
| 21003-1741 | Medium Track Excavator | | 0.0 | 12.0 |
| XYZ | Dump Truck | | 0.0 | 12.0 |
| ABC | Tandem Axle Tractor Trailer Dump Truck #1 | | 0.0 | 12.0 |
| DEF | Tandem Axle Tractor Trailer Dump Truck #2 | | 0.0 | 12.0 |
| GHI | Dump truck | | 0.0 | 12.0 |
| JKL | Excavator | | 0.0 | 12.0 |
| 123 | Power Screener | | 0.0 | 12.0 |
| Griffin Excavator | Excavator | | 8.0 | 0.0 |
| rmo | Roller Compactor | | 0.0 | 12.0 |
| Total operating hours to date: 2,337.0 | | Total | 8.0 | 120.0 |

**ACCIDENT REPORTING** (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| [signature] | 8/3/6 | [initials] | 8/3/06 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
# DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
156 

DATE
03 Aug 2006 - Thursday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912P6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Weather Caused No Delay
Temperature Min 65 °F, Max 76 °F; No Precipitation; No Wind

## QC NARRATIVES

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
EQ completed removal of the railroad tracks in the east segment. We also continued with excavation of additional makeup material from the infiltration gallery. This material was screened. The oversized material was transported back into the infiltration gallery (not weighed for payment). The fine material was transported to stockpiles adjacent to the east excavation. Griffin performed dewatering on a 24 hour basis for the east segment. We also began the deep exploration of the east segment. Oversized material from the east shallow excavation. 148.86 tons of material was weighed and transported to the debris stockpile. A total of 843.09 tons of oversized material has been weighed and transported from the west and east segments. Please note the attached summary table, and copies of the weigh tickets.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
Eric Bowman, Ed Wise, Nick Michailides, Ben Letany, eleven representatives of Maintenance Dynamics (five operators, four teamsters, two laborers). three representatives of Griffin dewatering, and three representatives of Task Force Security.

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
Nick Michailides conducted a safety tailgate meeting.

**Safety: (Inspections made, Deficiencies noted):**
None.

**Safety: Corrective Action taken:**
None.

## PREP/INITIAL DATES (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

## ACTIVITY START/FINISH

**No activities were started or finished today**

## QC REQUIREMENTS

**No QC requirements were completed today**

## QA/QC PUNCH LIST (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 156 

DATE 03 Aug 2006 - Thursday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912F6-06-C-0003 NA

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

**LABOR HOURS**

**The following labor hours were Reported today:**

| Employer | Labor Classification | | Number of Employees | Hours Worked |
|---|---|---|---|---|
| Allied Scale | ELECTRICIAN | | 0.0 | 0.0 |
| EQM | SAFETY ENGINEER - ON SITE | | 1.0 | 12.0 |
| EQM | SUPER - JOB | | 1.0 | 12.0 |
| EQM | CONSTRUCTION INSPECTOR | | 1.0 | 12.0 |
| EQM | CONSTRUCTION-RECORDS CLERK | | 1.0 | 12.0 |
| Great Lakes Labs | ENVIRON-CNTRL-SYS INST/SER | | 0.0 | 0.0 |
| Griffin | LABORER, PLUMBING | | 3.0 | 24.0 |
| Maintenance Dynamics | LABORERS | | 2.0 | 12.0 |
| Maintenance Dynamics | TRUCK DRIVER, GROUP 1 | | 4.0 | 32.0 |
| Maintenance Dynamics | OPERATING ENGINEER | | 5.0 | 60.0 |
| Miller Electric | ELECTRICIAN | | 0.0 | 0.0 |
| Ramierez & Marsch | LABORER, PLUMBING | | 0.0 | 0.0 |
| Ramierez & Marsch | ELECTRICIAN | | 0.0 | 0.0 |
| Task Force | TRAFFIC CONTROL SIGNALER | | 3.0 | 24.0 |
| US Industrial Hygien | SAFETY ENGINEER - ON SITE | | 0.0 | 0.0 |
| Total hours worked to date: | 3,689.5 | Total | 21.0 | 200.0 |

**EQUIPMENT HOURS**

**The following equipment hours were Reported today:**

| Serial Number | Description | | Standby Hours | Operating Hours |
|---|---|---|---|---|
| LCAJ37365 | 3.5 Yd Rubber Tire Loader | | 0.0 | 12.0 |
| N4DC95160 | 40 K Track Dozer | | 0.0 | 12.0 |
| 21003-1741 | Medium Track Excavator | | 0.0 | 12.0 |
| XYZ | Dump Truck | | 0.0 | 8.0 |
| ABC | Tandem Axle Tractor Trailer Dump Truck #1 | | 0.0 | 8.0 |
| DEF | Tandem Axle Tractor Trailer Dump Truck #2 | | 0.0 | 8.0 |
| GHI | Dump truck | | 0.0 | 8.0 |
| JKL | Excavator | | 0.0 | 12.0 |
| 123 | Power Screener | | 6.0 | 6.0 |
| Griffin Excavator | Excavator | | 8.0 | 0.0 |
| rmo | Roller Compactor | | 12.0 | 0.0 |
| rmo | Long Stick Excavator | | 8.0 | 0.0 |
| Total operating hours to date: 2,423.0 | | Total | 34.0 | 86.0 |

**ACCIDENT REPORTING** (Describe accidents)

**No accidents reported today**

NTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 8/4/6 | | 8/4/6 |

Summary of Debris Weigh Tickets
IHCDF Slurry Wall Gaps
Through 07/28/06

| 07/15/06 Material | |
|---|---|
| Load # | Net Weight |
| 1 | 10.76 |
| 2 | 9.82 |
| 3 | 11.18 |
| 4 | 12.15 |
| 5 | 12.56 |
| 6 | 12.03 |
| 7 | 12.55 |
| 8 | 12.78 |
| 9 | 12.31 |
| 10 | 12.90 |
| 11 | 11.83 |
| 12 | 13.03 |
| 13 | 12.89 |
| 14 | 13.71 |
| 15 | 12.96 |
| 16 | 12.89 |
| 17 | 12.89 |
| 18 | 12.67 |
| 19 | 12.25 |
| 20 | 12.58 |
| 21 | 11.89 |
| 22 | 11.55 |
| 23 | 12.04 |
| 24 | 11.49 |
| 25 | 12.45 |
| 26 | 11.70 |
| 27 | 13.18 |
| 28 | 10.66 |
| 29 | 9.99 |
| 30 | 11.37 |
| 31 | 5.26 |
| 32 | 7.02 |
| 33 | 8.57 |
| 34 | 8.63 |
| Total | 392.54 |

| 07/28/06 Material | |
|---|---|
| Load # | Net Weight |
| 36 | 15.94 |
| 37 | 26.45 |
| 38 | 16.66 |
| 39 | 18.16 |
| 40 | 15.18 |
| 41 | 21.16 |
| 42 | 14.26 |
| 43 | 23.23 |
| 44 | 11.86 |
| 45 | 21.10 |
| 46 | 15.78 |
| 47 | 23.86 |
| 48 | 13.96 |
| 49 | 24.50 |
| 50 | 11.88 |
| 51 | 17.50 |
| 52 | 10.21 |
| Total | 301.69 |

| 08/03/06 Material | |
|---|---|
| Load # | Net Weight |
| 53 | 19.44 |
| 54 | 16.48 |
| 55 | 15.30 |
| 56 | 21.35 |
| 57 | 13.81 |
| 58 | 15.67 |
| 59 | 15.83 |
| 60 | 10.94 |
| 61 | 11.86 |
| 62 | 8.18 |
| Total | 148.86 |

**Grand Total** **843.09**

ID 0053 11:55 06/27/06
IN WT. 032880LB
ID 0053 11:55 06/27/06
GROSS 071760LB
TARE W 032880LB
NET 038880LB
TONS 0019.44
01

8/3/6
1037a

ID 0054 11:55 06/27/06
IN WT. 024320LB
ID 0054 11:55 06/27/06
GROSS 057280LB
TARE W 024320LB
NET 032960LB
TONS 0016.48
01

8/3/6
10:40 A

ID 0055 11:55 06/27/06
IN WT. 021680LB
ID 0055 11:55 06/27/06
GROSS 052280LB
TARE W 021680LB
NET 030600LB
TONS 0015.30
01

8

8/3/6

1044 a

ID 0056 11:55 06/27/06
IN WT. 032540LB
ID 0056 11:55 06/27/06
GROSS 075240LB
TARE W 032540LB
NET 042700LB
TONS 0021.35
01

8/3/6
10:57 a

ID 0057 11:55 06/27/06
IN WT. 024540LB
ID 0057 11:55 06/27/06
GROSS 052160LB
TARE W 024540LB
NET 027620LB
TONS 0013.81
01

8/3/6

11:00 a

ID 0058 11:55 06/27/06
IN WT. 021700LB
ID 0058 11:55 06/27/06
GROSS 053040LB
TARE W 021700LB
NET 031340LB
TONS 0015.67
01

8/3/6
11:04a

ID 0059 11:55 06/27/06
IN WT. 032700LB
ID 0059 11:55 06/27/06
GROSS 064360LB
TARE W 032700LB
NET 031660LB
TONS 0015.83
01

8/3/6

11:16a

ID 0060 11:55 06/27/06
IN WT. 024580LB
ID 0060 11:55 06/27/06
GROSS 046460LB
TARE W 024580LB
NET 021880LB
TONS 0010.94
01

8/3/6
11:19 a

ID 0061 11:55 06/27/06
IN WT. 021780LB
ID 0061 11:55 06/27/06
GROSS 038140LB
TARE W 021780LB
NET 016360LB
TONS 0008.18
01

8/3/6
11:26a

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
157 

DATE
04 Aug 2006 - Friday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912R6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Weather Caused No Delay
Temperature Min 67 °F, Max 89 °F; No Precipitation; No Wind

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
EQ completed deep exploration of the east segment. No new obstructions were found. The attached table shows the final obstruction summary. Wealso completed backfilling and compaction of the excation. We also continued with excavation of additional makeup material fromthe infiltration gallery. This material was screened. The oversized material was transported back into the infiltration gallery (not weighed for payment). The fine material was transported to stockpiles adjacent to the east excavation. Griffin performed dewatering on a 24 hour basis for the east segment.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
Eric Bowman, Ed Wise, Nick Mchailides, Ben Letany, eleven representatives of Maintenance Dynamics (five operators, four teamsters, two laborers). three representatives of Griffin dewatering, and three representatives of Task Force Security.

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
Nick Mchailides conducted a safety tailgate meeting.

**Safety: (Inspections made, Deficiencies noted):**
None.

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 157 

DATE 04 Aug 2006 - Friday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912P6-06-C-0003 NA

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

**LABOR HOURS**

**The following labor hours were Reported today:**

| Employer | Labor Classification | | Number of Employees | Hours Worked |
|---|---|---|---|---|
| Allied Scale | ELECTRICIAN | | 0.0 | 0.0 |
| EQM | SAFETY ENGINEER - ON SITE | | 1.0 | 12.0 |
| EQM | SUPER - JOB | | 1.0 | 12.0 |
| EQM | CONSTRUCTION INSPECTOR | | 1.0 | 12.0 |
| EQM | CONSTRUCTION-RECORDS CLERK | | 1.0 | 12.0 |
| Great Lakes Labs | ENVIRON-CNTRL-SYS INST/SER | | 0.0 | 0.0 |
| Griffin | LABORER, PLUMBING | | 3.0 | 24.0 |
| Maintenance Dynamics | LABORERS | | 2.0 | 12.0 |
| Maintenance Dynamics | TRUCK DRIVER, GROUP 1 | | 1.0 | 12.0 |
| Maintenance Dynamics | OPERATING ENGINEER | | 5.0 | 60.0 |
| Miller Electric | ELECTRICIAN | | 0.0 | 0.0 |
| Ramierez & Marsch | LABORER, PLUMBING | | 0.0 | 0.0 |
| Ramierez & Marsch | ELECTRICIAN | | 0.0 | 0.0 |
| Task Force | TRAFFIC CONTROL SIGNALER | | 3.0 | 24.0 |
| US Industrial Hygien | SAFETY ENGINEER - ON SITE | | 0.0 | 0.0 |
| Total hours worked to date: | 3,869.5 | Total | 18.0 | 180.0 |

**EQUIPMENT HOURS**

**The following equipment hours were Reported today:**

| Serial Number | Description | | Standby Hours | Operating Hours |
|---|---|---|---|---|
| LCAJ37365 | 3.5 Yd Rubber Tire Loader | | 0.0 | 12.0 |
| N4DC95160 | 40 K Track Dozer | | 0.0 | 12.0 |
| 21003-1741 | Medium Track Excavator | | 0.0 | 12.0 |
| XYZ | Dump Truck | | 8.0 | 0.0 |
| ABC | Tandem Axle Tractor Trailer Dump Truck #1 | | 12.0 | 8.0 |
| DEF | Tandem Axle Tractor Trailer Dump Truck #2 | | 8.0 | 0.0 |
| GHI | Dump truck | | 8.0 | 0.0 |
| JKL | Excavator | | 0.0 | 12.0 |
| 123 | Power Screener | | 6.0 | 6.0 |
| Griffin Excavator | Excavator | | 8.0 | 0.0 |
| mno | Roller Compactor | | 12.0 | 0.0 |
| mno | Long Stick Excavator | | 8.0 | 0.0 |
| Total operating hours to date: 2,485.0 | | Total | 70.0 | 62.0 |

**ACCIDENT REPORTING** (Describe accidents)

**No accidents reported today**

NTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 8/7/6 | | 8/7/6 |

SLURRY WALL GAPS
OBSTRUCTION REMOVAL SUMMARY PAGE 1
INDIANA HARBOR CDF
ENVIRONMENTAL QUALITY MANAGEMENT

| Date Removed | Station | Type | Contained | EQ ID # | Month Inv | Size | Material | Elevation Top | Elevation Bottom | Plug Type | Outside Wall Northing | Outside Wall Easting | Inside Wall Northing | Inside Wall Easting | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **WEST SEGMENT** | | | | | | | | | | | | | | | |
| 7/17/2006 | 80+15 | Pipe | Empty | 300 | | 4" | Steel | 1.0 | 1.3 | Mech | | | | | Shallow <1ft deep |
| 7/17/2006 | 81+42 | Pipe | Empty | 301 | | 12" | Steel | 5.0 | 6.0 | Mech | | | | | About 5 ft deep |
| 7/17/2006 | 81+43 | Pipe | Empty | 302 | | 8" | Steel | 5.0 | 6.0 | Mech | | | | | About 5 ft deep |
| 7/18/2006 | 81+50 | Conduit | Wire | 303 | | 1' by 2' | Concrete | 1.0 | 2.0 | Mech | | | | | Single conduit encased in red concrete |
| 7/28/2006 | 84+15 | Conduit | Wire | 304 | | 1' by 2' | Concrete | 1.0 | 2.0 | Grout | | | | | Single conduit encased in red concrete |
| NA | 84+40 | Concrete | NA | NA | | | Concrete | 1.0 | 3.0 | NA | | | | | Large concrete structure |
| 7/28/2006 | 84+45 | Pipe | Empty | 305 | | 4" | Steel | 3.0 | 3.3 | Mech | | | | | Approx parrallel pipe meanders into trench, inside only |
| 7/28/2006 | 84+46 | Pipe | Empty | 306 | | 3" | Steel | 3.0 | 3.3 | Mech | | | | | Approx parrallel pipe meanders into trench, inside only |
| 7/28/2006 | 84+47 | Pipe | Empty | 307 | | 4" | Steel | 3.0 | 3.3 | Mech | | | | | Approx parrallel pipe meanders into trench, inside only |
| 7/28/2006 | 84+55 | Pipe | Empty | 308 | | 1.5" | Steel | 3.0 | 3.3 | Mech | | | | | Approx parrallel pipe meanders into trench, inside only |
| 7/29/2006 | 85+45 to 85+60 | Pipe | Empty | 309 | | 20" | Steel | 5.0 | 7.0 | Grout | | | | | This pipe could not be cut due to high levels of VOC, note QC report |
| NA | 86+00 | Conduit | | NA | | 8" | Steel | 1.0 | 2.0 | NA | | | | | Two 1" conduits encased in 8" pipe, not counted per A. Rundzaitis |
| | | | | | | | | | | | | | | | |
| **EAST SEGMENT** | | | | | | | | | | | | | | | |
| | 43+95 to 44+02 | RR Track | NA | NA | | NA | Steel | 1.0 | 2.0 | NA | | | | | Two sets of buried railroad tracks |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 158 

DATE 05 Aug 2006 - Saturday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912P6-06-C-0003 NA

CONTRACTOR Environmental Quality Management Inc

WEATHER
Weather Caused No Delay
Temperature Min 86 °F, Max 66 °F, No Precipitation, No Wind

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
EQ completed compaction testing of the east segment. All results were passing. A formal report will be attached to the daily report when it is available. Griffin discontinued dewatering at 12:00 noon.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
Ed Wise, one operator from Maintenance Dynamics, One representative of Great Lakes Testing, two representatives of Griffin dewatering, and three representatives of Task Force Security.

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
Ed Wise conducted a safety tailgate meeting.

**Safety: (Inspections made, Deficiencies noted):**
None.

**Safety: Corrective Action taken:**
None.

**PREP/INTIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 158 

DATE 05 Aug 2006 - Saturday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912P6-06-C-0003 NA

### LABOR HOURS

**The following labor hours were Reported today:**

| Employer | Labor Classification | | Number of Employees | Hours Worked |
|---|---|---|---|---|
| Allied Scale | ELECTRICIAN | | 0.0 | 0.0 |
| EQM | SAFETY ENGINEER - ON SITE | | 0.0 | 0.0 |
| EQM | SUPER - JOB | | 0.0 | 0.0 |
| EQM | CONSTRUCTION INSPECTOR | | 0.0 | 0.0 |
| EQM | CONSTRUCTION-RECORDS CLERK | | 0.0 | 0.0 |
| Great Lakes Labs | ENVIRON-CNTRL-SYS INST/SER | | 1.0 | 6.0 |
| Griffin | LABORER, PLUMBING | | 2.0 | 12.0 |
| Maintenance Dynamics | LABORERS | | 0.0 | 0.0 |
| Maintenance Dynamics | TRUCK DRIVER, GROUP 1 | | 0.0 | 0.0 |
| Maintenance Dynamics | OPERATING ENGINEER | | 1.0 | 8.0 |
| Miller Electric | ELECTRICIAN | | 0.0 | 0.0 |
| Ramierez & Marsch | LABORER, PLUMBING | | 0.0 | 0.0 |
| Ramierez & Marsch | ELECTRICIAN | | 0.0 | 0.0 |
| Task Force | TRAFFIC CONTROL SIGNALER | | 3.0 | 24.0 |
| US Industrial Hygien | SAFETY ENGINEER - ON SITE | | 0.0 | 0.0 |
| Total hours worked to date: | 3,939.5 | Total | 7.0 | 50.0 |

### EQUIPMENT HOURS

**The following equipment hours were Reported today:**

| Serial Number | Description | | Standby Hours | Operating Hours |
|---|---|---|---|---|
| LCAJ37365 | 3.5 Yd Rubber Tire Loader | | 8.0 | 0.0 |
| N4DC95160 | 40 K Track Dozer | | 8.0 | 0.0 |
| 21003-1741 | Medium Track Excavator | | 0.0 | 6.0 |
| XYZ | Dump Truck | | 8.0 | 0.0 |
| ABC | Tandem Axle Tractor Trailer Dump Truck #1 | | 8.0 | 0.0 |
| DEF | Tandem Axle Tractor Trailer Dump Truck #2 | | 8.0 | 0.0 |
| GHI | Dump truck | | 8.0 | 0.0 |
| JKL | Excavator | | 8.0 | 0.0 |
| 123 | Power Screener | | 8.0 | 0.0 |
| Griffin Excavator | Excavator | | 8.0 | 0.0 |
| rmo | Roller Compactor | | 8.0 | 0.0 |
| rmo | Long Stick Excavator | | 8.0 | 0.0 |
| Total operating hours to date: 2,515.0 | | Total | 88.0 | 6.0 |

### ACCIDENT REPORTING (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| [signature] | 8/7/6 | [signature] | 8/7/6 |

| CONTRACTORS QUALITY CONTROL REPORT (QCR)<br>DAILY LOG OF CONSTRUCTION - CIVIL | REPORT NUMBER<br>160 Page 1 of 2<br>DATE<br>07 Aug 2006 - Monday |
|---|---|
| PROJECT<br>Indiana Harbor CDF, Slurry Wall Gaps | CONTRACT NUMBER<br>W912F6-06-C-0003 NA |
| CONTRACTOR<br>Environmental Quality Management Inc | WEATHER<br>Weather Caused No Delay<br>Temperature Min 85 °F, Max 74 °F; No Precipitation; No Wind |

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
EQ prepared for installation of the slurry wall. Water supply and slurry piping was assembled. Unecessary equipment was decontaminated. One truck load of 100 lb bags of bentonite was received.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
Ed Wise, Ben Letany, Andy Lucas, eight representatives of Maintenance Dynamics (five operators, one teamsters, two laborers). and three representatives of Task Force Security.

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
Ed Wise conducted a safety tailgate meeting.

**Safety: (Inspections made, Deficiencies noted):**
None.

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 160 

DATE 07 Aug 2006 - Monday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912F6-06-C-0003 NA

### LABOR HOURS

The following labor hours were Reported today:

| Employer | Labor Classification | | Number of Employees | Hours Worked |
|---|---|---|---|---|
| Allied Scale | ELECTRICIAN | | 0.0 | 0.0 |
| EQM | SAFETY ENGINEER - ON SITE | | 1.0 | 12.0 |
| EQM | SUPER - JOB | | 0.0 | 0.0 |
| EQM | CONSTRUCTION INSPECTOR | | 1.0 | 12.0 |
| EQM | CONSTRUCTION-RECORDS CLERK | | 0.0 | 0.0 |
| Great Lakes Labs | ENVIRON-CNTRL-SYS INST/SER | | 0.0 | 0.0 |
| Griffin | LABORER, PLUMBING | | 0.0 | 0.0 |
| Maintenance Dynamics | LABORERS | | 2.0 | 24.0 |
| Maintenance Dynamics | TRUCK DRIVER, GROUP 1 | | 1.0 | 12.0 |
| Maintenance Dynamics | OPERATING ENGINEER | | 5.0 | 60.0 |
| Miller Electric | ELECTRICIAN | | 0.0 | 0.0 |
| Ramierez & Marsch | LABORER, PLUMBING | | 0.0 | 0.0 |
| Ramierez & Marsch | ELECTRICIAN | | 0.0 | 0.0 |
| Task Force | TRAFFIC CONTROL SIGNALER | | 3.0 | 24.0 |
| US Industrial Hygien | SAFETY ENGINEER - ON SITE | | 1.0 | 8.0 |
| Total hours worked to date: | 4,071.5 | Total | 14.0 | 152.0 |

### EQUIPMENT HOURS

The following equipment hours were Reported today:

| Serial Number | Description | | Standby Hours | Operating Hours |
|---|---|---|---|---|
| LCAJ37365 | 3.5 Yd Rubber Tire Loader | | 0.0 | 12.0 |
| N4DC95160 | 40 K Track Dozer | | 0.0 | 12.0 |
| 21003-1741 | Medium Track Excavator | | 0.0 | 12.0 |
| XYZ | Dump Truck | | 8.0 | 0.0 |
| ABC | Tandem Axle Tractor Trailer Dump Truck #1 | | 0.0 | 12.0 |
| DEF | Tandem Axle Tractor Trailer Dump Truck #2 | | 8.0 | 0.0 |
| GHI | Dump truck | | 8.0 | 0.0 |
| JKL | Excavator | | 0.0 | 12.0 |
| 123 | Power Screener | | 8.0 | 0.0 |
| Griffin Excavator | Excavator | | 8.0 | 0.0 |
| rmo | Roller Compactor | | 12.0 | 0.0 |
| rmo | Long Stick Excavator | | 8.0 | 0.0 |
| Total operating hours to date: 2,551.0 | | Total | 60.0 | 60.0 |

### ACCIDENT REPORTING (Describe accidents)

No accidents reported today

CONTRACTOR CERTIFICATION On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contrac plans and specifications, to the best of my knowledge, except as noted above.

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 8/8/6 | | 8/8/6 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
161 

DATE
08 Aug 2006 - Tuesday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912F6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Weather Caused No Delay
Temperature Min 81 °F, Max 65 °F; No Precipitation; No Wind

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
EQ prepared for installation of the slurry wall. Water supply and slurry piping was assembled. Unecessary equipment was decontaminated. The slurry plant was received and Miller electric connected it. DLZ reset the centerline stakes on both sides of the site and the ends of obstruction 309.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
Ed Wise, Ben Letany, eight representatives of Maintenance Dynamics (five operators, one teamsters, two laborers). two surveyors from DLZ, three electricians from Miller Electric, and three representatives of Task Force Security.

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
Ed Wise conducted a safety tailgate meeting.

**Safety: (Inspections made, Deficiencies noted):**
None.

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 161 

DATE 08 Aug 2006 - Tuesday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912P6-06-C-0003 NA

### LABOR HOURS

The following labor hours were Reported today:

| Employer | Labor Classification | | Number of Employees | Hours Worked |
|---|---|---|---|---|
| Allied Scale | ELECTRICIAN | | 0.0 | 0.0 |
| DLZ | SURVEYOR | | 2.0 | 16.0 |
| EQM | SAFETY ENGINEER - ON SITE | | 1.0 | 10.0 |
| EQM | SUPER - JOB | | 0.0 | 0.0 |
| EQM | CONSTRUCTION INSPECTOR | | 1.0 | 10.0 |
| EQM | CONSTRUCTION-RECORDS CLERK | | 0.0 | 0.0 |
| Great Lakes Labs | ENVIRON-CNTRL-SYS INST/SER | | 0.0 | 0.0 |
| Griffin | LABORER, PLUMBING | | 0.0 | 0.0 |
| Maintenance Dynamics | LABORERS | | 2.0 | 20.0 |
| Maintenance Dynamics | TRUCK DRIVER, GROUP 1 | | 1.0 | 10.0 |
| Maintenance Dynamics | OPERATING ENGINEER | | 5.0 | 42.0 |
| Miller Electric | ELECTRICIAN | | 3.0 | 24.0 |
| Ramierez & Marsch | LABORER, PLUMBING | | 0.0 | 0.0 |
| Ramierez & Marsch | ELECTRICIAN | | 0.0 | 0.0 |
| Task Force | TRAFFIC CONTROL SIGNALER | | 3.0 | 24.0 |
| US Industrial Hygien | SAFETY ENGINEER - ON SITE | | 0.0 | 0.0 |
| Total hours worked to date: | 4,227.5 | Total | 18.0 | 156.0 |

### EQUIPMENT HOURS

The following equipment hours were Reported today:

| Serial Number | Description | | Standby Hours | Operating Hours |
|---|---|---|---|---|
| LCAJ37365 | 3.5 Yd Rubber Tire Loader | | 0.0 | 0.0 |
| N4DC95160 | 40 K Track Dozer | | 0.0 | 0.0 |
| 21003-1741 | Medium Track Excavator | | 0.0 | 8.0 |
| XYZ | Dump Truck | | 8.0 | 0.0 |
| ABC | Tandem Axle Tractor Trailer Dump Truck #1 | | 5.0 | 5.0 |
| DEF | Tandem Axle Tractor Trailer Dump Truck #2 | | 8.0 | 0.0 |
| GHI | Dump truck | | 8.0 | 0.0 |
| JKL | Excavator | | 0.0 | 10.0 |
| 123 | Power Screener | | 8.0 | 0.0 |
| Griffin Excavator | Excavator | | 0.0 | 0.0 |
| nmo | Roller Compactor | | 4.0 | 4.0 |
| nmo | Long Stick Excavator | | 8.0 | 0.0 |
| FEB96V12N17-334-BRB | Forklift | | 4.0 | 4.0 |
| QRS | Slurry Batch Plant | | 8.0 | 0.0 |
| Total operating hours to date: 2,582.0 | | Total | 61.0 | 31.0 |

### ACCIDENT REPORTING (Describe accidents)

No accidents reported today

CONTRACTOR CERTIFICATION On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contra plans and specifications, to the best of my knowledge, except as noted above.

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 9/8/6 | | 9/8/6 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
162 

DATE
09 Aug 2006 - Wednesday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912F6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Weather Caused No Delay
Temperature Min 71 °F, Max 83 °F; No Precipitation; No Wind

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
EQ prepared for installation of the slurry wall. We continued with water supply and slurry piping assembly. Unecessary equipment was decontaminated.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
Ed Wise, Ben Letany, eight representatives of Maintenance Dynamics (five operators, one teamster, two laborers). and three representatives of Task Force Security.

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
Ed Wise conducted a safety tailgate meeting.

**Safety: (Inspections made, Deficiencies noted):**
None.

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 162 

DATE 09 Aug 2006 - Wednesday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912F6-06-C-0003 NA

### LABOR HOURS

**The following labor hours were Reported today:**

| Employer | Labor Classification | | Number of Employees | Hours Worked |
|---|---|---|---|---|
| Allied Scale | ELECTRICIAN | | 0.0 | 0.0 |
| DLZ | SURVEYOR | | 0.0 | 0.0 |
| EQM | SAFETY ENGINEER - ON SITE | | 1.0 | 10.0 |
| EQM | SUPER - JOB | | 0.0 | 0.0 |
| EQM | CONSTRUCTION INSPECTOR | | 1.0 | 10.0 |
| EQM | CONSTRUCTION-RECORDS CLERK | | 0.0 | 0.0 |
| Great Lakes Labs | ENVIRON-CNTRL-SYS INST/SER | | 0.0 | 0.0 |
| Griffin | LABORER, PLUMBING | | 0.0 | 0.0 |
| Maintenance Dynamics | LABORERS | | 2.0 | 20.0 |
| Maintenance Dynamics | TRUCK DRIVER, GROUP 1 | | 1.0 | 10.0 |
| Maintenance Dynamics | OPERATING ENGINEER | | 5.0 | 42.0 |
| Miller Electric | ELECTRICIAN | | 0.0 | 0.0 |
| Ramierez & Marsch | LABORER, PLUMBING | | 0.0 | 0.0 |
| Ramierez & Marsch | ELECTRICIAN | | 0.0 | 0.0 |
| Task Force | TRAFFIC CONTROL SIGNALER | | 3.0 | 24.0 |
| US Industrial Hygien | SAFETY ENGINEER - ON SITE | | 0.0 | 0.0 |
| Total hours worked to date: | 4,343.5 | Total | 13.0 | 116.0 |

### EQUIPMENT HOURS

**The following equipment hours were Reported today:**

| Serial Number | Description | | Standby Hours | Operating Hours |
|---|---|---|---|---|
| N4DC95160 | 40 K Track Dozer | | 0.0 | 0.0 |
| 21003-1741 | Medium Track Excavator | | 0.0 | 8.0 |
| XYZ | Dump Truck | | 8.0 | 0.0 |
| ABC | TandemAxle Tractor Trailer Dump Truck #1 | | 5.0 | 5.0 |
| JKL | Excavator | | 0.0 | 10.0 |
| 123 | Power Screener | | 8.0 | 0.0 |
| rmo | Roller Compactor | | 8.0 | 0.0 |
| rmo | Long Stick Excavator | | 8.0 | 0.0 |
| FEB96V12N17-334-BRB | Forklift | | 4.0 | 4.0 |
| QRS | Slurry Batch Plant | | 8.0 | 0.0 |
| Total operating hours to date: 2,609.0 | | Total | 49.0 | 27.0 |

### ACCIDENT REPORTING (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| [signature] | 8/10/6 | [signature] | 8/10/6 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
163 

DATE
10 Aug 2006 - Thursday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912F6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Weather Caused Non-Critical Delay
Temperature Min 69 °F, Max 76 °F; 0.21 IN Precipitation; No Wind

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
EQ continued with preparation for installation of the slurry wall. We continued with water supply and slurry piping assembly. Unecessary equipment was decontaminated. A replacement forklift was received.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
Ed Wise, Ben Letany, eight representatives of Maintenance Dynamics (five operators, one teamster, two laborers). and three representatives of Task Force Security.

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
Ed Wise conducted a safety tailgate meeting.

**Safety: (Inspections made, Deficiencies noted):**
None.

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 163 

DATE 10 Aug 2006 - Thursday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912P6-06-C-0003 NA

### LABOR HOURS

**The following labor hours were Reported today:**

| Employer | Labor Classification | Number of Employees | Hours Worked |
|---|---|---|---|
| Allied Scale | ELECTRICIAN | 0.0 | 0.0 |
| DLZ | SURVEYOR | 0.0 | 0.0 |
| EQM | SAFETY ENGINEER - ON SITE | 1.0 | 10.0 |
| EQM | SUPER - JOB | 0.0 | 0.0 |
| EQM | CONSTRUCTION INSPECTOR | 1.0 | 10.0 |
| EQM | CONSTRUCTION-RECORDS CLERK | 0.0 | 0.0 |
| Great Lakes Labs | ENVIRON-CNTRL-SYS INST/SER | 0.0 | 0.0 |
| Griffin | LABORER, PLUMBING | 0.0 | 0.0 |
| Maintenance Dynamics | LABORERS | 2.0 | 20.0 |
| Maintenance Dynamics | TRUCK DRIVER, GROUP 1 | 1.0 | 10.0 |
| Maintenance Dynamics | OPERATING ENGINEER | 5.0 | 42.0 |
| Miller Electric | ELECTRICIAN | 0.0 | 0.0 |
| Ramierez & Marsch | LABORER, PLUMBING | 0.0 | 0.0 |
| Ramierez & Marsch | ELECTRICIAN | 0.0 | 0.0 |
| Task Force | TRAFFIC CONTROL SIGNALER | 3.0 | 24.0 |
| US Industrial Hygien | SAFETY ENGINEER - ON SITE | 0.0 | 0.0 |
| | Total | 13.0 | 116.0 |

Total hours worked to date: 4,459.5

### EQUIPMENT HOURS

**The following equipment hours were Reported today:**

| Serial Number | Description | Standby Hours | Operating Hours |
|---|---|---|---|
| N4DC95160 | 40 K Track Dozer | 0.0 | 0.0 |
| 21003-1741 | Medium Track Excavator | 0.0 | 8.0 |
| XYZ | Dump Truck | 8.0 | 0.0 |
| ABC | Tandem Axle Tractor Trailer Dump Truck #1 | 5.0 | 5.0 |
| JKL | Excavator | 0.0 | 10.0 |
| rmo | Roller Compactor | 8.0 | 0.0 |
| rmo | Long Stick Excavator | 8.0 | 0.0 |
| FEB96V12N17-334-BRB | Forklift | 8.0 | 0.0 |
| QRS | Slurry Batch Plant | 8.0 | 0.0 |
| jkl | Forklift | 8.0 | 0.0 |
| | Total | 53.0 | 23.0 |

Total operating hours to date: 2,632.0

### ACCIDENT REPORTING (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contrac plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 8/11/8 | | 8/11/6 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
164 

DATE
11 Aug 2006 - Friday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912P6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Weather Caused No Delay
Temperature Mn 69 °F, Max 76 °F, No Precipitation; No Wind

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
EQ completed preparation for installation of the slurry wall. Minor work remains for Monday when installation of the slurry wall will begin.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
Ed Wise, Ben Letany, eight representatives of Maintenance Dynamics (five operators, one teamster, two laborers). and three representatives of Task Force Security.

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
Ed Wise conducted a safety tailgate meeting.

**Safety: (Inspections made, Deficiencies noted):**
None.

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 164 

DATE 11 Aug 2006 - Friday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912R6-06-C-0003 NA

**LABOR HOURS**

**The following labor hours were Reported today:**

| Employer | Labor Classification | Number of Employees | Hours Worked |
|---|---|---|---|
| Allied Scale | ELECTRICIAN | 0.0 | 0.0 |
| DLZ | SURVEYOR | 0.0 | 0.0 |
| EQM | SAFETY ENGINEER - ON SITE | 1.0 | 10.0 |
| EQM | SUPER - JOB | 0.0 | 0.0 |
| EQM | CONSTRUCTION INSPECTOR | 1.0 | 10.0 |
| EQM | CONSTRUCTION-RECORDS CLERK | 0.0 | 0.0 |
| Great Lakes Labs | ENVIRON-CNTRL-SYS INST/SER | 0.0 | 0.0 |
| Griffin | LABORER, PLUMBING | 0.0 | 0.0 |
| Maintenance Dynamics | LABORERS | 2.0 | 20.0 |
| Maintenance Dynamics | TRUCK DRIVER, GROUP 1 | 1.0 | 10.0 |
| Maintenance Dynamics | OPERATING ENGINEER | 5.0 | 42.0 |
| Miller Electric | ELECTRICIAN | 0.0 | 0.0 |
| Ramierez & Marsch | LABORER, PLUMBING | 0.0 | 0.0 |
| Ramierez & Marsch | ELECTRICIAN | 0.0 | 0.0 |
| Task Force | TRAFFIC CONTROL SIGNALER | 3.0 | 24.0 |
| US Industrial Hygien | SAFETY ENGINEER - ON SITE | 0.0 | 0.0 |
| | Total | 13.0 | 116.0 |

Total hours worked to date: 4,575.5

**EQUIPMENT HOURS**

**The following equipment hours were Reported today:**

| Serial Number | Description | Standby Hours | Operating Hours |
|---|---|---|---|
| N4DC95160 | 40 K Track Dozer | 0.0 | 0.0 |
| 21003-1741 | Medium Track Excavator | 0.0 | 8.0 |
| XYZ | Dump Truck | 8.0 | 0.0 |
| ABC | Tandem Axle Tractor Trailer Dump Truck #1 | 5.0 | 5.0 |
| JKL | Excavator | 0.0 | 10.0 |
| rmo | Roller Compactor | 8.0 | 0.0 |
| rmo | Long Stick Excavator | 8.0 | 0.0 |
| FEB96V12N17-334-BRB | Forklift | 8.0 | 0.0 |
| QRS | Slurry Batch Plant | 8.0 | 0.0 |
| jkl | Forklift | 8.0 | 0.0 |
| | Total | 53.0 | 23.0 |

Total operating hours to date: 2,655.0

**ACCIDENT REPORTING** (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 8/14/6 | | 8/14/06 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
167 

DATE
14 Aug 2006 - Monday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912P6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Weather Caused No Delay
Temperature Mn 63 °F, Max 83 °F; No Precipitation; No Wind

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
EQ completed installation of support facilities and began excavation of the slurry wall on the east side. The lead in trench was started at station 45+05. It will be installed on a 1:1 slope southward to station 44+70 to a depth of 35 ft. Section 44+70 to 44+60 is the overlap segment and will be installed to depth. EQ has estimated that about 50% of the bentonite will be recovered from the backfill from the lead in and overlap segments. The work plan calls for 4000 lb bentonite super sacks to be used at the rate of once per 7.4 feet. The bentonite required for this segment is, therefore, 35/2/7.4/2=1.18 (leadin), + 20/7.4/2 =1.35 (overlap), + 130/7.4=17.57 (New segment)= 20.10 sacks. EQ will use 21 sacks for this segment. We completed excavation of the leadin trench to station 44+70 to 32.5 ft. Excavation was very slow, and of concern, as this was soft backfill material. EQ will proceed with excavation on 081506, but it is possible the long stick excavator lacks sufficient power. QC data was in compliance except for pH on the supply slurry which showed 6.2 S.U. EQ believes this to be erroneous data and has instructed the sample technician to recalibrate the pH meter. Andy Lucas was on site.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
Eric Bowman, Ed Wise, Nick Michailides, Ben Letany, Andy Lucas, eight representatives of Maintenance Dynamics (five operators, one teamster, two laborers). and three representatives of Task Force Security.

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
Ben Letany conducted a safety tailgate meeting.

**Safety: (Inspections made, Deficiencies noted):**
None.

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 167 

DATE 14 Aug 2006 - Monday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912P6-06-C-0003 NA

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

**LABOR HOURS**

**The following labor hours were Reported today:**

| Employer | Labor Classification | | Number of Employees | Hours Worked |
|---|---|---|---|---|
| Allied Scale | ELECTRICIAN | | 0.0 | 0.0 |
| DLZ | SURVEYOR | | 0.0 | 0.0 |
| EQM | SAFETY ENGINEER - ON SITE | | 1.0 | 11.0 |
| EQM | SUPER - JOB | | 0.0 | 0.0 |
| EQM | CONSTRUCTION INSPECTOR | | 1.0 | 12.0 |
| EQM | CONSTRUCTION-RECORDS CLERK | | 1.0 | 11.0 |
| Great Lakes Labs | ENVIRON-CNTRL-SYS INST/SER | | 0.0 | 0.0 |
| Griffin | LABORER, PLUMBING | | 0.0 | 0.0 |
| Maintenance Dynamics | LABORERS | | 2.0 | 22.0 |
| Maintenance Dynamics | TRUCK DRIVER, GROUP 1 | | 1.0 | 11.0 |
| Maintenance Dynamics | OPERATING ENGINEER | | 5.0 | 42.0 |
| Miller Electric | ELECTRICIAN | | 0.0 | 0.0 |
| Ramierez & Marsch | LABORER, PLUMBING | | 0.0 | 0.0 |
| Ramierez & Marsch | ELECTRICIAN | | 0.0 | 0.0 |
| Task Force | TRAFFIC CONTROL SIGNALER | | 3.0 | 24.0 |
| US Industrial Hygien | SAFETY ENGINEER - ON SITE | | 1.0 | 8.0 |
| Total hours worked to date: | 4,716.5 | Total | 15.0 | 141.0 |

**EQUIPMENT HOURS**

**The following equipment hours were Reported today:**

| Serial Number | Description | | Standby Hours | Operating Hours |
|---|---|---|---|---|
| 21003-1741 | Medium Track Excavator | | 0.0 | 8.0 |
| XYZ | Dump Truck | | 8.0 | 0.0 |
| JKL | Excavator | | 0.0 | 8.0 |
| mno | Long Stick Excavator | | 0.0 | 8.0 |
| QRS | Slurry Batch Plant | | 0.0 | 8.0 |
| jkl | Forklift | | 0.0 | 8.0 |
| Total operating hours to date: 2,695.0 | | Total | 8.0 | 40.0 |

**ACCIDENT REPORTING** (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contra plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 8/15/6 | | 8/15/06 |

# DAILY SOIL-BENTONITE SLURRY WALL QUALITY CONTROL FORM

DATE: 08/14/06 JOB NAME: INDIANA HARBOR CUTOFF WALL GAPS JOB NUMBER: 30249

ATHER: Clear, warm

## SLURRY

### WITHIN TRENCH

| ATION | DEPTH | DENSITY | SAND | FILTRATE LOSS | VISCOSITY | pH |
|---|---|---|---|---|---|---|
| | feet | lb/ft$^3$ | % | cm$^3$ | seconds | S.U. |
| 4+85 | 2.00 | 77.00 | 7.00 | 16.00 | 45.00 | 9.1 |
| 4+75 | 33.00 | 70.00 | 6.50 | 12.00 | 41.00 | 8.6 |

EAST TRENCH

MENTS: No production on this trench today. 375 excavator from this trench moved to the SE trench today (since it's 375 excavator is broke down) to try and complete the portion of the slurry wall that is in front of the main gate as soon as possible.

### BACKFILL

| ATION | MOISTURE | FULL GRAIN SIZE | #200 SIEVE FINES | ATTERBURG |
|---|---|---|---|---|
| | % | | % | |
| | N/A | | | |

### SOIL-BENTONITE BACKFILL

| ATION | SLUMP CONE | FULL GRAIN SIZE | #200 SIEVE FINES | ATTERBURG | PERMEABILITY | PERM. DUPLICATE |
|---|---|---|---|---|---|---|
| | inches | | % | | API | TAKEN FOR D5084? |
| N/A | | | | | | |

MENTS

| DRY BENTONITE ADDITION | | |
|---|---|---|
| | TONS | % |
| TODAY | | |
| TO DATE | | |
| BORROW % | CY | |

| | |
|---|---|
| pH CALIBRATIONS PERFORMED TODAY? | Yes |
| BALANCE CALIBRATIONS PERFORMED TODAY? | Yes |
| FUNNEL CALIBRATIONS PERFORMED TODAY? | Yes |

# DAILY SOIL-BENTONITE SLURRY WALL QUALITY CONTROL FORM

E: 08/14/06 JOB NAME: INDIANA HARBOR CUTOFF WALL GAPS JOB NUMBER: 30249

## SLURRY BATCH PLANT

| TIME | DENSITY | VISCOSITY | FILTRATE LOSS | pH |
|---|---|---|---|---|
| Military | $lb/ft^3$ | seconds | $cm^3$ | S.U. |
| 13:15 | 67.00 | 43.00 | 18.00 | 6.2 |
| 14:15 | 68.50 | 51.00 | 19.00 | 6.2 |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

**pH readings are believed eronious, the r will be recalibrated**

| | |
|---|---|
| FUNNEL CALIBRATIONS PERFORMED TODAY? | Yes |
| pH METER CALIBRATIONS PERFORMED TODAY? | Yes |
| BALANCE CALIBRATIONS PERFORMED TODAY? | Yes |

# DAILY SOIL-BENTONITE SLURRY WALL QUALITY CONTROL FORM

ATE: 08/14/06 JOB NAME: INDIANA HARBOR CDF S-B CUTOFF WALL JOB NUMBER: 30249

VEATHER: Clear, warm RIG NUMBER:

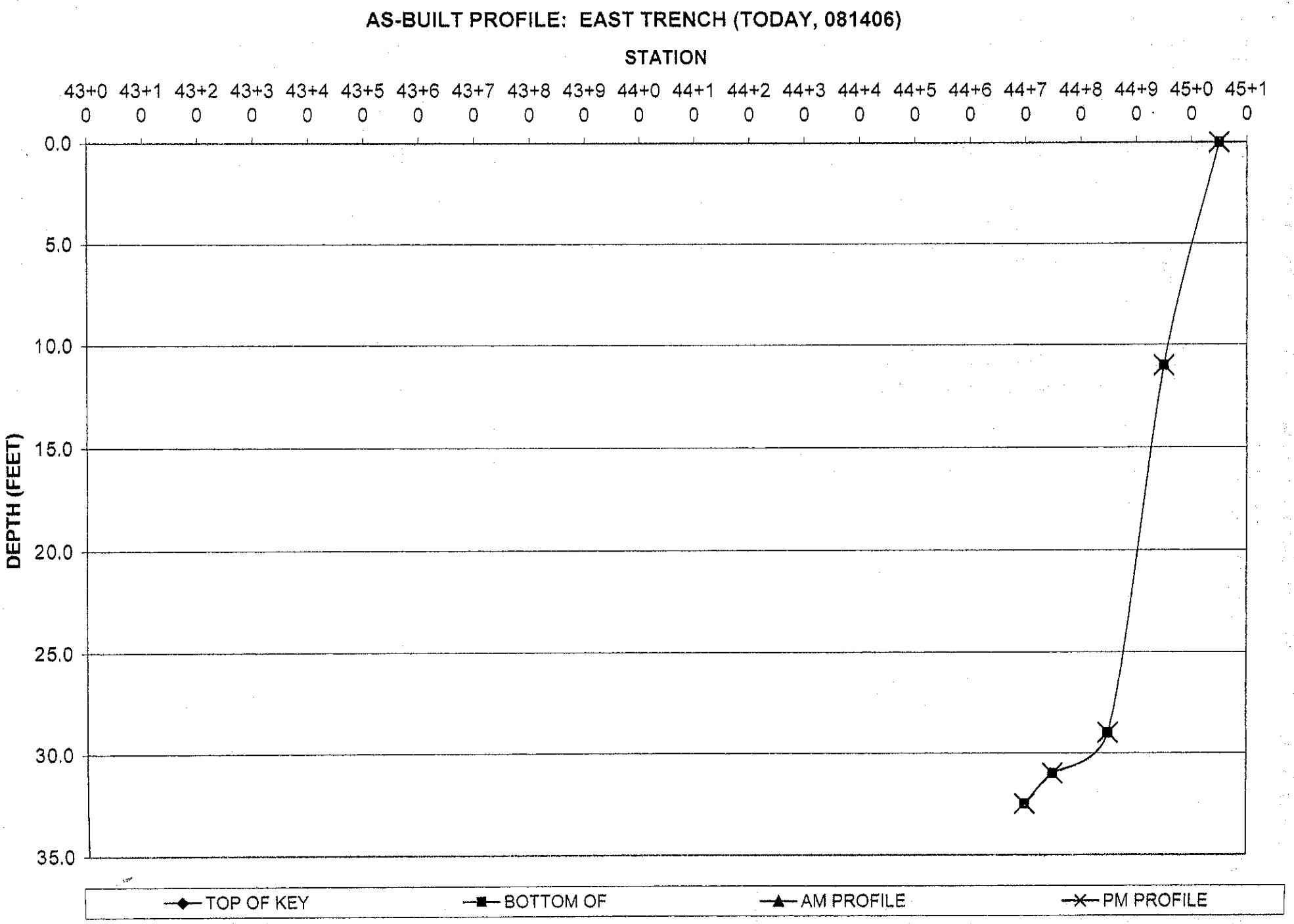
| TION | EXCAVATION DEPTH TOP KEY | BOT EXCAVATION | AVG DEPTH | LENGTH | AREA | WIDTH | BACKFILL SLOPE STATION | START OF SHIFT | END OF SHIFT |
|---|---|---|---|---|---|---|---|---|---|
| +10 | | | | 10.0 | 0.0 | 2.5 | 43+10 | 0.0 | 0.0 |
| +20 | | | 0.0 | 10.0 | 0.0 | 2.5 | 43+20 | 0.0 | 0.0 |
| +30 | | | 0.0 | 10.0 | 0.0 | 2.5 | 43+30 | 0.0 | 0.0 |
| +40 | | | 0.0 | 10.0 | 0.0 | 2.5 | 43+40 | 0.0 | 0.0 |
| +50 | | | 0.0 | 10.0 | 0.0 | 2.5 | 43+50 | 0.0 | 0.0 |
| +60 | | | 0.0 | 10.0 | 0.0 | 2.5 | 43+60 | 0.0 | 0.0 |
| +70 | | | 0.0 | 10.0 | 0.0 | 2.5 | 43+70 | 0.0 | 0.0 |
| +80 | | | 0.0 | 10.0 | 0.0 | 2.5 | 43+80 | 0.0 | 0.0 |
| +90 | | | 0.0 | 10.0 | 0.0 | 2.5 | 43+90 | 0.0 | 0.0 |
| +00 | | | 0.0 | 10.0 | 0.0 | 2.5 | 44+00 | 0.0 | 0.0 |
| +10 | | | 0.0 | 10.0 | 0.0 | 2.5 | 44+10 | 0.0 | 0.0 |
| +20 | | | 0.0 | 10.0 | 0.0 | 2.5 | 44+20 | 0.0 | 0.0 |
| -30 | | | 0.0 | 10.0 | 0.0 | 2.5 | 44+30 | 0.0 | 0.0 |
| | | | 0.0 | 10.0 | 0.0 | 2.5 | 44+40 | 0.0 | 0.0 |
| | | | 0.0 | 10.0 | 0.0 | 2.5 | 44+50 | 0.0 | 0.0 |
| -60 | | | 0.0 | 10.0 | 0.0 | 2.5 | 44+60 | 0.0 | 0.0 |
| -70 | | 32.5 | 0.0 | 10.0 | 0.0 | 2.5 | 44+70 | 0.0 | 32.5 |
| -75 | | 31.0 | 0.0 | 10.0 | 0.0 | 2.5 | 44+75 | 0.0 | 31.0 |
| -85 | | 29.0 | 0.0 | 10.0 | 0.0 | 2.5 | 44+85 | 0.0 | 29.0 |
| -95 | | 11.0 | 0.0 | 10.0 | 0.0 | 2.5 | 44+95 | 0.0 | 11.0 |
| -05 | | 0.0 | | | | | 45+05 | 0.0 | 0.0 |

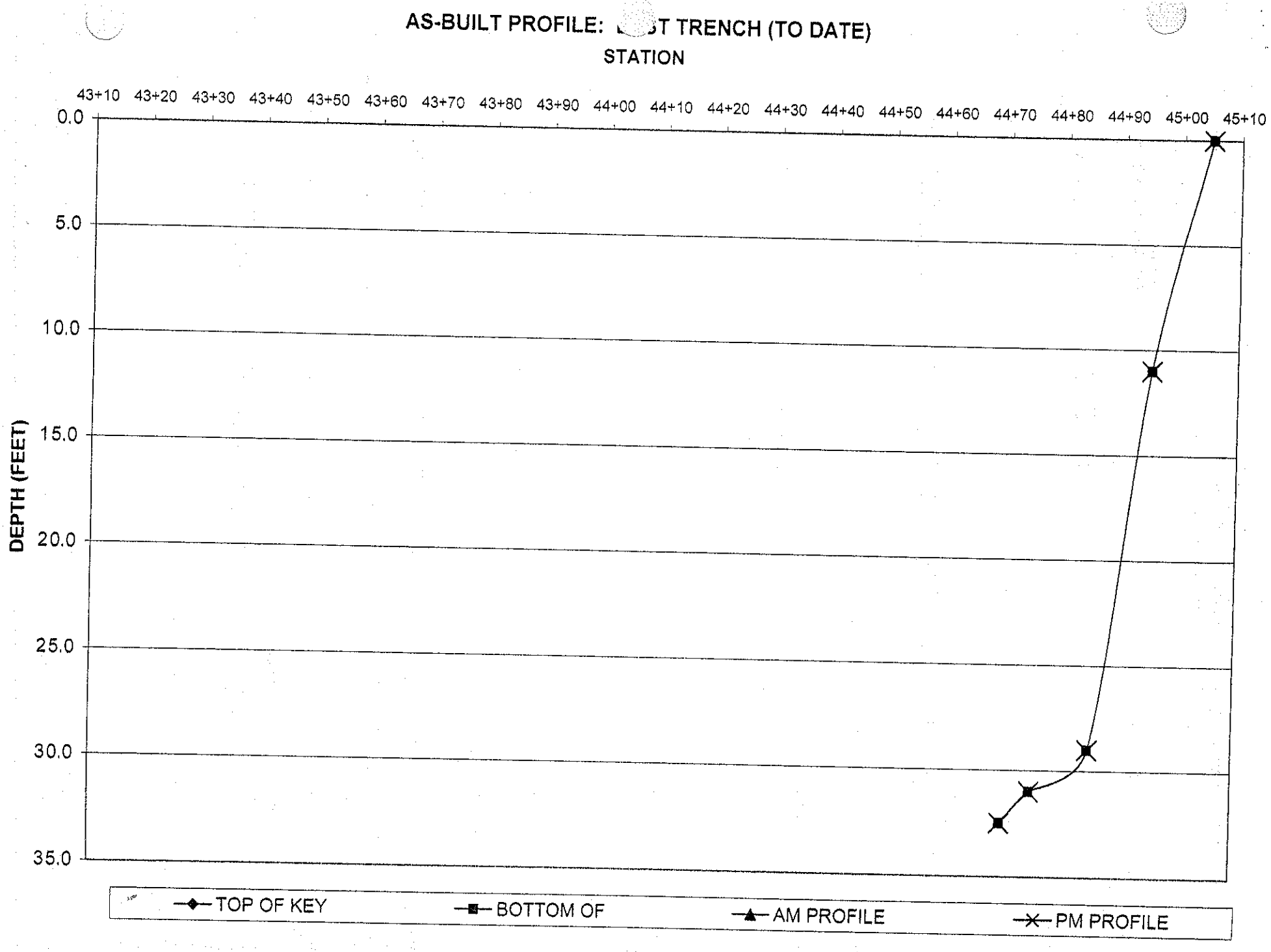
SF TODAY 0.00

SF TO DATE

MENTS

Trench


AS-BUILT PROFILE: EAST TRENCH (TODAY, 081406)
STATION
43+00
43+10
43+20
43+30
43+40
43+50
43+60
43+70
43+80
43+90
44+00
44+10
44+20
44+30
44+40
44+50
44+60
44+70
44+80
44+90
45+00
45+10
DEPTH (FEET)
0.0
5.0
10.0
15.0
20.0
25.0
30.0
35.0
TOP OF KEY
BOTTOM OF
AM PROFILE
PM PROFILE


AS-BUILT PROFILE: T TRENCH (TO DATE)
STATION
43+10
43+20
43+30
43+40
43+50
43+60
43+70
43+80
43+90
44+00
44+10
44+20
44+30
44+40
44+50
44+60
44+70
44+80
44+90
45+00
45+10
DEPTH (FEET)
0.0
5.0
10.0
15.0
20.0
25.0
30.0
35.0
TOP OF KEY
BOTTOM OF
AM PROFILE
PM PROFILE

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 168 

DATE 15 Aug 2006 - Tuesday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912F6-06-C-0003 NA

CONTRACTOR Environmental Quality Management Inc

WEATHER Weather Caused No Delay
Temperature Min 60 °F, Max 82 °F, No Precipitation; No Wind

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
EQ continued with excavation of the east segment. This proved futile as the excavator lacked sufficient power. We discontinued loperations mid day and will acquire a more powerfull excavator. Decontamination of equipment and other miscellaneous activities progressed. The USACE safety officer was on site and noted no deficiencies.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
Eric Bowman, Ed Wise, Nick Mchailides, Ben Letany, eight representatives of Maintenance Dynamics (five operators, one teamster, two laborers). and three representatives of Task Force Security.

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
Nick Mchailides conducted a safety tailgate meeting.

**Safety: (Inspections made, Deficiencies noted):**
The USACE safety inspector was on site for an informal audit. No deficiencies were found.

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 168 

DATE 15 Aug 2006 - Tuesday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912F6-06-C-0003 NA

**LABOR HOURS**

**The following labor hours were Reported today:**

| Employer | Labor Classification | | Number of Employees | Hours Worked |
|---|---|---|---|---|
| Allied Scale | ELECTRICIAN | | 0.0 | 0.0 |
| DLZ | SURVEYOR | | 0.0 | 0.0 |
| EQM | SAFETY ENGINEER - ON SITE | | 1.0 | 11.0 |
| EQM | SUPER - JOB | | 1.0 | 11.0 |
| EQM | CONSTRUCTION INSPECTOR | | 1.0 | 12.0 |
| EQM | CONSTRUCTION-RECORDS CLERK | | 1.0 | 11.0 |
| Great Lakes Labs | ENVIRON-CNTRL-SYS INST/SER | | 0.0 | 0.0 |
| Griffin | LABORER, PLUMBING | | 0.0 | 0.0 |
| Maintenance Dynamics | LABORERS | | 2.0 | 22.0 |
| Maintenance Dynamics | TRUCK DRIVER, GROUP 1 | | 1.0 | 10.0 |
| Maintenance Dynamics | OPERATING ENGINEER | | 5.0 | 42.0 |
| Miller Electric | ELECTRICIAN | | 0.0 | 0.0 |
| Ramierez & Marsch | LABORER, PLUMBING | | 0.0 | 0.0 |
| Ramierez & Marsch | ELECTRICIAN | | 0.0 | 0.0 |
| Task Force | TRAFFIC CONTROL SIGNALER | | 3.0 | 24.0 |
| US Industrial Hygien | SAFETY ENGINEER - ON SITE | | 0.0 | 0.0 |
| Total hours worked to date: | 4,859.5 | Total | 15.0 | 143.0 |

**EQUIPMENT HOURS**

**No equipment hours were Reported today**

Total operating hours to date: 2,695.0

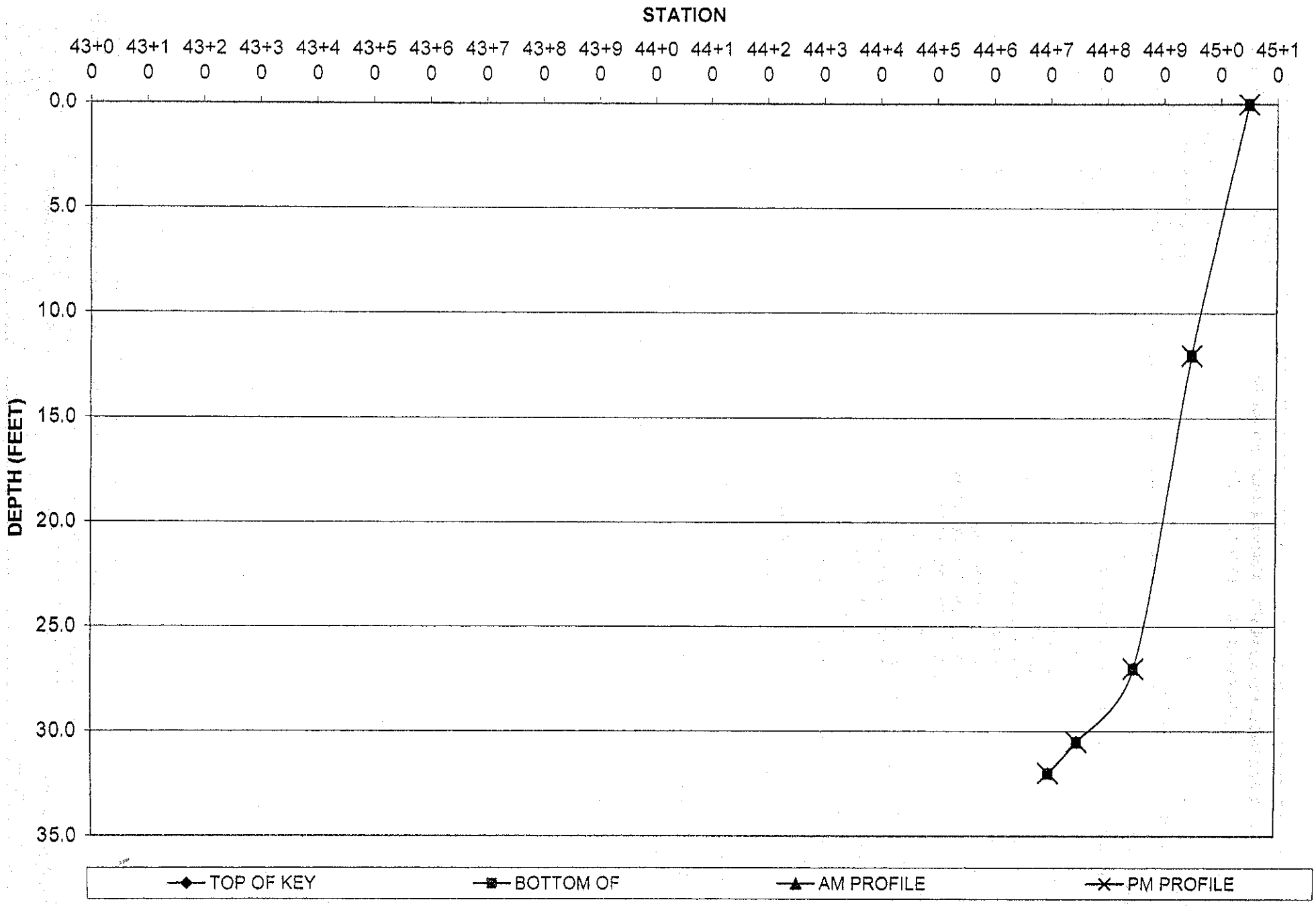
**ACCIDENT REPORTING** (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 8/16/6 | | 8/16/6 |

# AS-BUILT PROFILE: EAST TRENCH



| CONTRACTORS QUALITY CONTROL REPORT (QCR)<br>DAILY LOG OF CONSTRUCTION - CIVIL | REPORT NUMBER<br>169 Page 1 of 2<br>DATE<br>16 Aug 2006 - Wednesday |
|---|---|
| PROJECT<br>Indiana Harbor CDF, Slurry Wall Gaps | CONTRACT NUMBER<br>W912F6-06-C-0003 NA |
| CONTRACTOR<br>Environmental Quality Management Inc | WEATHER<br>Weather Caused No Delay<br>Temperature Min 66 °F, Max 82 °F; No Precipitation; No Wind |

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
EQ continued with decontamination of equipment and other miscellaneous activities progressed.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
Eric Bowman, Ed Wise, Nick Michailides, Ben Letany, eight representatives of Maintenance Dynamics (five operators, one teamster, two laborers). and three representatives of Task Force Security.

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
Nick Michailides conducted a safety tailgate meeting.

**Safety: (Inspections made, Deficiencies noted):**
None

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 169 

DATE 16 Aug 2006 - Wednesday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912P6-06-C-0003 NA

### LABOR HOURS

The following labor hours were Reported today:

| Employer | Labor Classification | Number of Employees | Hours Worked |
|---|---|---|---|
| Allied Scale | ELECTRICIAN | 0.0 | 0.0 |
| DLZ | SURVEYOR | 0.0 | 0.0 |
| EGM | SAFETY ENGINEER - ON SITE | 1.0 | 8.0 |
| EGM | SUPER - JOB | 1.0 | 8.0 |
| EGM | CONSTRUCTION INSPECTOR | 1.0 | 8.0 |
| EGM | CONSTRUCTION-RECORDS CLERK | 1.0 | 8.0 |
| Great Lakes Labs | ENVIRON-CNTRL-SYS INST/SER | 0.0 | 0.0 |
| Griffin | LABORER, PLUMBING | 0.0 | 0.0 |
| Maintenance Dynamics | LABORERS | 2.0 | 16.0 |
| Maintenance Dynamics | TRUCK DRIVER, GROUP 1 | 1.0 | 8.0 |
| Maintenance Dynamics | OPERATING ENGINEER | 5.0 | 40.0 |
| Miller Electric | ELECTRICIAN | 0.0 | 0.0 |
| Ramierez & Marsch | LABORER, PLUMBING | 0.0 | 0.0 |
| Ramierez & Marsch | ELECTRICIAN | 0.0 | 0.0 |
| Task Force | TRAFFIC CONTROL SIGNALER | 3.0 | 24.0 |
| US Industrial Hygien | SAFETY ENGINEER - ON SITE | 0.0 | 0.0 |
| | Total | 15.0 | 120.0 |

Total hours worked to date: 4,979.5

### EQUIPMENT HOURS

The following equipment hours were Reported today:

| Serial Number | Description | Standby Hours | Operating Hours |
|---|---|---|---|
| 21003-1741 | Medium Track Excavator | 0.0 | 8.0 |
| XYZ | Dump Truck | 8.0 | 0.0 |
| JKL | Excavator | 0.0 | 8.0 |
| mno | Long Stick Excavator | 8.0 | 8.0 |
| QRS | Slurry Batch Plant | 8.0 | 8.0 |
| jkl | Forklift | 0.0 | 8.0 |
| | Total | 24.0 | 40.0 |

Total operating hours to date: 2,735.0

### ACCIDENT REPORTING (Describe accidents)

No accidents reported today

CONTRACTOR CERTIFICATION On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as noted above.

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 8/17/6 | | 8/17/06 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
170 

DATE
17 Aug 2006 - Thursday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912P6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Weather Caused No Delay
Temperature Min 64 °F, Max 85 °F, No Precipitation, No Wind

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
EQ continued with decontamination of equipment and other miscellaneous activities. Eric Bowman and Ed Wise went to visit Dewind Dewatering to inspect their slurry wall equipment.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
Eric Bowman, Ed Wise, Nick Mchailides, Ben Letany, two representatives of Maintenance Dynamics (one operator, one laborer). and three representatives of Task Force Security.

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
Nick Mchailides conducted a safety tailgate meeting.

**Safety: (Inspections made, Deficiencies noted):**
None

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 170 

DATE 17 Aug 2006 - Thursday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912P6-06-C-0003 NA

### LABOR HOURS

The following labor hours were Reported today:

| Employer | Labor Classification | Number of Employees | Hours Worked |
|---|---|---|---|
| Allied Scale | ELECTRICIAN | 0.0 | 0.0 |
| DLZ | SURVEYOR | 0.0 | 0.0 |
| EQM | SAFETY ENGINEER - ON SITE | 1.0 | 8.0 |
| EQM | SUPER - JOB | 1.0 | 8.0 |
| EQM | CONSTRUCTION INSPECTOR | 1.0 | 8.0 |
| EQM | CONSTRUCTION-RECORDS CLERK | 1.0 | 8.0 |
| Great Lakes Labs | ENVIRON-CNTRL-SYS INST/SER | 0.0 | 0.0 |
| Griffin | LABORER, PLUMBING | 0.0 | 0.0 |
| Maintenance Dynamics | LABORERS | 1.0 | 8.0 |
| Maintenance Dynamics | TRUCK DRIVER, GROUP 1 | 0.0 | 0.0 |
| Maintenance Dynamics | OPERATING ENGINEER | 1.0 | 8.0 |
| Miller Electric | ELECTRICIAN | 0.0 | 0.0 |
| Ramierez & Marsch | LABORER, PLUMBING | 0.0 | 0.0 |
| Ramierez & Marsch | ELECTRICIAN | 0.0 | 0.0 |
| Task Force | TRAFFIC CONTROL SIGNALER | 3.0 | 24.0 |
| US Industrial Hygien | SAFETY ENGINEER - ON SITE | 0.0 | 0.0 |
| | Total | 9.0 | 72.0 |

Total hours worked to date: 5,051.5

### EQUIPMENT HOURS

The following equipment hours were Reported today:

| Serial Number | Description | Standby Hours | Operating Hours |
|---|---|---|---|
| 21003-1741 | Medium Track Excavator | 8.0 | 0.0 |
| JKL | Excavator | 8.0 | 0.0 |
| jkl | Forklift | 0.0 | 8.0 |
| | Total | 16.0 | 8.0 |

Total operating hours to date: 2,743.0

### ACCIDENT REPORTING (Describe accidents)

No accidents reported today

CONTRACTOR CERTIFICATION On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contr plans and specifications, to the best of my knowledge, except as noted above.

| QC REPRESENTATIVE'S SIGNATURE | DATE 8/18/06 | SUPERINTENDENTS INITIALS | DATE 8/18/06 |
|---|---|---|---|

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
171 

DATE
18 Aug 2006 - Friday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912P6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Weather Caused No Delay
Temperature Min 69 °F, Max 80 °F, No Precipitation, No Wind

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
EQ unloaded bentonite,and performed other minor site activities.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
Eric Bowman, Nick Michailides, Ben Letany, two representatives of Maintenance Dynamics (one operator, one laborer). and three representatives of Task Force Security.

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
Nick Michailides conducted a safety tailgate meeting.

**Safety: (Inspections made, Deficiencies noted):**
None

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 171 

DATE 18 Aug 2006 - Friday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912P6-06-C-0003 NA

### LABOR HOURS

The following labor hours were Reported today:

| Employer | Labor Classification | Number of Employees | Hours Worked |
|---|---|---|---|
| Allied Scale | ELECTRICIAN | 0.0 | 0.0 |
| DLZ | SURVEYOR | 0.0 | 0.0 |
| EQM | SAFETY ENGINEER - ON SITE | 1.0 | 8.0 |
| EQM | SUPER - JOB | 1.0 | 8.0 |
| EQM | CONSTRUCTION INSPECTOR | 1.0 | 8.0 |
| EQM | CONSTRUCTION-RECORDS CLERK | 0.0 | 0.0 |
| Great Lakes Labs | ENVIRON CNTRL-SYS INST/SER | 0.0 | 0.0 |
| Griffin | LABORER, PLUMBING | 0.0 | 0.0 |
| Maintenance Dynamics | LABORERS | 1.0 | 8.0 |
| Maintenance Dynamics | TRUCK DRIVER, GROUP 1 | 0.0 | 0.0 |
| Maintenance Dynamics | OPERATING ENGINEER | 1.0 | 8.0 |
| Miller Electric | ELECTRICIAN | 0.0 | 0.0 |
| Ramierez & Marsch | LABORER, PLUMBING | 0.0 | 0.0 |
| Ramierez & Marsch | ELECTRICIAN | 0.0 | 0.0 |
| Task Force | TRAFFIC CONTROL SIGNALER | 3.0 | 24.0 |
| US Industrial Hygien | SAFETY ENGINEER - ON SITE | 0.0 | 0.0 |
| | Total | 8.0 | 64.0 |

Total hours worked to date: 5,115.5

### EQUIPMENT HOURS

The following equipment hours were Reported today:

| Serial Number | Description | Standby Hours | Operating Hours |
|---|---|---|---|
| 21003-1741 | Medium Track Excavator | 8.0 | 0.0 |
| JKL | Excavator | 8.0 | 0.0 |
| jkl | Forklift | 0.0 | 8.0 |
| | Total | 16.0 | 8.0 |

Total operating hours to date: 2,751.0

### ACCIDENT REPORTING (Describe accidents)

No accidents reported today

CONTRACTOR CERTIFICATION On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contr plans and specifications, to the best of my knowledge, except as noted above.

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 8/21/6 | | 8/21/06 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
174 

DATE
21 Aug 2006 - Monday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912F6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Weather Caused No Delay
Temperature Min 60 °F, Max 83 °F; No Precipitation; No Wind

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
EQ unloaded bentonite,and performed other minor site activities.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
Eric Bowman, Ben Letany, two representatives of Maintenance Dynamics (one operator, one laborer). and three representatives of Task Force Security.

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
Eric Bowman conducted a safety tailgate meeting.

**Safety: (Inspections made, Deficiencies noted):**
None

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 174 

DATE 21 Aug 2006 - Monday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912F6-06-C-0003 NA

### LABOR HOURS

The following labor hours were Reported today:

| Employer | Labor Classification | Number of Employees | Hours Worked |
|---|---|---|---|
| Allied Scale | ELECTRICIAN | 0.0 | 0.0 |
| DLZ | SURVEYOR | 0.0 | 0.0 |
| EQM | SAFETY ENGINEER - ON SITE | 1.0 | 8.0 |
| EQM | SUPER - JOB | 0.0 | 0.0 |
| EQM | CONSTRUCTION INSPECTOR | 1.0 | 8.0 |
| EQM | CONSTRUCTION-RECORDS CLERK | 0.0 | 0.0 |
| Great Lakes Labs | ENVIRON-CNTRL-SYS INST/SER | 0.0 | 0.0 |
| Griffin | LABORER, PLUMBING | 0.0 | 0.0 |
| Maintenance Dynamics | LABORERS | 1.0 | 8.0 |
| Maintenance Dynamics | TRUCK DRIVER, GROUP 1 | 0.0 | 0.0 |
| Maintenance Dynamics | OPERATING ENGINEER | 1.0 | 8.0 |
| Miller Electric | ELECTRICIAN | 0.0 | 0.0 |
| Ramierez & Marsch | LABORER, PLUMBING | 0.0 | 0.0 |
| Ramierez & Marsch | ELECTRICIAN | 0.0 | 0.0 |
| Task Force | TRAFFIC CONTROL SIGNALER | 3.0 | 24.0 |
| US Industrial Hygien | SAFETY ENGINEER - ON SITE | 0.0 | 0.0 |
| | Total | 7.0 | 56.0 |

Total hours worked to date: 5,171.5

### EQUIPMENT HOURS

The following equipment hours were Reported today:

| Serial Number | Description | Standby Hours | Operating Hours |
|---|---|---|---|
| 21003-1741 | Medium Track Excavator | 8.0 | 0.0 |
| JKL | Excavator | 8.0 | 0.0 |
| jkl | Forklift | 0.0 | 8.0 |
| | Total | 16.0 | 8.0 |

Total operating hours to date: 2,759.0

### ACCIDENT REPORTING (Describe accidents)

No accidents reported today

CONTRACTOR CERTIFICATION On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contr plans and specifications, to the best of my knowledge, except as noted above.

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| [signature] | 8/22/6 | GB | 8/22/06 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 175 

DATE 22 Aug 2006 - Tuesday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912P6-06-C-0003 NA

CONTRACTOR Environmental Quality Management Inc

WEATHER
Weather Caused No Delay
Temperature Min 64 °F, Max 86 °F; No Precipitation; No Wind

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
EQ unloaded bentonite, and performed other minor site activities.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
Eric Bowman, Ed Wise, Ben Letany, two representatives of Maintenance Dynamics (one operator, one laborer). and three representatives of Task Force Security.

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
Ben Letany conducted a safety tailgate meeting.

**Safety: (Inspections made, Deficiencies noted):**
None

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 175 

DATE 22 Aug 2006 - Tuesday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912F6-06-C-0003 NA

### LABOR HOURS

The following labor hours were Reported today:

| Employer | Labor Classification | Number of Employees | Hours Worked |
|---|---|---|---|
| DLZ | SURVEYOR | 0.0 | 0.0 |
| EQM | SAFETY ENGINEER - ON SITE | 1.0 | 8.0 |
| EQM | SUPER - JOB | 1.0 | 8.0 |
| EQM | CONSTRUCTION INSPECTOR | 1.0 | 8.0 |
| EQM | CONSTRUCTION-RECORDS CLERK | 0.0 | 0.0 |
| Great Lakes Labs | ENVIRON-CNTRL-SYS INST/SER | 0.0 | 0.0 |
| Maintenance Dynamics | LABORERS | 1.0 | 8.0 |
| Maintenance Dynamics | OPERATING ENGINEER | 1.0 | 8.0 |
| Miller Electric | ELECTRICIAN | 0.0 | 0.0 |
| Task Force | TRAFFIC CONTROL SIGNALER | 3.0 | 24.0 |
| US Industrial Hygien | SAFETY ENGINEER - ON SITE | 0.0 | 0.0 |
| | Total | 8.0 | 64.0 |

Total hours worked to date: 5,235.5

### EQUIPMENT HOURS

The following equipment hours were Reported today:

| Serial Number | Description | Standby Hours | Operating Hours |
|---|---|---|---|
| 21003-1741 | Medium Track Excavator | 8.0 | 0.0 |
| JKL | Excavator | 8.0 | 0.0 |
| jkl | Forklift | 0.0 | 8.0 |
| | Total | 16.0 | 8.0 |

Total operating hours to date: 2,767.0

### ACCIDENT REPORTING (Describe accidents)

No accidents reported today

CONTRACTOR CERTIFICATION On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the cont plans and specifications, to the best of my knowledge, except as noted above.

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| [signature] | 8/23/6 | GR | 8/23/06 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
176 

DATE
23 Aug 2006 - Wednesday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912F6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Weather Caused No Delay
Temperature Min 66 °F, Max 87 °F, No Precipitation, No Wind

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
EQ unloaded bentonite,and performed other minor site activities.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
Eric Bowman, Ed Wise, Ben Letany, two representatives of Maintenance Dynamics (one operator, one laborer). and three representatives of Task Force Security.

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
Ben Letany conducted a safety tailgate meeting.

**Safety: (Inspections made, Deficiencies noted):**
None

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 176 

DATE 23 Aug 2006 - Wednesday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912P6-06-C-0003 NA

### LABOR HOURS

The following labor hours were Reported today:

| Employer | Labor Classification | Number of Employees | Hours Worked |
|---|---|---|---|
| DLZ | SURVEYOR | 0.0 | 0.0 |
| EQM | SAFETY ENGINEER - ON SITE | 1.0 | 8.0 |
| EQM | SUPER - JOB | 1.0 | 8.0 |
| EQM | CONSTRUCTION INSPECTOR | 1.0 | 8.0 |
| EQM | CONSTRUCTION-RECORDS CLERK | 0.0 | 0.0 |
| Great Lakes Labs | ENVIRON-CNTRL-SYS INST/SER | 0.0 | 0.0 |
| Maintenance Dynamics | LABORERS | 1.0 | 8.0 |
| Maintenance Dynamics | OPERATING ENGINEER | 1.0 | 8.0 |
| Miller Electric | ELECTRICIAN | 0.0 | 0.0 |
| Task Force | TRAFFIC CONTROL SIGNALER | 3.0 | 24.0 |
| US Industrial Hygien | SAFETY ENGINEER - ON SITE | 0.0 | 0.0 |
| | Total | 8.0 | 64.0 |

Total hours worked to date: 5,299.5

### EQUIPMENT HOURS

The following equipment hours were Reported today:

| Serial Number | Description | Standby Hours | Operating Hours |
|---|---|---|---|
| 21003-1741 | Medium Track Excavator | 8.0 | 0.0 |
| JKL | Excavator | 8.0 | 0.0 |
| jkl | Forklift | 0.0 | 8.0 |
| | Total | 16.0 | 8.0 |

Total operating hours to date: 2,775.0

### ACCIDENT REPORTING (Describe accidents)

No accidents reported today

CONTRACTOR CERTIFICATION On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contr plans and specifications, to the best of my knowledge, except as noted above.

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| [signature] | 8/24/6 | GB | 8/24/06 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
177 

DATE
24 Aug 2006 - Thursday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912P6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Weather Caused Non-Critical Delay
Temperature Mn 68 °F, Max 84 °F, 0.61 IN Precipitation; No Wind

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
EQ unloaded bentonite,and performed other minor site activities. Heavy rains inhibited work progress.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
Eric Bowman, Ed Wise, Ben Letany, two representatives of Maintenance Dynamics (one operator, one laborer). and three representatives of Task Force Security.

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
Ben Letany conducted a safety tailgate meeting.

**Safety: (Inspections made, Deficiencies noted):**
None

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 177 

DATE 24 Aug 2006 - Thursday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912F6-06-C-0003 NA

### LABOR HOURS

The following labor hours were Reported today:

| Employer | Labor Classification | Number of Employees | Hours Worked |
|---|---|---|---|
| DLZ | SURVEYOR | 0.0 | 0.0 |
| EQM | SAFETY ENGINEER - ON SITE | 1.0 | 8.0 |
| EQM | SUPER - JOB | 1.0 | 8.0 |
| EQM | CONSTRUCTION INSPECTOR | 1.0 | 8.0 |
| EQM | CONSTRUCTION-RECORDS CLERK | 0.0 | 0.0 |
| Great Lakes Labs | ENVIRON-CNTRL-SYS INST/SER | 0.0 | 0.0 |
| Maintenance Dynamics | LABORERS | 1.0 | 8.0 |
| Maintenance Dynamics | OPERATING ENGINEER | 1.0 | 8.0 |
| Miller Electric | ELECTRICIAN | 0.0 | 0.0 |
| Task Force | TRAFFIC CONTROL SIGNALER | 3.0 | 24.0 |
| US Industrial Hygien | SAFETY ENGINEER - ON SITE | 0.0 | 0.0 |
| | Total | 8.0 | 64.0 |

Total hours worked to date: 5,363.5

### EQUIPMENT HOURS

The following equipment hours were Reported today:

| Serial Number | Description | Standby Hours | Operating Hours |
|---|---|---|---|
| 21003-1741 | Medium Track Excavator | 8.0 | 0.0 |
| JKL | Excavator | 8.0 | 0.0 |
| jkl | Forklift | 0.0 | 8.0 |
| | Total | 16.0 | 8.0 |

Total operating hours to date: 2,783.0

### ACCIDENT REPORTING (Describe accidents)

No accidents reported today

CONTRACTOR CERTIFICATION On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the conf plans and specifications, to the best of my knowledge, except as noted above.

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 8/25/6 | | 8/25/06 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
178 

DATE
25 Aug 2006 - Friday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912F6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Weather Caused No Delay
Temperature Min 72 °F, Max 80 °F; No Precipitation; No Wind

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
EQ unloaded bentonite,and performed other minor site activities.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
Eric Bowman, Ed Wise, Ben Letany, two representatives of Maintenance Dynamics (one operator, one laborer). and three representatives of Task Force Security.

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
Ben Letany conducted a safety tailgate meeting.

**Safety: (Inspections made, Deficiencies noted):**
None

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 178 

DATE 25 Aug 2006 - Friday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912F6-06-C-0003 NA

**LABOR HOURS**

**The following labor hours were Reported today:**

| Employer | Labor Classification | | Number of Employees | Hours Worked |
|---|---|---|---|---|
| DLZ | SURVEYOR | | 0.0 | 0.0 |
| EGM | SAFETY ENGINEER - ON SITE | | 1.0 | 8.0 |
| EGM | SUPER - JOB | | 1.0 | 8.0 |
| EGM | CONSTRUCTION INSPECTOR | | 1.0 | 8.0 |
| EGM | CONSTRUCTION-RECORDS CLERK | | 0.0 | 0.0 |
| Great Lakes Labs | ENVIRON-CNTRL-SYS INST/SER | | 0.0 | 0.0 |
| Maintenance Dynamics | LABORERS | | 1.0 | 8.0 |
| Maintenance Dynamics | OPERATING ENGINEER | | 1.0 | 8.0 |
| Miller Electric | ELECTRICIAN | | 0.0 | 0.0 |
| Task Force | TRAFFIC CONTROL SIGNALER | | 3.0 | 24.0 |
| US Industrial Hygien | SAFETY ENGINEER - ON SITE | | 0.0 | 0.0 |
| Total hours worked to date: | 5,427.5 | Total | 8.0 | 64.0 |

**EQUIPMENT HOURS**

**The following equipment hours were Reported today:**

| Serial Number | Description | | Standby Hours | Operating Hours |
|---|---|---|---|---|
| 21003-1741 | Medium Track Excavator | | 8.0 | 0.0 |
| JKL | Excavator | | 8.0 | 0.0 |
| jkl | Forklift | | 0.0 | 8.0 |
| Total operating hours to date: 2,791.0 | | Total | 16.0 | 8.0 |

**ACCIDENT REPORTING** (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| [signature] | 8/28/6 | [initials] | 8/28/06 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
181 

DATE
28 Aug 2006 - Monday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912F6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Weather Caused Non-Critical Delay
Temperature Min 64 °F, Max 73 °F, 0.81 IN Precipitation, No Wind

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
EQ unloaded bentonite. We also received the tracks for the Dewind trencher.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
Eric Bowman, Ed Wise, Nick Mchailides, Ben Letany, two representatives of Maintenance Dynamics (one operator, one laborer). and three representatives of Task Force Security.

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
Nick Mchailides conducted a safety tailgate meeting.

**Safety: (Inspections made, Deficiencies noted):**
None

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 181 

DATE 28 Aug 2006 - Monday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912F6-06-C-0003 NA

### LABOR HOURS

The following labor hours were Reported today:

| Employer | Labor Classification | | Number of Employees | Hours Worked |
|---|---|---|---|---|
| DLZ | SURVEYOR | | 0.0 | 0.0 |
| EQM | SAFETY ENGINEER - ON SITE | | 1.0 | 8.0 |
| EQM | SUPER - JOB | | 1.0 | 8.0 |
| EQM | CONSTRUCTION INSPECTOR | | 1.0 | 8.0 |
| EQM | CONSTRUCTION-RECORDS CLERK | | 1.0 | 8.0 |
| Great Lakes Labs | ENVIRON-CNTRL-SYS INST/SER | | 0.0 | 0.0 |
| Maintenance Dynamics | LABORERS | | 1.0 | 8.0 |
| Maintenance Dynamics | OPERATING ENGINEER | | 2.0 | 16.0 |
| Miller Electric | ELECTRICIAN | | 0.0 | 0.0 |
| Task Force | TRAFFIC CONTROL SIGNALER | | 3.0 | 24.0 |
| US Industrial Hygien | SAFETY ENGINEER - ON SITE | | 0.0 | 0.0 |
| Total hours worked to date: | 5,507.5 | Total | 10.0 | 80.0 |

### EQUIPMENT HOURS

The following equipment hours were Reported today:

| Serial Number | Description | | Standby Hours | Operating Hours |
|---|---|---|---|---|
| 21003-1741 | Medium Track Excavator | | 8.0 | 0.0 |
| JKL | Excavator | | 8.0 | 0.0 |
| jkl | Forklift | | 0.0 | 8.0 |
| ABC | 55 Ton Crane | | 0.0 | 8.0 |
| Total operating hours to date: | 2,807.0 | Total | 16.0 | 16.0 |

### ACCIDENT REPORTING (Describe accidents)

No accidents reported today

CONTRACTOR CERTIFICATION On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as noted above.

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| [signature] | 8/29/06 | GPB | 8/29/06 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
182 

DATE
29 Aug 2006 - Tuesday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912P6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Weather Caused No Delay
Temperature Min 63 °F, Max 69 °F; 0.06 IN Precipitation; No Wind

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
EQ received the remaining components of the Dewind trencher and began assembly. Bentonite was receved and unloaded. other minor prep work was performed.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
Eric Bowman, Ed Wise, Nick Michailides, Ben Letany, four representatives of Maintenance Dynamics (three operators, one laborer). three representatives of Dewind, and three representatives of Task Force Security.

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
Nick Michailides conducted a safety tailgate meeting.

**Safety: (Inspections made, Deficiencies noted):**
None

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 182 

DATE 29 Aug 2006 - Tuesday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912F6-06-C-0003 NA

### LABOR HOURS

**The following labor hours were Reported today:**

| Employer | Labor Classification | | Number of Employees | Hours Worked |
|---|---|---|---|---|
| DLZ | SURVEYOR | | 0.0 | 0.0 |
| Dewind Dewatering | OPERATING ENGINEER | | 3.0 | 18.0 |
| EQM | SAFETY ENGINEER - ON SITE | | 1.0 | 12.0 |
| EQM | SUPER - JOB | | 1.0 | 12.0 |
| EQM | CONSTRUCTION INSPECTOR | | 1.0 | 12.0 |
| EQM | CONSTRUCTION-RECORDS CLERK | | 1.0 | 12.0 |
| Great Lakes Labs | ENVIRON-CNTRL-SYS INST/SER | | 0.0 | 0.0 |
| Maintenance Dynamics | LABORERS | | 1.0 | 12.0 |
| Maintenance Dynamics | OPERATING ENGINEER | | 3.0 | 36.0 |
| Miller Electric | ELECTRICIAN | | 0.0 | 0.0 |
| Task Force | TRAFFIC CONTROL SIGNALER | | 3.0 | 24.0 |
| US Industrial Hygien | SAFETY ENGINEER - ON SITE | | 0.0 | 0.0 |
| Total hours worked to date: | 5,645.5 | Total | 14.0 | 138.0 |

### EQUIPMENT HOURS

**The following equipment hours were Reported today:**

| Serial Number | Description | | Standby Hours | Operating Hours |
|---|---|---|---|---|
| 21003-1741 | Medium Track Excavator | | 8.0 | 0.0 |
| JKL | Excavator | | 0.0 | 8.0 |
| jkl | Forklift | | 0.0 | 12.0 |
| ABC | 55 Ton Crane | | 0.0 | 12.0 |
| DEF | Dewind Model 800 Treencher | | 0.0 | 6.0 |
| Total operating hours to date: | 2,845.0 | Total | 8.0 | 38.0 |

### ACCIDENT REPORTING (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| [signature] | 8/30/6 | [initials] | 8/30/06 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
183 

DATE
30 Aug 2006 - Wednesday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912P6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Weather Caused No Delay
Temperature Mn 62 °F, Max 74 °F, 0.02 IN Precipitation; No Wind

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
EQ completed assembly of the Dewind trencher. It was tracked to the east segment. We also began asembly of the slurry system. Bentonite was receved and unloaded. Other minor prep work was performed.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
Eric Bowman, Ed Wise, Nick Mchailides, Ben Letany, five representatives of Maintenance Dynamics (four operators, one laborer). three representatives of Dewind, and three representatives of Task Force Security.

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
Nick Mchailides conducted a safety tailgate meeting.

**Safety: (Inspections made, Deficiencies noted):**
None

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 183 

DATE 30 Aug 2006 - Wednesday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912P6-06-C-0003 NA

### LABOR HOURS

The following labor hours were Reported today:

| Employer | Labor Classification | | Number of Employees | Hours Worked |
|---|---|---|---|---|
| DLZ | SURVEYOR | | 0.0 | 0.0 |
| Dewind Dewatering | OPERATING ENGINEER | | 3.0 | 36.0 |
| EQM | SAFETY ENGINEER - ON SITE | | 1.0 | 12.0 |
| EQM | SUPER - JOB | | 1.0 | 12.0 |
| EQM | CONSTRUCTION INSPECTOR | | 1.0 | 12.0 |
| EQM | CONSTRUCTION-RECORDS CLERK | | 1.0 | 12.0 |
| Great Lakes Labs | ENVIRON-CNTRL-SYS INST/SER | | 0.0 | 0.0 |
| Maintenance Dynamics | LABORERS | | 1.0 | 12.0 |
| Maintenance Dynamics | OPERATING ENGINEER | | 4.0 | 40.0 |
| Miller Electric | ELECTRICIAN | | 0.0 | 0.0 |
| Task Force | TRAFFIC CONTROL SIGNALER | | 3.0 | 24.0 |
| US Industrial Hygien | SAFETY ENGINEER - ON SITE | | 1.0 | 8.0 |
| Total hours worked to date: | 5,813.5 | Total | 16.0 | 168.0 |

### EQUIPMENT HOURS

The following equipment hours were Reported today:

| Serial Number | Description | | Standby Hours | Operating Hours |
|---|---|---|---|---|
| 21003-1741 | Medium Track Excavator | | 8.0 | 0.0 |
| JKL | Excavator | | 0.0 | 10.0 |
| jkl | Forklift | | 0.0 | 12.0 |
| ABC | 55 Ton Crane | | 0.0 | 12.0 |
| DEF | Dewind Model 800 Treencher | | 0.0 | 12.0 |
| Total operating hours to date: 2,891.0 | | Total | 8.0 | 46.0 |

### ACCIDENT REPORTING (Describe accidents)

No accidents reported today

CONTRACTOR CERTIFICATION On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as noted above.

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 8/31/6 | | 8/31/06 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 184



DATE 31 Aug 2006 - Thursday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912F6-06-C-0003 NA

CONTRACTOR Environmental Quality Management Inc

WEATHER
Weather Caused No Delay
Temperature Min 63 °F, Max 73 °F; No Precipitation; No Wind

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
Dewind began installation of the slurry wall on the east side. The wall was completed to depth from station 44+70 to 44+15. The total depth was consistant at 39 feet. The depth to clay in this segment is about 32 to 33 feet. This yields a key in depth of between 6 and 7 feet. This exceeds the contract limit for payment of 5 feet. EQ will only invoice for a key in of the 5 foot maximum. Tierra provided dust control for tthe distribution of bentonite. They also deconned the maintenance Dynamics slurry plant.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
Eric Bowman, Ed Wise, Nick Mchailides, Ben Letany, four representatives of Maintenance Dynamics (four operators). three representatives of Dewind, two represntatives of Tierra, and three representatives of Task Force Security.

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
Nick Mchailides conducted a safety tailgate meeting.

**Safety: (Inspections made, Deficiencies noted):**
None

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 184 

DATE 31 Aug 2006 - Thursday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912F6-06-C-0003 NA

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

**LABOR HOURS**

**The following labor hours were Reported today:**

| Employer | Labor Classification | | Number of Employees | Hours Worked |
|---|---|---|---|---|
| DLZ | SURVEYOR | | 0.0 | 0.0 |
| Dewind Dewatering | OPERATING ENGINEER | | 3.0 | 36.0 |
| EQM | SAFETY ENGINEER - ON SITE | | 1.0 | 12.0 |
| EQM | SUPER - JOB | | 1.0 | 12.0 |
| EQM | CONSTRUCTION INSPECTOR | | 1.0 | 12.0 |
| EQM | CONSTRUCTION-RECORDS CLERK | | 1.0 | 12.0 |
| Great Lakes Labs | ENVIRON-CNTRL-SYS INST/SER | | 0.0 | 0.0 |
| Maintenance Dynamics | LABORERS | | 0.0 | 0.0 |
| Maintenance Dynamics | OPERATING ENGINEER | | 4.0 | 48.0 |
| Miller Electric | ELECTRICIAN | | 0.0 | 0.0 |
| Task Force | TRAFFIC CONTROL SIGNALER | | 3.0 | 24.0 |
| US Industrial Hygien | SAFETY ENGINEER - ON SITE | | 0.0 | 0.0 |
| Total hours worked to date: | 5,969.5 | Total | 14.0 | 156.0 |

**EQUIPMENT HOURS**

**The following equipment hours were Reported today:**

| Serial Number | Description | | Standby Hours | Operating Hours |
|---|---|---|---|---|
| 21003-1741 | Medium Track Excavator | | 0.0 | 12.0 |
| jkl | Forklift | | 0.0 | 12.0 |
| ABC | 55 Ton Crane | | 0.0 | 0.0 |
| DEF | Dewind Model 800 Treencher | | 0.0 | 12.0 |
| Total operating hours to date: 2,927.0 | | Total | 0.0 | 36.0 |

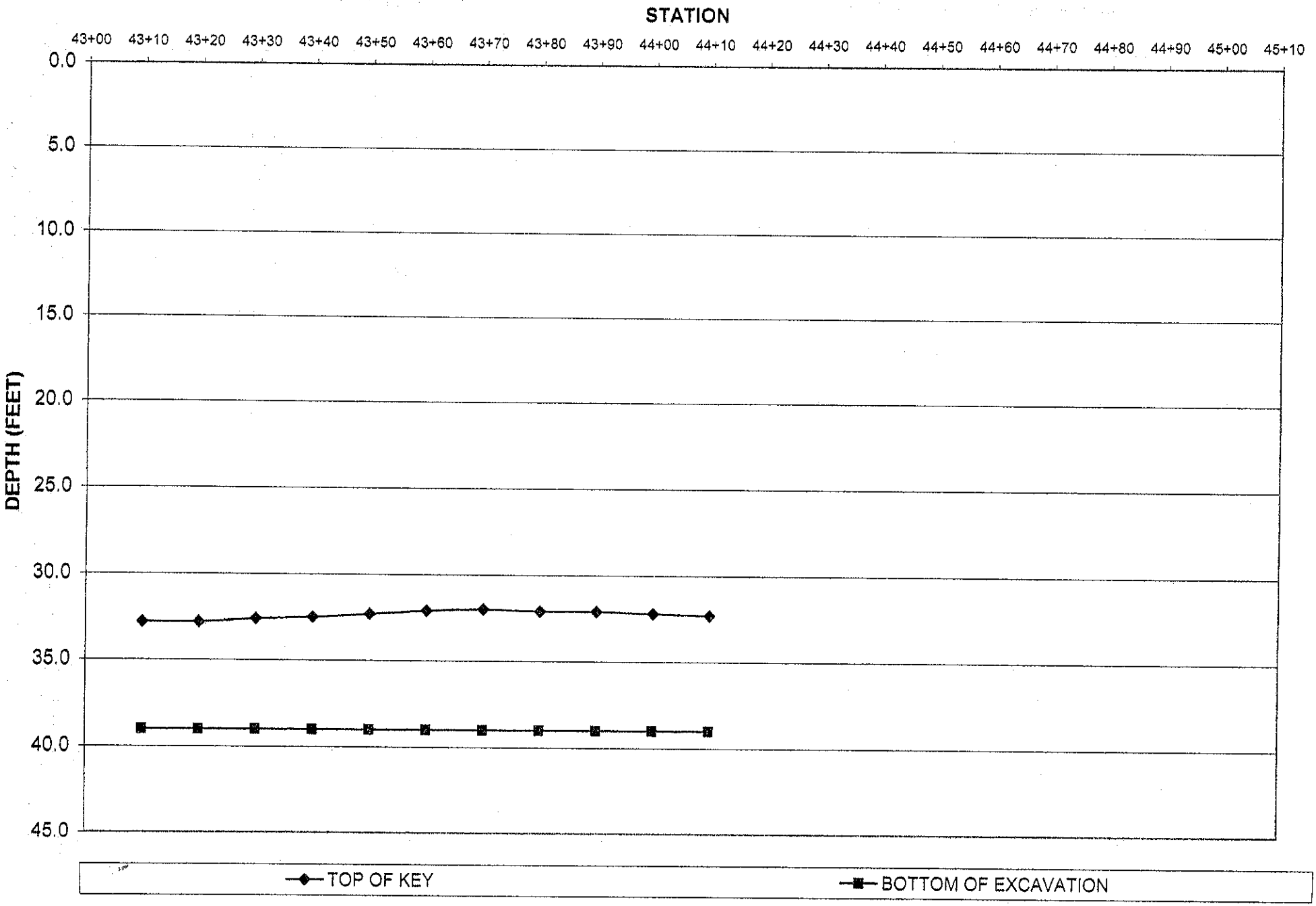
**ACCIDENT REPORTING** (Describe accidents)

**No accidents reported today**

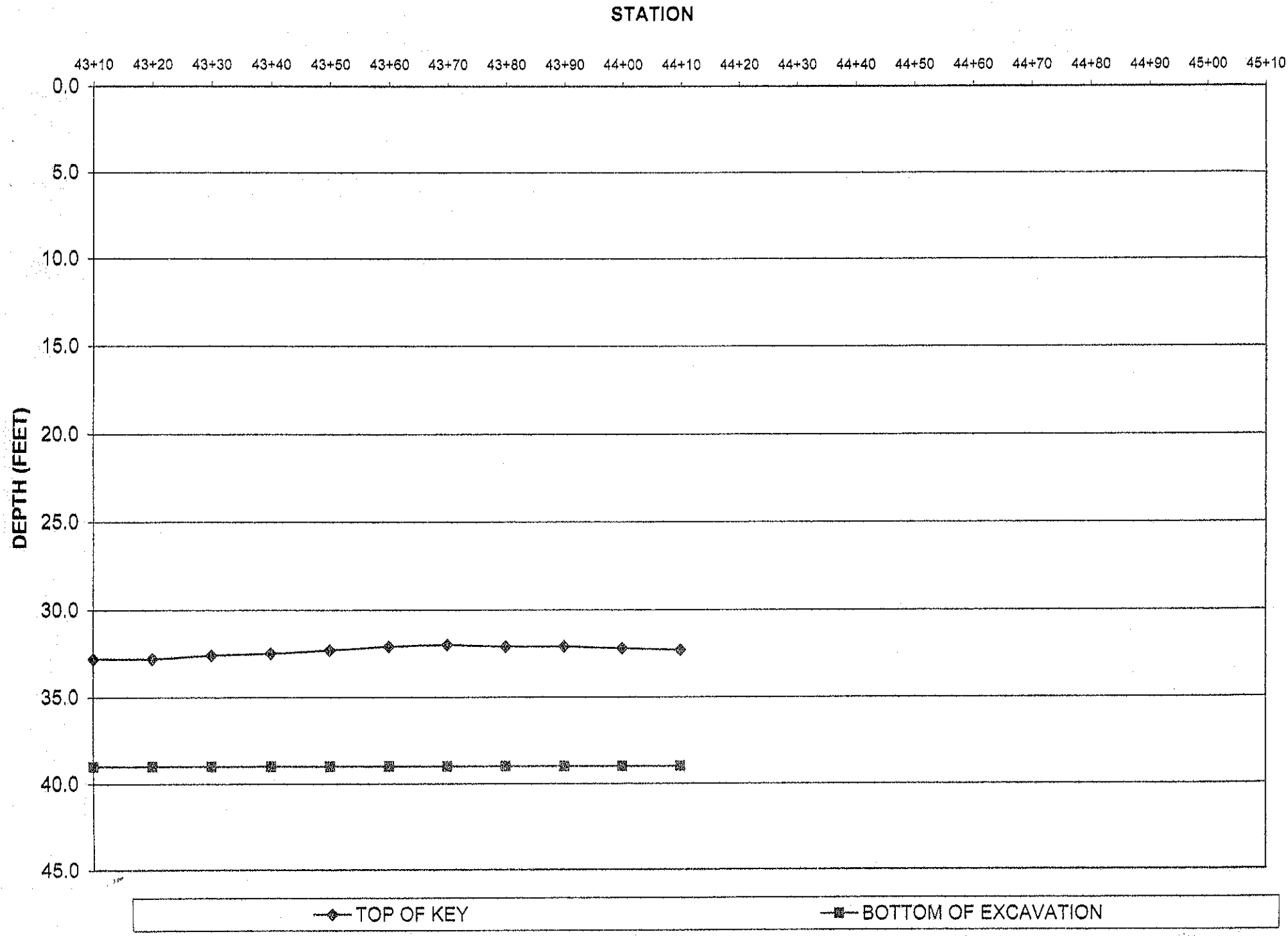
CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 9/13/6 | | 9/13/06 |

# AS-BUILT PROFILE: EAST TRENCH (TODAY, 083106)



# AS-BUILT PROFILE: EAST TRENCH (TO DATE)



# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
185 

DATE
01 Sep 2006 - Friday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912F6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Weather Caused No Delay
Temperature Min 66 °F, Max 75 °F; No Precipitation; No Wind

QC NARRATIVES

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
Dewind completed installation of the slurry wall on the east side. The wall was completed to depth from station 44+15 to Station 43+20 today and from Station 44+70 to 43+20 overall. The endpoints of the existing wall were clearly identified by the cap and the presence of the existing wall was easily identified by visual observation and the consistantcy of the wall was noted by dramatically reduced resistance to the trencher. A minimum of 10 feet of overlap was provided at both ends of the wall and to depth. The total depth was consistant at 39 feet. The depth to clay in this segment is about 32 to 33 feet. This yields a key in depth of between 6 and 7 feet. This exceeds the contract limit for payment of 5 feet. EQ will only invoice for a key in of the 5 foot maximum. Tierra provided dust control for tthe distribution of bentonite.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
Eric Bowman, Ed Wise, Nick Mchailides, Ben Letany, four representatives of Maintenance Dynamics (four operators). three representatives of Dewind, two represntatives of Tierra, and three representatives of Task Force Security.

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
Nick Mchailides conducted a safety tailgate meeting.

**Safety: (Inspections made, Deficiencies noted):**
None

**Safety: Corrective Action taken:**
None.

PREP/INITIAL DATES (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

ACTIVITY START/FINISH

**No activities were started or finished today**

QC REQUIREMENTS

**No QC requirements were completed today**

QA/QC PUNCH LIST (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 185 

DATE 01 Sep 2006 - Friday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912F6-06-C-0003 NA

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

**LABOR HOURS**

**The following labor hours were Reported today:**

| Employer | Labor Classification | | Number of Employees | Hours Worked |
|---|---|---|---|---|
| DLZ | SURVEYOR | | 0.0 | 0.0 |
| Dewind Dewatering | OPERATING ENGINEER | | 3.0 | 36.0 |
| EQM | SAFETY ENGINEER - ON SITE | | 1.0 | 12.0 |
| EQM | SUPER - JOB | | 1.0 | 12.0 |
| EQM | CONSTRUCTION INSPECTOR | | 1.0 | 12.0 |
| EQM | CONSTRUCTION-RECORDS CLERK | | 1.0 | 12.0 |
| Great Lakes Labs | ENVIRON-CNTRL-SYS INST/SER | | 0.0 | 0.0 |
| Maintenance Dynamics | LABORERS | | 0.0 | 0.0 |
| Maintenance Dynamics | OPERATING ENGINEER | | 4.0 | 48.0 |
| Miller Electric | ELECTRICIAN | | 0.0 | 0.0 |
| Task Force | TRAFFIC CONTROL SIGNALER | | 3.0 | 24.0 |
| US Industrial Hygien | SAFETY ENGINEER - ON SITE | | 0.0 | 0.0 |
| Total hours worked to date: | 6,125.5 | Total | 14.0 | 156.0 |

**EQUIPMENT HOURS**

**The following equipment hours were Reported today:**

| Serial Number | Description | | Standby Hours | Operating Hours |
|---|---|---|---|---|
| 21003-1741 | Medium Track Excavator | | 0.0 | 12.0 |
| jkl | Forklift | | 0.0 | 12.0 |
| ABC | 55 Ton Crane | | 0.0 | 0.0 |
| DEF | Dewind Model 800 Treencher | | 0.0 | 12.0 |
| Total operating hours to date: | 2,963.0 | Total | 0.0 | 36.0 |

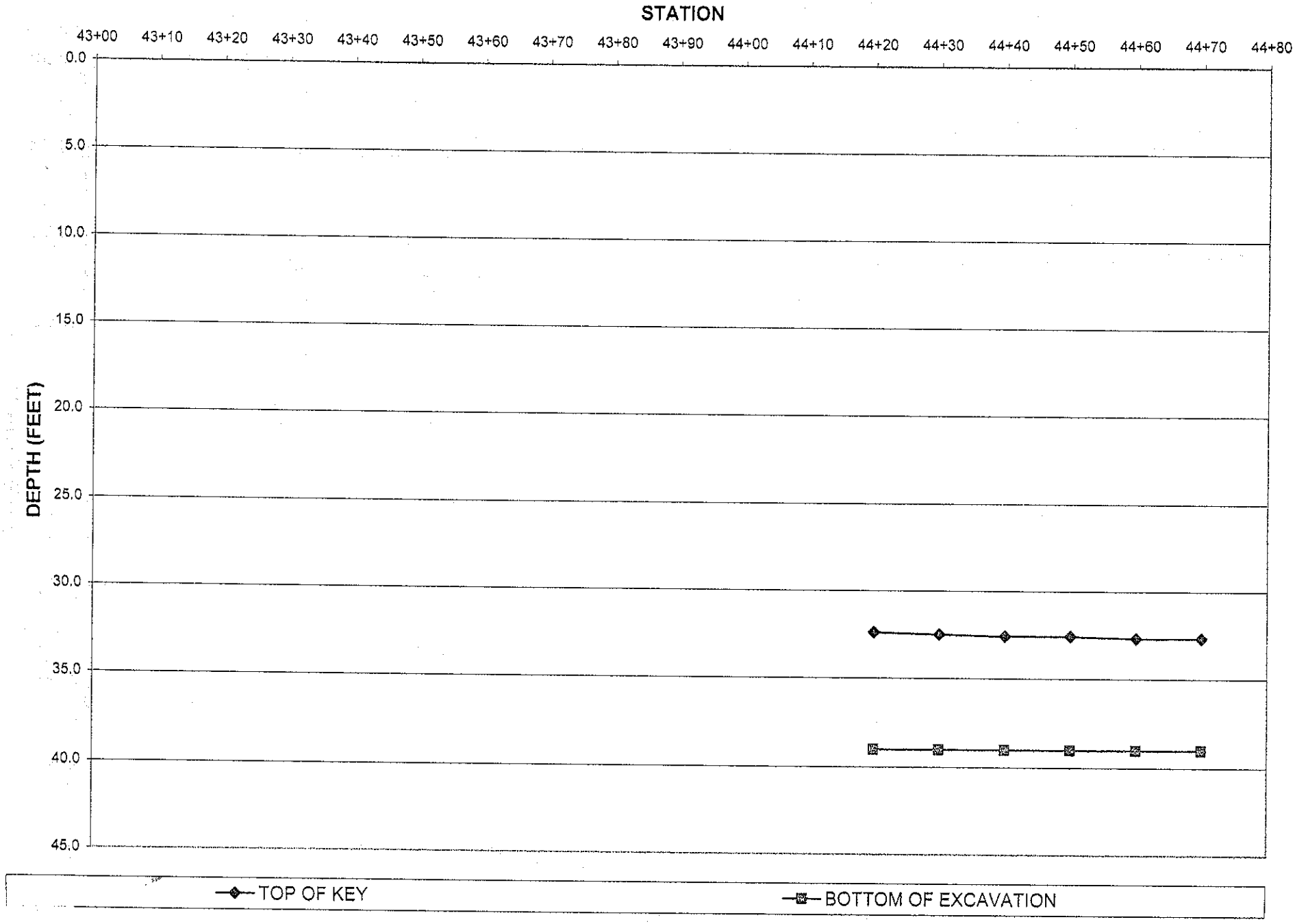
**ACCIDENT REPORTING** (Describe accidents)

**No accidents reported today**

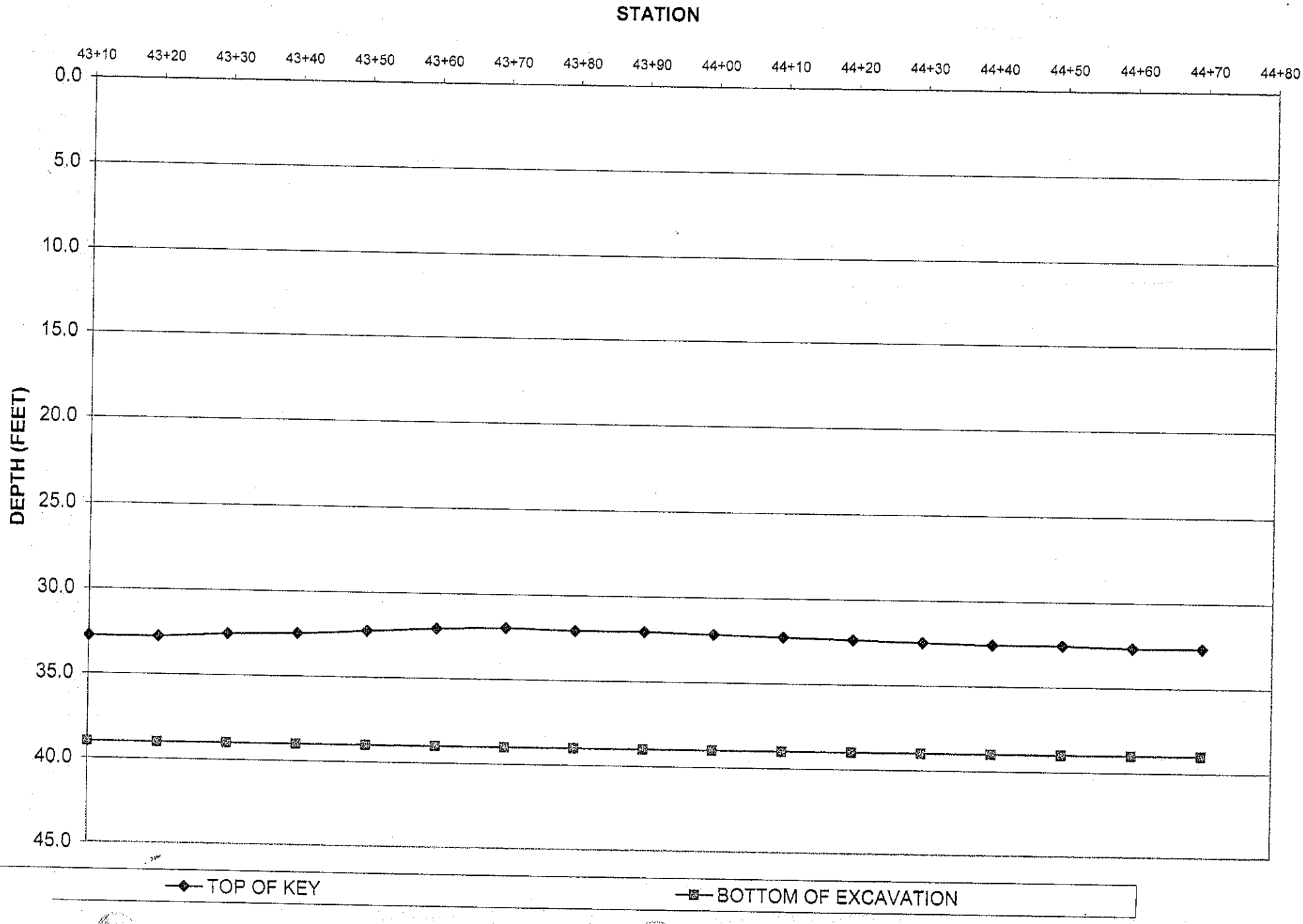
CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contrac plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 9/12/6 | | 9/12/06 |

# AS-BUILT PROFILE: EAST TRENCH (TODAY, 090106)



# AS-BUILT PROFILE: EAST TRENCH (TO DATE)



# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
189 

DATE
05 Sep 2006 - Tuesday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912F6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Weather Caused No Delay
Temperature Min 60 °F, Max 77 °F; No Precipitation; No Wind

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
EQ completed repiping of the water supply line to the west segment. Dewind completed set up for the slurry wall on this segment. Upon beginning the shallow trench for bentonite additioon it was discovered that the location of the existing wall varied from what the survey stakes indicated. DLZ and EQ Cincinnati personnel were immediately consulted and the survey data was found to be in error. Apparently the initial stationing coordinates for the wall were used versus the revised coordinates for the wall realignment. The difference is +60 feet. In addition the end point of the existing wall was found at Station 87+10 (correct coordinates) versus the 86+90 station referenced in the Construction Specifications. The as builts for the previous project were consulted and this was found to be accurate. The start point for the west segment was set at about station 87+25 to provide a 15 foot overlap. The wall was installed to depth from station 87+25 to 86+00. The total depth was consistant at 36 feet. The depth to clay in this segment is about 28.5 to 30.4 feet. This yields a key in depth of between 5.6 and 7.5 feet. This exceeds the contract limit for payment of 5 feet. EQ will only invoice for a key in of the 5 foot maximum

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
Eric Bowman, Ed Wise, Nick Mchailides, Ben Letany, Andy Lucas, six representatives of Maintenance Dynamics (four operators, one teamster, one laborer). three representatives of Dewind, and three representatives of Task Force Security.

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
Nick Mchailides conducted a safety tailgate meeting.

**Safety: (Inspections made, Deficiencies noted):**
None

**Safety: Corrective Action taken:**
None.

**PREP/INTIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**The following 2 activities were started today:**

| Activity No | Description |
|---|---|
| 0001-06-04 | Construction Schedule Monthly Update 4 |
| 0002-06-04 | Security Service Month 4 |

**No activities were finished today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 189 

DATE 05 Sep 2006 - Tuesday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912F6-06-C-0003 NA

**QC REQUIREMENTS**

No QC requirements were completed today

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

No QC Punch List items were issued today

No Punch List items were corrected today

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

No contractors had their first or last day on site today

**LABOR HOURS**

The following labor hours were Reported today:

| Employer | Labor Classification | | Number of Employees | Hours Worked |
|---|---|---|---|---|
| DLZ | SURVEYOR | | 0.0 | 0.0 |
| Dewind Dewatering | OPERATING ENGINEER | | 3.0 | 36.0 |
| EQM | SAFETY ENGINEER - ON SITE | | 1.0 | 12.0 |
| EQM | SUPER - JOB | | 1.0 | 12.0 |
| EQM | CONSTRUCTION INSPECTOR | | 1.0 | 12.0 |
| EQM | CONSTRUCTION-RECORDS CLERK | | 1.0 | 12.0 |
| Great Lakes Labs | ENVIRON-CNTRL-SYS INST/SER | | 0.0 | 0.0 |
| Maintenance Dynamics | LABORERS | | 1.0 | 12.0 |
| Maintenance Dynamics | TRUCK DRIVER, GROUP 1 | | 1.0 | 12.0 |
| Maintenance Dynamics | OPERATING ENGINEER | | 4.0 | 48.0 |
| Miller Electric | ELECTRICIAN | | 0.0 | 0.0 |
| Task Force | TRAFFIC CONTROL SIGNALER | | 3.0 | 24.0 |
| US Industrial Hygien | SAFETY ENGINEER - ON SITE | | 1.0 | 8.0 |
| Total hours worked to date: | 6,313.5 | Total | 17.0 | 188.0 |

**EQUIPMENT HOURS**

The following equipment hours were Reported today:

| Serial Number | Description | | Standby Hours | Operating Hours |
|---|---|---|---|---|
| 21003-1741 | Medium Track Excavator | | 0.0 | 12.0 |
| jkl | Forklift | | 0.0 | 12.0 |
| ABC | 55 Ton Crane | | 0.0 | 0.0 |
| DEF | Dewind Model 800 Treencher | | 0.0 | 12.0 |
| Total operating hours to date: 2,999.0 | | Total | 0.0 | 36.0 |

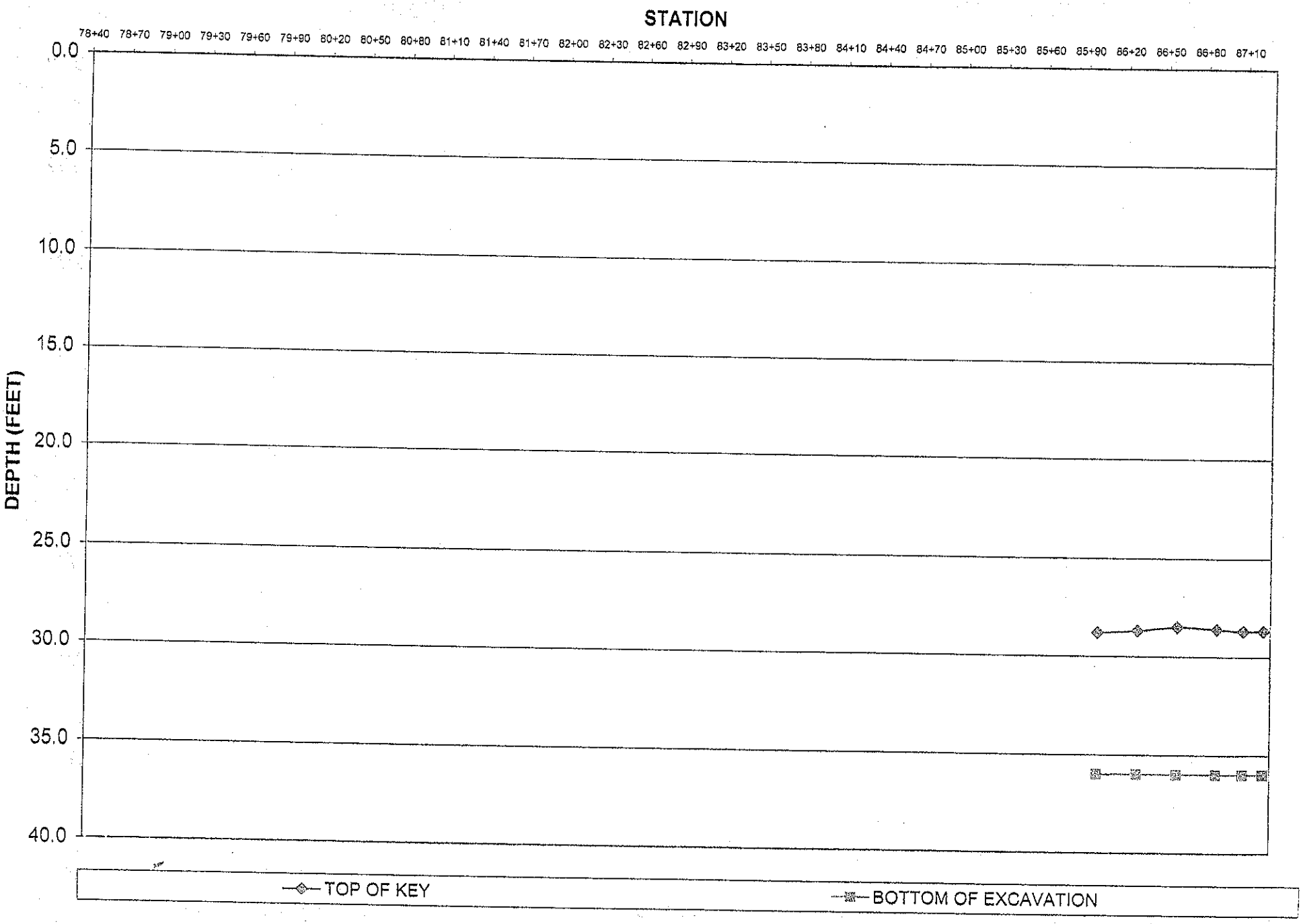
**ACCIDENT REPORTING** (Describe accidents)

No accidents reported today

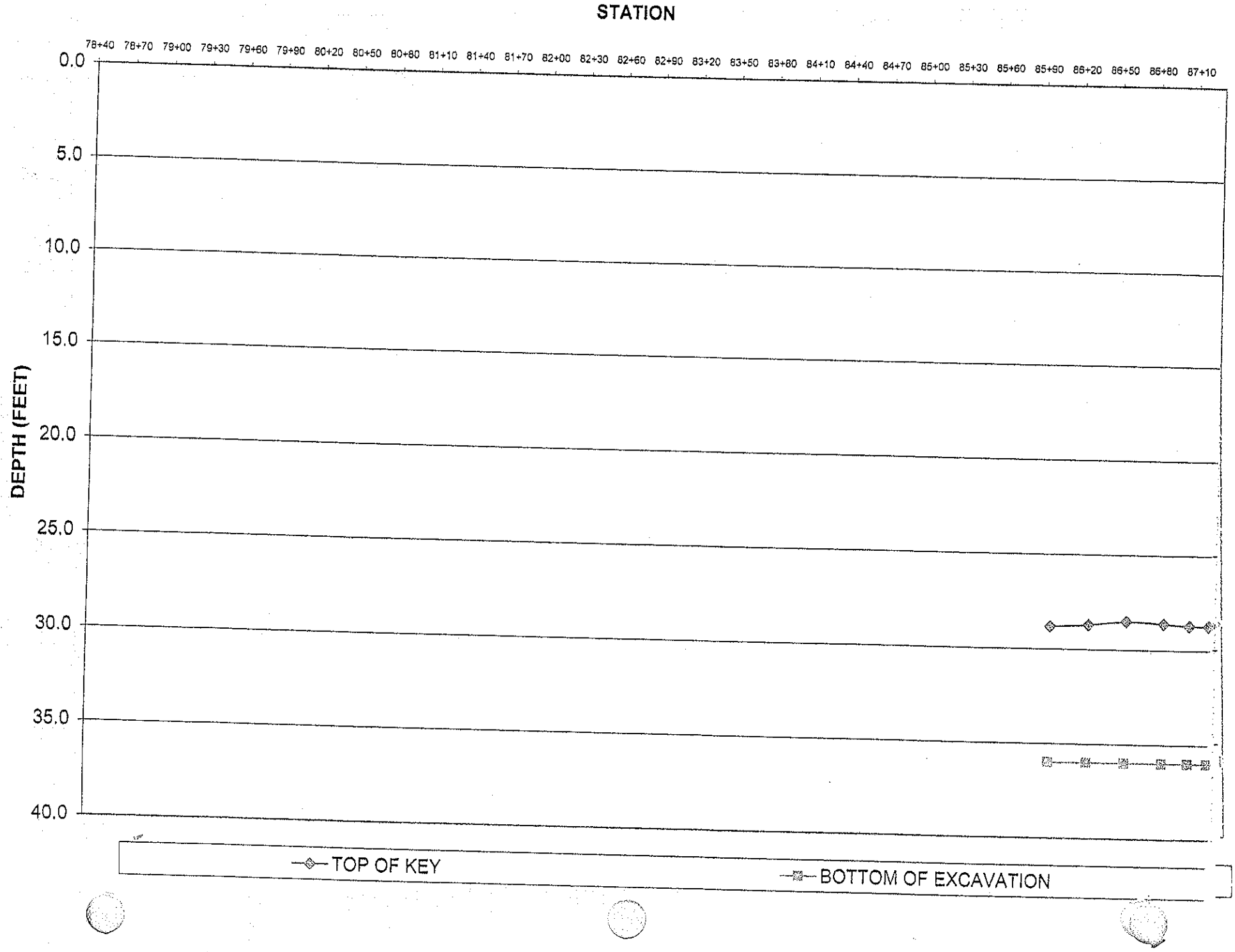
CONTRACTOR CERTIFICATION On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contrac plans and specifications, to the best of my knowledge, except as noted above.

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 9/12/6 | | 9/12/06 |

# AS-BUILT PROFILE: WEST TRENCH (TODAY, 090506)



# AS-BUILT PROFILE: WEST TRENCH (TO DATE)



# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
190 

DATE
06 Sep 2006 - Wednesday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912P6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Weather Caused No Delay
Temperature Min 59 °F, Max 80 °F; No Precipitation; No Wind

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
Dewind continued with installation of the west segment. Work was cut short due a death in the family of the Dewind operator. The wall was installed to depth from station 86+00 to 83+45 (255 feet) The total depth was consistant at 36 feet. The depth to clay in this segment is about 28.5 to 30.4 feet. This yields a key in depth of between 5.6 and 7.5 feet. This exceeds the contract limit for payment of 5 feet. EQ will only invoice for a key in of the 5 foot maximum DLZ was also onsite to restake the correct end points of the wall.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
Eric Bowman, Ed Wise, Nick Michailides, Ben Letany, two representatives of DLZ (two surveyors), six representatives of Maintenance Dynamics (four operators, one teamster, one laborer). three representatives of Dewind, and three representatives of Task Force Security.

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
Nick Michailides conducted a safety tailgate meeting.

**Safety: (Inspections made, Deficiencies noted):**
None

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 190 

DATE 06 Sep 2006 - Wednesday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912P6-06-C-0003 NA

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

**LABOR HOURS**

**The following labor hours were Reported today:**

| Employer | Labor Classification | Number of Employees | Hours Worked |
|---|---|---|---|
| DLZ | SURVEYOR | 2.0 | 8.0 |
| Dewind Dewatering | OPERATING ENGINEER | 3.0 | 24.0 |
| EQM | SAFETY ENGINEER - ON SITE | 1.0 | 8.0 |
| EQM | SUPER - JOB | 1.0 | 8.0 |
| EQM | CONSTRUCTION INSPECTOR | 1.0 | 8.0 |
| EQM | CONSTRUCTION-RECORDS CLERK | 1.0 | 8.0 |
| Great Lakes Labs | ENVIRON-CNTRL-SYS INST/SER | 0.0 | 0.0 |
| Maintenance Dynamics | LABORERS | 1.0 | 8.0 |
| Maintenance Dynamics | TRUCK DRIVER, GROUP 1 | 1.0 | 8.0 |
| Maintenance Dynamics | OPERATING ENGINEER | 4.0 | 32.0 |
| Miller Electric | ELECTRICIAN | 0.0 | 0.0 |
| Task Force | TRAFFIC CONTROL SIGNALER | 3.0 | 24.0 |
| US Industrial Hygien | SAFETY ENGINEER - ON SITE | 0.0 | 0.0 |
| | Total | 18.0 | 136.0 |

Total hours worked to date: 6,449.5

**EQUIPMENT HOURS**

**The following equipment hours were Reported today:**

| Serial Number | Description | Standby Hours | Operating Hours |
|---|---|---|---|
| 21003-1741 | Medium Track Excavator | 0.0 | 8.0 |
| jkl | Forklift | 0.0 | 8.0 |
| ABC | 55 Ton Crane | 0.0 | 0.0 |
| DEF | Dewind Model 800 Treencher | 0.0 | 8.0 |
| | Total | 0.0 | 24.0 |

Total operating hours to date: 3,023.0

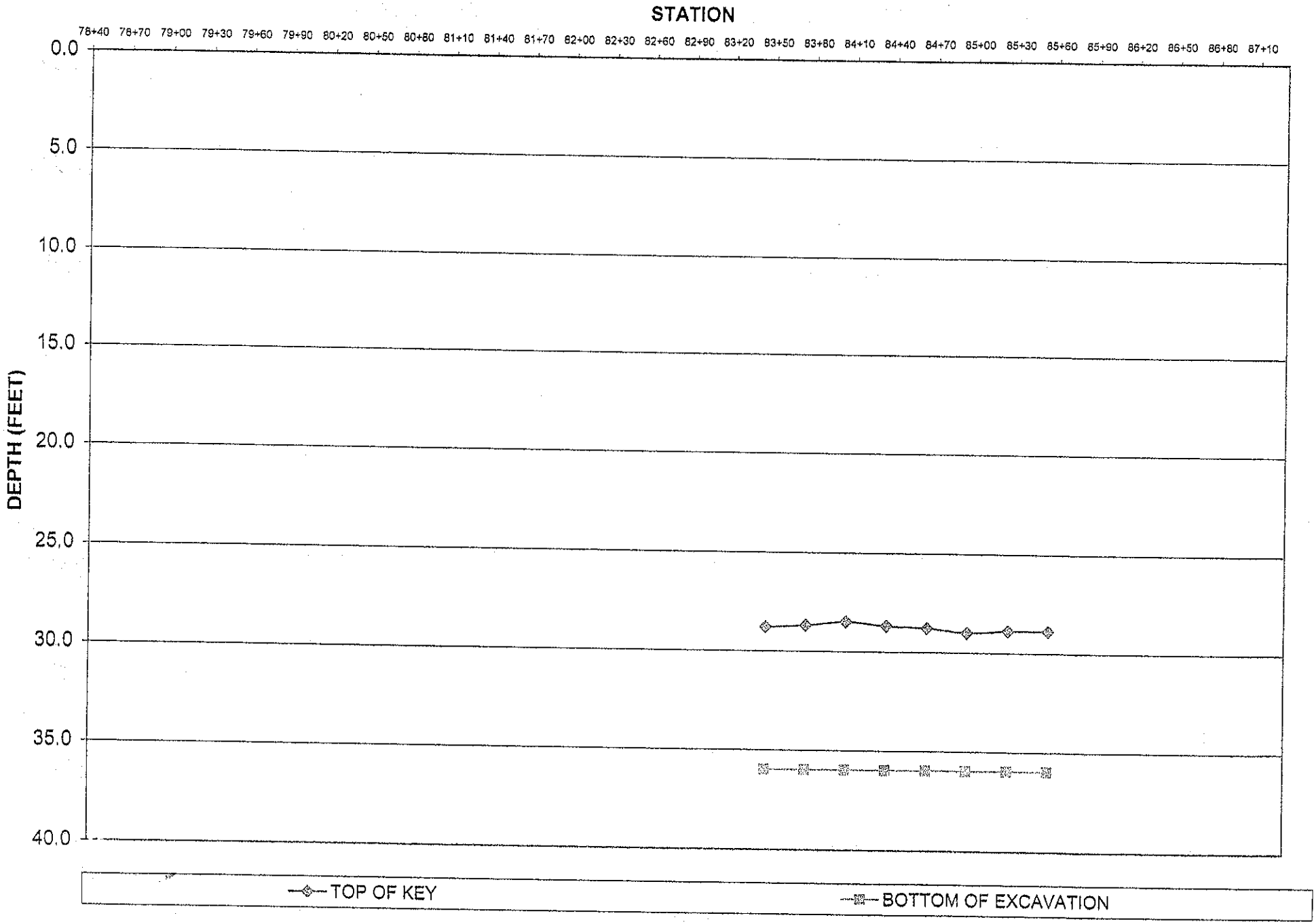
**ACCIDENT REPORTING** (Describe accidents)

**No accidents reported today**

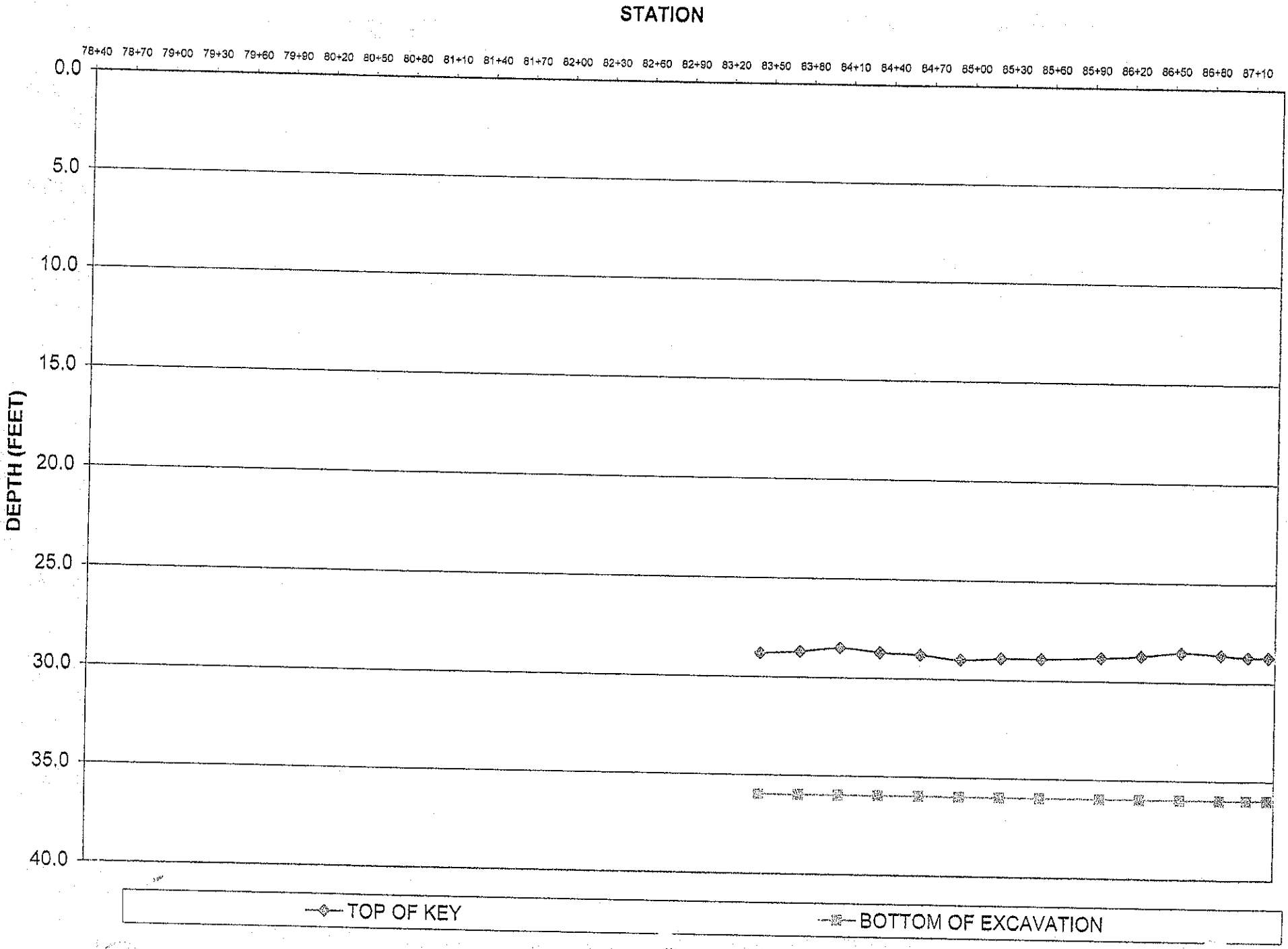
CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contra plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 9/12/6 | | 9/12/06 |

# AS-BUILT PROFILE: WEST TRENCH (TODAY, 090606)



# AS-BUILT PROFILE: WEST TRENCH (TO DATE)



# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
191 

DATE
07 Sep 2006 - Thursday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912P6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Weather Caused No Delay
Temperature Min 63 °F, Max 82 °F, No Precipitation; No Wind

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
Due to a death in the Dewind operators family there was no installation of slurry wall today. EQ continued with site cleanup and oranization..

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
Eric Bowman, Ed Wise, Nick Mchailides, Ben Letany, six representatives of Maintenance Dynamics (four operators, one teamster, one laborer). and three representatives of Task Force Security.

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
Nick Mchailides conducted a safety tailgate meeting.

**Safety: (Inspections made, Deficiencies noted):**
None

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 191 

DATE 07 Sep 2006 - Thursday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912P6-06-C-0003 NA

### LABOR HOURS

The following labor hours were Reported today:

| Employer | Labor Classification | | Number of Employees | Hours Worked |
|---|---|---|---|---|
| DLZ | SURVEYOR | | 0.0 | 0.0 |
| Dewind Dewatering | OPERATING ENGINEER | | 0.0 | 0.0 |
| EQM | SAFETY ENGINEER - ON SITE | | 1.0 | 8.0 |
| EQM | SUPER - JOB | | 1.0 | 8.0 |
| EQM | CONSTRUCTION INSPECTOR | | 1.0 | 8.0 |
| EQM | CONSTRUCTION-RECORDS CLERK | | 1.0 | 8.0 |
| Great Lakes Labs | ENVIRON-CNTRL-SYS INST/SER | | 0.0 | 0.0 |
| Maintenance Dynamics | LABORERS | | 1.0 | 8.0 |
| Maintenance Dynamics | TRUCK DRIVER, GROUP 1 | | 1.0 | 8.0 |
| Maintenance Dynamics | OPERATING ENGINEER | | 4.0 | 14.0 |
| Miller Electric | ELECTRICIAN | | 0.0 | 0.0 |
| Task Force | TRAFFIC CONTROL SIGNALER | | 3.0 | 24.0 |
| US Industrial Hygien | SAFETY ENGINEER - ON SITE | | 0.0 | 0.0 |
| Total hours worked to date: | 6,587.5 | Total | 13.0 | 86.0 |

### EQUIPMENT HOURS

The following equipment hours were Reported today:

| Serial Number | Description | | Standby Hours | Operating Hours |
|---|---|---|---|---|
| 21003-1741 | Medium Track Excavator | | 0.0 | 0.0 |
| jkl | Forklift | | 0.0 | 8.0 |
| ABC | 55 Ton Crane | | 0.0 | 0.0 |
| DEF | Dewind Model 800 Treencher | | 0.0 | 0.0 |
| Total operating hours to date: | 3,043.0 | Total | 0.0 | 8.0 |

### ACCIDENT REPORTING (Describe accidents)

No accidents reported today

CONTRACTOR CERTIFICATION On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contra plans and specifications, to the best of my knowledge, except as noted above.

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 9/12/6 | | 9/12/06 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
192 

DATE
08 Sep 2006 - Friday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912P6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Weather Caused No Delay
Temperature Mn 62 °F, Max 83 °F; No Precipitation; No Wind

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
Dewind continued with installation of the west segment. The wall was installed to depth from station 83+45 to 80+25 (320 feet). The total depth was consistant at 36 feet. The depth to clay in this segment is about 28.5 to 30.4 feet. This yields a key in depth of between 5.6 and 7.5 feet. This exceeds the contract limit for payment of 5 feet. EQ will only invoice for a key in of the 5 foot maximum

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
Eric Bowman, Ed Wise, Nick Mchailides, Ben Letany, six representatives of Maintenance Dynamics (four operators, one teamster, one laborer). three representatives of Dewind, and three representatives of Task Force Security.

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
Nick Mchailides conducted a safety tailgate meeting.

**Safety: (Inspections made, Deficiencies noted):**
None

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 192 

DATE 08 Sep 2006 - Friday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912P6-06-C-0003 NA

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

**LABOR HOURS**

**The following labor hours were Reported today:**

| Employer | Labor Classification | | Number of Employees | Hours Worked |
|---|---|---|---|---|
| DLZ | SURVEYOR | | 0.0 | 0.0 |
| Dewind Dewatering | OPERATING ENGINEER | | 3.0 | 36.0 |
| EQM | SAFETY ENGINEER - ON SITE | | 1.0 | 12.0 |
| EQM | SUPER - JOB | | 1.0 | 12.0 |
| EQM | CONSTRUCTION INSPECTOR | | 1.0 | 12.0 |
| EQM | CONSTRUCTION-RECORDS CLERK | | 1.0 | 12.0 |
| Great Lakes Labs | ENVIRON-CNTRL-SYS INST/SER | | 0.0 | 0.0 |
| Maintenance Dynamics | LABORERS | | 1.0 | 12.0 |
| Maintenance Dynamics | TRUCK DRIVER, GROUP 1 | | 1.0 | 12.0 |
| Maintenance Dynamics | OPERATING ENGINEER | | 4.0 | 48.0 |
| Miller Electric | ELECTRICIAN | | 0.0 | 0.0 |
| Task Force | TRAFFIC CONTROL SIGNALER | | 3.0 | 24.0 |
| US Industrial Hygien | SAFETY ENGINEER - ON SITE | | 0.0 | 0.0 |
| Total hours worked to date: | 6,715.5 | Total | 16.0 | 180.0 |

**EQUIPMENT HOURS**

**The following equipment hours were Reported today:**

| Serial Number | Description | | Standby Hours | Operating Hours |
|---|---|---|---|---|
| 21003-1741 | Medium Track Excavator | | 0.0 | 12.0 |
| jkl | Forklift | | 0.0 | 12.0 |
| ABC | 55 Ton Crane | | 0.0 | 0.0 |
| DEF | Dewind Model 800 Treencher | | 0.0 | 12.0 |
| Total operating hours to date: | 3,067.0 | Total | 0.0 | 36.0 |

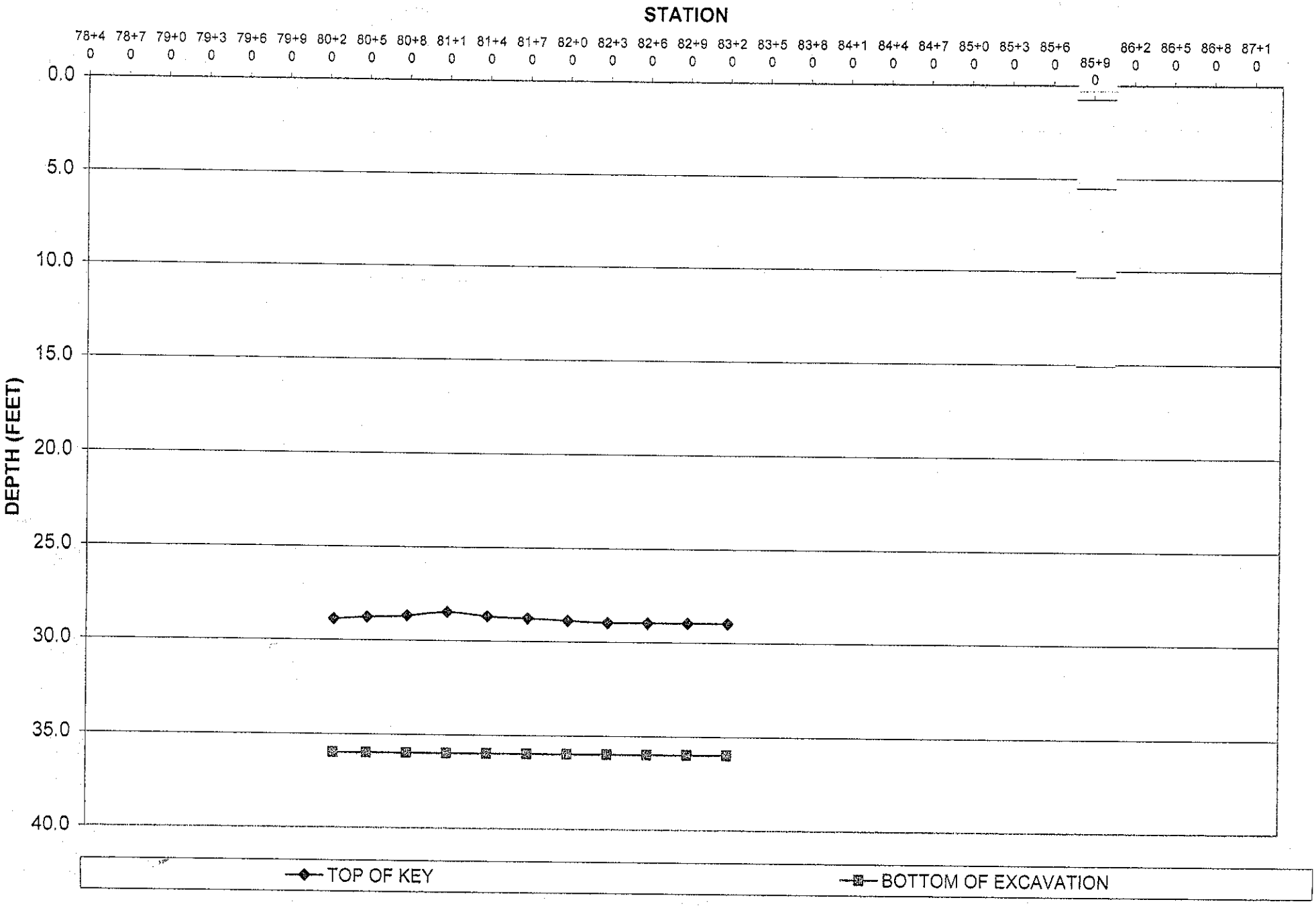
**ACCIDENT REPORTING** (Describe accidents)

**No accidents reported today**

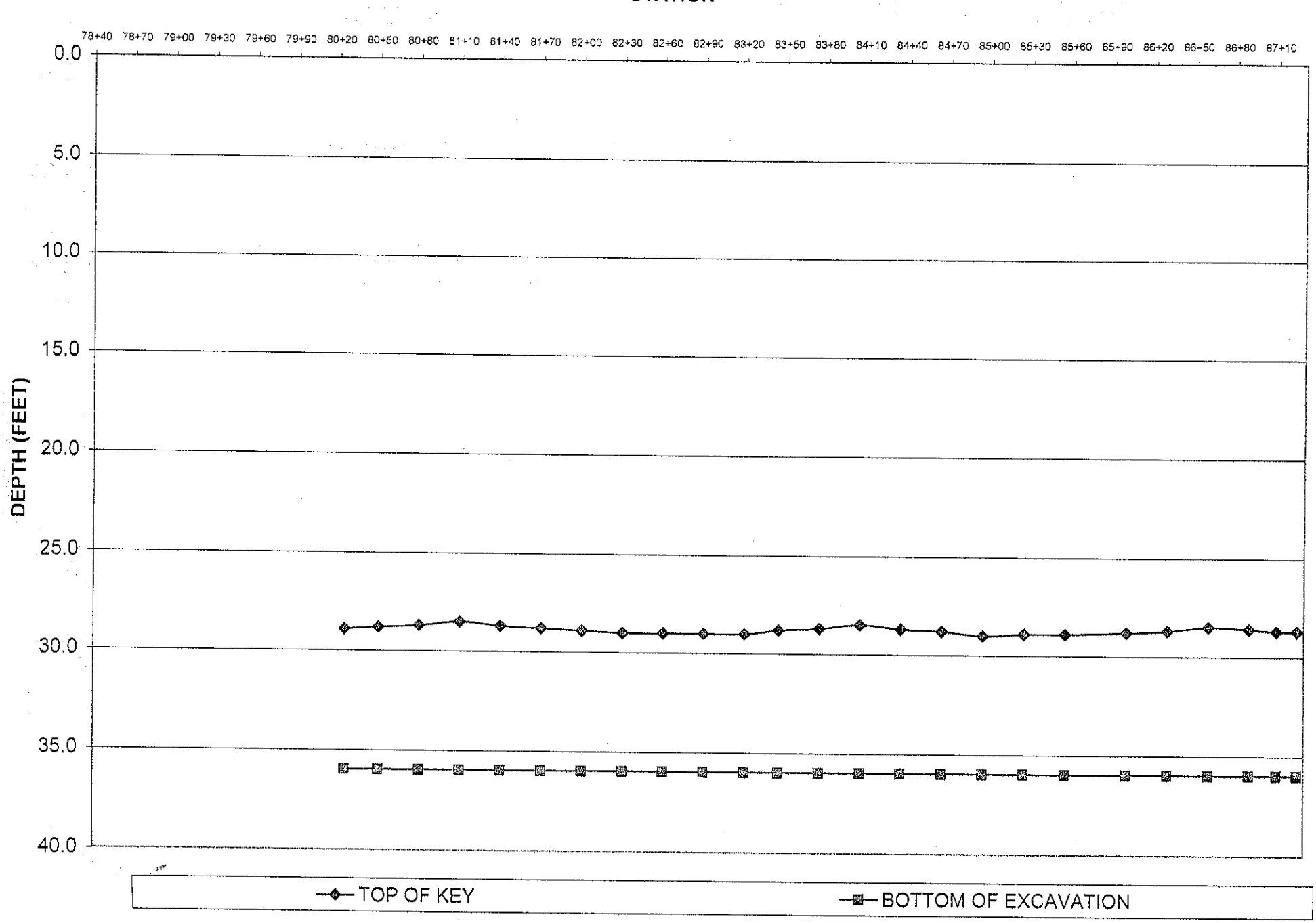
CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contr plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 9/12/6 | | 9/12/06 |

# AS-BUILT PROFILE: WEST TRENCH (TODAY, 090806)



# AS-BUILT PROFILE: WEST TRENCH (TO DATE)



# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
195 

DATE
11 Sep 2006 - Monday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912F6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Weather Caused Critical Delay
Temperature Mn 60 °F, Max 71 °F; 0.7 IN Precipitation; No Wind

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
Dewind continued with installation of the west segment. The wall was installed to depth from station 80+25 to 79+75 (50 feet). Work was terminated at about 9:00 am due to heavy rain and thunderstorms. The total depth was consistant at 36 feet. The depth to clay in this segment is about 28.5 to 30.4 feet. This yields a key in depth of between 5.6 and 7.5 feet. This exceeds the contract limit for payment of 5 feet. EQ will only invoice for a key in of the 5 foot maximum. Wet conditions and the prospect of rain for 091206 have led to a posponent of slurry wall work scheduled for that day.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
Eric Bowman, Ed Wise, Nick Mchailides, Ben Letany, six representatives of Maintenance Dynamics (four operators, one teamster, one laborer). three representatives of Dewind, and three representatives of Task Force Security.

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
Nick Mchailides conducted a safety tailgate meeting.

**Safety: (Inspections made, Deficiencies noted):**
None

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 195 

DATE 11 Sep 2006 - Monday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912F6-06-C-0003 NA

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

**LABOR HOURS**

**The following labor hours were Reported today:**

| Employer | Labor Classification | | Number of Employees | Hours Worked |
|---|---|---|---|---|
| DLZ | SURVEYOR | | 0.0 | 0.0 |
| Dewind Dewatering | OPERATING ENGINEER | | 3.0 | 12.0 |
| EQM | SAFETY ENGINEER - ON SITE | | 1.0 | 8.0 |
| EQM | SUPER - JOB | | 1.0 | 8.0 |
| EQM | CONSTRUCTION INSPECTOR | | 1.0 | 8.0 |
| EQM | CONSTRUCTION-RECORDS CLERK | | 1.0 | 8.0 |
| Great Lakes Labs | ENVIRON-CNTRL-SYS INST/SER | | 0.0 | 0.0 |
| Maintenance Dynamics | LABORERS | | 1.0 | 8.0 |
| Maintenance Dynamics | TRUCK DRIVER, GROUP 1 | | 1.0 | 8.0 |
| Maintenance Dynamics | OPERATING ENGINEER | | 4.0 | 32.0 |
| Miller Electric | ELECTRICIAN | | 0.0 | 0.0 |
| Task Force | TRAFFIC CONTROL SIGNALER | | 3.0 | 24.0 |
| US Industrial Hygien | SAFETY ENGINEER - ON SITE | | 0.0 | 0.0 |
| Total hours worked to date: 6,831.5 | | Total | 16.0 | 116.0 |

**EQUIPMENT HOURS**

**The following equipment hours were Reported today:**

| Serial Number | Description | | Standby Hours | Operating Hours |
|---|---|---|---|---|
| 21003-1741 | Medium Track Excavator | | 0.0 | 2.0 |
| jkl | Forklift | | 0.0 | 2.0 |
| ABC | 55 Ton Crane | | 0.0 | 0.0 |
| DEF | Dewind Model 800 Treencher | | 0.0 | 2.0 |
| Total operating hours to date: 3,073.0 | | Total | 0.0 | 6.0 |

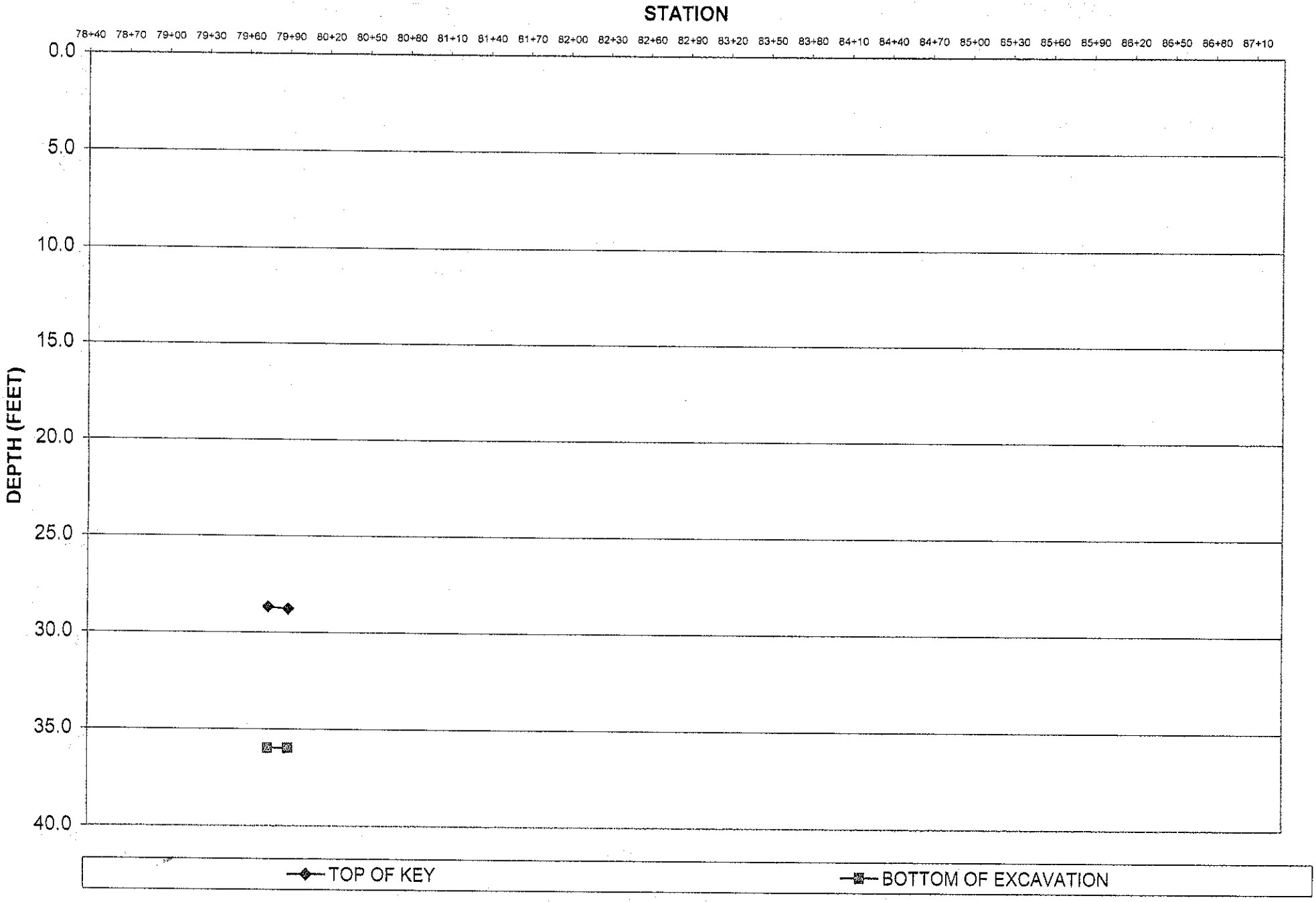
**ACCIDENT REPORTING** (Describe accidents)

**No accidents reported today**

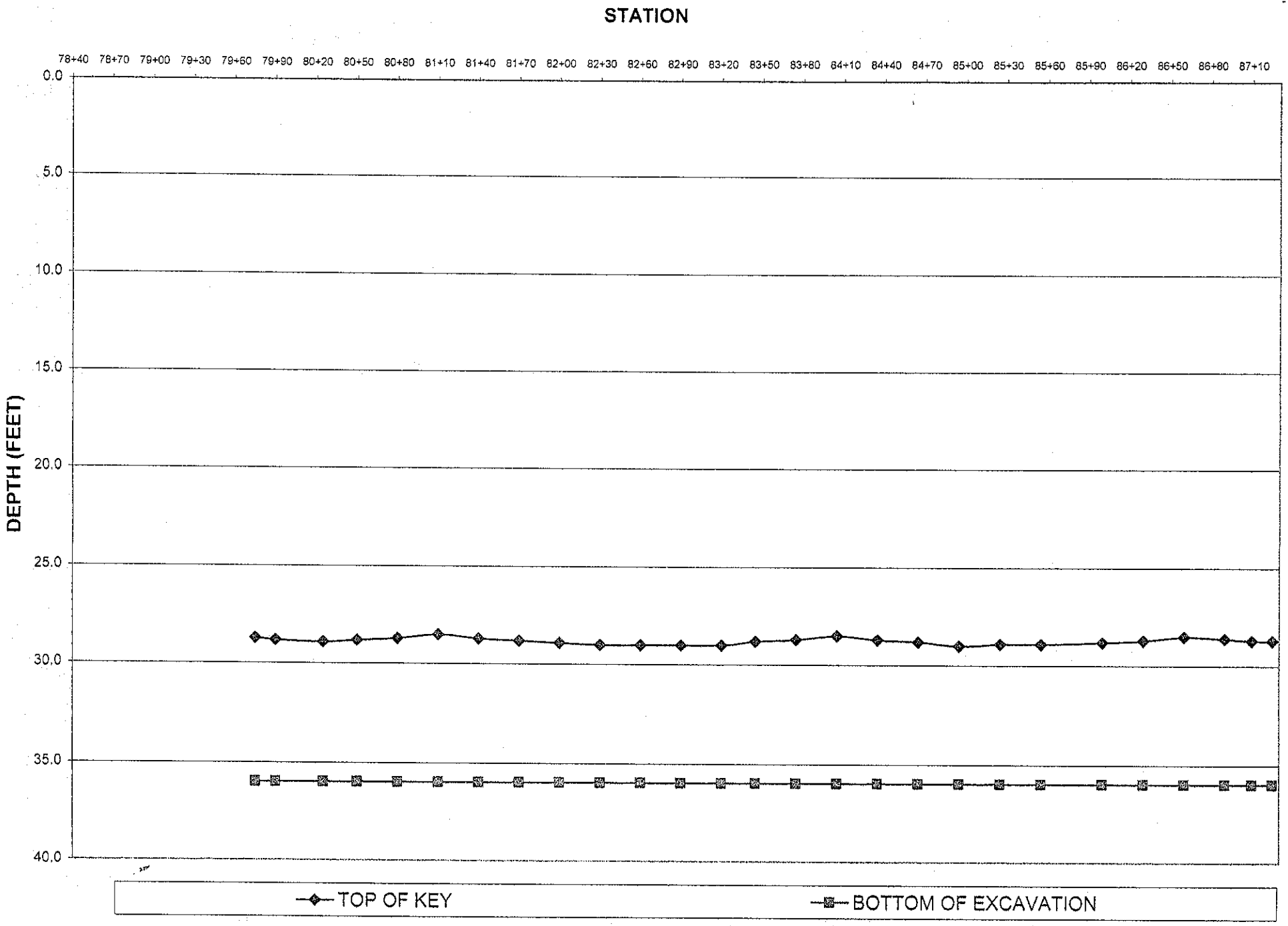
CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contra plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 9/18/06 | | 9/18/06 |

# AS-BUILT PROFILE: WEST TRENCH (TODAY, 091106)



# AS-BUILT PROFILE: WEST TRENCH (TO DATE)



# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
196 

DATE
12 Sep 2006 - Tuesday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912P6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Previous Weather - Critical Delay
Temperature Min 61 °F, Max 73 °F; 0.2 IN Precipitation; No Wind

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
Wet conditions from 091106 prohibited installation of the remaining wall. EQ received a 4" pump and ran it with the exisitng 2" to remove water from the work area. This was marginally successful as the surface influent was enormous.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
Eric Bowman, Ed Wise, Nick Mchailides, three representatives of Maintenance Dynamics (one operator, one teamster, one laborer). and three representatives of Task Force Security.

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
Nick Mchailides conducted a safety tailgate meeting.

**Safety: (Inspections made, Deficiencies noted):**
None

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 196 

DATE 12 Sep 2006 - Tuesday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912P6-06-C-0003 NA

### LABOR HOURS

**The following labor hours were Reported today:**

| Employer | Labor Classification | | Number of Employees | Hours Worked |
|---|---|---|---|---|
| DLZ | SURVEYOR | | 0.0 | 0.0 |
| Dewind Dewatering | OPERATING ENGINEER | | 0.0 | 0.0 |
| EQM | SAFETY ENGINEER - ON SITE | | 1.0 | 8.0 |
| EQM | SUPER - JOB | | 1.0 | 8.0 |
| EQM | CONSTRUCTION INSPECTOR | | 1.0 | 8.0 |
| EQM | CONSTRUCTION-RECORDS CLERK | | 0.0 | 0.0 |
| Great Lakes Labs | ENVIRON-CNTRL-SYS INST/SER | | 0.0 | 0.0 |
| Maintenance Dynamics | LABORERS | | 1.0 | 8.0 |
| Maintenance Dynamics | TRUCK DRIVER, GROUP 1 | | 1.0 | 8.0 |
| Maintenance Dynamics | OPERATING ENGINEER | | 0.0 | 8.0 |
| Miller Electric | ELECTRICIAN | | 0.0 | 0.0 |
| Task Force | TRAFFIC CONTROL SIGNALER | | 3.0 | 24.0 |
| US Industrial Hygien | SAFETY ENGINEER - ON SITE | | 0.0 | 0.0 |
| Total hours worked to date: | 6,903.5 | Total | 8.0 | 72.0 |

### EQUIPMENT HOURS

**The following equipment hours were Reported today:**

| Serial Number | Description | | Standby Hours | Operating Hours |
|---|---|---|---|---|
| 21003-1741 | Medium Track Excavator | | 4.0 | 4.0 |
| jkl | Forklift | | 0.0 | 0.0 |
| ABC | 55 Ton Crane | | 0.0 | 0.0 |
| DEF | Dewind Model 800 Treencher | | 0.0 | 0.0 |
| Total operating hours to date: | 3,077.0 | Total | 4.0 | 4.0 |

### ACCIDENT REPORTING (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 9/13/6 | | 9/13/06 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
197 

DATE
13 Sep 2006 - Wednesday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912P6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Weather Caused Critical Delay
Temperature Min 61 °F, Max 66 °F, 0.4 IN Precipitation; No Wind

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
Continuing rains caused a work stoppage.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
Eric Bowman, Ed Wise, three representatives of Maintenance Dynamics (one operator, one teamster, one laborer). and three representatives of Task Force Security.

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
Eric Bowman conducted a safety tailgate meeting.

**Safety: (Inspections made, Deficiencies noted):**
None

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 197 

DATE 13 Sep 2006 - Wednesday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912P6-06-C-0003 NA

### LABOR HOURS

The following labor hours were Reported today:

| Employer | Labor Classification | | Number of Employees | Hours Worked |
|---|---|---|---|---|
| DLZ | SURVEYOR | | 0.0 | 0.0 |
| Dewind Dewatering | OPERATING ENGINEER | | 0.0 | 0.0 |
| EQM | SAFETY ENGINEER - ON SITE | | 1.0 | 8.0 |
| EQM | SUPER - JOB | | 0.0 | 0.0 |
| EQM | CONSTRUCTION INSPECTOR | | 1.0 | 8.0 |
| EQM | CONSTRUCTION-RECORDS CLERK | | 0.0 | 0.0 |
| Great Lakes Labs | ENVIRON-CNTRL-SYS INST/SER | | 0.0 | 0.0 |
| Maintenance Dynamics | LABORERS | | 1.0 | 8.0 |
| Maintenance Dynamics | TRUCK DRIVER, GROUP 1 | | 1.0 | 8.0 |
| Maintenance Dynamics | OPERATING ENGINEER | | 0.0 | 8.0 |
| Miller Electric | ELECTRICIAN | | 0.0 | 0.0 |
| Task Force | TRAFFIC CONTROL SIGNALER | | 3.0 | 24.0 |
| US Industrial Hygien | SAFETY ENGINEER - ON SITE | | 0.0 | 0.0 |
| Total hours worked to date: | 6,967.5 | Total | 7.0 | 64.0 |

### EQUIPMENT HOURS

The following equipment hours were Reported today:

| Serial Number | Description | | Standby Hours | Operating Hours |
|---|---|---|---|---|
| 21003-1741 | Medium Track Excavator | | 8.0 | 0.0 |
| jkl | Forklift | | 8.0 | 0.0 |
| ABC | 55 Ton Crane | | 8.0 | 0.0 |
| DEF | Dewind Model 800 Treencher | | 8.0 | 0.0 |
| Total operating hours to date: | 3,077.0 | Total | 32.0 | 0.0 |

### ACCIDENT REPORTING (Describe accidents)

No accidents reported today

CONTRACTOR CERTIFICATION On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contr plans and specifications, to the best of my knowledge, except as noted above.

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 9/20/6 | | 9/20/06 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
198 

DATE
14 Sep 2006 - Thursday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912P6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Weather Caused Non-Critical Delay
Temperature Min 60 °F, Max 72 °F, No Precipitation; No Wind

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
Dewind completed installation of the west segment. The wall was installed to depth from station 79+75 to 78+35 (140 feet). The total depth was consistant at 36 feet.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
Eric Bowman, Ed Wise, six representatives of Maintenance Dynamics (four operators, one teamster, one laborer). three representatives of Dewind, and three representatives of Task Force Security.

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
Eric Bowman conducted a safety tailgate meeting.

**Safety: (Inspections made, Deficiencies noted):**
None

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 198 

DATE 14 Sep 2006 - Thursday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912P6-06-C-0003 NA

**LABOR HOURS**

**The following labor hours were Reported today:**

| Employer | Labor Classification | | Number of Employees | Hours Worked |
|---|---|---|---|---|
| DLZ | SURVEYOR | | 0.0 | 0.0 |
| Dewind Dewatering | OPERATING ENGINEER | | 3.0 | 24.0 |
| EQM | SAFETY ENGINEER - ON SITE | | 1.0 | 8.0 |
| EQM | SUPER - JOB | | 0.0 | 0.0 |
| EQM | CONSTRUCTION INSPECTOR | | 1.0 | 8.0 |
| EQM | CONSTRUCTION-RECORDS CLERK | | 0.0 | 0.0 |
| Great Lakes Labs | ENVIRON-CNTRL-SYS INST/SER | | 0.0 | 0.0 |
| Maintenance Dynamics | LABORERS | | 1.0 | 8.0 |
| Maintenance Dynamics | TRUCK DRIVER, GROUP 1 | | 1.0 | 8.0 |
| Maintenance Dynamics | OPERATING ENGINEER | | 4.0 | 32.0 |
| Miller Electric | ELECTRICIAN | | 0.0 | 0.0 |
| Task Force | TRAFFIC CONTROL SIGNALER | | 3.0 | 24.0 |
| US Industrial Hygien | SAFETY ENGINEER - ON SITE | | 0.0 | 0.0 |
| | | Total | 14.0 | 112.0 |

Total hours worked to date: 7,079.5

**EQUIPMENT HOURS**

**The following equipment hours were Reported today:**

| Serial Number | Description | | Standby Hours | Operating Hours |
|---|---|---|---|---|
| 21003-1741 | Medium Track Excavator | | 0.0 | 8.0 |
| jkl | Forklift | | 0.0 | 8.0 |
| ABC | 55 Ton Crane | | 8.0 | 0.0 |
| DEF | Dewind Model 800 Treencher | | 0.0 | 8.0 |
| | | Total | 8.0 | 24.0 |

Total operating hours to date: 3,101.0

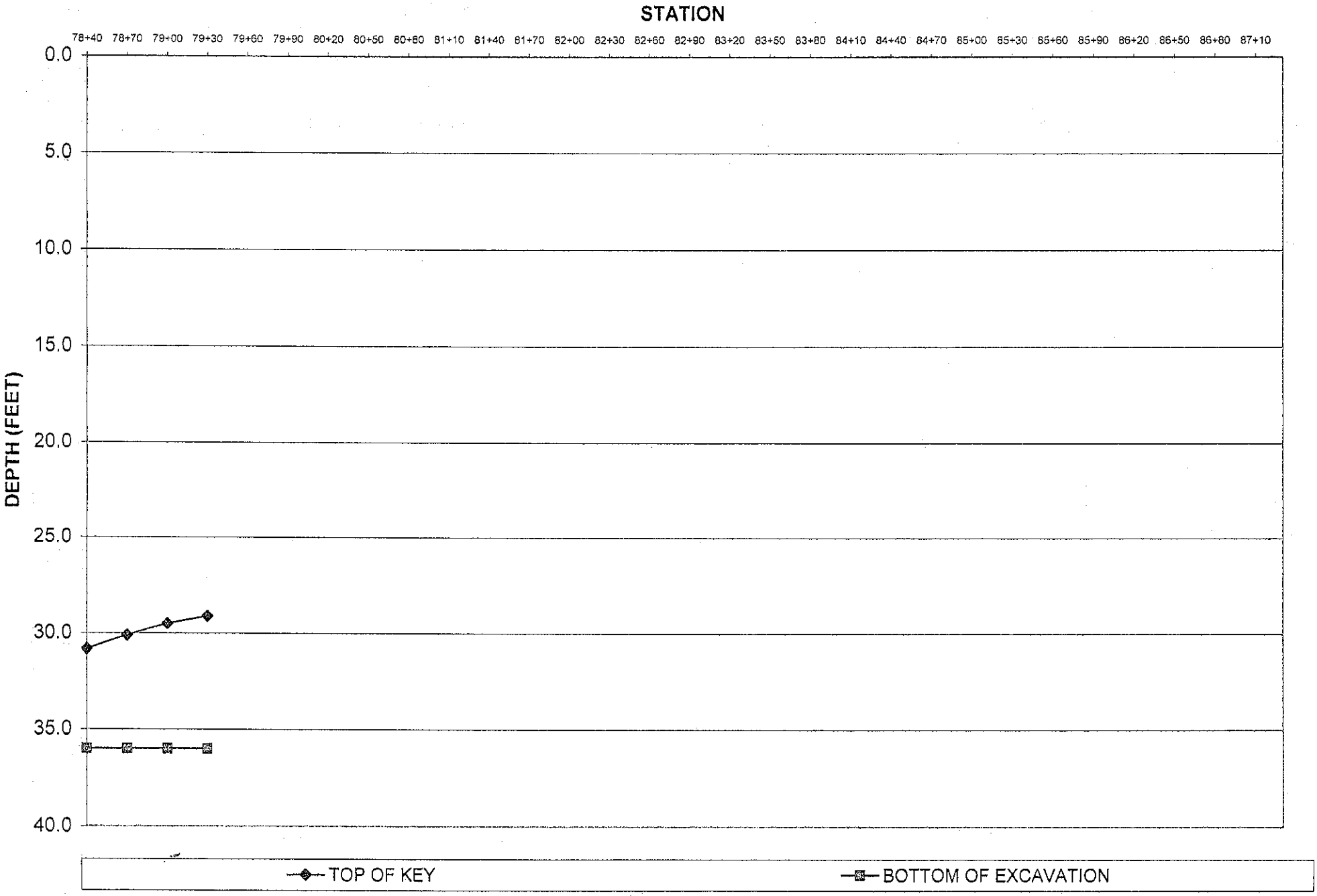
**ACCIDENT REPORTING** (Describe accidents)

**No accidents reported today**

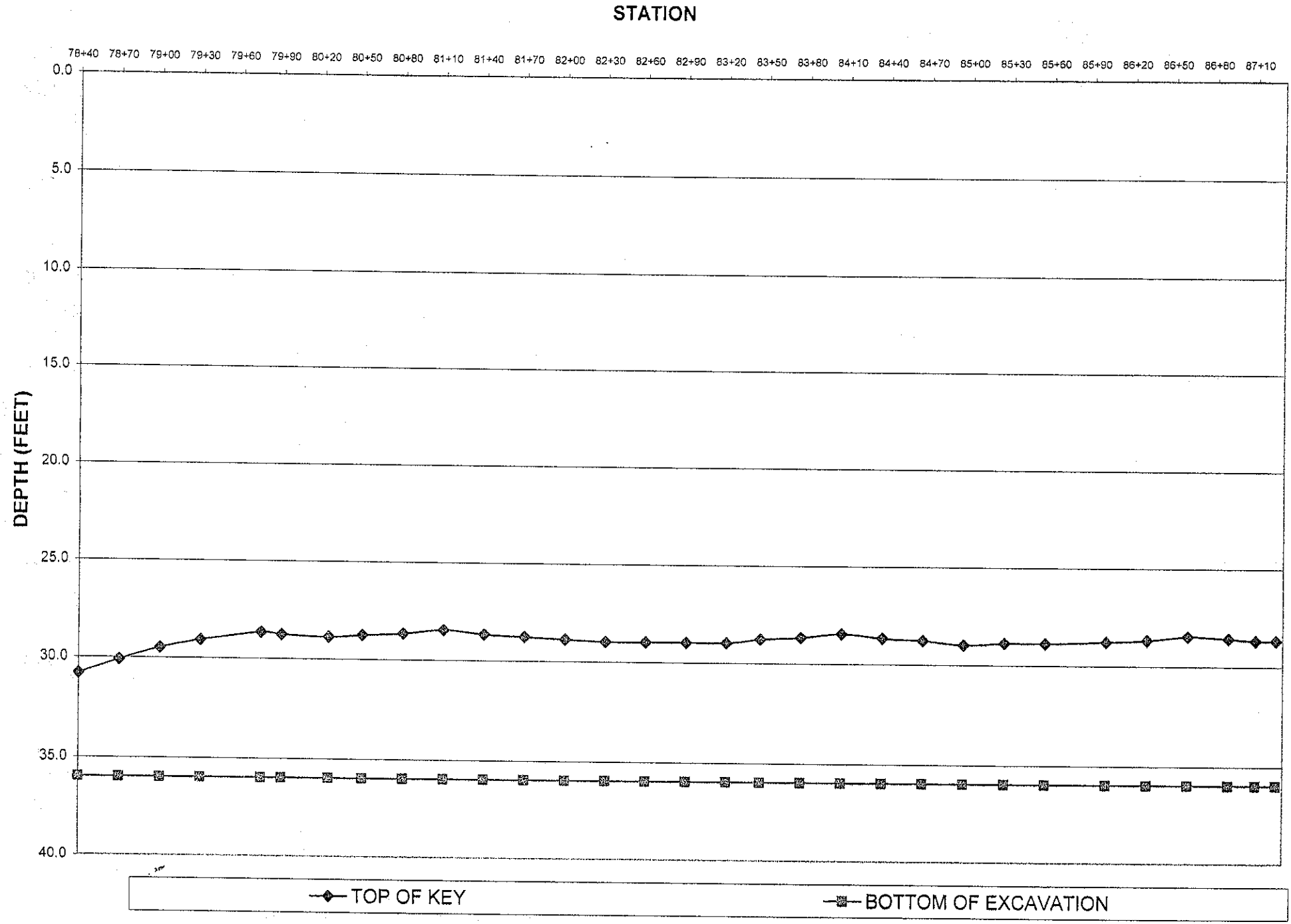
CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contr plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 9/20/6 | | 9/20/06 |

# AS-BUILT PROFILE: WEST TRENCH (TODAY, 091406)



# AS-BUILT PROFILE: WEST TRENCH (TO DATE 091406)



# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 199 

DATE 15 Sep 2006 - Friday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912P6-06-C-0003 NA

CONTRACTOR Environmental Quality Management Inc

WEATHER
Weather Caused No Delay
Temperature Mn 57 °F, Max 78 °F, No Precipitation, No Wind

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
Dewind started tear down of the trencher and performed miscellaneous decontamination of equipment.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
Eric Bowman, Ed Wise, Andy Lucas, seven representatives of Maintenance Dynamics (five operators, one teamster, one laborer). three representatives of Dewind, and three representatives of Task Force Security.

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
Eric Bowman conducted a safety tailgate meeting.

**Safety: (Inspections made, Deficiencies noted):**
None

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 199 

DATE 15 Sep 2006 - Friday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912P6-06-C-0003 NA

**LABOR HOURS**

**The following labor hours were Reported today:**

| Employer | Labor Classification | | Number of Employees | Hours Worked |
|---|---|---|---|---|
| DLZ | SURVEYOR | | 0.0 | 0.0 |
| Dewind Dewatering | OPERATING ENGINEER | | 4.0 | 52.0 |
| EQM | SAFETY ENGINEER - ON SITE | | 1.0 | 13.0 |
| EQM | SUPER - JOB | | 0.0 | 0.0 |
| EQM | CONSTRUCTION INSPECTOR | | 1.0 | 13.0 |
| EQM | CONSTRUCTION-RECORDS CLERK | | 0.0 | 0.0 |
| Great Lakes Labs | ENVIRON-CNTRL-SYS INST/SER | | 0.0 | 0.0 |
| Maintenance Dynamics | LABORERS | | 1.0 | 13.0 |
| Maintenance Dynamics | TRUCK DRIVER, GROUP 1 | | 1.0 | 13.0 |
| Maintenance Dynamics | OPERATING ENGINEER | | 5.0 | 65.0 |
| Miller Electric | ELECTRICIAN | | 0.0 | 0.0 |
| Task Force | TRAFFIC CONTROL SIGNALER | | 3.0 | 24.0 |
| US Industrial Hygien | SAFETY ENGINEER - ON SITE | | 1.0 | 8.0 |
| Total hours worked to date: | 7,280.5 | Total | 17.0 | 201.0 |

**EQUIPMENT HOURS**

**The following equipment hours were Reported today:**

| Serial Number | Description | | Standby Hours | Operating Hours |
|---|---|---|---|---|
| 21003-1741 | Medium Track Excavator | | 0.0 | 13.0 |
| jkl | Forklift | | 0.0 | 13.0 |
| ABC | 55 Ton Crane | | 0.0 | 13.0 |
| DEF | Dewind Model 800 Treencher | | 0.0 | 13.0 |
| Total operating hours to date: 3,153.0 | | Total | 0.0 | 52.0 |

**ACCIDENT REPORTING** (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contra plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 9/20/6 | | 9/20/06 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
202 

DATE
18 Sep 2006 - Monday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912P6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Weather Caused No Delay
Temperature Min 53 °F, Max 72 °F; No Precipitation; No Wind

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
Dewind completed tear down of the trencher and performed miscellaneous decontamination of equipment. All Dewind equipment was demobilized.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
Eric Bowman, Ed Wise, Ben Letany, seven representatives of Maintenance Dynamics (five operators, one teamster, one laborer). three representatives of Dewind, and three representatives of Task Force Security.

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
Eric Bowman conducted a safety tailgate meeting.

**Safety: (Inspections made, Deficiencies noted):**
None

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 202 

DATE 18 Sep 2006 - Monday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912P6-06-C-0003 NA

### LABOR HOURS

**The following labor hours were Reported today:**

| Employer | Labor Classification | | Number of Employees | Hours Worked |
|---|---|---|---|---|
| DLZ | SURVEYOR | | 0.0 | 0.0 |
| Dewind Dewatering | OPERATING ENGINEER | | 3.0 | 24.0 |
| EQM | SAFETY ENGINEER - ON SITE | | 1.0 | 8.0 |
| EQM | SUPER - JOB | | 1.0 | 8.0 |
| EQM | CONSTRUCTION INSPECTOR | | 1.0 | 8.0 |
| EQM | CONSTRUCTION-RECORDS CLERK | | 0.0 | 0.0 |
| Great Lakes Labs | ENVIRON-CNTRL-SYS INST/SER | | 0.0 | 0.0 |
| Maintenance Dynamics | LABORERS | | 1.0 | 8.0 |
| Maintenance Dynamics | TRUCK DRIVER, GROUP 1 | | 1.0 | 8.0 |
| Maintenance Dynamics | OPERATING ENGINEER | | 5.0 | 40.0 |
| Miller Electric | ELECTRICIAN | | 0.0 | 0.0 |
| Task Force | TRAFFIC CONTROL SIGNALER | | 3.0 | 24.0 |
| US Industrial Hygien | SAFETY ENGINEER - ON SITE | | 0.0 | 0.0 |
| Total hours worked to date: | 7,408.5 | Total | 16.0 | 128.0 |

### EQUIPMENT HOURS

**The following equipment hours were Reported today:**

| Serial Number | Description | | Standby Hours | Operating Hours |
|---|---|---|---|---|
| 21003-1741 | Medium Track Excavator | | 0.0 | 8.0 |
| jkl | Forklift | | 0.0 | 8.0 |
| ABC | 55 Ton Crane | | 0.0 | 8.0 |
| DEF | Dewind Model 800 Treencher | | 0.0 | 8.0 |
| Total operating hours to date: | 3,185.0 | Total | 0.0 | 32.0 |

### ACCIDENT REPORTING (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment ar material used and work performed during this Reporting period are in compliance with the contr. plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| [signature] | 9/20/6 | [signature] | 9/20/06 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
203 

DATE
19 Sep 2006 - Tuesday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912P6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Weather Caused No Delay
Temperature Min 45 °F, Max 54 °F; No Precipitation; No Wind

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
EQ performed miscellaneous cleanup activities.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
Eric Bowman, Ed Wise, Ben Letany, Andy Lucas, four representatives of Maintenance Dynamics (two operators, one teamster, one laborer). and three representatives of Task Force Security.

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
Eric Bowman conducted a safety tailgate meeting.

**Safety: (Inspections made, Deficiencies noted):**
None

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 203 

DATE 19 Sep 2006 - Tuesday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912P6-06-C-0003 NA

### LABOR HOURS

**The following labor hours were Reported today:**

| Employer | Labor Classification | | Number of Employees | Hours Worked |
|---|---|---|---|---|
| DLZ | SURVEYOR | | 0.0 | 0.0 |
| EQM | SAFETY ENGINEER - ON SITE | | 1.0 | 8.0 |
| EQM | SUPER - JOB | | 1.0 | 8.0 |
| EQM | CONSTRUCTION INSPECTOR | | 1.0 | 8.0 |
| EQM | CONSTRUCTION-RECORDS CLERK | | 0.0 | 0.0 |
| Great Lakes Labs | ENVIRON-CNTRL-SYS INST/SER | | 0.0 | 0.0 |
| Maintenance Dynamics | LABORERS | | 1.0 | 8.0 |
| Maintenance Dynamics | TRUCK DRIVER, GROUP 1 | | 1.0 | 8.0 |
| Maintenance Dynamics | OPERATING ENGINEER | | 2.0 | 16.0 |
| Miller Electric | ELECTRICIAN | | 0.0 | 0.0 |
| Task Force | TRAFFIC CONTROL SIGNALER | | 3.0 | 24.0 |
| US Industrial Hygien | SAFETY ENGINEER - ON SITE | | 1.0 | 8.0 |
| Total hours worked to date: | 7,496.5 | Total | 11.0 | 88.0 |

### EQUIPMENT HOURS

**The following equipment hours were Reported today:**

| Serial Number | Description | | Standby Hours | Operating Hours |
|---|---|---|---|---|
| 21003-1741 | Medium Track Excavator | | 0.0 | 8.0 |
| jkl | Forklift | | 0.0 | 8.0 |
| Total operating hours to date: 3,201.0 | | Total | 0.0 | 16.0 |

### ACCIDENT REPORTING (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment an material used and work performed during this Reporting period are in compliance with the contra plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 9/20/6 | | 9/20/06 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 204 Page 1 of 2

DATE 20 Sep 2006 - Wednesday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912P6-06-C-0003 NA

CONTRACTOR Environmental Quality Management Inc

WEATHER
Weather Caused No Delay
Temperature Min 44 °F, Max 62 °F; No Precipitation; No Wind

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
EQ performed miscellaneous cleanup activities.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
Eric Bowman, Ed Wise, Ben Letany, four representatives of Maintenance Dynamics (two operators, one teamster, one laborer). and three representatives of Task Force Security.

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
Eric Bowman conducted a safety tailgate meeting.

**Safety: (Inspections made, Deficiencies noted):**
None

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

No preparatory or initial inspections were held today

**ACTIVITY START/FINISH**

No activities were started or finished today

**QC REQUIREMENTS**

No QC requirements were completed today

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

No QC Punch List items were issued today

No Punch List items were corrected today

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

No contractors had their first or last day on site today

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 204 Page 2 of 2

DATE 20 Sep 2006 - Wednesday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912P6-06-C-0003 NA

### LABOR HOURS

The following labor hours were Reported today:

| Employer | Labor Classification | | Number of Employees | Hours Worked |
|---|---|---|---|---|
| DLZ | SURVEYOR | | 0.0 | 0.0 |
| EQM | SAFETY ENGINEER - ON SITE | | 1.0 | 8.0 |
| EQM | SUPER - JOB | | 1.0 | 8.0 |
| EQM | CONSTRUCTION INSPECTOR | | 1.0 | 8.0 |
| EQM | CONSTRUCTION-RECORDS CLERK | | 0.0 | 0.0 |
| Great Lakes Labs | ENVIRON-CNTRL-SYS INST/SER | | 0.0 | 0.0 |
| Maintenance Dynamics | LABORERS | | 1.0 | 8.0 |
| Maintenance Dynamics | TRUCK DRIVER, GROUP 1 | | 1.0 | 8.0 |
| Maintenance Dynamics | OPERATING ENGINEER | | 2.0 | 16.0 |
| Miller Electric | ELECTRICIAN | | 0.0 | 0.0 |
| Task Force | TRAFFIC CONTROL SIGNALER | | 3.0 | 24.0 |
| US Industrial Hygien | SAFETY ENGINEER - ON SITE | | 0.0 | 0.0 |
| Total hours worked to date: | 7,576.5 | Total | 10.0 | 80.0 |

### EQUIPMENT HOURS

The following equipment hours were Reported today:

| Serial Number | Description | | Standby Hours | Operating Hours |
|---|---|---|---|---|
| 21003-1741 | Medium Track Excavator | | 0.0 | 8.0 |
| jkl | Forklift | | 0.0 | 8.0 |
| Total operating hours to date: | 3,217.0 | Total | 0.0 | 16.0 |

### ACCIDENT REPORTING (Describe accidents)

No accidents reported today

CONTRACTOR CERTIFICATION On behalf of the contractor, I certify that this Report is complete and correct and all equipment an material used and work performed during this Reporting period are in compliance with the contrac plans and specifications, to the best of my knowledge, except as noted above.

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | | | |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
205 

DATE
21 Sep 2006 - Thursday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912R6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Weather Caused No Delay
Temperature Min 57 °F, Max 70 °F; No Precipitation; No Wind

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
EQ performed miscellaneous cleanup activities. K&S Engineering advanced one boring at station 86+70 (log attached).

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
Eric Bowman, Ed Wise, Ben Letany, five representatives of Maintenance Dynamics (three operators, one teamster, one laborer). two representatives of K&S Engineering, and three representatives of Task Force Security.

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
Eric Bowman conducted a safety tailgate meeting.

**Safety: (Inspections made, Deficiencies noted):**
None

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 205 

DATE 21 Sep 2006 - Thursday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912P6-06-C-0003 NA

### LABOR HOURS

The following labor hours were Reported today:

| Employer | Labor Classification | | Number of Employees | Hours Worked |
|---|---|---|---|---|
| DLZ | SURVEYOR | | 0.0 | 0.0 |
| EQM | SAFETY ENGINEER - ON SITE | | 1.0 | 8.0 |
| EQM | SUPER - JOB | | 1.0 | 8.0 |
| EQM | CONSTRUCTION INSPECTOR | | 1.0 | 8.0 |
| EQM | CONSTRUCTION-RECORDS CLERK | | 0.0 | 0.0 |
| Great Lakes Labs | ENVIRON-CNTRL-SYS INST/SER | | 0.0 | 0.0 |
| K&S Engineers | OPERATING ENGINEER | | 2.0 | 16.0 |
| Maintenance Dynamics | LABORERS | | 1.0 | 8.0 |
| Maintenance Dynamics | TRUCK DRIVER, GROUP 1 | | 1.0 | 8.0 |
| Maintenance Dynamics | OPERATING ENGINEER | | 3.0 | 24.0 |
| Miller Bectric | ELECTRICIAN | | 0.0 | 0.0 |
| Task Force | TRAFFIC CONTROL SIGNALER | | 3.0 | 24.0 |
| US Industrial Hygien | SAFETY ENGINEER - ON SITE | | 0.0 | 0.0 |
| Total hours worked to date: | 7,680.5 | Total | 13.0 | 104.0 |

### EQUIPMENT HOURS

The following equipment hours were Reported today:

| Serial Number | Description | | Standby Hours | Operating Hours |
|---|---|---|---|---|
| 21003-1741 | Medium Track Excavator | | 0.0 | 8.0 |
| jkl | Forklift | | 0.0 | 8.0 |
| 123 | Bull Dozer | | 0.0 | 8.0 |
| Total operating hours to date: 3,241.0 | | Total | 0.0 | 24.0 |

### ACCIDENT REPORTING (Describe accidents)

No accidents reported today

CONTRACTOR CERTIFICATION On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the cont plans and specifications, to the best of my knowledge, except as noted above.

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 9/26/6 | | 9/26/06 |

Hole No. 86+70

| | | | |
|---|---|---|---|
| LING LOG | Division USACE | INSTALLATION INDIANA HARBOR CDF | SHEET 1 of 1 Sheets |
| ject | IHCDF Slurry Wall Gaps | 10. Size and Type of Bit | 4.25 H S A |
| | East Chicago, IN | 11. Datum for Elevation Shown (*TBM or MSL*) | NA |
| lling Agency | K&S Engineering | 12. Manufacturers Designation of Drill | D50 Dietrich |
| le No. (*As shown on ng title and title number*) | 86+70 | 13. Total No. of Overburden Samples Taken | 2 Undisturbed 0 |
| | | 14. Total Number of Core Boxes | 0 |
| me of Driller | Marion Perry | 15. Elevation of Ground Water | |
| | | 16. Date Hole | Started 9/21/2006 Completed 9/21/2006 |
| ection of Hole | Vertical [ ] Inclined ____ Deg. From Vert. | 17. Elevation Top of Hole | NA |
| ickness of Overburden | 18 | 18. Total Core Recovery for Boring | NOTE REMARKS |
| pth Drilled into Rock | NA | 19. Signature of Inspector | Ed Wise |
| tal Depth of Hole | 18' | | |

| ELEVATION *a* | DEPTH *b* | LEGEND *c* | CLASSIFICATION OF MATERIALS (*Description*) *d* | % CORE RECOVERY *e* | BOX or SAMPLE No. *f* | REMARKS (*Drilling time, water loss, depth of weathering, etc., if significant*) *g* |
|---|---|---|---|---|---|---|
| | 2 | | | | Na | No sampling performed until 12 ft |
| | 4 | | | | | |
| | 6 | | | | Na | |
| | 8 | | | | | |
| | 10 | | | | Na | |
| | 12 | | Soil Bentonite backfill | | | Ostenberg sample from 12 to 15 ft Clean Gray Soil bentonite backfill, very soft. No sign of sidewall. 32 of 36" recovery. Tubes wax sealed, capped, taped, and stored upright in core box. |
| | 14 | | | | | |
| | 16 | | Soil Bentonite backfill | | | Ostenberg sample from 15 to 18 ft Clean Gray Soil bentonite backfill, very soft. No sign of sidewall. 32 of 36" recovery. Tubes wax sealed, capped, taped, and stored upright in core box. |
| | 18 | | | | | Boring terminated at 18 ft |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
206 

DATE
22 Sep 2006 - Friday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912P6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Weather Caused Critical Delay
Temperature Mn 57 °F, Max 72 °F; 0.09 IN Precipitation; No Wind

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
Continuing rains caused a work stoppage.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
Ed Wise, Ben Letany, five representatives of Maintenance Dynamics (three operator, one teamster, one laborer). and three representatives of Task Force Security.

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
Ben Letany conducted a safety tailgate meeting.

**Safety: (Inspections made, Deficiencies noted):**
None

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 206 

DATE 22 Sep 2006 - Friday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912F6-06-C-0003 NA

### LABOR HOURS

The following labor hours were Reported today:

| Employer | Labor Classification | | Number of Employees | Hours Worked |
|---|---|---|---|---|
| DLZ | SURVEYOR | | 0.0 | 0.0 |
| EQM | SAFETY ENGINEER - ON SITE | | 1.0 | 8.0 |
| EQM | SUPER - JOB | | 0.0 | 0.0 |
| EQM | CONSTRUCTION INSPECTOR | | 1.0 | 8.0 |
| EQM | CONSTRUCTION-RECORDS CLERK | | 0.0 | 0.0 |
| Great Lakes Labs | ENVIRON-CNTRL-SYS INST/SER | | 0.0 | 0.0 |
| K&S Engineers | OPERATING ENGINEER | | 0.0 | 0.0 |
| Maintenance Dynamics | LABORERS | | 1.0 | 0.0 |
| Maintenance Dynamics | TRUCK DRIVER, GROUP 1 | | 1.0 | 0.0 |
| Maintenance Dynamics | OPERATING ENGINEER | | 3.0 | 0.0 |
| Miller Electric | ELECTRICIAN | | 0.0 | 0.0 |
| Task Force | TRAFFIC CONTROL SIGNALER | | 3.0 | 24.0 |
| US Industrial Hygien | SAFETY ENGINEER - ON SITE | | 0.0 | 0.0 |
| Total hours worked to date: | 7,720.5 | Total | 10.0 | 40.0 |

### EQUIPMENT HOURS

The following equipment hours were Reported today:

| Serial Number | Description | | Standby Hours | Operating Hours |
|---|---|---|---|---|
| 21003-1741 | Medium Track Excavator | | 8.0 | 0.0 |
| jkl | Forklift | | 8.0 | 0.0 |
| 123 | Bull Dozer | | 8.0 | 0.0 |
| 234 | Drill Rig | | 8.0 | 0.0 |
| Total operating hours to date: | 3,241.0 | Total | 32.0 | 0.0 |

### ACCIDENT REPORTING (Describe accidents)

No accidents reported today

NTRACTOR CERTIFICATION On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as noted above.

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 9/26/6 | | 9/26/06 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
209 

DATE
25 Sep 2006 - Monday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912P6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Previous Weather - Non-Critical Delay
Temperature Mn 44 °F, Max 62 °F; No Precipitation; No Wind

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
EQ performed miscellaneous cleanup activities. K&S Engineering advanced three borings at stations 85+70, 84+85, and 81+85 (logs attached).

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
Eric Bowman, Ed Wise, Ben Letany, five representatives of Maintenance Dynamics (three operators, one teamster, one laborer). two representatives of K&S Engineering, and three representatives of Task Force Security.

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
Ben Letany conducted a safety tailgate meeting.

**Safety: (Inspections made, Deficiencies noted):**
None

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 209 

DATE 25 Sep 2006 - Monday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912F6-06-C-0003 NA

### LABOR HOURS

**The following labor hours were Reported today:**

| Employer | Labor Classification | | Number of Employees | Hours Worked |
|---|---|---|---|---|
| DLZ | SURVEYOR | | 0.0 | 0.0 |
| EQM | SAFETY ENGINEER - ON SITE | | 1.0 | 8.0 |
| EQM | SUPER - JOB | | 1.0 | 8.0 |
| EQM | CONSTRUCTION INSPECTOR | | 1.0 | 8.0 |
| EQM | CONSTRUCTION-RECORDS CLERK | | 0.0 | 0.0 |
| Great Lakes Labs | ENVIRON-CNTRL-SYS INST/SER | | 0.0 | 0.0 |
| K&S Engineers | OPERATING ENGINEER | | 2.0 | 16.0 |
| Maintenance Dynamics | LABORERS | | 1.0 | 8.0 |
| Maintenance Dynamics | TRUCK DRIVER, GROUP 1 | | 1.0 | 8.0 |
| Maintenance Dynamics | OPERATING ENGINEER | | 3.0 | 24.0 |
| Miller Electric | ELECTRICIAN | | 0.0 | 0.0 |
| Task Force | TRAFFIC CONTROL SIGNALER | | 3.0 | 24.0 |
| US Industrial Hygien | SAFETY ENGINEER - ON SITE | | 0.0 | 0.0 |
| Total hours worked to date: | 7,824.5 | Total | 13.0 | 104.0 |

### EQUIPMENT HOURS

**The following equipment hours were Reported today:**

| Serial Number | Description | | Standby Hours | Operating Hours |
|---|---|---|---|---|
| 21003-1741 | Medium Track Excavator | | 0.0 | 8.0 |
| jkl | Forklift | | 0.0 | 8.0 |
| 123 | Bull Dozer | | 0.0 | 8.0 |
| 234 | Drill Rig | | 0.0 | 8.0 |
| Total operating hours to date: | 3,273.0 | Total | 0.0 | 32.0 |

### ACCIDENT REPORTING (Describe accidents)

**No accidents reported today**

NTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 9/26/6 | | 9/26/06 |

Hole No. 85+70

| | | | |
|---|---|---|---|
| LING LOG | Division USACE | INSTALLATION INDIANA HARBOR CDF | SHEET 1 of 1 Sheets |
| ject | IHCDF Slurry Wall Gaps | 10. Size and Type of Bit | 4.25 H S A |
| cation | East Chicago, IN | 11. Datum for Elevation Shown (*TBM or MSL*) | NA |
| lling Agency | K&S Engineering | 12. Manufacturers Designation of Drill | D50 Dietrich |
| le No. (*As shown on ng title and title number*) | 85+70 | 13. Total No. of Overburden Samples Taken | 2 Undisturbed 0 |
| | | 14. Total Number of Core Boxes | 0 |
| me of Driller | Marion Perry | 15. Elevation of Ground Water | |
| | | 16. Date Hole | Started 9/25/2006 Completed 9/25/2006 |
| ection of Hole | Vertical [ ] Inclined ____ Deg. From Vert. | 17. Elevation Top of Hole | NA |
| ickness of Overburden | 8 | 18. Total Core Recovery for Boring | NOTE REMARKS |
| pth Drilled into Rock | NA | 19. Signature of Inspector | Ed Wise |
| tal Depth of Hole | 8 | | |

| ELEVATION *a* | DEPTH *b* | LEGEND *c* | CLASSIFICATION OF MATERIALS (*Description*) *d* | % CORE RECOVERY *e* | BOX or SAMPLE No. *f* | REMARKS (*Drilling time, water loss, depth of weathering, etc., if significant*) *g* |
|---|---|---|---|---|---|---|
| | 2 | | Soil Bentonite backfill | | Na | No sampling performed until 3 ft Ostenberg sample from 3 to 5 ft Clean Gray Soil bentonite backfill, very soft. No sign of sidewall. 33 of 36" recovery. Tubes wax sealed, capped, taped, and stored upright in core box. |
| | 4 | | | | | |
| | 6 | | Soil Bentonite backfill | | Na | Ostenberg sample from 5 to 8 ft Clean Gray Soil bentonite backfill, very soft. No sign of sidewall. 30 of 36" recovery. Tubes wax sealed, capped, taped, and stored upright in core box. |
| | 8 | | | | | Boring terminated at 18 ft |

Hole No. 84+85

| | | | |
|---|---|---|---|
| LLING LOG | Division USACE | INSTALLATION INDIANA HARBOR CDF | SHEET 1 of 2 Sheets |
| ject | IHCDF Slurry Wall Gaps | 10. Size and Type of Bit | 4.25 H S A |
| on | East Chicago, IN | 11. Datum for Elevation Shown (*TBM or MSL*) | NA |
| illing Agency | K&S Engineering | 12. Manufacturers Designation of Drill | D50 Dietrich |
| le No. (*As shown on ng title and title number*) | 84+85 | 13. Total No. of Overburden Samples Taken | 2 Undisturbed 0 |
| | | 14. Total Number of Core Boxes | 0 |
| ume of Driller | Marion Perry | 15. Elevation of Ground Water | |
| | | 16. Date Hole | Started 9/25/2006 Completed 9/25/2006 |
| rection of Hole | Vertical ☐ Inclined ____ Deg. From Vert. | 17. Elevation Top of Hole | NA |
| ickness of Overburden | 28' | 18. Total Core Recovery for Boring | NOTE REMARKS |
| pth Drilled into Rock | NA | 19. Signature of Inspector | Ed Wise |
| tal Depth of Hole | 28' | | |

| ELEVATION *a* | DEPTH *b* | LEGEND *c* | CLASSIFICATION OF MATERIALS (*Description*) *d* | % CORE RECOVERY *e* | BOX or SAMPLE No. *f* | REMARKS (*Drilling time, water loss, depth of weathering, etc., if significant*) *g* |
|---|---|---|---|---|---|---|
| | 2 | | | | Na | No sampling performed until 22 ft |
| | 4 | | | | | |
| | 6 | | | | Na | |
| | 8 | | | | | |
| | 10 | | | | Na | |
| | 12 | | | | | |
| | 14 | | | | Na | |
| | 16 | | | | | |
| | 18 | | | | Na | |
| | 20 | | | | | |

| DRILLING LOG (Cont Sheet) | Elevation Top of Hole | NA | Hole No. 84+85 |
|---|---|---|---|
| ct IHCDF Slurry Wall Gaps | INSTALLATION Indiana Harbor CDF | | SHEET 2 of 2 Sheets |

| ELEVATION *a* | DEPTH *b* | LEGEND *c* | CLASSIFICATION OF MATERIALS (*Description*) *d* | % CORE RECOVERY *e* | BOX or SAMPLE No. *f* | REMARKS (*Drilling time, water loss, depth of weathering, etc., if significant*) *g* |
|---|---|---|---|---|---|---|
| | 22 | | Soil Bentonite backfill | | | Ostenberg sample from 22 to 25 ft Clean Gray Soil bentonite backfill, very soft. No sign of sidewall. 30 of 36" recovery. Tubes wax sealed, capped, taped, and stored upright in core box. |
| | 24 | | Soil Bentonite backfill | | | Ostenberg sample from 25 to 88 ft Clean Gray Soil bentonite backfill, very soft. No sign of sidewall. 28 of 36" recovery. Tubes wax sealed, capped, taped, and stored upright in core box. |
| | 26 | | | | | |
| | 28 | | | | | Boring terminated at 28 ft |

Hole No. 81+85

| | | | |
|---|---|---|---|
| ING LOG | Division USACE | INSTALLATION INDIANA HARBOR CDF | SHEET 1 of 2 Sheets |
| ect | IHCDF Slurry Wall Gaps | 10. Size and Type of Bit | 4.25 H S A |
| on | East Chicago, IN | 11. Datum for Elevation Shown (*TBM or MSL*) | NA |
| ling Agency | K&S Engineering | 12. Manufacturers Designation of Drill | D50 Dietrich |
| e No. (*As shown on g title and title number*) | 81+85 | 13. Total No. of Overburden Samples Taken | 2 Undisturbed 0 |
| | | 14. Total Number of Core Boxes | 0 |
| ne of Driller | Marion Perry | 15. Elevation of Ground Water | |
| | | 16. Date Hole | Started 9/25/2006 Completed 9/25/2006 |
| ection of Hole | Vertical [ ] Inclined ____ Deg. From Vert. | 17. Elevation Top of Hole | NA |
| ckness of Overburden | 28' | 18. Total Core Recovery for Boring | NOTE REMARKS |
| th Drilled into Rock | NA | 19. Signature of Inspector | Ed Wis |
| al Depth of Hole | 28' | | |

| EVATION *a* | DEPTH *b* | LEGEND *c* | CLASSIFICATION OF MATERIALS (*Description*) *d* | % CORE RECOVERY *e* | BOX or SAMPLE No. *f* | REMARKS (*Drilling time, water loss, depth of weathering, etc., if significant*) *g* |
|---|---|---|---|---|---|---|
| | 2 | | | | Na | No sampling performed until 22 ft |
| | 4 | | | | | |
| | 6 | | | | Na | |
| | 8 | | | | | |
| | 10 | | | | Na | |
| | 12 | | | | | |
| | 14 | | | | Na | |
| | 16 | | | | | |
| | 18 | | | | Na | |
| | 20 | | | | | |

| DRILLING LOG (Cont Sheet) | Elevation Top of Hole | NA | Hole No. 81+85 |
|---|---|---|---|
| :t · IHCDF Slurry Wall Gaps | INSTALLATION Indiana Harbor CDF | | SHEET 2 of 2 Sheets |

| ELEVATION *a* | DEPTH *b* | LEGEND *c* | CLASSIFICATION OF MATERIALS *(Description)* *d* | % CORE RECOVERY *e* | BOX or SAMPLE No. *f* | REMARKS *(Drilling time, water loss, depth of weathering, etc., if significant)* *g* |
|---|---|---|---|---|---|---|
| | 22 | | Soil Bentonite backfill | | | Ostenberg sample from 22 to 25 ft Clean Gray Soil bentonite backfill, very soft. No sign of sidewall. 24 of 36" recovery. Tubes wax sealed, capped, taped, and stored upright in core box. |
| | 24 | | Soil Bentonite backfill | | | Ostenberg sample from 25 to 88 ft Clean Gray Soil bentonite backfill, very soft. No sign of sidewall. 30 of 36" recovery. Tubes wax sealed, capped, taped, and stored upright in core box. |
| | 26 | | | | | |
| | 28 | | | | | Boring terminated at 28 ft |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
210 

DATE
26 Sep 2006 - Tuesday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912R6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Weather Caused No Delay
Temperature Min 57 °F, Max 74 °F; No Precipitation; No Wind

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
EQ performed miscellaneous cleanup activities. K&S Engineering advanced two borings at stations 82+85, and 83+85 (logs attached).

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
Eric Bowman, Ed Wise, Ben Letany, four representatives of Maintenance Dynamics (two operators, one teamster, one laborer). two representatives of K&S Engineering, and three representatives of Task Force Security.

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
Ben Letany conducted a safety tailgate meeting.

**Safety: (Inspections made, Deficiencies noted):**
None

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 210 

DATE 26 Sep 2006 - Tuesday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912F6-06-C-0003 NA

### LABOR HOURS

The following labor hours were Reported today:

| Employer | Labor Classification | Number of Employees | Hours Worked |
|---|---|---|---|
| DLZ | SURVEYOR | 0.0 | 0.0 |
| EQM | SAFETY ENGINEER - ON SITE | 1.0 | 8.0 |
| EQM | SUPER - JOB | 1.0 | 8.0 |
| EQM | CONSTRUCTION INSPECTOR | 1.0 | 8.0 |
| EQM | CONSTRUCTION-RECORDS CLERK | 0.0 | 0.0 |
| Great Lakes Labs | ENVIRON-CNTRL-SYS INST/SER | 0.0 | 0.0 |
| K&S Engineers | OPERATING ENGINEER | 2.0 | 16.0 |
| Maintenance Dynamics | LABORERS | 1.0 | 8.0 |
| Maintenance Dynamics | TRUCK DRIVER, GROUP 1 | 1.0 | 8.0 |
| Maintenance Dynamics | OPERATING ENGINEER | 2.0 | 16.0 |
| Miller Electric | ELECTRICIAN | 0.0 | 0.0 |
| Task Force | TRAFFIC CONTROL SIGNALER | 3.0 | 24.0 |
| US Industrial Hygien | SAFETY ENGINEER - ON SITE | 0.0 | 0.0 |
| | Total | 12.0 | 96.0 |

Total hours worked to date: 7,920.5

### EQUIPMENT HOURS

The following equipment hours were Reported today:

| Serial Number | Description | Standby Hours | Operating Hours |
|---|---|---|---|
| 21003-1741 | Medium Track Excavator | 0.0 | 8.0 |
| jkl | Forklift | 8.0 | 0.0 |
| 123 | Bull Dozer | 8.0 | 0.0 |
| 234 | Drill Rig | 0.0 | 8.0 |
| | Total | 16.0 | 16.0 |

Total operating hours to date: 3,289.0

### ACCIDENT REPORTING (Describe accidents)

No accidents reported today

CONTRACTOR CERTIFICATION On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contr plans and specifications, to the best of my knowledge, except as noted above.

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 9/27/6 | | 9/27/06 |

Hole No. 83+85

| | | | |
|---|---|---|---|
| LING LOG | Division USACE | INSTALLATION INDIANA HARBOR CDF | SHEET 1 of 1 Sheets |
| ject | IHCDF Slurry Wall Gaps | 10. Size and Type of Bit | 4.25 H S A |
| cation | East Chicago, IN | 11. Datum for Elevation Shown (*TBM or MSL*) | NA |
| illing Agency | K&S Engineering | 12. Manufacturers Designation of Drill | D50 Dietrich |
| ole No. (*As shown on ing title and title number*) | 83+85 | 13. Total No. of Overburden Samples Taken | 2 Undisturbed 0 |
| | | 14. Total Number of Core Boxes | 0 |
| ame of Driller | Marion Perry | 15. Elevation of Ground Water | |
| | | 16. Date Hole | Started 9/26/2006 Completed 9/26/2006 |
| rection of Hole | Vertical ☐ Inclined ____ Deg. From Vert. | 17. Elevation Top of Hole | NA |
| hickness of Overburden | 18 | 18. Total Core Recovery for Boring | NOTE REMARKS |
| epth Drilled into Rock | NA | 19. Signature of Inspector | Ed Wise |
| otal Depth of Hole | 18' | | |

| ELEVATION *a* | DEPTH *b* | LEGEND *c* | CLASSIFICATION OF MATERIALS (*Description*) *d* | % CORE RECOVERY *e* | BOX or SAMPLE No. *f* | REMARKS (*Drilling time, water loss, depth of weathering, etc., if significant*) *g* |
|---|---|---|---|---|---|---|
| | 2 | | | | Na | No sampling performed until 12 ft |
| | 4 | | | | | |
| | 6 | | | | Na | |
| | 8 | | | | | |
| | 10 | | | | Na | |
| | 12 | | Soil Bentonite backfill | | | Ostenberg sample from 12 to 15 ft Clean Gray Soil bentonite backfill, very soft. No sign of sidewall. 30 of 36" recovery. Tubes wax sealed, capped, taped, and stored upright in core box. |
| | 14 | | Soil Bentonite backfill | | | Ostenberg sample from 15 to 18 ft Clean Gray Soil bentonite backfill, very soft. No sign of sidewall. 32 of 36" recovery. Tubes wax sealed, capped, taped, and stored upright in core box. |
| | 16 | | | | | |
| | 18 | | | | | Boring terminated at 18 ft |

Hole No. 82+85

| | | | |
|---|---|---|---|
| LLING LOG | Division USACE | INSTALLATION INDIANA HARBOR CDF | SHEET 1 of 1 Sheets |
| oject | IHCDF Slurry Wall Gaps | 10. Size and Type of Bit | 4.25 H S A |
| cation | East Chicago, IN | 11. Datum for Elevation Shown (*TBM or MSL*) | NA |
| illing Agency | K&S Engineering | 12. Manufacturers Designation of Drill | D50 Dietrich |
| ole No. (*As shown on ng title and title number*) | 82+85 | 13. Total No. of Overburden Samples Taken | 2 Undisturbed 0 |
| | | 14. Total Number of Core Boxes | 0 |
| ame of Driller | Marion Perry | 15. Elevation of Ground Water | |
| | | 16. Date Hole | Started 9/26/2006 Completed 9/26/2006 |
| rection of Hole | Vertical ☐ Inclined _____ Deg. From Vert. | 17. Elevation Top of Hole | NA |
| ickness of Overburden | 8 | 18. Total Core Recovery for Boring | NOTE REMARKS |
| epth Drilled into Rock | NA | 19. Signature of Inspector | Ed Wise |
| otal Depth of Hole | 8 | | |

| ELEVATION *a* | DEPTH *b* | LEGEND *c* | CLASSIFICATION OF MATERIALS (*Description*) *d* | % CORE RECOVERY *e* | BOX or SAMPLE No. *f* | REMARKS (*Drilling time, water loss, depth of weathering, etc., if significant*) *g* |
|---|---|---|---|---|---|---|
| | 2 | | Soil Bentonite backfill | | Na | No sampling performed until 3 ft<br>Ostenberg sample from 3 to 5 ft<br>Clean Gray Soil bentonite backfill, very soft. No sign of sidewall. 26 of 36" recovery. Tubes wax sealed, capped, taped, and stored upright in core box. |
| | 4 | | | | | |
| | 6 | | Soil Bentonite backfill | | Na | Ostenberg sample from 5 to 8 ft<br>Clean Gray Soil bentonite backfill, very soft. No sign of sidewall. 32 of 36" recovery. Tubes wax sealed, capped, taped, and stored upright in core box. |
| | 8 | | | | | Boring terminated at 18 ft |

| CONTRACTORS QUALITY CONTROL REPORT (QCR)<br>DAILY LOG OF CONSTRUCTION - CIVIL | REPORT NUMBER<br>211 Page 1 of 2 |
|---|---|
| | DATE<br>27 Sep 2006 - Wednesday |
| PROJECT<br>Indiana Harbor CDF, Slurry Wall Gaps | CONTRACT NUMBER<br>W912F6-06-C-0003 NA |
| CONTRACTOR<br>Environmental Quality Management Inc | WEATHER<br>Weather Caused No Delay<br>Temperature Mn 49 °F, Max 74 °F; No Precipitation; No Wind |

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
EQ performed miscellaneous cleanup activities. K&S Engineering advanced three borings at stations 78+85, 79+85, and 80+85 (logs attached).

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
Eric Bowman, Ed Wise, Ben Letany, seven representatives of Maintenance Dynamics (five operators, one teamster, one laborer). two representatives of K&S Engineering, and three representatives of Task Force Security.

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
Ben Letany conducted a safety tailgate meeting.

**Safety: (Inspections made, Deficiencies noted):**
None

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 211 

DATE 27 Sep 2006 - Wednesday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912P6-06-C-0003 NA

### LABOR HOURS

**The following labor hours were Reported today:**

| Employer | Labor Classification | | Number of Employees | Hours Worked |
|---|---|---|---|---|
| DLZ | SURVEYOR | | 0.0 | 0.0 |
| EQM | SAFETY ENGINEER - ON SITE | | 1.0 | 8.0 |
| EQM | SUPER - JOB | | 1.0 | 8.0 |
| EQM | CONSTRUCTION INSPECTOR | | 1.0 | 8.0 |
| EQM | CONSTRUCTION-RECORDS CLERK | | 0.0 | 0.0 |
| Great Lakes Labs | ENVIRON-CNTRL-SYS INST/SER | | 0.0 | 0.0 |
| K&S Engineers | OPERATING ENGINEER | | 2.0 | 16.0 |
| Maintenance Dynamics | LABORERS | | 1.0 | 8.0 |
| Maintenance Dynamics | TRUCK DRIVER, GROUP 1 | | 1.0 | 8.0 |
| Maintenance Dynamics | OPERATING ENGINEER | | 5.0 | 40.0 |
| Miller Electric | ELECTRICIAN | | 0.0 | 0.0 |
| Task Force | TRAFFIC CONTROL SIGNALER | | 3.0 | 24.0 |
| US Industrial Hygien | SAFETY ENGINEER - ON SITE | | 0.0 | 0.0 |
| Total hours worked to date: | 8,040.5 | Total | 15.0 | 120.0 |

### EQUIPMENT HOURS

**The following equipment hours were Reported today:**

| Serial Number | Description | | Standby Hours | Operating Hours |
|---|---|---|---|---|
| 21003-1741 | Medium Track Excavator | | 0.0 | 8.0 |
| jkl | Forklift | | 0.0 | 8.0 |
| 123 | Bull Dozer | | 8.0 | 0.0 |
| 234 | Drill Rig | | 0.0 | 8.0 |
| Total operating hours to date: 3,313.0 | | Total | 8.0 | 24.0 |

### ACCIDENT REPORTING (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 10/17/6 | | 10/17/6 |

Hole No. 78+85

| DRILLING LOG | Division USACE | INSTALLATION INDIANA HARBOR CDF | SHEET 1 of 2 Sheets |
|---|---|---|---|
| 1. Project | IHCDF Slurry Wall Gaps | 10. Size and Type of Bit | 4.25 H S A |
| 2. Location | East Chicago, IN | 11. Datum for Elevation Shown (*TBM or MSL*) | NA |
| 3. Drilling Agency | K&S Engineering | 12. Manufacturers Designation of Drill | D50 Dietrich |
| 4. Hole No. (*As shown on drawing title and title number*) | 78+85 | 13. Total No. of Overburden Samples Taken | 2 Undisturbed 0 |
| | | 14. Total Number of Core Boxes | 0 |
| 5. Name of Driller | Marion Perry | 15. Elevation of Ground Water | |
| 6. Direction of Hole | | 16. Date Hole | Started 9/27/2006 Completed 9/27/2006 |
| [X] Vertical [ ] Inclined ____ Deg. From Vert. | | 17. Elevation Top of Hole | NA |
| 7. Thickness of Overburden | 28' | 18. Total Core Recovery for Boring | NOTE REMARKS |
| 8. Depth Drilled into Rock | NA | 19. Signature of Inspector | |
| 9. Total Depth of Hole | 28' | | |

| ELEVATION *a* | DEPTH *b* | LEGEND *c* | CLASSIFICATION OF MATERIALS (*Description*) *d* | % CORE RECOVERY *e* | BOX or SAMPLE No. *f* | REMARKS (*Drilling time, water loss, depth of weathering, etc., if significant*) *g* |
|---|---|---|---|---|---|---|
| | 2 | | | | Na | No sampling performed until 22 ft |
| | 4 | | | | | |
| | 6 | | | | Na | |
| | 8 | | | | | |
| | 10 | | | | Na | |
| | 12 | | | | | |
| | 14 | | | | Na | |
| | 16 | | | | | |
| | 18 | | | | Na | |
| | 20 | | | | | |

| DRILLING LOG (Cont Sheet) | Elevation Top of Hole | NA | Hole No. 78+85 |
|---|---|---|---|
| Project IHCDF Slurry Wall Gaps | INSTALLATION Indiana Harbor CDF | | SHEET 2 of 2 Sheets |

| ELEVATION *a* | DEPTH *b* | LEGEND *c* | CLASSIFICATION OF MATERIALS *(Description)* *d* | % CORE RECOVERY *e* | BOX or SAMPLE No. *f* | REMARKS *(Drilling time, water loss, depth of weathering, etc., if significant)* *g* |
|---|---|---|---|---|---|---|
| | 22 | | Soil Bentonite backfill | | | Ostenberg sample from 22 to 25 ft Clean Gray Soil bentonite backfill, very soft. No sign of sidewall. 32 of 36" recovery. Tubes wax sealed, capped, taped, and stored upright in core box. |
| | 24 | | Soil Bentonite backfill | | | Ostenberg sample from 25 to 88 ft Clean Gray Soil bentonite backfill, very soft. No sign of sidewall. 35 of 36" recovery. Tubes wax sealed, capped, taped, and stored upright in core box. |
| | 26 | | | | | |
| | 28 | | | | | Boring terminated at 28 ft |

Hole No. 79+85

| DRILLING LOG | Division USACE | INSTALLATION INDIANA HARBOR CDF | SHEET 1 of 1 Sheets |
|---|---|---|---|
| 1. Project | IHCDF Slurry Wall Gaps | 10. Size and Type of Bit | 4.25 H S A |
| 2. Location | East Chicago, IN | 11. Datum for Elevation Shown (*TBM or MSL*) | NA |
| 3. Drilling Agency | K&S Engineering | 12. Manufacturers Designation of Drill | D50 Dietrich |
| 4. Hole No. (*As shown on drawing title and title number*) | 79+85 | 13. Total No. of Overburden Samples Taken | 2 Undisturbed 0 |
| | | 14. Total Number of Core Boxes | 0 |
| 5. Name of Driller | Marion Perry | 15. Elevation of Ground Water | |
| 6. Direction of Hole | | 16. Date Hole | Started 9/27/2006 Completed 9/27/2006 |
| [X] Vertical [ ] Inclined ____ Deg. From Vert. | | 17. Elevation Top of Hole | NA |
| 7. Thickness of Overburden | 8 | 18. Total Core Recovery for Boring | NOTE REMARKS |
| 8. Depth Drilled into Rock | NA | 19. Signature of Inspector | |
| 9. Total Depth of Hole | 8 | | |

| ELEVATION *a* | DEPTH *b* | LEGEND *c* | CLASSIFICATION OF MATERIALS (*Description*) *d* | % CORE RECOVERY *e* | BOX or SAMPLE No. *f* | REMARKS (*Drilling time, water loss, depth of weathering, etc., if significant*) *g* |
|---|---|---|---|---|---|---|
| | 2 | | Soil Bentonite backfill | | Na | No sampling performed until 3 ft<br>Ostenberg sample from 3 to 5 ft<br>Clean Gray Soil bentonite backfill, very soft. No sign of sidewall. 25 of 36" recovery. Tubes wax sealed, capped, taped, and stored upright in core box. |
| | 4 | | | | | |
| | 6 | | Soil Bentonite backfill | | Na | Ostenberg sample from 5 to 8 ft<br>Clean Gray Soil bentonite backfill, very soft. No sign of sidewall. 32 of 36" recovery. Tubes wax sealed, capped, taped, and stored upright in core box. |
| | 8 | | | | | Boring terminated at 88 ft |

| DRILLING LOG (Cont Sheet) | Elevation Top of Hole | | Hole No. |
|---|---|---|---|
| Project IHCDF Slurry Wall Gaps | | INSTALLATION Chicago District | SHEET 2 of 2 Sheets |

| ELEVATION *a* | DEPTH *b* | LEGEND *c* | CLASSIFICATION OF MATERIALS *(Description)* *d* | % CORE RECOVERY *e* | BOX or SAMPLE No. *f* | REMARKS *(Drilling time, water loss, depth of weathering, etc., if significant)* *g* |
|---|---|---|---|---|---|---|

Hole No. 80+85

| DRILLING LOG | Division USACE | INSTALLATION INDIANA HARBOR CDF | SHEET 1 of 1 Sheets |
|---|---|---|---|

| | | | |
|---|---|---|---|
| 1. Project | IHCDF Slurry Wall Gaps | 10. Size and Type of Bit | 4.25 H S A |
| 2. Location | East Chicago, IN | 11. Datum for Elevation Shown (*TBM or MSL*) | NA |
| 3. Drilling Agency | K&S Engineering | 12. Manufacturers Designation of Drill | D50 Dietrich |
| 4. Hole No. (*As shown on drawing title and title number*) | 80+85 | 13. Total No. of Overburden Samples Taken | 2 Undisturbed 0 |
| | | 14. Total Number of Core Boxes | 0 |
| 5. Name of Driller | Marion Perry | 15. Elevation of Ground Water | |
| 6. Direction of Hole | | 16. Date Hole | Started 9/27/2006 Completed 9/27/2006 |
| X Vertical ☐ Inclined ____ Deg. From Vert. | | 17. Elevation Top of Hole | NA |
| 7. Thickness of Overburden | 18 | 18. Total Core Recovery for Boring | NOTE REMARKS |
| 8. Depth Drilled into Rock | NA | 19. Signature of Inspector | |
| 9. Total Depth of Hole | 18' | | |

| ELEVATION *a* | DEPTH *b* | LEGEND *c* | CLASSIFICATION OF MATERIALS (*Description*) *d* | % CORE RECOVERY *e* | BOX or SAMPLE No. *f* | REMARKS (*Drilling time, water loss, depth of weathering, etc., if significant*) *g* |
|---|---|---|---|---|---|---|
| | 2 | | | | Na | No sampling performed until 12 ft |
| | 4 | | | | | |
| | 6 | | | | Na | |
| | 8 | | | | | |
| | 10 | | | | Na | |
| | 12 | | Soil Bentonite backfill | | | Ostenberg sample from 12 to 15 ft Clean Gray Soil bentonite backfill, very soft. No sign of sidewall. 32 of 36" recovery. Tubes wax sealed, capped, taped, and stored upright in core box. |
| | 14 | | | | | |
| | 16 | | Soil Bentonite backfill | | | Ostenberg sample from 15 to 18 ft Clean Gray Soil bentonite backfill, very soft. No sign of sidewall. 32 of 36" recovery. Tubes wax sealed, capped, taped, and stored upright in core box. |
| | 18 | | | | | Boring terminated at 18 ft |

| DRILLING LOG (Cont Sheet) | Elevation Top of Hole | | Hole No. |
|---|---|---|---|
| Project IHCDF Slurry Wall Gaps | | INSTALLATION Chicago District | SHEET 2 of 2 Sheets |

| ELEVATION *a* | DEPTH *b* | LEGEND *c* | CLASSIFICATION OF MATERIALS *(Description)* *d* | % CORE RECOVERY *e* | BOX or SAMPLE No. *f* | REMARKS *(Drilling time, water loss, depth of weathering, etc., if significant)* *g* |
|---|---|---|---|---|---|---|

| CONTRACTORS QUALITY CONTROL REPORT (QCR)<br>DAILY LOG OF CONSTRUCTION - CIVIL | REPORT NUMBER<br>212 Page 1 of 2<br>DATE<br>28 Sep 2006 - Thursday |
|---|---|
| PROJECT<br>Indiana Harbor CDF, Slurry Wall Gaps | CONTRACT NUMBER<br>W912P6-06-C-0003 NA |
| CONTRACTOR<br>Environmental Quality Management Inc | WEATHER<br>Weather Caused No Delay<br>Temperature Min 41 °F, Max 64 °F; No Precipitation; No Wind |

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
EQ performed miscellaneous cleanup activities. K&S Engineering advanced two borings at stations 43+50, and 44+50 (logs attached). This completes the verification boring program The samples are scheduled to be extruded on Monday 100206 at Great Lakes Laboratories.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
Eric Bowman, Ed Wise, Ben Letany, seven representatives of Maintenance Dynamics (five operators, one teamster, one laborer). two representatives of K&S Engineering, and three representatives of Task Force Security.

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
Ben Letany conducted a safety tailgate meeting.

**Safety: (Inspections made, Deficiencies noted):**
None

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 212 

DATE 28 Sep 2006 - Thursday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912F6-06-C-0003 NA

### LABOR HOURS

**The following labor hours were Reported today:**

| Employer | Labor Classification | | Number of Employees | Hours Worked |
|---|---|---|---|---|
| DLZ | SURVEYOR | | 0.0 | 0.0 |
| EQM | SAFETY ENGINEER - ON SITE | | 1.0 | 8.0 |
| EQM | SUPER - JOB | | 1.0 | 8.0 |
| EQM | CONSTRUCTION INSPECTOR | | 1.0 | 8.0 |
| EQM | CONSTRUCTION-RECORDS CLERK | | 0.0 | 0.0 |
| Great Lakes Labs | ENVIRON-CNTRL-SYS INST/SER | | 0.0 | 0.0 |
| K&S Engineers | OPERATING ENGINEER | | 2.0 | 16.0 |
| Maintenance Dynamics | LABORERS | | 1.0 | 8.0 |
| Maintenance Dynamics | TRUCK DRIVER, GROUP 1 | | 1.0 | 8.0 |
| Maintenance Dynamics | OPERATING ENGINEER | | 5.0 | 40.0 |
| Miller Electric | ELECTRICIAN | | 0.0 | 0.0 |
| Task Force | TRAFFIC CONTROL SIGNALER | | 3.0 | 24.0 |
| US Industrial Hygien | SAFETY ENGINEER - ON SITE | | 0.0 | 0.0 |
| Total hours worked to date: | 8,160.5 | Total | 15.0 | 120.0 |

### EQUIPMENT HOURS

**The following equipment hours were Reported today:**

| Serial Number | Description | | Standby Hours | Operating Hours |
|---|---|---|---|---|
| 21003-1741 | Medium Track Excavator | | 0.0 | 8.0 |
| jkl | Forklift | | 0.0 | 8.0 |
| 123 | Bull Dozer | | 8.0 | 0.0 |
| 234 | Drill Rig | | 0.0 | 8.0 |
| Total operating hours to date: | 3,337.0 | Total | 8.0 | 24.0 |

### ACCIDENT REPORTING (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | | | 9/29/06 |

Hole No. 43+50

| | | | |
|---|---|---|---|
| LLING LOG | Division USACE | INSTALLATION INDIANA HARBOR CDF | SHEET 1 of 1 Sheets |
| roject | IHCDF Slurry Wall Gaps | 10. Size and Type of Bit | 4.25 H S A |
| ion | East Chicago, IN | 11. Datum for Elevation Shown (*TBM or MSL*) | NA |
| rilling Agency | K&S Engineering | 12. Manufacturers Designation of Drill | D50 Dietrich |
| ole No. (*As shown on ing title and title number*) | 43+50 | 13. Total No. of Overburden Samples Taken | 2 Undisturbed 0 |
| | | 14. Total Number of Core Boxes | 0 |
| ame of Driller | Marion Perry | 15. Elevation of Ground Water | |
| irection of Hole | | 16. Date Hole | Started 9/28/2006 Completed 9/28/2006 |
| Vertical ☐ Inclined ____ Deg. From Vert. | | 17. Elevation Top of Hole | NA |
| hickness of Overburden | 8 | 18. Total Core Recovery for Boring | NOTE REMARKS |
| epth Drilled into Rock | NA | 19. Signature of Inspector | Ed Wise |
| otal Depth of Hole | 8 | | |

| LEVATION *a* | DEPTH *b* | LEGEND *c* | CLASSIFICATION OF MATERIALS (*Description*) *d* | % CORE RECOVERY *e* | BOX or SAMPLE No. *f* | REMARKS (*Drilling time, water loss, depth of weathering, etc., if significant*) *g* |
|---|---|---|---|---|---|---|
| | 2 | | Soil Bentonite backfill | | Na | No sampling performed until 3 ft<br>Ostenberg sample from 3 to 5 ft<br>Clean Gray Soil bentonite backfill, very soft. No sign of sidewall. 29 of 36" recovery. Tubes wax sealed, capped, taped, and stored upright in core box. |
| | 4 | | | | | |
| | 6 | | Soil Bentonite backfill | | Na | Ostenberg sample from 5 to 8 ft<br>Clean Gray Soil bentonite backfill, very soft. No sign of sidewall. 31 of 36" recovery. Tubes wax sealed, capped, taped, and stored upright in core box. |
| | 8 | | | | | Boring terminated at 18 ft |

Hole No. 44+50

| | | | |
|---|---|---|---|
| LLING LOG | Division USACE | INSTALLATION INDIANA HARBOR CDF | SHEET 1 of 1 Sheets |
| roject | IHCDF Slurry Wall Gaps | 10. Size and Type of Bit | 4.25 H S A |
| ocation | East Chicago, IN | 11. Datum for Elevation Shown (*TBM or MSL*) | NA |
| rilling Agency | K&S Engineering | 12. Manufacturers Designation of Drill | D50 Dietrich |
| ole No. (*As shown on ing title and title number*) | 44+50 | 13. Total No. of Overburden Samples Taken | 2 Undisturbed 0 |
| | | 14. Total Number of Core Boxes | 0 |
| ame of Driller | Marion Perry | 15. Elevation of Ground Water | |
| irection of Hole | | 16. Date Hole | Started 9/28/2006 Completed 9/28/2006 |
| Vertical ☐ Inclined _____ Deg. From Vert. | | 17. Elevation Top of Hole | NA |
| hickness of Overburden | 18 | 18. Total Core Recovery for Boring | NOTE REMARKS |
| epth Drilled into Rock | NA | 19. Signature of Inspector | Ed Wise |
| otal Depth of Hole | 18' | | |

| ELEVATION *a* | DEPTH *b* | LEGEND *c* | CLASSIFICATION OF MATERIALS (*Description*) *d* | % CORE RECOVERY *e* | BOX or SAMPLE No. *f* | REMARKS (*Drilling time, water loss, depth of weathering, etc., if significant*) *g* |
|---|---|---|---|---|---|---|
| | 2 | | | | Na | No sampling performed until 12 ft |
| | 4 | | | | | |
| | 6 | | | | Na | |
| | 8 | | | | | |
| | 10 | | | | Na | |
| | 12 | | Soil Bentonite backfill | | | Ostenberg sample from 12 to 15 ft Clean Gray Soil bentonite backfill, very soft. No sign of sidewall. 33 of 36" recovery. Tubes wax sealed, capped, taped, and stored upright in core box. |
| | 14 | | | | | |
| | 16 | | Soil Bentonite backfill | | | Ostenberg sample from 15 to 18 ft Clean Gray Soil bentonite backfill, very soft. No sign of sidewall. 29 of 36" recovery. Tubes wax sealed, capped, taped, and stored upright in core box. |
| | 18 | | | | | Boring terminated at 18 ft |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
# DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
213 

DATE
29 Sep 2006 - Friday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912P6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Previous Weather - Non-Critical Delay
Temperature Mn 44 °F, Max 61 °F, 0.04 IN Precipitation; No Wind

## QC NARRATIVES

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
EQ performed miscellaneous cleanup activities. DLZ began surveying of the as built wall and confirmatory borings.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
Eric Bowman, Ed Wise, Ben Letany, eight representatives of Maintenance Dynamics (six operators, one teamster, one laborer). two representatives of DLZ Surveying, and three representatives of Task Force Security.

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
Ben Letany conducted a safety tailgate meeting.

**Safety: (Inspections made, Deficiencies noted):**
None

**Safety: Corrective Action taken:**
None.

## PREP/INITIAL DATES (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

## ACTIVITY START/FINISH

**The following activity was started today:**

| Activity No | Description |
|---|---|
| 0004-02-03 | Erosion Control O&M/Month 3 |

**No activities were finished today**

## QC REQUIREMENTS

**No QC requirements were completed today**

## QA/QC PUNCH LIST (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 213 

DATE 29 Sep 2006 - Friday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912F6-06-C-0003 NA

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

**LABOR HOURS**

**The following labor hours were Reported today:**

| Employer | Labor Classification | | Number of Employees | Hours Worked |
|---|---|---|---|---|
| DLZ | SURVEYOR | | 2.0 | 8.0 |
| EQM | SAFETY ENGINEER - ON SITE | | 1.0 | 8.0 |
| EQM | SUPER - JOB | | 1.0 | 8.0 |
| EQM | CONSTRUCTION INSPECTOR | | 1.0 | 8.0 |
| EQM | CONSTRUCTION-RECORDS CLERK | | 0.0 | 0.0 |
| Great Lakes Labs | ENVIRON-CNTRL-SYS INST/SER | | 0.0 | 0.0 |
| K&S Engineers | OPERATING ENGINEER | | 0.0 | 0.0 |
| Maintenance Dynamics | LABORERS | | 1.0 | 8.0 |
| Maintenance Dynamics | TRUCK DRIVER, GROUP 1 | | 1.0 | 8.0 |
| Maintenance Dynamics | OPERATING ENGINEER | | 6.0 | 48.0 |
| Miller Electric | ELECTRICIAN | | 0.0 | 0.0 |
| Task Force | TRAFFIC CONTROL SIGNALER | | 3.0 | 24.0 |
| US Industrial Hygien | SAFETY ENGINEER - ON SITE | | 0.0 | 0.0 |
| Total hours worked to date: 8,280.5 | | Total | 16.0 | 120.0 |

**EQUIPMENT HOURS**

**The following equipment hours were Reported today:**

| Serial Number | Description | | Standby Hours | Operating Hours |
|---|---|---|---|---|
| 21003-1741 | Medium Track Excavator | | 0.0 | 8.0 |
| jkl | Forklift | | 0.0 | 8.0 |
| 123 | Bull Dozer | | 8.0 | 0.0 |
| 234 | Drill Rig | | 0.0 | 8.0 |
| Total operating hours to date: 3,361.0 | | Total | 8.0 | 24.0 |

**ACCIDENT REPORTING** (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 10/4/06 | | 10/4/06 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 216 

DATE 02 Oct 2006 - Monday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912R6-06-C-0003 NA

CONTRACTOR Environmental Quality Management Inc

WEATHER
Weather Caused Non-Critical Delay
Temperature Min 61 °F, Max 83 °F, 2.62 IN Precipitation; No Wind

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
EQ performed miscellaneous cleanup activities. DLZ continued surveying of the as built wall and confirmatory borings. Great Lakes extruded six samples at their lab. Joe Schulenberg from USACE and Ed Wise were in attendance. The samples were set up for flex wall permeability. the remaining samples will be preped on 100306 when additional apparatus is available.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
Eric Bowman, Ed Wise, Ben Letany, nine representatives of Maintenance Dynamics (seven operators, one teamster, one laborer). two representatives of DLZ Surveying, and three representatives of Task Force Security.

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
Ben Letany conducted a safety tailgate meeting.

**Safety: (Inspections made, Deficiencies noted):**
None

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 216 

DATE 02 Oct 2006 - Monday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912F6-06-C-0003 NA

### LABOR HOURS

**The following labor hours were Reported today:**

| Employer | Labor Classification | | Number of Employees | Hours Worked |
|---|---|---|---|---|
| DLZ | SURVEYOR | | 2.0 | 16.0 |
| EQM | SAFETY ENGINEER - ON SITE | | 1.0 | 8.0 |
| EQM | SUPER - JOB | | 1.0 | 8.0 |
| EQM | CONSTRUCTION INSPECTOR | | 1.0 | 8.0 |
| EQM | CONSTRUCTION-RECORDS CLERK | | 0.0 | 0.0 |
| Great Lakes Labs | ENVIRON-CNTRL-SYS INST/SER | | 0.0 | 0.0 |
| K&S Engineers | OPERATING ENGINEER | | 0.0 | 0.0 |
| Maintenance Dynamics | LABORERS | | 1.0 | 8.0 |
| Maintenance Dynamics | TRUCK DRIVER, GROUP 1 | | 1.0 | 8.0 |
| Maintenance Dynamics | OPERATING ENGINEER | | 7.0 | 56.0 |
| Miller Electric | ELECTRICIAN | | 0.0 | 0.0 |
| Task Force | TRAFFIC CONTROL SIGNALER | | 3.0 | 24.0 |
| US Industrial Hygien | SAFETY ENGINEER - ON SITE | | 0.0 | 0.0 |
| Total hours worked to date: | 8,416.5 | Total | 17.0 | 136.0 |

### EQUIPMENT HOURS

**The following equipment hours were Reported today:**

| Serial Number | Description | | Standby Hours | Operating Hours |
|---|---|---|---|---|
| 21003-1741 | Medium Track Excavator | | 0.0 | 8.0 |
| jkl | Forklift | | 0.0 | 8.0 |
| 123 | Bull Dozer | | 8.0 | 0.0 |
| 234 | Drill Rig | | 0.0 | 8.0 |
| Total operating hours to date: | 3,385.0 | Total | 8.0 | 24.0 |

### ACCIDENT REPORTING (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contrac plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 10/4/6 | | 10/4/06 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 217 

DATE 03 Oct 2006 - Tuesday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912P6-06-C-0003 NA

CONTRACTOR Environmental Quality Management Inc

WEATHER
Previous Weather - Critical Delay
Temperature Min 68 °F, Max 76 °F; No Precipitation; No Wind

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
The site experienced severe weather the night of 100206. Gary airport reported 2.62 inches of rain. Either extremely high surface winds or a tornado moved one of the site trailers approximately 75 feet from its original location and deposited it on its side, destroyed. Phone service was eliminated and the electrical supply system severely damaged. The high rains caused flooding of the site to where it was from the last heavy rains. It took 6 days of pumping 24 hours per day to remove this water and it is currently higher. EQ has decided to complete the limited tasks it can (site survey, demob, trailer pad removal, etc) this week. We will return when the site is dry enough to perform the sole remaining task of cap installation. EQ performed miscellaneous cleanup activities. DLZ was unable to continue surveying. Great Lakes extruded the final five samples at their lab. The samples were set up for flex wall permeability.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
Eric Bowman, Ed Wise, Ben Letany, nine representatives of Maintenance Dynamics (seven operators, one teamster, one laborer). two representatives of DLZ Surveying, and three representatives of Task Force Security.

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
Ben Letany conducted a safety tailgate meeting.

**Safety: (Inspections made, Deficiencies noted):**
None

**Safety: Corrective Action taken:**
None.

**PREP/INTIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 217 

DATE 03 Oct 2006 - Tuesday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912F6-06-C-0003 NA

No Punch List items were corrected today

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

No contractors had their first or last day on site today

**LABOR HOURS**

The following labor hours were Reported today:

| Employer | Labor Classification | Number of Employees | Hours Worked |
|---|---|---|---|
| DLZ | SURVEYOR | 0.0 | 0.0 |
| EQM | SAFETY ENGINEER - ON SITE | 1.0 | 8.0 |
| EQM | SUPER - JOB | 1.0 | 8.0 |
| EQM | CONSTRUCTION INSPECTOR | 1.0 | 8.0 |
| EQM | CONSTRUCTION-RECORDS CLERK | 0.0 | 0.0 |
| Great Lakes Labs | ENVIRON-CNTRL-SYS INST/SER | 0.0 | 0.0 |
| K&S Engineers | OPERATING ENGINEER | 0.0 | 0.0 |
| Maintenance Dynamics | LABORERS | 1.0 | 8.0 |
| Maintenance Dynamics | TRUCK DRIVER, GROUP 1 | 1.0 | 8.0 |
| Maintenance Dynamics | OPERATING ENGINEER | 7.0 | 56.0 |
| Miller Electric | ELECTRICIAN | 0.0 | 0.0 |
| Task Force | TRAFFIC CONTROL SIGNALER | 3.0 | 24.0 |
| US Industrial Hygien | SAFETY ENGINEER - ON SITE | 0.0 | 0.0 |
| Total hours worked to date: | 8,536.5 | Total 15.0 | 120.0 |

**EQUIPMENT HOURS**

The following equipment hours were Reported today:

| Serial Number | Description | Standby Hours | Operating Hours |
|---|---|---|---|
| 21003-1741 | Medium Track Excavator | 0.0 | 8.0 |
| jkl | Forklift | 0.0 | 8.0 |
| 123 | Bull Dozer | 8.0 | 0.0 |
| 234 | Drill Rig | 0.0 | 8.0 |
| Total operating hours to date: 3,409.0 | | Total 8.0 | 24.0 |

**ACCIDENT REPORTING** (Describe accidents)

No accidents reported today

CONTRACTOR CERTIFICATION On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as noted above.

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| [signature] | 10/4/6 | [initials] | 10/4/06 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
218 

DATE
04 Oct 2006 - Wednesday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912F6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Previous Weather - Critical Delay
Temperature Min 56 °F, Max 76 °F; No Precipitation; No Wind

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
Recent heavy rains precluded placement of the slurry wall cap. This is the critical path task. Water has ponded to the extent that this work can't be accomplished. EQ continued with miscellaneous. site cleanup.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
Eric Bowman, Ed Wise, Ben Letany, five representatives of Maintenance Dynamics (three operators, one teamster, one laborer). and three representatives of Task Force Security.

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
Ben Letany conducted a safety tailgate meeting.

**Safety: (Inspections made, Deficiencies noted):**
None

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 218 

DATE 04 Oct 2006 - Wednesday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912P6-06-C-0003 NA

### LABOR HOURS

**The following labor hours were Reported today:**

| Employer | Labor Classification | Number of Employees | Hours Worked |
|---|---|---|---|
| DLZ | SURVEYOR | 0.0 | 0.0 |
| EQM | SAFETY ENGINEER - ON SITE | 1.0 | 8.0 |
| EQM | SUPER - JOB | 1.0 | 8.0 |
| EQM | CONSTRUCTION INSPECTOR | 1.0 | 8.0 |
| EQM | CONSTRUCTION-RECORDS CLERK | 0.0 | 0.0 |
| Great Lakes Labs | ENVIRON-CNTRL-SYS INST/SER | 0.0 | 0.0 |
| K&S Engineers | OPERATING ENGINEER | 0.0 | 0.0 |
| Maintenance Dynamics | LABORERS | 1.0 | 8.0 |
| Maintenance Dynamics | TRUCK DRIVER, GROUP 1 | 1.0 | 8.0 |
| Maintenance Dynamics | OPERATING ENGINEER | 3.0 | 24.0 |
| Task Force | TRAFFIC CONTROL SIGNALER | 3.0 | 24.0 |
| Total hours worked to date: | 8,624.5 | Total 11.0 | 88.0 |

### EQUIPMENT HOURS

**The following equipment hours were Reported today:**

| Serial Number | Description | Standby Hours | Operating Hours |
|---|---|---|---|
| 21003-1741 | Medium Track Excavator | 0.0 | 8.0 |
| jkl | Forklift | 0.0 | 8.0 |
| 123 | Bull Dozer | 0.0 | 8.0 |
| Total operating hours to date: 3,433.0 | | Total 0.0 | 24.0 |

### ACCIDENT REPORTING (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contra plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 10/16/6 | | 10/16/6 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
219 

DATE
05 Oct 2006 - Thursday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912F6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Previous Weather - Critical Delay
Temperature Min 51 °F, Max 59 °F; No Precipitation; No Wind

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
Recent heavy rains precluded placement of the slurry wall cap. This is the critical path task. Water has ponded to the extent that this work can't be accomplished. EQ continued with miscellaneous site cleanup.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
Eric Bowman, Ed Wise, Ben Letany, five representatives of Maintenance Dynamics (three operators, one teamster, one laborer). and three representatives of Task Force Security.

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
Ben Letany conducted a safety tailgate meeting.

**Safety: (Inspections made, Deficiencies noted):**
None

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 219 

DATE 05 Oct 2006 - Thursday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912P6-06-C-0003 NA

### LABOR HOURS

**The following labor hours were Reported today:**

| Employer | Labor Classification | | Number of Employees | Hours Worked |
|---|---|---|---|---|
| DLZ | SURVEYOR | | 0.0 | 0.0 |
| EQM | SAFETY ENGINEER - ON SITE | | 1.0 | 8.0 |
| EQM | SUPER - JOB | | 1.0 | 8.0 |
| EQM | CONSTRUCTION INSPECTOR | | 1.0 | 8.0 |
| EQM | CONSTRUCTION-RECORDS CLERK | | 0.0 | 0.0 |
| Great Lakes Labs | ENVIRON-CNTRL-SYS INST/SER | | 0.0 | 0.0 |
| K&S Engineers | OPERATING ENGINEER | | 0.0 | 0.0 |
| Maintenance Dynamics | LABORERS | | 1.0 | 8.0 |
| Maintenance Dynamics | TRUCK DRIVER, GROUP 1 | | 1.0 | 8.0 |
| Maintenance Dynamics | OPERATING ENGINEER | | 3.0 | 24.0 |
| Task Force | TRAFFIC CONTROL SIGNALER | | 3.0 | 24.0 |
| Total hours worked to date: | 8,712.5 | Total | 11.0 | 88.0 |

### EQUIPMENT HOURS

**The following equipment hours were Reported today:**

| Serial Number | Description | | Standby Hours | Operating Hours |
|---|---|---|---|---|
| 21003-1741 | Medium Track Excavator | | 0.0 | 8.0 |
| jkl | Forklift | | 0.0 | 8.0 |
| 123 | Bull Dozer | | 0.0 | 8.0 |
| Total operating hours to date: 3,457.0 | | Total | 0.0 | 24.0 |

### ACCIDENT REPORTING (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contrac plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 10/16/6 | | 10/16/6 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
# DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
220



DATE
06 Oct 2006 - Friday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912P6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Previous Weather - Critical Delay
Temperature Min 46 °F, Max 59 °F; No Precipitation; No Wind

## QC NARRATIVES

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
Recent heavy rains precluded placement of the slurry wall cap. This is the critical path task. Water has ponded to the extent that this work can't be accomplished. EQ continued with miscellaneous site cleanup.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
Eric Bowman, Ed Wise, Ben Letany, five representatives of Maintenance Dynamics (three operators, one teamster, one laborer). and three representatives of Task Force Security.

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
Ben Letany conducted a safety tailgate meeting.

**Safety: (Inspections made, Deficiencies noted):**
None

**Safety: Corrective Action taken:**
None.

## PREP/INITIAL DATES (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

## ACTIVITY START/FINISH

**No activities were started or finished today**

## QC REQUIREMENTS

**No QC requirements were completed today**

## QA/QC PUNCH LIST (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

## CONTRACTORS ON SITE (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 220 

DATE 06 Oct 2006 - Friday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912P6-06-C-0003 NA

**LABOR HOURS**

**The following labor hours were Reported today:**

| Employer | Labor Classification | Number of Employees | Hours Worked |
|---|---|---|---|
| DLZ | SURVEYOR | 0.0 | 0.0 |
| EQM | SAFETY ENGINEER - ON SITE | 1.0 | 8.0 |
| EQM | SUPER - JOB | 1.0 | 8.0 |
| EQM | CONSTRUCTION INSPECTOR | 1.0 | 8.0 |
| EQM | CONSTRUCTION-RECORDS CLERK | 0.0 | 0.0 |
| Great Lakes Labs | ENVIRON-CNTRL-SYS INST/SER | 0.0 | 0.0 |
| K&S Engineers | OPERATING ENGINEER | 0.0 | 0.0 |
| Maintenance Dynamics | LABORERS | 1.0 | 8.0 |
| Maintenance Dynamics | TRUCK DRIVER, GROUP 1 | 1.0 | 8.0 |
| Maintenance Dynamics | OPERATING ENGINEER | 3.0 | 24.0 |
| Task Force | TRAFFIC CONTROL SIGNALER | 3.0 | 24.0 |
| Total hours worked to date: 8,800.5 | | Total 11.0 | 88.0 |

**EQUIPMENT HOURS**

**The following equipment hours were Reported today:**

| Serial Number | Description | Standby Hours | Operating Hours |
|---|---|---|---|
| 21003-1741 | Medium Track Excavator | 0.0 | 8.0 |
| jkl | Forklift | 0.0 | 8.0 |
| 123 | Bull Dozer | 0.0 | 8.0 |
| Total operating hours to date: 3,481.0 | | Total 0.0 | 24.0 |

**ACCIDENT REPORTING** (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contrac plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 10/16/6 | | 10/16/6 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
# DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
223



DATE
09 Oct 2006 - Monday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912F6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Previous Weather - Critical Delay
Temperature Min 50 °F, Max 69 °F; No Precipitation; No Wind

## QC NARRATIVES

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
Recent heavy rains precluded placement of the slurry wall cap. This is the critical path task. Water has ponded to the extent that this work can't be accomplished. EQ continued with miscellaneous site cleanup.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
Eric Bowman, Ben Letany, five representatives of Maintenance Dynamics (three operators, one teamster, one laborer). and three representatives of Task Force Security.

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
Ben Letany conducted a safety tailgate meeting.

**Safety: (Inspections made, Deficiencies noted):**
None

**Safety: Corrective Action taken:**
None.

## PREP/INITIAL DATES (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

## ACTIVITY START/FINISH

**No activities were started or finished today**

## QC REQUIREMENTS

**No QC requirements were completed today**

## QA/QC PUNCH LIST (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

## CONTRACTORS ON SITE (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 223



DATE 09 Oct 2006 - Monday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912P6-06-C-0003 NA

### LABOR HOURS

**The following labor hours were Reported today:**

| Employer | Labor Classification | Number of Employees | Hours Worked |
|---|---|---|---|
| DLZ | SURVEYOR | 0.0 | 0.0 |
| EQM | SAFETY ENGINEER - ON SITE | 1.0 | 8.0 |
| EQM | SUPER - JOB | 0.0 | 0.0 |
| EQM | CONSTRUCTION INSPECTOR | 1.0 | 8.0 |
| EQM | CONSTRUCTION-RECORDS CLERK | 0.0 | 0.0 |
| Great Lakes Labs | ENVIRON-CNTRL-SYS INST/SER | 0.0 | 0.0 |
| K&S Engineers | OPERATING ENGINEER | 0.0 | 0.0 |
| Maintenance Dynamics | LABORERS | 1.0 | 8.0 |
| Maintenance Dynamics | TRUCK DRIVER, GROUP 1 | 1.0 | 8.0 |
| Maintenance Dynamics | OPERATING ENGINEER | 3.0 | 24.0 |
| Task Force | TRAFFIC CONTROL SIGNALER | 3.0 | 24.0 |
| Total hours worked to date: | 8,880.5 | Total 10.0 | 80.0 |

### EQUIPMENT HOURS

**The following equipment hours were Reported today:**

| Serial Number | Description | Standby Hours | Operating Hours |
|---|---|---|---|
| 21003-1741 | Medium Track Excavator | 0.0 | 8.0 |
| jkl | Forklift | 0.0 | 8.0 |
| 123 | Bull Dozer | 0.0 | 8.0 |
| Total operating hours to date: 3,505.0 | | Total 0.0 | 24.0 |

### ACCIDENT REPORTING (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| [signature] | 10/16/6 | [signature] | 10/16/6 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
224



DATE
10 Oct 2006 - Tuesday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912F6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Previous Weather - Critical Delay
Temperature Min 54 °F, Max 61 °F; No Precipitation; No Wind

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
Recent heavy rains precluded placement of the slurry wall cap. This is the critical path task. Water has ponded to the extent that this work can't be accomplished. EQ continued with miscellaneous site cleanup.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
Eric Bowman, Ben Letany, five representatives of Maintenance Dynamics (three operators, one teamster, one laborer). and three representatives of Task Force Security.

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
Ben Letany conducted a safety tailgate meeting.

**Safety: (Inspections made, Deficiencies noted):**
None

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 224 

DATE 10 Oct 2006 - Tuesday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912F6-06-C-0003 NA

### LABOR HOURS

**The following labor hours were Reported today:**

| Employer | Labor Classification | | Number of Employees | Hours Worked |
|---|---|---|---|---|
| DLZ | SURVEYOR | | 0.0 | 0.0 |
| EQM | SAFETY ENGINEER - ON SITE | | 1.0 | 8.0 |
| EQM | SUPER - JOB | | 0.0 | 0.0 |
| EQM | CONSTRUCTION INSPECTOR | | 1.0 | 8.0 |
| EQM | CONSTRUCTION-RECORDS CLERK | | 0.0 | 0.0 |
| Great Lakes Labs | ENVIRON-CNTRL-SYS INST/SER | | 0.0 | 0.0 |
| K&S Engineers | OPERATING ENGINEER | | 0.0 | 0.0 |
| Maintenance Dynamics | LABORERS | | 1.0 | 8.0 |
| Maintenance Dynamics | TRUCK DRIVER, GROUP 1 | | 1.0 | 8.0 |
| Maintenance Dynamics | OPERATING ENGINEER | | 3.0 | 24.0 |
| Task Force | TRAFFIC CONTROL SIGNALER | | 3.0 | 24.0 |
| Total hours worked to date: | 8,960.5 | Total | 10.0 | 80.0 |

### EQUIPMENT HOURS

**The following equipment hours were Reported today:**

| Serial Number | Description | | Standby Hours | Operating Hours |
|---|---|---|---|---|
| 21003-1741 | Medium Track Excavator | | 0.0 | 8.0 |
| jkl | Forklift | | 0.0 | 8.0 |
| 123 | Bull Dozer | | 0.0 | 8.0 |
| Total operating hours to date: 3,529.0 | | Total | 0.0 | 24.0 |

### ACCIDENT REPORTING (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment an material used and work performed during this Reporting period are in compliance with the contra plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 10/16/6 | | 10/16/6 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
# DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
225



DATE
11 Oct 2006 - Wednesday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912F6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Previous Weather - Critical Delay
Temperature Min 36 °F, Max 57 °F; No Precipitation; No Wind

## QC NARRATIVES

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
Recent heavy rains precluded placement of the slurry wall cap. This is the critical path task. Water has ponded to the extent that this work can't be accomplished. EQ continued with miscellaneous site cleanup.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
Eric Bowman, Ben Letany, five representatives of Maintenance Dynamics (three operators, one teamster, one laborer). and three representatives of Task Force Security.

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
Ben Letany conducted a safety tailgate meeting.

**Safety: (Inspections made, Deficiencies noted):**
None

**Safety: Corrective Action taken:**
None.

## PREP/INITIAL DATES (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

## ACTIVITY START/FINISH

**No activities were started or finished today**

## QC REQUIREMENTS

**No QC requirements were completed today**

## QA/QC PUNCH LIST (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

## CONTRACTORS ON SITE (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 225 

DATE 11 Oct 2006 - Wednesday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912P6-06-C-0003 NA

### LABOR HOURS

**The following labor hours were Reported today:**

| Employer | Labor Classification | Number of Employees | Hours Worked |
|---|---|---|---|
| DLZ | SURVEYOR | 0.0 | 0.0 |
| EQM | SAFETY ENGINEER - ON SITE | 1.0 | 8.0 |
| EQM | SUPER - JOB | 0.0 | 0.0 |
| EQM | CONSTRUCTION INSPECTOR | 1.0 | 8.0 |
| EQM | CONSTRUCTION-RECORDS CLERK | 0.0 | 0.0 |
| Great Lakes Labs | ENVIRON-CNTRL-SYS INST/SER | 0.0 | 0.0 |
| K&S Engineers | OPERATING ENGINEER | 0.0 | 0.0 |
| Maintenance Dynamics | LABORERS | 1.0 | 8.0 |
| Maintenance Dynamics | TRUCK DRIVER, GROUP 1 | 1.0 | 8.0 |
| Maintenance Dynamics | OPERATING ENGINEER | 3.0 | 24.0 |
| Task Force | TRAFFIC CONTROL SIGNALER | 3.0 | 24.0 |
| Total hours worked to date: 9,040.5 | Total | 10.0 | 80.0 |

### EQUIPMENT HOURS

**The following equipment hours were Reported today:**

| Serial Number | Description | Standby Hours | Operating Hours |
|---|---|---|---|
| 21003-1741 | Medium Track Excavator | 0.0 | 8.0 |
| jkl | Forklift | 0.0 | 8.0 |
| 123 | Bull Dozer | 0.0 | 8.0 |
| Total operating hours to date: 3,553.0 | Total | 0.0 | 24.0 |

### ACCIDENT REPORTING (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contra plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 10/16/6 | | 10/16/6 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
226 

DATE
12 Oct 2006 - Thursday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912P6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Previous Weather - Critical Delay
Temperature Min 32 °F, Max 41 °F; No Precipitation; No Wind

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
Recent heavy rains precluded placement of the slurry wall cap. This is the critical path task. Water has ponded to the extent that this work can't be accomplished. EQ continued with miscellaneous site cleanup.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
Eric Bowman, Ben Letany, five representatives of Maintenance Dynamics (three operators, one teamster, one laborer). and three representatives of Task Force Security.

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
Ben Letany conducted a safety tailgate meeting.

**Safety: (Inspections made, Deficiencies noted):**
None

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 226 

DATE 12 Oct 2006 - Thursday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912P6-06-C-0003 NA

### LABOR HOURS

**The following labor hours were Reported today:**

| Employer | Labor Classification | | Number of Employees | Hours Worked |
|---|---|---|---|---|
| DLZ | SURVEYOR | | 0.0 | 0.0 |
| EQM | SAFETY ENGINEER - ON SITE | | 1.0 | 8.0 |
| EQM | SUPER - JOB | | 0.0 | 0.0 |
| EQM | CONSTRUCTION INSPECTOR | | 1.0 | 8.0 |
| EQM | CONSTRUCTION-RECORDS CLERK | | 0.0 | 0.0 |
| Great Lakes Labs | ENVIRON-CNTRL-SYS INST/SER | | 0.0 | 0.0 |
| K&S Engineers | OPERATING ENGINEER | | 0.0 | 0.0 |
| Maintenance Dynamics | LABORERS | | 1.0 | 8.0 |
| Maintenance Dynamics | TRUCK DRIVER, GROUP 1 | | 1.0 | 8.0 |
| Maintenance Dynamics | OPERATING ENGINEER | | 3.0 | 24.0 |
| Task Force | TRAFFIC CONTROL SIGNALER | | 3.0 | 24.0 |
| Total hours worked to date: | 9,120.5 | Total | 10.0 | 80.0 |

### EQUIPMENT HOURS

**The following equipment hours were Reported today:**

| Serial Number | Description | | Standby Hours | Operating Hours |
|---|---|---|---|---|
| 21003-1741 | Medium Track Excavator | | 0.0 | 8.0 |
| jkl | Forklift | | 0.0 | 8.0 |
| 123 | Bull Dozer | | 0.0 | 8.0 |
| Total operating hours to date: 3,577.0 | | Total | 0.0 | 24.0 |

### ACCIDENT REPORTING (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 10/16/6 | | 10/16/6 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
227



DATE
13 Oct 2006 - Friday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912F6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Previous Weather - Critical Delay
Temperature Mn 34 °F, Max 52 °F; No Precipitation; No Wind

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
Recent heavy rains precluded placement of the slurry wall cap. This is the critical path task. Water has ponded to the extent that this work can't be accomplished. EQ continued with miscellaneous site cleanup.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
Ben Letany, (two representatives of Maintenance Dynamics ( one teamster, one laborer).

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
Ben Letany conducted a safety tailgate meeting.

**Safety: (Inspections made, Deficiencies noted):**
None

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 227 

DATE 13 Oct 2006 - Friday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912P6-06-C-0003 NA

### LABOR HOURS

**The following labor hours were Reported today:**

| Employer | Labor Classification | | Number of Employees | Hours Worked |
|---|---|---|---|---|
| DLZ | SURVEYOR | | 0.0 | 0.0 |
| EQM | SAFETY ENGINEER - ON SITE | | 1.0 | 8.0 |
| EQM | SUPER - JOB | | 0.0 | 0.0 |
| EQM | CONSTRUCTION INSPECTOR | | 0.0 | 0.0 |
| EQM | CONSTRUCTION-RECORDS CLERK | | 0.0 | 0.0 |
| Great Lakes Labs | ENVIRON-CNTRL-SYS INST/SER | | 0.0 | 0.0 |
| K&S Engineers | OPERATING ENGINEER | | 0.0 | 0.0 |
| Maintenance Dynamics | LABORERS | | 1.0 | 8.0 |
| Maintenance Dynamics | TRUCK DRIVER, GROUP 1 | | 1.0 | 8.0 |
| Maintenance Dynamics | OPERATING ENGINEER | | 0.0 | 0.0 |
| Task Force | TRAFFIC CONTROL SIGNALER | | 0.0 | 0.0 |
| Total hours worked to date: | 9,144.5 | Total | 3.0 | 24.0 |

### EQUIPMENT HOURS

**The following equipment hours were Reported today:**

| Serial Number | Description | | Standby Hours | Operating Hours |
|---|---|---|---|---|
| 21003-1741 | Medium Track Excavator | | 8.0 | 0.0 |
| jkl | Forklift | | 8.0 | 0.0 |
| 123 | Bull Dozer | | 8.0 | 0.0 |
| Total operating hours to date: 3,577.0 | | Total | 24.0 | 0.0 |

### ACCIDENT REPORTING (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| [signature] | 10/16/6 | [signature] | 10/16/6 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
# DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
230 

DATE
16 Oct 2006 - Monday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912F6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Previous Weather - Critical Delay
Temperature Min 51 °F, Max 61 °F; No Precipitation; No Wind

## QC NARRATIVES

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
Recent heavy rains precluded placement of the slurry wall cap. This is the critical path task. Water has ponded to the extent that this work can't be accomplished. EQ could not perform any work.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
None.

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
None.

**Safety: (Inspections made, Deficiencies noted):**
None

**Safety: Corrective Action taken:**
None.

## PREP/INITIAL DATES (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

## ACTIVITY START/FINISH

**No activities were started or finished today**

## QC REQUIREMENTS

**No QC requirements were completed today**

## QA/QC PUNCH LIST (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

## CONTRACTORS ON SITE (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 230 

DATE 16 Oct 2006 - Monday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912P6-06-C-0003 NA

**LABOR HOURS**

**The following labor hours were Reported today:**

| Employer | Labor Classification | | Number of Employees | Hours Worked |
|---|---|---|---|---|
| DLZ | SURVEYOR | | 0.0 | 0.0 |
| EQM | SAFETY ENGINEER - ON SITE | | 0.0 | 0.0 |
| EQM | SUPER - JOB | | 0.0 | 0.0 |
| EQM | CONSTRUCTION INSPECTOR | | 0.0 | 0.0 |
| EQM | CONSTRUCTION-RECORDS CLERK | | 0.0 | 0.0 |
| Great Lakes Labs | ENVIRON-CNTRL-SYS INST/SER | | 0.0 | 0.0 |
| K&S Engineers | OPERATING ENGINEER | | 0.0 | 0.0 |
| Maintenance Dynamics | LABORERS | | 0.0 | 0.0 |
| Maintenance Dynamics | TRUCK DRIVER, GROUP 1 | | 0.0 | 0.0 |
| Maintenance Dynamics | OPERATING ENGINEER | | 0.0 | 0.0 |
| Task Force | TRAFFIC CONTROL SIGNALER | | 0.0 | 0.0 |
| Total hours worked to date: | 9,144.5 | Total | 0.0 | 0.0 |

**EQUIPMENT HOURS**

**No equipment hours were Reported today**

Total operating hours to date: 3,577.0

**ACCIDENT REPORTING** (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment ar material used and work performed during this Reporting period are in compliance with the contr plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 10/16/6 | | 10/16/6 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
# DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
231 

DATE
17 Oct 2006 - Tuesday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912P6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Previous Weather - Critical Delay
Temperature Min 51 °F, Max 59 °F; 0.29 IN Precipitation; No Wind

## QC NARRATIVES

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
Recent heavy rains precluded placement of the slurry wall cap. This is the critical path task. Water has ponded to the extent that this work can't be accomplished. EQ could not perform any work.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
None.

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
None.

**Safety: (Inspections made, Deficiencies noted):**
None

**Safety: Corrective Action taken:**
None.

## PREP/INITIAL DATES (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

## ACTIVITY START/FINISH

**No activities were started or finished today**

## QC REQUIREMENTS

**No QC requirements were completed today**

## QA/QC PUNCH LIST (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

## CONTRACTORS ON SITE (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 231 

DATE 17 Oct 2006 - Tuesday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912P6-06-C-0003 NA

### LABOR HOURS

**The following labor hours were Reported today:**

| Employer | Labor Classification | | Number of Employees | Hours Worked |
|---|---|---|---|---|
| DLZ | SURVEYOR | | 0.0 | 0.0 |
| EQM | SAFETY ENGINEER - ON SITE | | 0.0 | 0.0 |
| EQM | SUPER - JOB | | 0.0 | 0.0 |
| EQM | CONSTRUCTION INSPECTOR | | 0.0 | 0.0 |
| EQM | CONSTRUCTION-RECORDS CLERK | | 0.0 | 0.0 |
| Great Lakes Labs | ENVIRON-CNTRL-SYS INST/SER | | 0.0 | 0.0 |
| K&S Engineers | OPERATING ENGINEER | | 0.0 | 0.0 |
| Maintenance Dynamics | LABORERS | | 0.0 | 0.0 |
| Maintenance Dynamics | TRUCK DRIVER, GROUP 1 | | 0.0 | 0.0 |
| Maintenance Dynamics | OPERATING ENGINEER | | 0.0 | 0.0 |
| Task Force | TRAFFIC CONTROL SIGNALER | | 0.0 | 0.0 |
| Total hours worked to date: | 9,144.5 | Total | 0.0 | 0.0 |

### EQUIPMENT HOURS

**The following equipment hours were Reported today:**

| Serial Number | Description | | Standby Hours | Operating Hours |
|---|---|---|---|---|
| 21003-1741 | Medium Track Excavator | | 0.0 | 0.0 |
| jkl | Forklift | | 0.0 | 0.0 |
| 123 | Bull Dozer | | 0.0 | 0.0 |
| Total operating hours to date: 3,577.0 | | Total | 0.0 | 0.0 |

### ACCIDENT REPORTING (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contrac. plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 18 OCT 06 | | 18 OCT 06 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
232 

DATE
18 Oct 2006 - Wednesday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912P6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Previous Weather - Critical Delay
Temperature Min 45 °F, Max 62 °F; 0.15 IN Precipitation; No Wind

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
Recent heavy rains precluded placement of the slurry wall cap. This is the critical path task. Water has ponded to the extent that this work can't be accomplished. EQ could not perform any work.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
None.

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
None.

**Safety: (Inspections made, Deficiencies noted):**
None

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 232 

DATE 18 Oct 2006 - Wednesday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912P6-06-C-0003 NA

### LABOR HOURS

**The following labor hours were Reported today:**

| Employer | Labor Classification | Number of Employees | Hours Worked |
|---|---|---|---|
| DLZ | SURVEYOR | 0.0 | 0.0 |
| EQM | SAFETY ENGINEER - ON SITE | 0.0 | 0.0 |
| EQM | SUPER - JOB | 0.0 | 0.0 |
| EQM | CONSTRUCTION INSPECTOR | 0.0 | 0.0 |
| EQM | CONSTRUCTION-RECORDS CLERK | 0.0 | 0.0 |
| Great Lakes Labs | ENVIRON-CNTRL-SYS INST/SER | 0.0 | 0.0 |
| K&S Engineers | OPERATING ENGINEER | 0.0 | 0.0 |
| Maintenance Dynamics | LABORERS | 0.0 | 0.0 |
| Maintenance Dynamics | TRUCK DRIVER, GROUP 1 | 0.0 | 0.0 |
| Maintenance Dynamics | OPERATING ENGINEER | 0.0 | 0.0 |
| Task Force | TRAFFIC CONTROL SIGNALER | 0.0 | 0.0 |
| Total hours worked to date: | 9,144.5 | 0.0 | 0.0 |
| | Total | 0.0 | 0.0 |

### EQUIPMENT HOURS

**The following equipment hours were Reported today:**

| Serial Number | Description | Standby Hours | Operating Hours |
|---|---|---|---|
| 21003-1741 | Medium Track Excavator | 0.0 | 0.0 |
| jkl | Forklift | 0.0 | 0.0 |
| 123 | Bull Dozer | 0.0 | 0.0 |
| Total operating hours to date: | 3,577.0 | 0.0 | 0.0 |
| | Total | 0.0 | 0.0 |

### ACCIDENT REPORTING (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 19 OCT 06 | | 19 OCT 06 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
233 

DATE
19 Oct 2006 - Thursday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912P6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Previous Weather - Critical Delay
Temperature Min 39 °F, Max 46 °F; No Precipitation; No Wind

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
Recent heavy rains precluded placement of the slurry wall cap. This is the critical path task. Water has ponded to the extent that this work can't be accomplished. EQ could not perform any work.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
None.

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
None.

**Safety: (Inspections made, Deficiencies noted):**
None

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 233 

DATE 19 Oct 2006 - Thursday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912P6-06-C-0003 NA

### LABOR HOURS

**The following labor hours were Reported today:**

| Employer | Labor Classification | | Number of Employees | Hours Worked |
|---|---|---|---|---|
| DLZ | SURVEYOR | | 0.0 | 0.0 |
| EQM | SAFETY ENGINEER - ON SITE | | 0.0 | 0.0 |
| EQM | SUPER - JOB | | 0.0 | 0.0 |
| EQM | CONSTRUCTION INSPECTOR | | 0.0 | 0.0 |
| EQM | CONSTRUCTION-RECORDS CLERK | | 0.0 | 0.0 |
| Great Lakes Labs | ENVIRON-CNTRL-SYS INST/SER | | 0.0 | 0.0 |
| K&S Engineers | OPERATING ENGINEER | | 0.0 | 0.0 |
| Maintenance Dynamics | LABORERS | | 0.0 | 0.0 |
| Maintenance Dynamics | TRUCK DRIVER, GROUP 1 | | 0.0 | 0.0 |
| Maintenance Dynamics | OPERATING ENGINEER | | 0.0 | 0.0 |
| Task Force | TRAFFIC CONTROL SIGNALER | | 0.0 | 0.0 |
| Total hours worked to date: | 9,144.5 | Total | 0.0 | 0.0 |

### EQUIPMENT HOURS

**The following equipment hours were Reported today:**

| Serial Number | Description | | Standby Hours | Operating Hours |
|---|---|---|---|---|
| 21003-1741 | Medium Track Excavator | | 0.0 | 0.0 |
| jkl | Forklift | | 0.0 | 0.0 |
| 123 | Bull Dozer | | 0.0 | 0.0 |
| Total operating hours to date: | 3,577.0 | Total | 0.0 | 0.0 |

### ACCIDENT REPORTING (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 20OCT 06 | | 20OCT 06 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
234 

DATE
20 Oct 2006 - Friday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912P6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Previous Weather - Critical Delay
Temperature Min 35 °F, Max 54 °F; No Precipitation; No Wind

QC NARRATIVES

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
Recent heavy rains precluded placement of the slurry wall cap. This is the critical path task. Water has ponded to the extent that this work can't be accomplished. EQ could not perform any work.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
None.

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
None.

**Safety: (Inspections made, Deficiencies noted):**
None

**Safety: Corrective Action taken:**
None.

PREP/INITIAL DATES (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

ACTIVITY START/FINISH

**No activities were started or finished today**

QC REQUIREMENTS

**No QC requirements were completed today**

QA/QC PUNCH LIST (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

CONTRACTORS ON SITE (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 234 

DATE 20 Oct 2006 - Friday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912P6-06-C-0003 NA

**LABOR HOURS**

**The following labor hours were Reported today:**

| Employer | Labor Classification | Number of Employees | Hours Worked |
|---|---|---|---|
| DLZ | SURVEYOR | 0.0 | 0.0 |
| EQM | SAFETY ENGINEER - ON SITE | 0.0 | 0.0 |
| EQM | SUPER - JOB | 0.0 | 0.0 |
| EQM | CONSTRUCTION INSPECTOR | 0.0 | 0.0 |
| EQM | CONSTRUCTION-RECORDS CLERK | 0.0 | 0.0 |
| Great Lakes Labs | ENVIRON-CNTRL-SYS INST/SER | 0.0 | 0.0 |
| K&S Engineers | OPERATING ENGINEER | 0.0 | 0.0 |
| Maintenance Dynamics | LABORERS | 0.0 | 0.0 |
| Maintenance Dynamics | TRUCK DRIVER, GROUP 1 | 0.0 | 0.0 |
| Maintenance Dynamics | OPERATING ENGINEER | 0.0 | 0.0 |
| Task Force | TRAFFIC CONTROL SIGNALER | 0.0 | 0.0 |
| | Total | 0.0 | 0.0 |

Total hours worked to date: 9,144.5

**EQUIPMENT HOURS**

**The following equipment hours were Reported today:**

| Serial Number | Description | Standby Hours | Operating Hours |
|---|---|---|---|
| 21003-1741 | Medium Track Excavator | 0.0 | 0.0 |
| jkl | Forklift | 0.0 | 0.0 |
| 123 | Bull Dozer | 0.0 | 0.0 |
| | Total | 0.0 | 0.0 |

Total operating hours to date: 3,577.0

**ACCIDENT REPORTING** (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 23 OCT 06 | | 23 OCT 06 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
237 

DATE
23 Oct 2006 - Monday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912P6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Previous Weather - Critical Delay
Temperature Min 35 °F, Max 43 °F; No Precipitation; No Wind

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
Recent heavy rains precluded placement of the slurry wall cap. This is the critical path task. Water has ponded to the extent that this work can't be accomplished. EQ could not perform any work.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
None.

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
None.

**Safety: (Inspections made, Deficiencies noted):**
None

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 237 

DATE 23 Oct 2006 - Monday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912P6-06-C-0003 NA

**LABOR HOURS**

**The following labor hours were Reported today:**

| Employer | Labor Classification | | Number of Employees | Hours Worked |
|---|---|---|---|---|
| DLZ | SURVEYOR | | 0.0 | 0.0 |
| EQM | SAFETY ENGINEER - ON SITE | | 0.0 | 0.0 |
| EQM | SUPER - JOB | | 0.0 | 0.0 |
| EQM | CONSTRUCTION INSPECTOR | | 0.0 | 0.0 |
| EQM | CONSTRUCTION-RECORDS CLERK | | 0.0 | 0.0 |
| Great Lakes Labs | ENVIRON-CNTRL-SYS INST/SER | | 0.0 | 0.0 |
| K&S Engineers | OPERATING ENGINEER | | 0.0 | 0.0 |
| Maintenance Dynamics | LABORERS | | 0.0 | 0.0 |
| Maintenance Dynamics | TRUCK DRIVER, GROUP 1 | | 0.0 | 0.0 |
| Maintenance Dynamics | OPERATING ENGINEER | | 0.0 | 0.0 |
| Task Force | TRAFFIC CONTROL SIGNALER | | 0.0 | 0.0 |
| Total hours worked to date: | 9,144.5 | Total | 0.0 | 0.0 |

**EQUIPMENT HOURS**

**The following equipment hours were Reported today:**

| Serial Number | Description | | Standby Hours | Operating Hours |
|---|---|---|---|---|
| 21003-1741 | Medium Track Excavator | | 0.0 | 0.0 |
| jkl | Forklift | | 0.0 | 0.0 |
| 123 | Bull Dozer | | 0.0 | 0.0 |
| Total operating hours to date: | 3,577.0 | Total | 0.0 | 0.0 |

**ACCIDENT REPORTING** (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| [signature] | 24 OCT 06 | [signature] | 24 OCT 06 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
238 

DATE
24 Oct 2006 - Tuesday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912P6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Previous Weather - Critical Delay
Temperature Min 31 °F, Max 48 °F; No Precipitation; No Wind

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
Recent heavy rains precluded placement of the slurry wall cap. This is the critical path task. Water has ponded to the extent that this work can't be accomplished. EQ could not perform any work.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
None.

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
None.

**Safety: (Inspections made, Deficiencies noted):**
None

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 238 

DATE 24 Oct 2006 - Tuesday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912P6-06-C-0003 NA

**LABOR HOURS**

**The following labor hours were Reported today:**

| Employer | Labor Classification | | Number of Employees | Hours Worked |
|---|---|---|---|---|
| DLZ | SURVEYOR | | 0.0 | 0.0 |
| EQM | SAFETY ENGINEER - ON SITE | | 0.0 | 0.0 |
| EQM | SUPER - JOB | | 0.0 | 0.0 |
| EQM | CONSTRUCTION INSPECTOR | | 0.0 | 0.0 |
| EQM | CONSTRUCTION-RECORDS CLERK | | 0.0 | 0.0 |
| Great Lakes Labs | ENVIRON-CNTRL-SYS INST/SER | | 0.0 | 0.0 |
| K&S Engineers | OPERATING ENGINEER | | 0.0 | 0.0 |
| Maintenance Dynamics | LABORERS | | 0.0 | 0.0 |
| Maintenance Dynamics | TRUCK DRIVER, GROUP 1 | | 0.0 | 0.0 |
| Maintenance Dynamics | OPERATING ENGINEER | | 0.0 | 0.0 |
| Task Force | TRAFFIC CONTROL SIGNALER | | 0.0 | 0.0 |
| Total hours worked to date: | 9,144.5 | Total | 0.0 | 0.0 |

**EQUIPMENT HOURS**

**The following equipment hours were Reported today:**

| Serial Number | Description | | Standby Hours | Operating Hours |
|---|---|---|---|---|
| 21003-1741 | Medium Track Excavator | | 0.0 | 0.0 |
| jkl | Forklift | | 0.0 | 0.0 |
| 123 | Bull Dozer | | 0.0 | 0.0 |
| Total operating hours to date: | 3,577.0 | Total | 0.0 | 0.0 |

**ACCIDENT REPORTING** (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| [signature] | 25 OCT 06 | [signature] | 25 OCT 06 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
# DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
239 

DATE
25 Oct 2006 - Wednesday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912P6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Previous Weather - Critical Delay
Temperature Min 30 °F, Max 52 °F; No Precipitation; No Wind

## QC NARRATIVES

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
Recent heavy rains precluded placement of the slurry wall cap. This is the critical path task. Water has ponded to the extent that this work can't be accomplished. EQ could not perform any work.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
None.

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
None.

**Safety: (Inspections made, Deficiencies noted):**
None

**Safety: Corrective Action taken:**
None.

## PREP/INITIAL DATES (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

## ACTIVITY START/FINISH

**No activities were started or finished today**

## QC REQUIREMENTS

**No QC requirements were completed today**

## QA/QC PUNCH LIST (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

## CONTRACTORS ON SITE (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 239 

DATE 25 Oct 2006 - Wednesday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912P6-06-C-0003 NA

**LABOR HOURS**

**The following labor hours were Reported today:**

| Employer | Labor Classification | | Number of Employees | Hours Worked |
|---|---|---|---|---|
| DLZ | SURVEYOR | | 0.0 | 0.0 |
| EQM | SAFETY ENGINEER - ON SITE | | 0.0 | 0.0 |
| EQM | SUPER - JOB | | 0.0 | 0.0 |
| EQM | CONSTRUCTION INSPECTOR | | 0.0 | 0.0 |
| EQM | CONSTRUCTION-RECORDS CLERK | | 0.0 | 0.0 |
| Great Lakes Labs | ENVIRON-CNTRL-SYS INST/SER | | 0.0 | 0.0 |
| K&S Engineers | OPERATING ENGINEER | | 0.0 | 0.0 |
| Maintenance Dynamics | LABORERS | | 0.0 | 0.0 |
| Maintenance Dynamics | TRUCK DRIVER, GROUP 1 | | 0.0 | 0.0 |
| Maintenance Dynamics | OPERATING ENGINEER | | 0.0 | 0.0 |
| Task Force | TRAFFIC CONTROL SIGNALER | | 0.0 | 0.0 |
| Total hours worked to date: | 9,144.5 | Total | 0.0 | 0.0 |

**EQUIPMENT HOURS**

**The following equipment hours were Reported today:**

| Serial Number | Description | | Standby Hours | Operating Hours |
|---|---|---|---|---|
| 21003-1741 | Medium Track Excavator | | 0.0 | 0.0 |
| jkl | Forklift | | 0.0 | 0.0 |
| 123 | Bull Dozer | | 0.0 | 0.0 |
| Total operating hours to date: 3,577.0 | | Total | 0.0 | 0.0 |

**ACCIDENT REPORTING** (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 26 OCT 06 | | 26 OCT 06 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
240 

DATE
26 Oct 2006 - Thursday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912P6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Previous Weather - Critical Delay
Temperature Min 43 °F, Max 46 °F; 0.44 IN Precipitation; No Wind

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
Recent heavy rains precluded placement of the slurry wall cap. This is the critical path task. Water has ponded to the extent that this work can't be accomplished. EQ could not perform any work.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
None.

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
None.

**Safety: (Inspections made, Deficiencies noted):**
None

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 240 

DATE 26 Oct 2006 - Thursday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912P6-06-C-0003 NA

### LABOR HOURS

**The following labor hours were Reported today:**

| Employer | Labor Classification | | Number of Employees | Hours Worked |
|---|---|---|---|---|
| DLZ | SURVEYOR | | 0.0 | 0.0 |
| EQM | SAFETY ENGINEER - ON SITE | | 0.0 | 0.0 |
| EQM | SUPER - JOB | | 0.0 | 0.0 |
| EQM | CONSTRUCTION INSPECTOR | | 0.0 | 0.0 |
| EQM | CONSTRUCTION-RECORDS CLERK | | 0.0 | 0.0 |
| Great Lakes Labs | ENVIRON-CNTRL-SYS INST/SER | | 0.0 | 0.0 |
| K&S Engineers | OPERATING ENGINEER | | 0.0 | 0.0 |
| Maintenance Dynamics | LABORERS | | 0.0 | 0.0 |
| Maintenance Dynamics | TRUCK DRIVER, GROUP 1 | | 0.0 | 0.0 |
| Maintenance Dynamics | OPERATING ENGINEER | | 0.0 | 0.0 |
| Task Force | TRAFFIC CONTROL SIGNALER | | 0.0 | 0.0 |
| Total hours worked to date: | 9,144.5 | Total | 0.0 | 0.0 |

### EQUIPMENT HOURS

**The following equipment hours were Reported today:**

| Serial Number | Description | | Standby Hours | Operating Hours |
|---|---|---|---|---|
| 21003-1741 | Medium Track Excavator | | 0.0 | 0.0 |
| jkl | Forklift | | 0.0 | 0.0 |
| 123 | Bull Dozer | | 0.0 | 0.0 |
| Total operating hours to date: 3,577.0 | | Total | 0.0 | 0.0 |

### ACCIDENT REPORTING (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contrac plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| [signature] | 27OCT 06 | [signature] | 27 OCT 06 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
241 

DATE
27 Oct 2006 - Friday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912P6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Previous Weather - Critical Delay
Temperature Min 41 °F, Max 47 °F; 0.01 IN Precipitation; No Wind

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
Recent heavy rains precluded placement of the slurry wall cap. This is the critical path task. Water has ponded to the extent that this work can't be accomplished. EQ could not perform any work.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
None.

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
None.

**Safety: (Inspections made, Deficiencies noted):**
None

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 241 

DATE 27 Oct 2006 - Friday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912P6-06-C-0003 NA

**LABOR HOURS**

**The following labor hours were Reported today:**

| Employer | Labor Classification | | Number of Employees | Hours Worked |
|---|---|---|---|---|
| DLZ | SURVEYOR | | 0.0 | 0.0 |
| EQM | SAFETY ENGINEER - ON SITE | | 0.0 | 0.0 |
| EQM | SUPER - JOB | | 0.0 | 0.0 |
| EQM | CONSTRUCTION INSPECTOR | | 0.0 | 0.0 |
| EQM | CONSTRUCTION-RECORDS CLERK | | 0.0 | 0.0 |
| Great Lakes Labs | ENVIRON-CNTRL-SYS INST/SER | | 0.0 | 0.0 |
| K&S Engineers | OPERATING ENGINEER | | 0.0 | 0.0 |
| Maintenance Dynamics | LABORERS | | 0.0 | 0.0 |
| Maintenance Dynamics | TRUCK DRIVER, GROUP 1 | | 0.0 | 0.0 |
| Maintenance Dynamics | OPERATING ENGINEER | | 0.0 | 0.0 |
| Task Force | TRAFFIC CONTROL SIGNALER | | 0.0 | 0.0 |
| Total hours worked to date: | 9,144.5 | Total | 0.0 | 0.0 |

**EQUIPMENT HOURS**

**The following equipment hours were Reported today:**

| Serial Number | Description | | Standby Hours | Operating Hours |
|---|---|---|---|---|
| 21003-1741 | Medium Track Excavator | | 0.0 | 0.0 |
| jkl | Forklift | | 0.0 | 0.0 |
| 123 | Bull Dozer | | 0.0 | 0.0 |
| Total operating hours to date: 3,577.0 | | Total | 0.0 | 0.0 |

**ACCIDENT REPORTING** (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contrac plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| [signature] | 30 OCT 06 | [signature] | 30 OCT 06 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
244 

DATE
30 Oct 2006 - Monday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912P6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Previous Weather - Critical Delay
Temperature Min 47 °F, Max 71 °F; No Precipitation; No Wind

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
Recent heavy rains precluded placement of the slurry wall cap. This is the critical path task. Water has ponded to the extent that this work can't be accomplished. EQ could not perform any work.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
None.

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
None.

**Safety: (Inspections made, Deficiencies noted):**
None

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 244 

DATE 30 Oct 2006 - Monday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912P6-06-C-0003 NA

**LABOR HOURS**

**The following labor hours were Reported today:**

| Employer | Labor Classification | Number of Employees | Hours Worked |
|---|---|---|---|
| DLZ | SURVEYOR | 0.0 | 0.0 |
| EQM | SAFETY ENGINEER - ON SITE | 0.0 | 0.0 |
| EQM | SUPER - JOB | 0.0 | 0.0 |
| EQM | CONSTRUCTION INSPECTOR | 0.0 | 0.0 |
| EQM | CONSTRUCTION-RECORDS CLERK | 0.0 | 0.0 |
| Great Lakes Labs | ENVIRON-CNTRL-SYS INST/SER | 0.0 | 0.0 |
| K&S Engineers | OPERATING ENGINEER | 0.0 | 0.0 |
| Maintenance Dynamics | LABORERS | 0.0 | 0.0 |
| Maintenance Dynamics | TRUCK DRIVER, GROUP 1 | 0.0 | 0.0 |
| Maintenance Dynamics | OPERATING ENGINEER | 0.0 | 0.0 |
| Task Force | TRAFFIC CONTROL SIGNALER | 0.0 | 0.0 |
| Total hours worked to date: | 9,144.5 | Total 0.0 | 0.0 |

**EQUIPMENT HOURS**

**The following equipment hours were Reported today:**

| Serial Number | Description | Standby Hours | Operating Hours |
|---|---|---|---|
| 21003-1741 | Medium Track Excavator | 0.0 | 0.0 |
| jkl | Forklift | 0.0 | 0.0 |
| 123 | Bull Dozer | 0.0 | 0.0 |
| Total operating hours to date: 3,577.0 | | Total 0.0 | 0.0 |

**ACCIDENT REPORTING** (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contrac. plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| [signature] | 31 OCT 06 | [signature] | 31 OCT 06 |

| CONTRACTORS QUALITY CONTROL REPORT (QCR)<br>DAILY LOG OF CONSTRUCTION - CIVIL | REPORT NUMBER<br>245 Page 1 of 2<br>DATE<br>31 Oct 2006 - Tuesday |
|---|---|
| PROJECT<br>Indiana Harbor CDF, Slurry Wall Gaps | CONTRACT NUMBER<br>W912P6-06-C-0003 NA |
| CONTRACTOR<br>Environmental Quality Management Inc | WEATHER<br>Previous Weather - Critical Delay<br>Temperature Min 35 °F, Max 63 °F; No Precipitation; No Wind |

QC NARRATIVES

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
Recent heavy rains precluded placement of the slurry wall cap. This is the critical path task. Water has ponded to the extent that this work can't be accomplished. EQ could not perform any work.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
None.

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
None.

**Safety: (Inspections made, Deficiencies noted):**
None

**Safety: Corrective Action taken:**
None.

PREP/INITIAL DATES (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

ACTIVITY START/FINISH

**No activities were started or finished today**

QC REQUIREMENTS

**No QC requirements were completed today**

QA/QC PUNCH LIST (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

CONTRACTORS ON SITE (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 245 

DATE 31 Oct 2006 - Tuesday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912P6-06-C-0003 NA

### LABOR HOURS

**The following labor hours were Reported today:**

| Employer | Labor Classification | | Number of Employees | Hours Worked |
|---|---|---|---|---|
| DLZ | SURVEYOR | | 0.0 | 0.0 |
| EQM | SAFETY ENGINEER - ON SITE | | 0.0 | 0.0 |
| EQM | SUPER - JOB | | 0.0 | 0.0 |
| EQM | CONSTRUCTION INSPECTOR | | 0.0 | 0.0 |
| EQM | CONSTRUCTION-RECORDS CLERK | | 0.0 | 0.0 |
| Great Lakes Labs | ENVIRON-CNTRL-SYS INST/SER | | 0.0 | 0.0 |
| K&S Engineers | OPERATING ENGINEER | | 0.0 | 0.0 |
| Maintenance Dynamics | LABORERS | | 0.0 | 0.0 |
| Maintenance Dynamics | TRUCK DRIVER, GROUP 1 | | 0.0 | 0.0 |
| Maintenance Dynamics | OPERATING ENGINEER | | 0.0 | 0.0 |
| Task Force | TRAFFIC CONTROL SIGNALER | | 0.0 | 0.0 |
| Total hours worked to date: | 9,144.5 | Total | 0.0 | 0.0 |

### EQUIPMENT HOURS

**The following equipment hours were Reported today:**

| Serial Number | Description | | Standby Hours | Operating Hours |
|---|---|---|---|---|
| 21003-1741 | Medium Track Excavator | | 0.0 | 0.0 |
| jkl | Forklift | | 0.0 | 0.0 |
| 123 | Bull Dozer | | 0.0 | 0.0 |
| Total operating hours to date: 3,577.0 | | Total | 0.0 | 0.0 |

### ACCIDENT REPORTING (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contra plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 01 NOV 06 | | 01 NOV 06 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
# DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
246 

DATE
01 Nov 2006 - Wednesday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912P6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Previous Weather - Critical Delay
Temperature Min 30 °F, Max 43 °F; No Precipitation; No Wind

## QC NARRATIVES

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
Recent heavy rains precluded placement of the slurry wall cap. This is the critical path task. Water has ponded to the extent that this work can't be accomplished. EQ could not perform any work.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
None.

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
None.

**Safety: (Inspections made, Deficiencies noted):**
None

**Safety: Corrective Action taken:**
None.

## PREP/INITIAL DATES (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

## ACTIVITY START/FINISH

**No activities were started or finished today**

## QC REQUIREMENTS

**No QC requirements were completed today**

## QA/QC PUNCH LIST (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

## CONTRACTORS ON SITE (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 246 

DATE 01 Nov 2006 - Wednesday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912P6-06-C-0003 NA

**LABOR HOURS**

**The following labor hours were Reported today:**

| Employer | Labor Classification | Number of Employees | Hours Worked |
|---|---|---|---|
| DLZ | SURVEYOR | 0.0 | 0.0 |
| EQM | SAFETY ENGINEER - ON SITE | 0.0 | 0.0 |
| EQM | SUPER - JOB | 0.0 | 0.0 |
| EQM | CONSTRUCTION INSPECTOR | 0.0 | 0.0 |
| EQM | CONSTRUCTION-RECORDS CLERK | 0.0 | 0.0 |
| Great Lakes Labs | ENVIRON-CNTRL-SYS INST/SER | 0.0 | 0.0 |
| K&S Engineers | OPERATING ENGINEER | 0.0 | 0.0 |
| Maintenance Dynamics | LABORERS | 0.0 | 0.0 |
| Maintenance Dynamics | TRUCK DRIVER, GROUP 1 | 0.0 | 0.0 |
| Maintenance Dynamics | OPERATING ENGINEER | 0.0 | 0.0 |
| Task Force | TRAFFIC CONTROL SIGNALER | 0.0 | 0.0 |
| Total hours worked to date: | 9,144.5 | Total 0.0 | 0.0 |

**EQUIPMENT HOURS**

**The following equipment hours were Reported today:**

| Serial Number | Description | Standby Hours | Operating Hours |
|---|---|---|---|
| 21003-1741 | Medium Track Excavator | 0.0 | 0.0 |
| jkl | Forklift | 0.0 | 0.0 |
| 123 | Bull Dozer | 0.0 | 0.0 |
| Total operating hours to date: 3,577.0 | | Total 0.0 | 0.0 |

**ACCIDENT REPORTING** (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contrac. plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 07 NOV 06 | | 07 NOV 06 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
247 

DATE
02 Nov 2006 - Thursday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912P6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Previous Weather - Critical Delay
Temperature Min 27 °F, Max 36 °F; No Precipitation; No Wind

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
Recent heavy rains precluded placement of the slurry wall cap. This is the critical path task. Water has ponded to the extent that this work can't be accomplished. EQ could not perform any work.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
None.

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
None.

**Safety: (Inspections made, Deficiencies noted):**
None

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 247 

DATE 02 Nov 2006 - Thursday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912P6-06-C-0003 NA

**LABOR HOURS**

**The following labor hours were Reported today:**

| Employer | Labor Classification | Number of Employees | Hours Worked |
|---|---|---|---|
| DLZ | SURVEYOR | 0.0 | 0.0 |
| EQM | SAFETY ENGINEER - ON SITE | 0.0 | 0.0 |
| EQM | SUPER - JOB | 0.0 | 0.0 |
| EQM | CONSTRUCTION INSPECTOR | 0.0 | 0.0 |
| EQM | CONSTRUCTION-RECORDS CLERK | 0.0 | 0.0 |
| Great Lakes Labs | ENVIRON-CNTRL-SYS INST/SER | 0.0 | 0.0 |
| K&S Engineers | OPERATING ENGINEER | 0.0 | 0.0 |
| Maintenance Dynamics | LABORERS | 0.0 | 0.0 |
| Maintenance Dynamics | TRUCK DRIVER, GROUP 1 | 0.0 | 0.0 |
| Maintenance Dynamics | OPERATING ENGINEER | 0.0 | 0.0 |
| Task Force | TRAFFIC CONTROL SIGNALER | 0.0 | 0.0 |
| | | 0.0 | 0.0 |
| Total hours worked to date: 9,144.5 | Total | 0.0 | 0.0 |

**EQUIPMENT HOURS**

**The following equipment hours were Reported today:**

| Serial Number | Description | Standby Hours | Operating Hours |
|---|---|---|---|
| 21003-1741 | Medium Track Excavator | 0.0 | 0.0 |
| jkl | Forklift | 0.0 | 0.0 |
| 123 | Bull Dozer | 0.0 | 0.0 |
| Total operating hours to date: 3,577.0 | Total | 0.0 | 0.0 |

**ACCIDENT REPORTING** (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 03 NOV 06 | | 03 NOV 06 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
248 

DATE
03 Nov 2006 - Friday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912P6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Previous Weather - Critical Delay
Temperature Min 23 °F, Max 41 °F; No Precipitation; No Wind

QC NARRATIVES

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
Recent heavy rains precluded placement of the slurry wall cap. This is the critical path task. Water has ponded to the extent that this work can't be accomplished. EQ could not perform any work.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
None.

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
None.

**Safety: (Inspections made, Deficiencies noted):**
None

**Safety: Corrective Action taken:**
None.

PREP/INITIAL DATES (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

ACTIVITY START/FINISH

**No activities were started or finished today**

QC REQUIREMENTS

**No QC requirements were completed today**

QA/QC PUNCH LIST (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

CONTRACTORS ON SITE (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 248 

DATE 03 Nov 2006 - Friday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912P6-06-C-0003 NA

**LABOR HOURS**

**The following labor hours were Reported today:**

| Employer | Labor Classification | | Number of Employees | Hours Worked |
|---|---|---|---|---|
| DLZ | SURVEYOR | | 0.0 | 0.0 |
| EQM | SAFETY ENGINEER - ON SITE | | 0.0 | 0.0 |
| EQM | SUPER - JOB | | 0.0 | 0.0 |
| EQM | CONSTRUCTION INSPECTOR | | 0.0 | 0.0 |
| EQM | CONSTRUCTION-RECORDS CLERK | | 0.0 | 0.0 |
| Great Lakes Labs | ENVIRON-CNTRL-SYS INST/SER | | 0.0 | 0.0 |
| K&S Engineers | OPERATING ENGINEER | | 0.0 | 0.0 |
| Maintenance Dynamics | LABORERS | | 0.0 | 0.0 |
| Maintenance Dynamics | TRUCK DRIVER, GROUP 1 | | 0.0 | 0.0 |
| Maintenance Dynamics | OPERATING ENGINEER | | 0.0 | 0.0 |
| Task Force | TRAFFIC CONTROL SIGNALER | | 0.0 | 0.0 |
| Total hours worked to date: | 9,144.5 | Total | 0.0 | 0.0 |

**EQUIPMENT HOURS**

**The following equipment hours were Reported today:**

| Serial Number | Description | | Standby Hours | Operating Hours |
|---|---|---|---|---|
| 21003-1741 | Medium Track Excavator | | 0.0 | 0.0 |
| jkl | Forklift | | 0.0 | 0.0 |
| 123 | Bull Dozer | | 0.0 | 0.0 |
| Total operating hours to date: 3,577.0 | | Total | 0.0 | 0.0 |

**ACCIDENT REPORTING** (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 06 Nov 06 | | 06 Nov 06 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
251 

DATE
06 Nov 2006 - Monday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912P6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Previous Weather - Critical Delay
Temperature Min 46 °F, Max 54 °F; 0.01 IN Precipitation; No Wind

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
Recent heavy rains precluded placement of the slurry wall cap. This is the critical path task. Water has ponded to the extent that this work can't be accomplished. EQ could not perform any work.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
None.

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
None.

**Safety: (Inspections made, Deficiencies noted):**
None

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 251 

DATE 06 Nov 2006 - Monday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912P6-06-C-0003 NA

**LABOR HOURS**

**The following labor hours were Reported today:**

| Employer | Labor Classification | | Number of Employees | Hours Worked |
|---|---|---|---|---|
| DLZ | SURVEYOR | | 0.0 | 0.0 |
| EQM | SAFETY ENGINEER - ON SITE | | 0.0 | 0.0 |
| EQM | SUPER - JOB | | 0.0 | 0.0 |
| EQM | CONSTRUCTION INSPECTOR | | 0.0 | 0.0 |
| EQM | CONSTRUCTION-RECORDS CLERK | | 0.0 | 0.0 |
| Great Lakes Labs | ENVIRON-CNTRL-SYS INST/SER | | 0.0 | 0.0 |
| K&S Engineers | OPERATING ENGINEER | | 0.0 | 0.0 |
| Maintenance Dynamics | LABORERS | | 0.0 | 0.0 |
| Maintenance Dynamics | TRUCK DRIVER, GROUP 1 | | 0.0 | 0.0 |
| Maintenance Dynamics | OPERATING ENGINEER | | 0.0 | 0.0 |
| Task Force | TRAFFIC CONTROL SIGNALER | | 0.0 | 0.0 |
| Total hours worked to date: | 9,144.5 | Total | 0.0 | 0.0 |

**EQUIPMENT HOURS**

**The following equipment hours were Reported today:**

| Serial Number | Description | | Standby Hours | Operating Hours |
|---|---|---|---|---|
| 21003-1741 | Medium Track Excavator | | 0.0 | 0.0 |
| jkl | Forklift | | 0.0 | 0.0 |
| 123 | Bull Dozer | | 0.0 | 0.0 |
| Total operating hours to date: | 3,577.0 | Total | 0.0 | 0.0 |

**ACCIDENT REPORTING** (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 07 NOV 06 | | 07 NOV 06 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
252



DATE
07 Nov 2006 - Tuesday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912P6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Previous Weather - Critical Delay
Temperature Min 50 °F, Max 57 °F; No Precipitation; No Wind

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
Recent heavy rains precluded placement of the slurry wall cap. This is the critical path task. Water has ponded to the extent that this work can't be accomplished. EQ could not perform any work.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
None.

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
None.

**Safety: (Inspections made, Deficiencies noted):**
None

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 252 

DATE 07 Nov 2006 - Tuesday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912P6-06-C-0003 NA

### LABOR HOURS

**The following labor hours were Reported today:**

| Employer | Labor Classification | | Number of Employees | Hours Worked |
|---|---|---|---|---|
| DLZ | SURVEYOR | | 0.0 | 0.0 |
| EQM | SAFETY ENGINEER - ON SITE | | 0.0 | 0.0 |
| EQM | SUPER - JOB | | 0.0 | 0.0 |
| EQM | CONSTRUCTION INSPECTOR | | 0.0 | 0.0 |
| EQM | CONSTRUCTION-RECORDS CLERK | | 0.0 | 0.0 |
| Great Lakes Labs | ENVIRON-CNTRL-SYS INST/SER | | 0.0 | 0.0 |
| K&S Engineers | OPERATING ENGINEER | | 0.0 | 0.0 |
| Maintenance Dynamics | LABORERS | | 0.0 | 0.0 |
| Maintenance Dynamics | TRUCK DRIVER, GROUP 1 | | 0.0 | 0.0 |
| Maintenance Dynamics | OPERATING ENGINEER | | 0.0 | 0.0 |
| Task Force | TRAFFIC CONTROL SIGNALER | | 0.0 | 0.0 |
| Total hours worked to date: | 9,144.5 | Total | 0.0 | 0.0 |

### EQUIPMENT HOURS

**The following equipment hours were Reported today:**

| Serial Number | Description | | Standby Hours | Operating Hours |
|---|---|---|---|---|
| 21003-1741 | Medium Track Excavator | | 0.0 | 0.0 |
| jkl | Forklift | | 0.0 | 0.0 |
| 123 | Bull Dozer | | 0.0 | 0.0 |
| Total operating hours to date: | 3,577.0 | Total | 0.0 | 0.0 |

### ACCIDENT REPORTING (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contrac plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 08 NOV 06 | | 08 NOV 06 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
253 

DATE
08 Nov 2006 - Wednesday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912P6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Previous Weather - Critical Delay
Temperature Min 47 °F, Max 65 °F; No Precipitation; No Wind

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
Recent heavy rains precluded placement of the slurry wall cap. This is the critical path task. Water has ponded to the extent that this work can't be accomplished. EQ could not perform any work.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
None.

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
None.

**Safety: (Inspections made, Deficiencies noted):**
None

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 253 

DATE 08 Nov 2006 - Wednesday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912P6-06-C-0003 NA

### LABOR HOURS

**The following labor hours were Reported today:**

| Employer | Labor Classification | | Number of Employees | Hours Worked |
|---|---|---|---|---|
| DLZ | SURVEYOR | | 0.0 | 0.0 |
| EQM | SAFETY ENGINEER - ON SITE | | 0.0 | 0.0 |
| EQM | SUPER - JOB | | 0.0 | 0.0 |
| EQM | CONSTRUCTION INSPECTOR | | 0.0 | 0.0 |
| EQM | CONSTRUCTION-RECORDS CLERK | | 0.0 | 0.0 |
| Great Lakes Labs | ENVIRON-CNTRL-SYS INST/SER | | 0.0 | 0.0 |
| K&S Engineers | OPERATING ENGINEER | | 0.0 | 0.0 |
| Maintenance Dynamics | LABORERS | | 0.0 | 0.0 |
| Maintenance Dynamics | TRUCK DRIVER, GROUP 1 | | 0.0 | 0.0 |
| Maintenance Dynamics | OPERATING ENGINEER | | 0.0 | 0.0 |
| Task Force | TRAFFIC CONTROL SIGNALER | | 0.0 | 0.0 |
| Total hours worked to date: | 9,144.5 | Total | 0.0 | 0.0 |

### EQUIPMENT HOURS

**The following equipment hours were Reported today:**

| Serial Number | Description | | Standby Hours | Operating Hours |
|---|---|---|---|---|
| 21003-1741 | Medium Track Excavator | | 0.0 | 0.0 |
| jkl | Forklift | | 0.0 | 0.0 |
| 123 | Bull Dozer | | 0.0 | 0.0 |
| Total operating hours to date: 3,577.0 | | Total | 0.0 | 0.0 |

### ACCIDENT REPORTING (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 09NOV06 | | 09NOV06 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
254 

DATE
09 Nov 2006 - Thursday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912P6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Previous Weather - Critical Delay
Temperature Min 50 °F, Max 71 °F; No Precipitation; No Wind

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
Recent heavy rains precluded placement of the slurry wall cap. This is the critical path task. Water has ponded to the extent that this work can't be accomplished. EQ could not perform any work.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
None.

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
None.

**Safety: (Inspections made, Deficiencies noted):**
None

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 254 

DATE 09 Nov 2006 - Thursday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912F6-06-C-0003 NA

**LABOR HOURS**

**The following labor hours were Reported today:**

| Employer | Labor Classification | | Number of Employees | Hours Worked |
|---|---|---|---|---|
| DLZ | SURVEYOR | | 0.0 | 0.0 |
| EQM | SAFETY ENGINEER - ON SITE | | 0.0 | 0.0 |
| EQM | SUPER - JOB | | 0.0 | 0.0 |
| EQM | CONSTRUCTION INSPECTOR | | 0.0 | 0.0 |
| EQM | CONSTRUCTION-RECORDS CLERK | | 0.0 | 0.0 |
| Great Lakes Labs | ENVIRON-CNTRL-SYS INST/SER | | 0.0 | 0.0 |
| K&S Engineers | OPERATING ENGINEER | | 0.0 | 0.0 |
| Maintenance Dynamics | LABORERS | | 0.0 | 0.0 |
| Maintenance Dynamics | TRUCK DRIVER, GROUP 1 | | 0.0 | 0.0 |
| Maintenance Dynamics | OPERATING ENGINEER | | 0.0 | 0.0 |
| Task Force | TRAFFIC CONTROL SIGNALER | | 0.0 | 0.0 |
| Total hours worked to date: | 9,144.5 | Total | 0.0 | 0.0 |

**EQUIPMENT HOURS**

**The following equipment hours were Reported today:**

| Serial Number | Description | | Standby Hours | Operating Hours |
|---|---|---|---|---|
| 21003-1741 | Medium Track Excavator | | 0.0 | 0.0 |
| jkl | Forklift | | 0.0 | 0.0 |
| 123 | Bull Dozer | | 0.0 | 0.0 |
| Total operating hours to date: | 3,577.0 | Total | 0.0 | 0.0 |

**ACCIDENT REPORTING** (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 10 NOV 06 | | 10 NOV 06 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
255 

DATE
10 Nov 2006 - Friday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912F6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Previous Weather - Critical Delay
Temperature Min 41 °F, Max 51 °F; No Precipitation; No Wind

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
Recent heavy rains precluded placement of the slurry wall cap. This is the critical path task. Water has ponded to the extent that this work can't be accomplished. EQ could not perform any work.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
None.

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
None.

**Safety: (Inspections made, Deficiencies noted):**
None

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 255 

DATE 10 Nov 2006 - Friday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912P6-06-C-0003 NA

**LABOR HOURS**

**No labor hours were Reported today**

Total hours worked to date: 9,144.5

**EQUIPMENT HOURS**

**No equipment hours were Reported today**

Total operating hours to date: 3,577.0

**ACCIDENT REPORTING** (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contra plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 13 NOV 06 | | 13 NOV 06 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
# DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
262 

DATE
17 Nov 2006 - Friday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912P6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Weather Caused No Delay
Temperature Min 0 °F, Max 0 °F; No Precipitation; No Wind

## QC NARRATIVES

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
No work was performed this week. Analytical results showed non-compliance with the contract specification requirements. This report covers the period of 111006 to 111706.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
None.

**General Comments:**
None.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
None.

**Safety: (Inspections made, Deficiencies noted):**
None

**Safety: Corrective Action taken:**
None.

## PREP/INTIAL DATES (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

## ACTIVITY START/FINISH

**No activities were started or finished today**

## QC REQUIREMENTS

**No QC requirements were completed today**

## QA/QC PUNCH LIST (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

## CONTRACTORS ON SITE (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

| CONTRACTORS QUALITY CONTROL REPORT (QCR)<br>DAILY LOG OF CONSTRUCTION - CIVIL | REPORT NUMBER<br>262 Page 2 of 2<br>DATE<br>17 Nov 2006 - Friday |
|---|---|
| PROJECT<br>Indiana Harbor CDF, Slurry Wall Gaps | CONTRACT NUMBER<br>W912P6-06-C-0003 NA |

**LABOR HOURS**

**No labor hours were Reported today**

Total hours worked to date: 9,144.5

**EQUIPMENT HOURS**

**No equipment hours were Reported today**

Total operating hours to date: 3,577.0

**ACCIDENT REPORTING** (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contrac plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 20 NOV 06 | | 20 NOV 06 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
269 

DATE
24 Nov 2006 - Friday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912F6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Weather Caused No Delay
Temperature Min 0 °F, Max 0 °F; No Precipitation; No Wind

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
No work was performed this week. Analytical results showed non-compliance with the contract specification requirements. This report covers the period of 111806 to 112406.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
None.

**General Comments:**
None.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
None.

**Safety: (Inspections made, Deficiencies noted):**
None

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

| CONTRACTORS QUALITY CONTROL REPORT (QCR)<br>DAILY LOG OF CONSTRUCTION - CIVIL | REPORT NUMBER<br>269 Page 2 of 2<br>DATE<br>24 Nov 2006 - Friday |
|---|---|
| PROJECT<br>Indiana Harbor CDF, Slurry Wall Gaps | CONTRACT NUMBER<br>W912P6-06-C-0003 NA |

**LABOR HOURS**

**No labor hours were Reported today**

Total hours worked to date: 9,144.5

**EQUIPMENT HOURS**

**No equipment hours were Reported today**

Total operating hours to date: 3,577.0

**ACCIDENT REPORTING** (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contra plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 27NOV06 | | 27NOV 06 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
272 

DATE
27 Nov 2006 - Monday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912P6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Weather Caused No Delay
Temperature Mn 0 °F, Max 0 °F; No Precipitation; No Wind

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
No work was performed today. Previous analytical results showed non-compliance with the contract specification requirements.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
None.

**General Comments:**
None.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
None.

**Safety: (Inspections made, Deficiencies noted):**
None

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

| CONTRACTORS QUALITY CONTROL REPORT (QCR)<br>DAILY LOG OF CONSTRUCTION - CIVIL | REPORT NUMBER<br>272 Page 2 of 2<br>DATE<br>27 Nov 2006 - Monday |
|---|---|
| PROJECT<br>Indiana Harbor CDF, Slurry Wall Gaps | CONTRACT NUMBER<br>W912F6-06-C-0003 NA |

**LABOR HOURS**

**No labor hours were Reported today**

Total hours worked to date: 9,144.5

**EQUIPMENT HOURS**

**No equipment hours were Reported today**

Total operating hours to date: 3,577.0

**ACCIDENT REPORTING** (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 28 NOV 06 | | 28 NOV 06 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
# DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
273 

DATE
28 Nov 2006 - Tuesday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912F6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Weather Caused No Delay
Temperature Min 0 °F, Max 0 °F; No Precipitation; No Wind

## QC NARRATIVES

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
No work was performed today. Previous analytical results showed non-compliance with the contract specification requirements.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
None.

**General Comments:**
None.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
None.

**Safety: (Inspections made, Deficiencies noted):**
None

**Safety: Corrective Action taken:**
None.

## PREP/INITIAL DATES (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

## ACTIVITY START/FINISH

**No activities were started or finished today**

## QC REQUIREMENTS

**No QC requirements were completed today**

## QA/QC PUNCH LIST (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

## CONTRACTORS ON SITE (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

| CONTRACTORS QUALITY CONTROL REPORT (QCR)<br>DAILY LOG OF CONSTRUCTION - CIVIL | REPORT NUMBER<br>273 Page 2 of 2<br>DATE<br>28 Nov 2006 - Tuesday |
|---|---|
| PROJECT<br>Indiana Harbor CDF, Slurry Wall Gaps | CONTRACT NUMBER<br>W912P6-06-C-0003 NA |

**LABOR HOURS**

**No labor hours were Reported today**

Total hours worked to date: 9,144.5

**EQUIPMENT HOURS**

**No equipment hours were Reported today**

Total operating hours to date: 3,577.0

**ACCIDENT REPORTING** (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 29 NOV 06 | | 29Nov06 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
# DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
274 

DATE
29 Nov 2006 - Wednesday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912P6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Weather Caused No Delay
Temperature Min 42 °F, Max 63 °F; 1.2 IN Precipitation; No Wind

## QC NARRATIVES

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
Dewind mobilized to the site. No work was performed.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
Ben Letany, and three Dewind truck drivers

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
None.

**Safety: (Inspections made, Deficiencies noted):**
None

**Safety: Corrective Action taken:**
None.

## PREP/INITIAL DATES (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

## ACTIVITY START/FINISH

**No activities were started or finished today**

## QC REQUIREMENTS

**No QC requirements were completed today**

## QA/QC PUNCH LIST (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

## CONTRACTORS ON SITE (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 274 

DATE 29 Nov 2006 - Wednesday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912P6-06-C-0003 NA

**LABOR HOURS**

**The following labor hours were Reported today:**

| Employer | Labor Classification | | Number of Employees | Hours Worked |
|---|---|---|---|---|
| DLZ | SURVEYOR | | 0.0 | 0.0 |
| Dewind Dewatering | TRUCK DRIVER, GROUP 1 | | 3.0 | 6.0 |
| EQM | SAFETY ENGINEER - ON SITE | | 1.0 | 2.0 |
| EQM | SUPER - JOB | | 0.0 | 0.0 |
| EQM | CONSTRUCTION INSPECTOR | | 0.0 | 0.0 |
| EQM | CONSTRUCTION-RECORDS CLERK | | 0.0 | 0.0 |
| K&S Engineers | OPERATING ENGINEER | | 0.0 | 0.0 |
| Maintenance Dynamics | OPERATING ENGINEER | | 0.0 | 0.0 |
| Total hours worked to date: | 9,152.5 | Total | 4.0 | 8.0 |

**EQUIPMENT HOURS**

**The following equipment hours were Reported today:**

| Serial Number | Description | | Standby Hours | Operating Hours |
|---|---|---|---|---|
| DEF | Dewind Model 800 Treencher | | 8.0 | 0.0 |
| 1234 | Loader | | 8.0 | 0.0 |
| 2345 | Medium Excavator | | 8.0 | 0.0 |
| 3456 | Small Excavator | | 8.0 | 0.0 |
| Total operating hours to date: 3,577.0 | | Total | 32.0 | 0.0 |

**ACCIDENT REPORTING** (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment an material used and work performed during this Reporting period are in compliance with the contra plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 30 NOV 06 | | 30 Nov 06 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
275 

DATE
30 Nov 2006 - Thursday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912P6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Weather Caused No Delay
Temperature Min 29 °F, Max 42 °F; 0.44 IN Precipitation; No Wind

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
Dewind began site setup. One truck load of bentonite was received.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
Ben Letany, and five representatives of Dewind (five operators).

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
None.

**Safety: (Inspections made, Deficiencies noted):**
None

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 275 

DATE 30 Nov 2006 - Thursday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912P6-06-C-0003 NA

### LABOR HOURS

**The following labor hours were Reported today:**

| Employer | Labor Classification | | Number of Employees | Hours Worked |
|---|---|---|---|---|
| DLZ | SURVEYOR | | 0.0 | 0.0 |
| Dewind Dewatering | OPERATING ENGINEER | | 5.0 | 55.0 |
| EQM | SAFETY ENGINEER - ON SITE | | 1.0 | 11.0 |
| EQM | SUPER - JOB | | 0.0 | 0.0 |
| EQM | CONSTRUCTION INSPECTOR | | 0.0 | 0.0 |
| EQM | CONSTRUCTION-RECORDS CLERK | | 0.0 | 0.0 |
| Great Lakes Labs | ENVIRON-CNTRL-SYS INST/SER | | 0.0 | 0.0 |
| K&S Engineers | OPERATING ENGINEER | | 0.0 | 0.0 |
| Total hours worked to date: | 9,218.5 | Total | 6.0 | 66.0 |

### EQUIPMENT HOURS

**The following equipment hours were Reported today:**

| Serial Number | Description | | Standby Hours | Operating Hours |
|---|---|---|---|---|
| DEF | Dewind Model 800 Treencher | | 0.0 | 11.0 |
| 1234 | Loader | | 0.0 | 11.0 |
| 2345 | Medium Excavator | | 0.0 | 11.0 |
| 3456 | Small Excavator | | 8.0 | 0.0 |
| Total operating hours to date: 3,610.0 | | Total | 8.0 | 33.0 |

### ACCIDENT REPORTING (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contra plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 01 Dec 06 | | 01 DEC 06 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
# DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
276 

DATE
01 Dec 2006 - Friday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912P6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Weather Caused No Delay
Temperature Min 20 °F, Max 36 °F; 0.62 IN Precipitation; No Wind

## QC NARRATIVES

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
Dewind continued with site setup. Two truck loads of bentonite were received.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
Ben Letany, and five representatives of Dewind (five operators).

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
None.

**Safety: (Inspections made, Deficiencies noted):**
None

**Safety: Corrective Action taken:**
None.

## PREP/INITIAL DATES (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

## ACTIVITY START/FINISH

**No activities were started or finished today**

## QC REQUIREMENTS

**No QC requirements were completed today**

## QA/QC PUNCH LIST (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

## CONTRACTORS ON SITE (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 276 

DATE 01 Dec 2006 - Friday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912P6-06-C-0003 NA

### LABOR HOURS

**The following labor hours were Reported today:**

| Employer | Labor Classification | | Number of Employees | Hours Worked |
|---|---|---|---|---|
| DLZ | SURVEYOR | | 0.0 | 0.0 |
| Dewind Dewatering | OPERATING ENGINEER | | 5.0 | 40.0 |
| EQM | SAFETY ENGINEER - ON SITE | | 1.0 | 8.0 |
| EQM | SUPER - JOB | | 0.0 | 0.0 |
| EQM | CONSTRUCTION INSPECTOR | | 0.0 | 0.0 |
| EQM | CONSTRUCTION-RECORDS CLERK | | 0.0 | 0.0 |
| Great Lakes Labs | ENVIRON-CNTRL-SYS INST/SER | | 0.0 | 0.0 |
| K&S Engineers | OPERATING ENGINEER | | 0.0 | 0.0 |
| Total hours worked to date: | 9,266.5 | Total | 6.0 | 48.0 |

### EQUIPMENT HOURS

**The following equipment hours were Reported today:**

| Serial Number | Description | | Standby Hours | Operating Hours |
|---|---|---|---|---|
| DEF | Dewind Model 800 Treencher | | 0.0 | 8.0 |
| 1234 | Loader | | 0.0 | 8.0 |
| 2345 | Medium Excavator | | 0.0 | 8.0 |
| 3456 | Small Excavator | | 8.0 | 0.0 |
| Total operating hours to date: 3,634.0 | | Total | 8.0 | 24.0 |

### ACCIDENT REPORTING (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVES SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 03 DEC 06 | | 03 DEC 06 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
279 

DATE
04 Dec 2006 - Monday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912P6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Weather Caused No Delay
Temperature Min 9 °F, Max 27 °F; No Precipitation; No Wind

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
Dewind continued with set up of their equipment. DLZ completed surveying of the East segment.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
Ed Wise, Ben Letany, five representatives of Dewind (five operators) and two representatives of DLZ.

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
Ben Letany conducted a safety tailgate meeting.

**Safety: (Inspections made, Deficiencies noted):**
None

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 279 

DATE 04 Dec 2006 - Monday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912P6-06-C-0003 NA

### LABOR HOURS

**The following labor hours were Reported today:**

| Employer | Labor Classification | | Number of Employees | Hours Worked |
|---|---|---|---|---|
| DLZ | SURVEYOR | | 0.0 | 0.0 |
| Dewind Dewatering | OPERATING ENGINEER | | 5.0 | 55.0 |
| EQM | SAFETY ENGINEER - ON SITE | | 1.0 | 11.0 |
| EQM | SUPER - JOB | | 0.0 | 0.0 |
| EQM | CONSTRUCTION INSPECTOR | | 1.0 | 11.0 |
| EQM | CONSTRUCTION-RECORDS CLERK | | 0.0 | 0.0 |
| Great Lakes Labs | ENVIRON-CNTRL-SYS INST/SER | | 0.0 | 0.0 |
| K&S Engineers | OPERATING ENGINEER | | 0.0 | 0.0 |
| Maintenance Dynamics | LABORERS | | 0.0 | 0.0 |
| Maintenance Dynamics | TRUCK DRIVER, GROUP 1 | | 0.0 | 0.0 |
| Maintenance Dynamics | OPERATING ENGINEER | | 0.0 | 0.0 |
| Task Force | TRAFFIC CONTROL SIGNALER | | 0.0 | 0.0 |
| Total hours worked to date: | 9,343.5 | Total | 7.0 | 77.0 |

### EQUIPMENT HOURS

**The following equipment hours were Reported today:**

| Serial Number | Description | | Standby Hours | Operating Hours |
|---|---|---|---|---|
| DEF | Dewind Model 800 Treencher | | 0.0 | 11.0 |
| 1234 | Loader | | 0.0 | 11.0 |
| 2345 | Medium Excavator | | 0.0 | 11.0 |
| 3456 | Small Excavator | | 5.5 | 5.5 |
| Total operating hours to date: 3,672.5 | | Total | 5.5 | 38.5 |

### ACCIDENT REPORTING (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contrac plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 05 DEC 06 | | 05 DEC 06 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
# DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
280 

DATE
05 Dec 2006 - Tuesday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912P6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Weather Caused No Delay
Temperature Min 11 °F, Max 33 °F; No Precipitation; No Wind

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
Dewind completed rework of the east segment (from Station 43+20 to 44+50, 130 feet). Some unmixed bentonite was noted in the southern segment from about Station 43+70 to 43+20. Dry bentonite was originally placed in a shallow trench along the path of the slurry wall. Apparently the deep trencher veered off of this path and up to 20% of the bentonite was not mixed into the wall in this segment. Additional bentonite was added in a new shallow trench and additional precaution was taken to ensure the trencher followed the original path.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
Ed Wise, Ben Letany, five representatives of Dewind (five operators) and two representatives of DLZ.

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
Ben Letany conducted a safety tailgate meeting.

**Safety: (Inspections made, Deficiencies noted):**
None

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 280 

DATE 05 Dec 2006 - Tuesday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912P6-06-C-0003 NA

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

**LABOR HOURS**

**The following labor hours were Reported today:**

| Employer | Labor Classification | | Number of Employees | Hours Worked |
|---|---|---|---|---|
| DLZ | SURVEYOR | | 0.0 | 0.0 |
| Dewind Dewatering | OPERATING ENGINEER | | 5.0 | 55.0 |
| EQM | SAFETY ENGINEER - ON SITE | | 1.0 | 11.0 |
| EQM | SUPER - JOB | | 0.0 | 0.0 |
| EQM | CONSTRUCTION INSPECTOR | | 1.0 | 11.0 |
| EQM | CONSTRUCTION-RECORDS CLERK | | 0.0 | 0.0 |
| Great Lakes Labs | ENVIRON-CNTRL-SYS INST/SER | | 0.0 | 0.0 |
| K&S Engineers | OPERATING ENGINEER | | 0.0 | 0.0 |
| Maintenance Dynamics | OPERATING ENGINEER | | 0.0 | 0.0 |
| Total hours worked to date: | 9,436.5 | Total | 7.0 | 77.0 |

**EQUIPMENT HOURS**

**The following equipment hours were Reported today:**

| Serial Number | Description | | Standby Hours | Operating Hours |
|---|---|---|---|---|
| DEF | Dewind Model 800 Treencher | | 0.0 | 11.0 |
| 1234 | Loader | | 0.0 | 11.0 |
| 2345 | Medium Excavator | | 0.0 | 11.0 |
| 3456 | Small Excavator | | 0.0 | 11.0 |
| Total operating hours to date: 3,716.5 | | Total | 0.0 | 44.0 |

**ACCIDENT REPORTING** (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contrac plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 06 Dec 06 | | 06 DEC 06 |

| CONTRACTORS QUALITY CONTROL REPORT (QCR)<br>DAILY LOG OF CONSTRUCTION - CIVIL | REPORT NUMBER<br>280 Page 1 of 2<br>DATE<br>05 Dec 2006 - Tuesday |
|---|---|
| PROJECT<br>Indiana Harbor CDF, Slurry Wall Gaps | CONTRACT NUMBER<br>W912F6-06-C-0003 NA |
| CONTRACTOR<br>Environmental Quality Management Inc | WEATHER<br>Weather Caused No Delay<br>Temperature Mn 11 °F, Max 33 °F; No Precipitation; No Wind |

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
Dewind completed rework of the east segment (from Station 43+20 to 44+50, 130 feet). Some unmixed bentonite was noted in the southern segment from about Station 43+70 to 43+20. Dry bentonite was originally placed in a shallow trench along the path of the slurry wall. Apparently the deep trencher veered off of this path and up to 20% of the bentonite was not mixed into the wall in this segment. Additional bentonite was added in a new shallow trench and additional precaution was taken to ensure the trencher followed the original path.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
Ed Wise, Ben Letany, five representatives of Dewind (five operators) and two representatives of DLZ.

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
Ben Letany conducted a safety tailgate meeting.

**Safety: (Inspections made, Deficiencies noted):**
None

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 280 

DATE 05 Dec 2006 - Tuesday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912F6-06-C-0003 NA

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

**LABOR HOURS**

**The following labor hours were Reported today:**

| Employer | Labor Classification | | Number of Employees | Hours Worked |
|---|---|---|---|---|
| DLZ | SURVEYOR | | 0.0 | 0.0 |
| Dewind Dewatering | OPERATING ENGINEER | | 5.0 | 55.0 |
| EQM | SAFETY ENGINEER - ON SITE | | 1.0 | 11.0 |
| EQM | SUPER - JOB | | 0.0 | 0.0 |
| EQM | CONSTRUCTION INSPECTOR | | 1.0 | 11.0 |
| EQM | CONSTRUCTION-RECORDS CLERK | | 0.0 | 0.0 |
| Great Lakes Labs | ENVIRON-CNTRL-SYS INST/SER | | 0.0 | 0.0 |
| K&S Engineers | OPERATING ENGINEER | | 0.0 | 0.0 |
| Maintenance Dynamics | OPERATING ENGINEER | | 0.0 | 0.0 |
| Total hours worked to date: | 9,436.5 | Total | 7.0 | 77.0 |

**EQUIPMENT HOURS**

**The following equipment hours were Reported today:**

| Serial Number | Description | | Standby Hours | Operating Hours |
|---|---|---|---|---|
| DEF | Dewind Model 800 Treencher | | 0.0 | 11.0 |
| 1234 | Loader | | 0.0 | 11.0 |
| 2345 | Medium Excavator | | 0.0 | 11.0 |
| 3456 | Small Excavator | | 0.0 | 11.0 |
| Total operating hours to date: 3,716.5 | | Total | 0.0 | 44.0 |

**ACCIDENT REPORTING** (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | | | |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
# DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
281 

DATE
06 Dec 2006 - Wednesday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912P6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Weather Caused No Delay
Temperature Min 22 °F, Max 43 °F; No Precipitation; No Wind

## QC NARRATIVES

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
Dewind began rework of the west segment. This was completed between stations 86+70 and 85+00 (170 feet). The original trench followed the path of the placement of the dry bentonite throughout this segment. This observation continues throughout the west segment, unless otherwise noted.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
Ed Wise, Ben Letany, five representatives of Dewind (five operators).

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
Ben Letany conducted a safety tailgate meeting.

**Safety: (Inspections made, Deficiencies noted):**
None

**Safety: Corrective Action taken:**
None.

## PREP/INITIAL DATES (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

## ACTIVITY START/FINISH

**No activities were started or finished today**

## QC REQUIREMENTS

**No QC requirements were completed today**

## QA/QC PUNCH LIST (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

## CONTRACTORS ON SITE (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 281 

DATE 06 Dec 2006 - Wednesday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912P6-06-C-0003 NA

**LABOR HOURS**

**The following labor hours were Reported today:**

| Employer | Labor Classification | | Number of Employees | Hours Worked |
|---|---|---|---|---|
| DLZ | SURVEYOR | | 0.0 | 0.0 |
| Dewind Dewatering | OPERATING ENGINEER | | 5.0 | 60.0 |
| EQM | SAFETY ENGINEER - ON SITE | | 1.0 | 12.0 |
| EQM | SUPER - JOB | | 0.0 | 0.0 |
| EQM | CONSTRUCTION INSPECTOR | | 1.0 | 12.0 |
| EQM | CONSTRUCTION-RECORDS CLERK | | 0.0 | 0.0 |
| Great Lakes Labs | ENVIRON-CNTRL-SYS INST/SER | | 0.0 | 0.0 |
| K&S Engineers | OPERATING ENGINEER | | 0.0 | 0.0 |
| Maintenance Dynamics | OPERATING ENGINEER | | 0.0 | 0.0 |
| Total hours worked to date: | 9,504.5 | Total | 7.0 | 84.0 |

**EQUIPMENT HOURS**

**The following equipment hours were Reported today:**

| Serial Number | Description | | Standby Hours | Operating Hours |
|---|---|---|---|---|
| DEF | Dewind Model 800 Treencher | | 0.0 | 11.0 |
| 1234 | Loader | | 0.0 | 11.0 |
| 2345 | Medium Excavator | | 0.0 | 11.0 |
| 3456 | Small Excavator | | 0.0 | 11.0 |
| Total operating hours to date: 3,760.5 | | Total | 0.0 | 44.0 |

**ACCIDENT REPORTING** (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 08 Dec 06 | | 07 Dec 06 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
282 

DATE
07 Dec 2006 - Thursday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912P6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Weather Caused No Delay
Temperature Min 11 °F, Max 23 °F; No Precipitation; No Wind

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
Dewind continued rework of the west segment. This was completed between stations 85+00 to 83+50 (150 feet). The original trench followed the path of the placement of the dry bentonite throughout this segment. This observation continues throughout the west segment, unless otherwise noted.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
Ed Wise, Ben Letany, five representatives of Dewind (five operators).

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
Ben Letany conducted a safety tailgate meeting.

**Safety: (Inspections made, Deficiencies noted):**
None

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 282 

DATE 07 Dec 2006 - Thursday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912F6-06-C-0003 NA

### LABOR HOURS

**The following labor hours were Reported today:**

| Employer | Labor Classification | | Number of Employees | Hours Worked |
|---|---|---|---|---|
| DLZ | SURVEYOR | | 0.0 | 0.0 |
| Dewind Dewatering | OPERATING ENGINEER | | 5.0 | 60.0 |
| EQM | SAFETY ENGINEER - ON SITE | | 1.0 | 12.0 |
| EQM | SUPER - JOB | | 0.0 | 0.0 |
| EQM | CONSTRUCTION INSPECTOR | | 1.0 | 12.0 |
| EQM | CONSTRUCTION-RECORDS CLERK | | 0.0 | 0.0 |
| Great Lakes Labs | ENVIRON-CNTRL-SYS INST/SER | | 0.0 | 0.0 |
| K&S Engineers | OPERATING ENGINEER | | 0.0 | 0.0 |
| Maintenance Dynamics | OPERATING ENGINEER | | 0.0 | 0.0 |
| Total hours worked to date: | 9,588.5 | Total | 7.0 | 84.0 |

### EQUIPMENT HOURS

**The following equipment hours were Reported today:**

| Serial Number | Description | | Standby Hours | Operating Hours |
|---|---|---|---|---|
| DEF | Dewind Model 800 Treencher | | 0.0 | 11.0 |
| 1234 | Loader | | 0.0 | 11.0 |
| 2345 | Medium Excavator | | 0.0 | 11.0 |
| 3456 | Small Excavator | | 0.0 | 11.0 |
| Total operating hours to date: | 3,804.5 | Total | 0.0 | 44.0 |

### ACCIDENT REPORTING (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 08 Dec 06 | | 08 Dec 06 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
# DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
283 

DATE
08 Dec 2006 - Friday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912P6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Weather Caused No Delay
Temperature Min 9 °F, Max 25 °F; No Precipitation; No Wind

## QC NARRATIVES

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
Dewind continued rework of the west segment. This was completed between stations 83+50 82+45 (125 feet). The remaining sections are very wet. In order to increase the stiffness of the backfill and ensure that an adequate amount of bentonite is added Dewind began placing dry bentonite in addition to that from the slurry. Slurried bentonite continued to be added at the rate of one sack per 25 feet (1.6 %) and an additional dry sack was added per every 30 feet (1.3 %0 for a total additonal bentonite addition of 2.9%. This will continued for the remainder of thie west segment. The original trench followed the path of the placement of the dry bentonite throughout this segment. This observation continues throughout the west segment, unless otherwise noted.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
Ed Wise, Ben Letany, five representatives of Dewind (five operators).

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
Ben Letany conducted a safety tailgate meeting.

**Safety: (Inspections made, Deficiencies noted):**
None

**Safety: Corrective Action taken:**
None.

## PREP/INITIAL DATES (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

## ACTIVITY START/FINISH

**No activities were started or finished today**

## QC REQUIREMENTS

**No QC requirements were completed today**

## QA/QC PUNCH LIST (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 283 

DATE 08 Dec 2006 - Friday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912P6-06-C-0003 NA

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

**LABOR HOURS**

**The following labor hours were Reported today:**

| Employer | Labor Classification | | Number of Employees | Hours Worked |
|---|---|---|---|---|
| DLZ | SURVEYOR | | 0.0 | 0.0 |
| Dewind Dewatering | OPERATING ENGINEER | | 5.0 | 40.0 |
| EQM | SAFETY ENGINEER - ON SITE | | 1.0 | 8.0 |
| EQM | SUPER - JOB | | 0.0 | 0.0 |
| EQM | CONSTRUCTION INSPECTOR | | 1.0 | 8.0 |
| EQM | CONSTRUCTION-RECORDS CLERK | | 0.0 | 0.0 |
| Great Lakes Labs | ENVIRON-CNTRL-SYS INST/SER | | 0.0 | 0.0 |
| K&S Engineers | OPERATING ENGINEER | | 0.0 | 0.0 |
| Maintenance Dynamics | OPERATING ENGINEER | | 0.0 | 0.0 |
| Total hours worked to date: | 9,644.5 | Total | 7.0 | 56.0 |

**EQUIPMENT HOURS**

**The following equipment hours were Reported today:**

| Serial Number | Description | | Standby Hours | Operating Hours |
|---|---|---|---|---|
| DEF | Dewind Model 800 Treencher | | 0.0 | 8.0 |
| 1234 | Loader | | 0.0 | 8.0 |
| 2345 | Medium Excavator | | 0.0 | 8.0 |
| 3456 | Small Excavator | | 0.0 | 8.0 |
| Total operating hours to date: | 3,836.5 | Total | 0.0 | 32.0 |

**ACCIDENT REPORTING** (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 11 Dec 06 | | 11 Dec 06 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
286 

DATE
11 Dec 2006 - Monday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912P6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Weather Caused Non-Critical Delay
Temperature Mn 40 °F, Max 49 °F, 0.45 IN Precipitation; No Wind

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
Rains delayed work in the morning. Dewind completed the rework of the trench between stations 82+85 to 83+50 (65 feet). K&S completed borings at stations 43+50 and 85+70.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
Ed Wise, Ben Letany, five representatives of Dewind (five operators) and two representatives of K&S.

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
Ben Letany conducted a safety tailgate meeting.

**Safety: (Inspections made, Deficiencies noted):**
None

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 286 

DATE 11 Dec 2006 - Monday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912P6-06-C-0003 NA

**LABOR HOURS**

**The following labor hours were Reported today:**

| Employer | Labor Classification | | Number of Employees | Hours Worked |
|---|---|---|---|---|
| DLZ | SURVEYOR | | 0.0 | 0.0 |
| Dewind Dewatering | OPERATING ENGINEER | | 5.0 | 55.0 |
| EQM | SAFETY ENGINEER - ON SITE | | 1.0 | 11.0 |
| EQM | SUPER - JOB | | 0.0 | 0.0 |
| EQM | CONSTRUCTION INSPECTOR | | 1.0 | 11.0 |
| EQM | CONSTRUCTION-RECORDS CLERK | | 0.0 | 0.0 |
| Great Lakes Labs | ENVIRON-CNTRL-SYS INST/SER | | 0.0 | 0.0 |
| K&S Engineers | OPERATING ENGINEER | | 2.0 | 18.0 |
| Maintenance Dynamics | OPERATING ENGINEER | | 0.0 | 0.0 |
| Total hours worked to date: | 9,515.5 | Total | 9.0 | 95.0 |

**EQUIPMENT HOURS**

**The following equipment hours were Reported today:**

| Serial Number | Description | | Standby Hours | Operating Hours |
|---|---|---|---|---|
| DEF | Dewind Model 800 Treencher | | 0.0 | 11.0 |
| 234 | Drill Rig | | 0.0 | 9.0 |
| 1234 | Loader | | 0.0 | 11.0 |
| 2345 | Medium Excavator | | 0.0 | 11.0 |
| Total operating hours to date: 3,758.5 | | Total | 0.0 | 42.0 |

**ACCIDENT REPORTING** (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 12 Dec 06 | | 12 Dec 06 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 287 

DATE 12 Dec 2006 - Tuesday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912F6-06-C-0003 NA

CONTRACTOR Environmental Quality Management Inc

WEATHER
Weather Caused Non-Critical Delay
Temperature Mn 42 °F, Max 54 °F; 0.35 IN Precipitation; No Wind

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
Rains delayed work in the morning. K&S called off work due to rain. Dewind completed the rework of the trench between stations 81+25 to 82+85. The trencher bar broke in the early afternoon. Dewind began disassembly of the affected equipment. It will be returned to their headquaters for repair. They are tentatively expecting to return on 19Dec06 to complete the work.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
Ed Wise, Ben Letany, five representatives of Dewind (five operators) and two representatives of K&S.

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
Ben Letany conducted a safety tailgate meeting.

**Safety: (Inspections made, Deficiencies noted):**
None

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 287 

DATE 12 Dec 2006 - Tuesday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912P6-06-C-0003 NA

### LABOR HOURS

The following labor hours were Reported today:

| Employer | Labor Classification | | Number of Employees | Hours Worked |
|---|---|---|---|---|
| DLZ | SURVEYOR | | 0.0 | 0.0 |
| Dewind Dewatering | OPERATING ENGINEER | | 5.0 | 55.0 |
| EQM | SAFETY ENGINEER - ON SITE | | 1.0 | 11.0 |
| EQM | SUPER - JOB | | 0.0 | 0.0 |
| EQM | CONSTRUCTION INSPECTOR | | 1.0 | 11.0 |
| EQM | CONSTRUCTION-RECORDS CLERK | | 0.0 | 0.0 |
| Great Lakes Labs | ENVIRON-CNTRL-SYS INST/SER | | 0.0 | 0.0 |
| K&S Engineers | OPERATING ENGINEER | | 2.0 | 4.0 |
| Maintenance Dynamics | OPERATING ENGINEER | | 0.0 | 0.0 |
| Total hours worked to date: | 9,501.5 | Total | 9.0 | 81.0 |

### EQUIPMENT HOURS

The following equipment hours were Reported today:

| Serial Number | Description | | Standby Hours | Operating Hours |
|---|---|---|---|---|
| DEF | Dewind Model 800 Treencher | | 0.0 | 11.0 |
| 234 | Drill Rig | | 8.0 | 0.0 |
| 1234 | Loader | | 0.0 | 11.0 |
| 2345 | Medium Excavator | | 0.0 | 11.0 |
| Total operating hours to date: | 3,749.5 | Total | 8.0 | 33.0 |

### ACCIDENT REPORTING (Describe accidents)

No accidents reported today

CONTRACTOR CERTIFICATION On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as noted above.

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| [signature] | 13 Dec 06 | [signature] | 13 Dec 06 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
288 

DATE
13 Dec 2006 - Wednesday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912P6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Weather Caused No Delay
Temperature Mn 35 °F, Max 50 °F; No Precipitation; No Wind

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
Dewind removed the trencher bar and ancillary equipment from the site. K&S could not access the sample locations due to collected rainwater. Dewind improved access with a loader and K&S will return 14Dec06 to continue work.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
Ed Wise, Ben Letany, three representatives of Dewind (three operators) and two representatives of K&S.

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
Ben Letany conducted a safety tailgate meeting.

**Safety: (Inspections made, Deficiencies noted):**
None

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 288 

DATE 13 Dec 2006 - Wednesday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912F6-06-C-0003 NA

### LABOR HOURS

**The following labor hours were Reported today:**

| Employer | Labor Classification | | Number of Employees | Hours Worked |
|---|---|---|---|---|
| DLZ | SURVEYOR | | 0.0 | 0.0 |
| Dewind Dewatering | OPERATING ENGINEER | | 3.0 | 24.0 |
| EQM | SAFETY ENGINEER - ON SITE | | 1.0 | 8.0 |
| EQM | SUPER - JOB | | 0.0 | 0.0 |
| EQM | CONSTRUCTION INSPECTOR | | 1.0 | 8.0 |
| EQM | CONSTRUCTION-RECORDS CLERK | | 0.0 | 0.0 |
| Great Lakes Labs | ENVIRON-CNTRL-SYS INST/SER | | 0.0 | 0.0 |
| K&S Engineers | OPERATING ENGINEER | | 0.0 | 0.0 |
| Maintenance Dynamics | OPERATING ENGINEER | | 0.0 | 0.0 |
| Total hours worked to date: | 9,460.5 | Total | 5.0 | 40.0 |

### EQUIPMENT HOURS

**The following equipment hours were Reported today:**

| Serial Number | Description | | Standby Hours | Operating Hours |
|---|---|---|---|---|
| DEF | Dewind Model 800 Treencher | | 0.0 | 11.0 |
| 234 | Drill Rig | | 8.0 | 0.0 |
| 1234 | Loader | | 0.0 | 11.0 |
| 2345 | Medium Excavator | | 0.0 | 11.0 |
| 3456 | Small Excavator | | 0.0 | 0.0 |
| Total operating hours to date: | 3,749.5 | Total | 8.0 | 33.0 |

### ACCIDENT REPORTING (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 13 Dec 06 | | 13 Dec 06 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
289 

DATE
14 Dec 2006 - Thursday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912P6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Weather Caused No Delay
Temperature Mn 37 °F, Max 56 °F; No Precipitation; No Wind

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
K&S Engineers completed the trench borings at stations 83+85 and 82+85. No other construction work was performed.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
Ben Letany and two representatives of K&S Engineers.

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
Ben Letany conducted a safety tailgate meeting.

**Safety: (Inspections made, Deficiencies noted):**
None

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 289 

DATE 14 Dec 2006 - Thursday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912P6-06-C-0003 NA

### LABOR HOURS

The following labor hours were Reported today:

| Employer | Labor Classification | | Number of Employees | Hours Worked |
|---|---|---|---|---|
| DLZ | SURVEYOR | | 0.0 | 0.0 |
| Dewind Dewatering | OPERATING ENGINEER | | 0.0 | 0.0 |
| EQM | SAFETY ENGINEER - ON SITE | | 1.0 | 4.0 |
| EQM | SUPER - JOB | | 0.0 | 0.0 |
| EQM | CONSTRUCTION INSPECTOR | | 0.0 | 4.0 |
| EQM | CONSTRUCTION-RECORDS CLERK | | 0.0 | 0.0 |
| Great Lakes Labs | ENVIRON-CNTRL-SYS INST/SER | | 0.0 | 0.0 |
| K&S Engineers | OPERATING ENGINEER | | 2.0 | 16.0 |
| Maintenance Dynamics | OPERATING ENGINEER | | 0.0 | 0.0 |
| Total hours worked to date: | 9,444.5 | Total | 3.0 | 24.0 |

### EQUIPMENT HOURS

The following equipment hours were Reported today:

| Serial Number | Description | | Standby Hours | Operating Hours |
|---|---|---|---|---|
| 234 | Drill Rig | | 0.0 | 8.0 |
| Total operating hours to date: 3,724.5 | | Total | 0.0 | 8.0 |

### ACCIDENT REPORTING (Describe accidents)

No accidents reported today

CONTRACTOR CERTIFICATION On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as noted above.

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 15 Dec 06 | | 15 Dec 06 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
290 

DATE
15 Dec 2006 - Friday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912P6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Weather Caused No Delay
Temperature Mn 30 °F, Max 46 °F, No Precipitation; No Wind

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
No work was performed today.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
None.

**General Comments:**
None.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
None.

**Safety: (Inspections made, Deficiencies noted):**
None

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 290 

DATE 15 Dec 2006 - Friday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912P6-06-C-0003 NA

**LABOR HOURS**

**The following labor hours were Reported today:**

| Employer | Labor Classification | | Number of Employees | Hours Worked |
|---|---|---|---|---|
| DLZ | SURVEYOR | | 0.0 | 0.0 |
| Dewind Dewatering | OPERATING ENGINEER | | 0.0 | 0.0 |
| EQM | SAFETY ENGINEER - ON SITE | | 0.0 | 0.0 |
| EQM | SUPER - JOB | | 0.0 | 0.0 |
| EQM | CONSTRUCTION INSPECTOR | | 1.0 | 0.0 |
| EQM | CONSTRUCTION-RECORDS CLERK | | 0.0 | 0.0 |
| Great Lakes Labs | ENVIRON-CNTRL-SYS INST/SER | | 0.0 | 0.0 |
| K&S Engineers | OPERATING ENGINEER | | 0.0 | 0.0 |
| Maintenance Dynamics | OPERATING ENGINEER | | 0.0 | 0.0 |
| Total hours worked to date: | 9,884.5 | Total | 1.0 | 0.0 |

**EQUIPMENT HOURS**

**The following equipment hours were Reported today:**

| Serial Number | Description | | Standby Hours | Operating Hours |
|---|---|---|---|---|
| 234 | Drill Rig | | 0.0 | 0.0 |
| Total operating hours to date: 3,952.5 | | Total | 0.0 | 0.0 |

**ACCIDENT REPORTING** (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contra plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 12/18/6 | | |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
# DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
293



DATE
18 Dec 2006 - Monday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912P6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Weather Caused No Delay
Temperature Mn 30 °F, Max 44 °F; No Precipitation; No Wind

## QC NARRATIVES

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
Dewind mobilized to the site and began reassembly of the trencher.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
Ed Wise, Ben Letany, and three representatives of Dewind (three operators).

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
Ben Letany conducted a safety tailgate meeting.

**Safety: (Inspections made, Deficiencies noted):**
None

**Safety: Corrective Action taken:**
None.

## PREP/INITIAL DATES (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

## ACTIVITY START/FINISH

**No activities were started or finished today**

## QC REQUIREMENTS

**No QC requirements were completed today**

## QA/QC PUNCH LIST (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

## CONTRACTORS ON SITE (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 293 

DATE 18 Dec 2006 - Monday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912P6-06-C-0003 NA

### LABOR HOURS

**The following labor hours were Reported today:**

| Employer | Labor Classification | | Number of Employees | Hours Worked |
|---|---|---|---|---|
| DLZ | SURVEYOR | | 0.0 | 0.0 |
| Dewind Dewatering | OPERATING ENGINEER | | 3.0 | 33.0 |
| EQM | SAFETY ENGINEER - ON SITE | | 1.0 | 11.0 |
| EQM | SUPER - JOB | | 0.0 | 0.0 |
| EQM | CONSTRUCTION INSPECTOR | | 1.0 | 11.0 |
| EQM | CONSTRUCTION-RECORDS CLERK | | 0.0 | 0.0 |
| Great Lakes Labs | ENVIRON-CNTRL-SYS INST/SER | | 0.0 | 0.0 |
| K&S Engineers | OPERATING ENGINEER | | 0.0 | 0.0 |
| Maintenance Dynamics | OPERATING ENGINEER | | 0.0 | 0.0 |
| Total hours worked to date: | 9,939.5 | Total | 5.0 | 55.0 |

### EQUIPMENT HOURS

**The following equipment hours were Reported today:**

| Serial Number | Description | | Standby Hours | Operating Hours |
|---|---|---|---|---|
| DEF | Dewind Model 800 Treencher | | 11.0 | 0.0 |
| 234 | Drill Rig | | 0.0 | 0.0 |
| 1234 | Loader | | 0.0 | 11.0 |
| 2345 | Medium Excavator | | 0.0 | 11.0 |
| 3456 | Small Excavator | | 0.0 | 11.0 |
| Total operating hours to date: 3,985.5 | | Total | 11.0 | 33.0 |

### ACCIDENT REPORTING (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment an material used and work performed during this Reporting period are in compliance with the contra plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 12/18/4 | | |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
294 

DATE
19 Dec 2006 - Tuesday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912F6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Weather Caused No Delay
Temperature Mn 26 °F, Max 45 °F; No Precipitation; No Wind

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
Dewind completed reassembly of the trencher and rework of the slurry wall between station 81+50 and 82+85.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
Ed Wise, Ben Letany, and three representatives of Dewind (three operators).

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
Ben Letany conducted a safety tailgate meeting.

**Safety: (Inspections made, Deficiencies noted):**
None

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 294 

DATE 19 Dec 2006 - Tuesday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912P6-06-C-0003 NA

**LABOR HOURS**

**The following labor hours were Reported today:**

| Employer | Labor Classification | | Number of Employees | Hours Worked |
|---|---|---|---|---|
| DLZ | SURVEYOR | | 0.0 | 0.0 |
| Dewind Dewatering | OPERATING ENGINEER | | 3.0 | 33.0 |
| EQM | SAFETY ENGINEER - ON SITE | | 1.0 | 11.0 |
| EQM | SUPER - JOB | | 0.0 | 0.0 |
| EQM | CONSTRUCTION INSPECTOR | | 1.0 | 11.0 |
| EQM | CONSTRUCTION-RECORDS CLERK | | 0.0 | 0.0 |
| Great Lakes Labs | ENVIRON-CNTRL-SYS INST/SER | | 0.0 | 0.0 |
| K&S Engineers | OPERATING ENGINEER | | 0.0 | 0.0 |
| Maintenance Dynamics | OPERATING ENGINEER | | 0.0 | 0.0 |
| Total hours worked to date: | 9,994.5 | Total | 5.0 | 55.0 |

**EQUIPMENT HOURS**

**The following equipment hours were Reported today:**

| Serial Number | Description | | Standby Hours | Operating Hours |
|---|---|---|---|---|
| DEF | Dewind Model 800 Treencher | | 0.0 | 11.0 |
| 234 | Drill Rig | | 0.0 | 0.0 |
| 1234 | Loader | | 0.0 | 11.0 |
| 2345 | Medium Excavator | | 0.0 | 11.0 |
| 3456 | Small Excavator | | 0.0 | 11.0 |
| Total operating hours to date: 4,029.5 | | Total | 0.0 | 44.0 |

**ACCIDENT REPORTING** (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 12/20/6 | | 12/20/6 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
# DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
295



DATE
20 Dec 2006 - Wednesday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912P6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Weather Caused No Delay
Temperature Min 23 °F, Max 45 °F; 0.41 IN Precipitation; No Wind

## QC NARRATIVES

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
Dewind completed rework of the slurry wall between station 79+85 and 81+50.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
Ed Wise, Ben Letany, and three representatives of Dewind (three operators).

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
Ben Letany conducted a safety tailgate meeting.

**Safety: (Inspections made, Deficiencies noted):**
None

**Safety: Corrective Action taken:**
None.

## PREP/INITIAL DATES (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

## ACTIVITY START/FINISH

**No activities were started or finished today**

## QC REQUIREMENTS

**No QC requirements were completed today**

## QA/QC PUNCH LIST (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

## CONTRACTORS ON SITE (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 295 

DATE 20 Dec 2006 - Wednesday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912F6-06-C-0003 NA

### LABOR HOURS

**The following labor hours were Reported today:**

| Employer | Labor Classification | | Number of Employees | Hours Worked |
|---|---|---|---|---|
| DLZ | SURVEYOR | | 0.0 | 0.0 |
| Dewind Dewatering | OPERATING ENGINEER | | 3.0 | 33.0 |
| BQM | SAFETY ENGINEER - ON SITE | | 1.0 | 11.0 |
| BQM | SUPER - JOB | | 0.0 | 0.0 |
| BQM | CONSTRUCTION INSPECTOR | | 1.0 | 11.0 |
| BQM | CONSTRUCTION-RECORDS CLERK | | 0.0 | 0.0 |
| Great Lakes Labs | ENVIRON-CNTRL-SYS INST/SER | | 0.0 | 0.0 |
| K&S Engineers | OPERATING ENGINEER | | 0.0 | 0.0 |
| Maintenance Dynamics | OPERATING ENGINEER | | 0.0 | 0.0 |
| Total hours worked to date: | 10,049.5 | Total | 5.0 | 55.0 |

### EQUIPMENT HOURS

**The following equipment hours were Reported today:**

| Serial Number | Description | | Standby Hours | Operating Hours |
|---|---|---|---|---|
| DEF | Dewind Model 800 Treencher | | 0.0 | 11.0 |
| 234 | Drill Rig | | 0.0 | 0.0 |
| 1234 | Loader | | 0.0 | 11.0 |
| 2345 | Medium Excavator | | 0.0 | 11.0 |
| 3456 | Small Excavator | | 0.0 | 11.0 |
| Total operating hours to date: 4,073.5 | | Total | 0.0 | 44.0 |

### ACCIDENT REPORTING (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 12/21/06 | | 12/20/06 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
296 

DATE
21 Dec 2006 - Thursday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912P6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Weather Caused No Delay
Temperature Mn 37 °F, Max 54 °F; 0.64 IN Precipitation; No Wind

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
Dewind disassembled their equipment and demobilized.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
Ed Wise, Ben Letany, and three representatives of Dewind (three operators).

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
Ben Letany conducted a safety tailgate meeting.

**Safety: (Inspections made, Deficiencies noted):**
None

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 296 

DATE 21 Dec 2006 - Thursday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912F6-06-C-0003 NA

**LABOR HOURS**

**The following labor hours were Reported today:**

| Employer | Labor Classification | | Number of Employees | Hours Worked |
|---|---|---|---|---|
| DLZ | SURVEYOR | | 0.0 | 0.0 |
| Dewind Dewatering | OPERATING ENGINEER | | 3.0 | 33.0 |
| EQM | SAFETY ENGINEER - ON SITE | | 1.0 | 11.0 |
| EQM | SUPER - JOB | | 0.0 | 0.0 |
| EQM | CONSTRUCTION INSPECTOR | | 1.0 | 11.0 |
| EQM | CONSTRUCTION-RECORDS CLERK | | 0.0 | 0.0 |
| Great Lakes Labs | ENVIRON-CNTRL-SYS INST/SER | | 0.0 | 0.0 |
| K&S Engineers | OPERATING ENGINEER | | 0.0 | 0.0 |
| Maintenance Dynamics | OPERATING ENGINEER | | 0.0 | 0.0 |
| Total hours worked to date: | 10,104.5 | Total | 5.0 | 55.0 |

**EQUIPMENT HOURS**

**The following equipment hours were Reported today:**

| Serial Number | Description | | Standby Hours | Operating Hours |
|---|---|---|---|---|
| DEF | Dewind Model 800 Treencher | | 0.0 | 11.0 |
| 234 | Drill Rig | | 0.0 | 0.0 |
| 1234 | Loader | | 0.0 | 11.0 |
| 2345 | Medium Excavator | | 0.0 | 11.0 |
| 3456 | Small Excavator | | 0.0 | 11.0 |
| Total operating hours to date: 4,117.5 | | Total | 0.0 | 44.0 |

**ACCIDENT REPORTING** (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 12/22/06 | | 12/22/6 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
297 

DATE
22 Dec 2006 - Friday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912P6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Weather Caused No Delay
Temperature Mn 42 °F, Max 56 °F; 0.94 IN Precipitation; No Wind

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
No construction work was performed.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
None.

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
None.

**Safety: (Inspections made, Deficiencies noted):**
None

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 297 

DATE 22 Dec 2006 - Friday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912P6-06-C-0003 NA

**LABOR HOURS**

**The following labor hours were Reported today:**

| Employer | Labor Classification | | Number of Employees | Hours Worked |
|---|---|---|---|---|
| DLZ | SURVEYOR | | 0.0 | 0.0 |
| Dewind Dewatering | OPERATING ENGINEER | | 0.0 | 0.0 |
| EQM | SAFETY ENGINEER - ON SITE | | 0.0 | 0.0 |
| EQM | SUPER - JOB | | 0.0 | 0.0 |
| EQM | CONSTRUCTION INSPECTOR | | 0.0 | 0.0 |
| EQM | CONSTRUCTION-RECORDS CLERK | | 0.0 | 0.0 |
| Great Lakes Labs | ENVIRON-CNTRL-SYS INST/SER | | 0.0 | 0.0 |
| K&S Engineers | OPERATING ENGINEER | | 0.0 | 0.0 |
| Maintenance Dynamics | OPERATING ENGINEER | | 0.0 | 0.0 |
| Total hours worked to date: | 10,104.5 | Total | 0.0 | 0.0 |

**EQUIPMENT HOURS**

**The following equipment hours were Reported today:**

| Serial Number | Description | | Standby Hours | Operating Hours |
|---|---|---|---|---|
| 234 | Drill Rig | | 0.0 | 0.0 |
| Total operating hours to date: 4,117.5 | | Total | 0.0 | 0.0 |

**ACCIDENT REPORTING** (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 12/26/6 | | 12/26/6 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
300 

DATE
25 Dec 2006 - Monday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912F6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Weather Caused No Delay
Temperature Min 34 °F, Max 44 °F; No Precipitation; No Wind

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
No work was performed today.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
None.

**General Comments:**
None.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
None.

**Safety: (Inspections made, Deficiencies noted):**
None

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 300 

DATE 25 Dec 2006 - Monday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912P6-06-C-0003 NA

**LABOR HOURS**

**The following labor hours were Reported today:**

| Employer | Labor Classification | | Number of Employees | Hours Worked |
|---|---|---|---|---|
| DLZ | SURVEYOR | | 0.0 | 0.0 |
| Dewind Dewatering | OPERATING ENGINEER | | 0.0 | 0.0 |
| EQM | SAFETY ENGINEER - ON SITE | | 0.0 | 0.0 |
| EQM | SUPER - JOB | | 0.0 | 0.0 |
| EQM | CONSTRUCTION INSPECTOR | | 0.0 | 0.0 |
| EQM | CONSTRUCTION-RECORDS CLERK | | 0.0 | 0.0 |
| Great Lakes Labs | ENVIRON-CNTRL-SYS INST/SER | | 0.0 | 0.0 |
| K&S Engineers | OPERATING ENGINEER | | 0.0 | 0.0 |
| Maintenance Dynamics | OPERATING ENGINEER | | 0.0 | 0.0 |
| Total hours worked to date: | 10,104.5 | Total | 0.0 | 0.0 |

**EQUIPMENT HOURS**

**The following equipment hours were Reported today:**

| Serial Number | Description | | Standby Hours | Operating Hours |
|---|---|---|---|---|
| 234 | Drill Rig | | 0.0 | 0.0 |
| Total operating hours to date: 4,117.5 | | Total | 0.0 | 0.0 |

**ACCIDENT REPORTING** (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment an material used and work performed during this Reporting period are in compliance with the contrac plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 12/27/6 | | 12/27/6 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
301



DATE
26 Dec 2006 - Tuesday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912P6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Weather Caused No Delay
Temperature Mn 28 °F, Max 38 °F; No Precipitation; No Wind

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
No work was performed today.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
None.

**General Comments:**
None.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
None.

**Safety: (Inspections made, Deficiencies noted):**
None

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 301 

DATE 26 Dec 2006 - Tuesday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912P6-06-C-0003 NA

**LABOR HOURS**

**The following labor hours were Reported today:**

| Employer | Labor Classification | | Number of Employees | Hours Worked |
|---|---|---|---|---|
| DLZ | SURVEYOR | | 0.0 | 0.0 |
| Dewind Dewatering | OPERATING ENGINEER | | 0.0 | 0.0 |
| EQM | SAFETY ENGINEER - ON SITE | | 0.0 | 0.0 |
| EQM | SUPER - JOB | | 0.0 | 0.0 |
| EQM | CONSTRUCTION INSPECTOR | | 0.0 | 0.0 |
| EQM | CONSTRUCTION-RECORDS CLERK | | 0.0 | 0.0 |
| Great Lakes Labs | ENVIRON-CNTRL-SYS INST/SER | | 0.0 | 0.0 |
| K&S Engineers | OPERATING ENGINEER | | 0.0 | 0.0 |
| Maintenance Dynamics | OPERATING ENGINEER | | 0.0 | 0.0 |
| Total hours worked to date: | 10,104.5 | Total | 0.0 | 0.0 |

**EQUIPMENT HOURS**

**The following equipment hours were Reported today:**

| Serial Number | Description | | Standby Hours | Operating Hours |
|---|---|---|---|---|
| 234 | Drill Rig | | 0.0 | 0.0 |
| Total operating hours to date: 4,117.5 | | Total | 0.0 | 0.0 |

**ACCIDENT REPORTING** (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 12/27/6 | | 12/27/6 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
302 

DATE
27 Dec 2006 - Wednesday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912P6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Weather Caused No Delay
Temperature Mn 27 °F, Max 42 °F; 0.03 IN Precipitation; No Wind

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
K&S completed borings at station 80+85 and 82+85.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
Ben Letany and two representatives of K&S.

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
Ben Letany conducted a safety tailgate meeting.

**Safety: (Inspections made, Deficiencies noted):**
None

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 302 

DATE 27 Dec 2006 - Wednesday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912P6-06-C-0003 NA

### LABOR HOURS

The following labor hours were Reported today:

| Employer | Labor Classification | | Number of Employees | Hours Worked |
|---|---|---|---|---|
| DLZ | SURVEYOR | | 0.0 | 0.0 |
| Dewind Dewatering | OPERATING ENGINEER | | 0.0 | 0.0 |
| EQM | SAFETY ENGINEER - ON SITE | | 1.0 | 4.0 |
| EQM | SUPER - JOB | | 0.0 | 0.0 |
| EQM | CONSTRUCTION INSPECTOR | | 1.0 | 4.0 |
| EQM | CONSTRUCTION-RECORDS CLERK | | 0.0 | 0.0 |
| Great Lakes Labs | ENVIRON-CNTRL-SYS INST/SER | | 0.0 | 0.0 |
| K&S Engineers | OPERATING ENGINEER | | 2.0 | 16.0 |
| Maintenance Dynamics | OPERATING ENGINEER | | 0.0 | 0.0 |
| Total hours worked to date: | 10,128.5 | Total | 4.0 | 24.0 |

### EQUIPMENT HOURS

The following equipment hours were Reported today:

| Serial Number | Description | | Standby Hours | Operating Hours |
|---|---|---|---|---|
| 234 | Drill Rig | | 0.0 | 8.0 |
| Total operating hours to date: 4,125.5 | | Total | 0.0 | 8.0 |

### ACCIDENT REPORTING (Describe accidents)

No accidents reported today

CONTRACTOR CERTIFICATION On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as noted above.

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 12/28/06 | | 12/28/06 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
303 

DATE
28 Dec 2006 - Thursday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912P6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Weather Caused No Delay
Temperature Min 37 °F, Max 51 °F; No Precipitation; No Wind

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
K&S completed the boring at station 84+85.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
Ben Letany and two representatives of K&S.

**General Comments:**
None. See activities in progress above.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
Ben Letany conducted a safety tailgate meeting.

**Safety: (Inspections made, Deficiencies noted):**
None

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 303 

DATE 28 Dec 2006 - Thursday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912F6-06-C-0003 NA

**LABOR HOURS**

**The following labor hours were Reported today:**

| Employer | Labor Classification | | Number of Employees | Hours Worked |
|---|---|---|---|---|
| DLZ | SURVEYOR | | 0.0 | 0.0 |
| Dewind Dewatering | OPERATING ENGINEER | | 0.0 | 0.0 |
| EQM | SAFETY ENGINEER - ON SITE | | 1.0 | 4.0 |
| EQM | SUPER - JOB | | 0.0 | 0.0 |
| EQM | CONSTRUCTION INSPECTOR | | 1.0 | 4.0 |
| EQM | CONSTRUCTION-RECORDS CLERK | | 0.0 | 0.0 |
| Great Lakes Labs | ENVIRON-CNTRL-SYS INST/SER | | 0.0 | 0.0 |
| K&S Engineers | OPERATING ENGINEER | | 2.0 | 16.0 |
| Maintenance Dynamics | OPERATING ENGINEER | | 0.0 | 0.0 |
| Total hours worked to date: | 10,152.5 | Total | 4.0 | 24.0 |

**EQUIPMENT HOURS**

**The following equipment hours were Reported today:**

| Serial Number | Description | | Standby Hours | Operating Hours |
|---|---|---|---|---|
| 234 | Drill Rig | | 0.0 | 8.0 |
| Total operating hours to date: 4,133.5 | | Total | 0.0 | 8.0 |

**ACCIDENT REPORTING** (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 12/29/06 | | 12/29/06 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
304 

DATE
29 Dec 2006 - Friday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912R6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Weather Caused No Delay
Temperature Mn 41 °F, Max 56 °F; No Precipitation; No Wind

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
No work was performed on site today. Ed Wise and ben Letany went to Great Lakes Laboratories and witnessed the preparation of samples from Stations 85+85, 81+85, and 80+85.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
None.

**General Comments:**
None.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
None.

**Safety: (Inspections made, Deficiencies noted):**
None

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 304 

DATE 29 Dec 2006 - Friday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912P6-06-C-0003 NA

**LABOR HOURS**

**The following labor hours were Reported today:**

| Employer | Labor Classification | | Number of Employees | Hours Worked |
|---|---|---|---|---|
| DLZ | SURVEYOR | | 0.0 | 0.0 |
| Dewind Dewatering | OPERATING ENGINEER | | 0.0 | 0.0 |
| EQM | SAFETY ENGINEER - ON SITE | | 0.0 | 0.0 |
| EQM | SUPER - JOB | | 0.0 | 0.0 |
| EQM | CONSTRUCTION INSPECTOR | | 0.0 | 0.0 |
| EQM | CONSTRUCTION-RECORDS CLERK | | 0.0 | 0.0 |
| Great Lakes Labs | ENVIRON-CNTRL-SYS INST/SER | | 0.0 | 0.0 |
| K&S Engineers | OPERATING ENGINEER | | 0.0 | 0.0 |
| Maintenance Dynamics | OPERATING ENGINEER | | 0.0 | 0.0 |
| Total hours worked to date: | 10,152.5 | Total | 0.0 | 0.0 |

**EQUIPMENT HOURS**

**The following equipment hours were Reported today:**

| Serial Number | Description | | Standby Hours | Operating Hours |
|---|---|---|---|---|
| 234 | Drill Rig | | 0.0 | 0.0 |
| Total operating hours to date: 4,133.5 | | Total | 0.0 | 0.0 |

**ACCIDENT REPORTING** (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment an material used and work performed during this Reporting period are in compliance with the contrac plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 1/2/6 | | 1/2/6 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
311



DATE
05 Jan 2007 - Friday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912P6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Weather Caused No Delay
Temperature Mn 45 °F, Max 54 °F; 0.01 IN Precipitation; No Wind

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
No work was performed on site this week.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
None.

**General Comments:**
None.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
None.

**Safety: (Inspections made, Deficiencies noted):**
None

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 311 

DATE 05 Jan 2007 - Friday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912P6-06-C-0003 NA

**LABOR HOURS**

**No labor hours were Reported today**

Total hours worked to date: 10,152.5

**EQUIPMENT HOURS**

**The following equipment hours were Reported today:**

| Serial Number | Description | | Standby Hours | Operating Hours |
|---|---|---|---|---|
| DEF | Dewind Model 800 Treencher | | 8.0 | 0.0 |
| Total operating hours to date: 4,133.5 | | Total | 8.0 | 0.0 |

**ACCIDENT REPORTING** (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 08 Jan 07 | | 08 Jan 07 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
318



DATE
12 Jan 2007 - Friday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912P6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Weather Caused No Delay
Temperature Mn 37 °F, Max 53 °F; 0.15 IN Precipitation; No Wind

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
No work was performed on site this week.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
None.

**General Comments:**
None.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
None.

**Safety: (Inspections made, Deficiencies noted):**
None

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 318 

DATE 12 Jan 2007 - Friday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912P6-06-C-0003 NA

**LABOR HOURS**

**No labor hours were Reported today**

Total hours worked to date: 10,152.5

**EQUIPMENT HOURS**

**The following equipment hours were Reported today:**

| Serial Number | Description | | Standby Hours | Operating Hours |
|---|---|---|---|---|
| DEF | Dewind Model 800 Treencher | | 8.0 | 0.0 |
| Total operating hours to date: 4,133.5 | | Total | 8.0 | 0.0 |

**ACCIDENT REPORTING** (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 15 Jan 07 | | 15 Jan 07 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
# DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
325



DATE
19 Jan 2007 - Friday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912P6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Weather Caused No Delay
Temperature Min 19 °F, Max 31 °F; No Precipitation; No Wind

## QC NARRATIVES

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
No work was performed on site this week.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
None.

**General Comments:**
None.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
None.

**Safety: (Inspections made, Deficiencies noted):**
None

**Safety: Corrective Action taken:**
None.

## PREP/INITIAL DATES (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

## ACTIVITY START/FINISH

**No activities were started or finished today**

## QC REQUIREMENTS

**No QC requirements were completed today**

## QA/QC PUNCH LIST (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

## CONTRACTORS ON SITE (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 325 

DATE 19 Jan 2007 - Friday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912P6-06-C-0003 NA

**LABOR HOURS**

**No labor hours were Reported today**

Total hours worked to date: 10,152.5

**EQUIPMENT HOURS**

**The following equipment hours were Reported today:**

| Serial Number | Description | | Standby Hours | Operating Hours |
|---|---|---|---|---|
| DEF | Dewind Model 800 Treencher | | 8.0 | 0.0 |
| Total operating hours to date: 4,133.5 | | Total | 8.0 | 0.0 |

**ACCIDENT REPORTING** (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENTS INITIALS | DATE |
|---|---|---|---|
| | 1/15/07 | | 1/15/07 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
# DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
332 

DATE
26 Jan 2007 - Friday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912P6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Weather Caused No Delay
Temperature Min 19 °F, Max 45 °F; No Precipitation; No Wind

## QC NARRATIVES

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
No work was performed on site this week.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
None.

**General Comments:**
None.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
None.

**Safety: (Inspections made, Deficiencies noted):**
None

**Safety: Corrective Action taken:**
None.

## PREP/INITIAL DATES (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

## ACTIVITY START/FINISH

**No activities were started or finished today**

## QC REQUIREMENTS

**No QC requirements were completed today**

## QA/QC PUNCH LIST (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

## CONTRACTORS ON SITE (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

| CONTRACTORS QUALITY CONTROL REPORT (QCR)<br>DAILY LOG OF CONSTRUCTION - CIVIL | REPORT NUMBER<br>332 Page 2 of 2<br>DATE<br>26 Jan 2007 - Friday |
|---|---|
| PROJECT<br>Indiana Harbor CDF, Slurry Wall Gaps | CONTRACT NUMBER<br>W912P6-06-C-0003 NA |

**LABOR HOURS**

**No labor hours were Reported today**

Total hours worked to date: 10,152.5

**EQUIPMENT HOURS**

**The following equipment hours were Reported today:**

| Serial Number | Description | | Standby Hours | Operating Hours |
|---|---|---|---|---|
| DEF | Dewind Model 800 Treencher | | 8.0 | 0.0 |
| Total operating hours to date: 4,133.5 | | Total | 8.0 | 0.0 |

**ACCIDENT REPORTING** (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contrac plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 1/29/07 | | 1/29/07 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
335 

DATE
29 Jan 2007 - Monday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912F6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Weather Caused No Delay
Temperature Min 11 °F, Max 30 °F; No Precipitation; No Wind

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
No work was performed on site today.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
None.

**General Comments:**
None.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
None.

**Safety: (Inspections made, Deficiencies noted):**
None

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 335 

DATE 29 Jan 2007 - Monday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912P6-06-C-0003 NA

**LABOR HOURS**

**No labor hours were Reported today**

Total hours worked to date: 10,152.5

**EQUIPMENT HOURS**

**The following equipment hours were Reported today:**

| Serial Number | Description | | Standby Hours | Operating Hours |
|---|---|---|---|---|
| DEF | Dewind Model 800 Treencher | | 8.0 | 0.0 |
| Total operating hours to date: 4,133.5 | | Total | 8.0 | 0.0 |

**ACCIDENT REPORTING** (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contrac plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 1/30/07 | | 1/30/07 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 336 

DATE 30 Jan 2007 - Tuesday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912P6-06-C-0003 NA

CONTRACTOR Environmental Quality Management Inc

WEATHER
Weather Caused No Delay
Temperature Min 10 °F, Max 21 °F; No Precipitation; No Wind

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
116 tons of 3x2 slag and 76 tons of 53's were received and used to construct an access road to the area where the stone toe berm will be placed. A staging pad was also constructed. Thatcher assembled about 200 feet of discharge piping for the temporary SSP dewatering system Thatcher cut three of the six weep holes.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
William Brunston (EQ), Ben Letany (EQ), three representatives of Griffin, two representatives of IES, two representatives of Thatcher, and one represntative of Task Force.

**General Comments:**
None.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
Ben Letany conducted a safety tail gate meeting.

**Safety: (Inspections made, Deficiencies noted):**
None

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**Today was the first day on site for the following 2 contractors:**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 336 

DATE 30 Jan 2007 - Tuesday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912P6-06-C-0003 NA

IES
Thatcher Constructio

**No contractors had their last day on site today**

**LABOR HOURS**

**The following labor hours were Reported today:**

| Employer | Labor Classification | | Number of Employees | Hours Worked |
|---|---|---|---|---|
| DLZ | SURVEYOR | | 0.0 | 0.0 |
| Dewind Dewatering | OPERATING ENGINEER | | 0.0 | 0.0 |
| EQM | SAFETY ENGINEER - ON SITE | | 1.0 | 9.0 |
| EQM | SUPER - JOB | | 0.0 | 0.0 |
| EQM | CONSTRUCTION INSPECTOR | | 1.0 | 8.0 |
| EQM | CONSTRUCTION-RECORDS CLERK | | 0.0 | 0.0 |
| Griffin | OPERATING ENGINEER | | 3.0 | 18.0 |
| IES | OPERATING ENGINEER | | 2.0 | 18.0 |
| K&S Engineers | OPERATING ENGINEER | | 0.0 | 0.0 |
| Task Force | TRAFFIC CONTROL SIGNALER | | 1.0 | 8.0 |
| Thatcher Constructio | LABORER, STEEL HANDLING | | 2.0 | 2.0 |
| Total hours worked to date: | 10,215.5 | Total | 10.0 | 63.0 |

**EQUIPMENT HOURS**

**The following equipment hours were Reported today:**

| Serial Number | Description | | Standby Hours | Operating Hours |
|---|---|---|---|---|
| DEF | Dewind Model 800 Treencher | | 8.0 | 0.0 |
| 2345 | Medium Excavator | | 8.0 | 0.0 |
| 3456 | Small Excavator | | 8.0 | 0.0 |
| 211 | Long Stick Excavator | | 8.0 | 0.0 |
| 212 | 3 CY Loader | | 0.0 | 8.0 |
| Total operating hours to date: 4,141.5 | | Total | 32.0 | 8.0 |

**ACCIDENT REPORTING** (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 1/30/07 | | 1/30/07 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
# DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
337 

DATE
31 Jan 2007 - Wednesday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912P6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Weather Caused No Delay
Temperature Min 6 °F, Max 23 °F; No Precipitation; No Wind

## QC NARRATIVES

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
A. Rundzaitis and W. Brunston located the 65 ft of wall to receive the toe berm. Approximately 1177 tons of CA-1 limestone was received. About 500 tons of this was placed at the center point of the SSP wall. Griffin received 4" hdpe pipe and welded about 300 to 400 feet for th dwatering system.
It was too cold to operate the ambient air monitoring system. No real time particulate data was collected. However, based upon visual observations it was noted that dust was minimal due to EQ's operations.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
William Brunston (EQ), Ben Letany (EQ), three representatives of Griffin, four representatives of IES, and two represntatives of Task Force.

**General Comments:**
None.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
Ben Letany conducted a safety tail gate meeting.

**Safety: (Inspections made, Deficiencies noted):**
None

**Safety: Corrective Action taken:**
None.

## PREP/INITIAL DATES (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

## ACTIVITY START/FINISH

**No activities were started or finished today**

## QC REQUIREMENTS

**No QC requirements were completed today**

## QA/QC PUNCH LIST (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 337 

DATE 31 Jan 2007 - Wednesday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912P6-06-C-0003 NA

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

**LABOR HOURS**

**The following labor hours were Reported today:**

| Employer | Labor Classification | | Number of Employees | Hours Worked |
|---|---|---|---|---|
| DLZ | SURVEYOR | | 0.0 | 0.0 |
| Dewind Dewatering | OPERATING ENGINEER | | 0.0 | 0.0 |
| EQM | SAFETY ENGINEER - ON SITE | | 1.0 | 10.0 |
| EQM | SUPER - JOB | | 0.0 | 0.0 |
| EQM | CONSTRUCTION INSPECTOR | | 1.0 | 10.0 |
| EQM | CONSTRUCTION-RECORDS CLERK | | 0.0 | 0.0 |
| Griffin | OPERATING ENGINEER | | 3.0 | 15.0 |
| IES | LABORERS | | 2.0 | 20.0 |
| IES | OPERATING ENGINEER | | 2.0 | 20.0 |
| K&S Engineers | OPERATING ENGINEER | | 0.0 | 0.0 |
| Task Force | TRAFFIC CONTROL SIGNALER | | 2.0 | 14.0 |
| Thatcher Constructio | LABORER, STEEL HANDLING | | 0.0 | 0.0 |
| Total hours worked to date: | 10,304.5 | Total | 11.0 | 89.0 |

**EQUIPMENT HOURS**

**The following equipment hours were Reported today:**

| Serial Number | Description | | Standby Hours | Operating Hours |
|---|---|---|---|---|
| DEF | Dewind Model 800 Treencher | | 8.0 | 0.0 |
| 2345 | Medium Excavator | | 8.0 | 0.0 |
| 3456 | Small Excavator | | 8.0 | 0.0 |
| 211 | Long Stick Excavator | | 0.0 | 10.0 |
| 212 | 3 CY Loader | | 0.0 | 10.0 |
| Total operating hours to date: 4,161.5 | | Total | 24.0 | 20.0 |

**ACCIDENT REPORTING** (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contrac plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 2/1/7 | | 2/1/7 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
338



DATE
01 Feb 2007 - Thursday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912P6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Weather Caused No Delay
Temperature Min 16 °F, Max 31 °F; 0.04 IN Precipitation; No Wind

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
About 1641 tons of CA-1 limestone was received today for a total of 2818 tons. About 800-900 tons was placed for a toal of about 1400 to 1500 tons. The material appears to be holding in place much better than the previous effort. The rework of the eastern segment of the slurry wal is scheduled for Monday 04Feb07.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
William Brunston (EQ), Ben Letany (EQ), three representatives of Griffin, four representatives of IES, and two represntatives of Task Force.

**General Comments:**
None.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
Ben Letany conducted a safety tail gate meeting.

**Safety: (Inspections made, Deficiencies noted):**
None

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 338 

DATE 01 Feb 2007 - Thursday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912F6-06-C-0003 NA

### LABOR HOURS

**The following labor hours were Reported today:**

| Employer | Labor Classification | | Number of Employees | Hours Worked |
|---|---|---|---|---|
| DLZ | SURVEYOR | | 0.0 | 0.0 |
| Dewind Dewatering | OPERATING ENGINEER | | 0.0 | 0.0 |
| EQM | SAFETY ENGINEER - ON SITE | | 1.0 | 10.0 |
| EQM | SUPER - JOB | | 0.0 | 0.0 |
| EQM | CONSTRUCTION INSPECTOR | | 1.0 | 10.0 |
| EQM | CONSTRUCTION-RECORDS CLERK | | 0.0 | 0.0 |
| Griffin | OPERATING ENGINEER | | 3.0 | 18.0 |
| IES | LABORERS | | 2.0 | 20.0 |
| IES | OPERATING ENGINEER | | 2.0 | 20.0 |
| K&S Engineers | OPERATING ENGINEER | | 0.0 | 0.0 |
| Task Force | TRAFFIC CONTROL SIGNALER | | 2.0 | 14.0 |
| Thatcher Constructio | LABORER, STEEL HANDLING | | 0.0 | 0.0 |
| Total hours worked to date: | 10,396.5 | Total | 11.0 | 92.0 |

### EQUIPMENT HOURS

**The following equipment hours were Reported today:**

| Serial Number | Description | | Standby Hours | Operating Hours |
|---|---|---|---|---|
| DEF | Dewind Model 800 Treencher | | 8.0 | 0.0 |
| 2345 | Medium Excavator | | 8.0 | 0.0 |
| 3456 | Small Excavator | | 8.0 | 0.0 |
| 211 | Long Stick Excavator | | 0.0 | 10.0 |
| 212 | 3 CY Loader | | 0.0 | 10.0 |
| Total operating hours to date: 4,181.5 | | Total | 24.0 | 20.0 |

### ACCIDENT REPORTING (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contrac plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 02 Feb 07 | | 02 Feb 07 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
339 

DATE
02 Feb 2007 - Friday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912P6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Weather Caused No Delay
Temperature Min 8 °F, Max 16 °F; No Precipitation; No Wind

QC NARRATIVES

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
No CA-1 limestone was received today. A total of 2818 tons has been delivered. About 800-900 tons was placed for a toal of about 2200 to 2300 tons. The material appears to be holding in place much better than the previous effort.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
William Brunston (EQ), Ben Letany (EQ), three representatives of IES (two operators and one laborer, and two represntatives of Task Force.

**General Comments:**
None.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
Ben Letany conducted a safety tail gate meeting.

**Safety: (Inspections made, Deficiencies noted):**
None

**Safety: Corrective Action taken:**
None.

PREP/INITIAL DATES (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

ACTIVITY START/FINISH

**No activities were started or finished today**

QC REQUIREMENTS

**No QC requirements were completed today**

QA/QC PUNCH LIST (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

CONTRACTORS ON SITE (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 339 

DATE 02 Feb 2007 - Friday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912P6-06-C-0003 NA

### LABOR HOURS

**The following labor hours were Reported today:**

| Employer | Labor Classification | | Number of Employees | Hours Worked |
|---|---|---|---|---|
| DLZ | SURVEYOR | | 0.0 | 0.0 |
| Dewind Dewatering | OPERATING ENGINEER | | 0.0 | 0.0 |
| EQM | SAFETY ENGINEER - ON SITE | | 1.0 | 9.0 |
| EQM | SUPER - JOB | | 0.0 | 0.0 |
| EQM | CONSTRUCTION INSPECTOR | | 1.0 | 9.0 |
| EQM | CONSTRUCTION-RECORDS CLERK | | 0.0 | 0.0 |
| Griffin | OPERATING ENGINEER | | 0.0 | 0.0 |
| IES | LABORERS | | 1.0 | 9.0 |
| IES | OPERATING ENGINEER | | 2.0 | 18.0 |
| K&S Engineers | OPERATING ENGINEER | | 0.0 | 0.0 |
| Task Force | TRAFFIC CONTROL SIGNALER | | 2.0 | 14.0 |
| Thatcher Constructio | LABORER, STEEL HANDLING | | 0.0 | 0.0 |
| Total hours worked to date: | 10,455.5 | Total | 7.0 | 59.0 |

### EQUIPMENT HOURS

**The following equipment hours were Reported today:**

| Serial Number | Description | | Standby Hours | Operating Hours |
|---|---|---|---|---|
| DEF | Dewind Model 800 Treencher | | 8.0 | 0.0 |
| 2345 | Medium Excavator | | 8.0 | 0.0 |
| 3456 | Small Excavator | | 8.0 | 0.0 |
| 211 | Long Stick Excavator | | 0.0 | 9.0 |
| 212 | 3 CY Loader | | 0.0 | 9.0 |
| Total operating hours to date: | 4,199.5 | Total | 24.0 | 18.0 |

### ACCIDENT REPORTING (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contrac plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 03feb07 | | 03feb07 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
340 

DATE
03 Feb 2007 - Saturday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912P6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Weather Caused No Delay
Temperature Min -1 °F, Max 16 °F; No Precipitation; No Wind

QC NARRATIVES

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
No CA-1 limestone was received today. A total of 2818 tons has been delivered. About 500 tons was placed for a toal of about 2700 tons. The material appears to be holding in place much better than the previous effort.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
Ben Letany (EQ), three representatives of IES (two operators and one laborer, and two represntatives of Task Force.

**General Comments:**
None.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
Ben Letany conducted a safety tail gate meeting.

**Safety: (Inspections made, Deficiencies noted):**
None

**Safety: Corrective Action taken:**
None.

PREP/INITIAL DATES (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

ACTIVITY START/FINISH

**No activities were started or finished today**

QC REQUIREMENTS

**No QC requirements were completed today**

QA/QC PUNCH LIST (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

CONTRACTORS ON SITE (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 340 

DATE 03 Feb 2007 - Saturday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912P6-06-C-0003 NA

### LABOR HOURS

**The following labor hours were Reported today:**

| Employer | Labor Classification | | Number of Employees | Hours Worked |
|---|---|---|---|---|
| DLZ | SURVEYOR | | 0.0 | 0.0 |
| Dewind Dewatering | OPERATING ENGINEER | | 0.0 | 0.0 |
| EQM | SAFETY ENGINEER - ON SITE | | 1.0 | 8.0 |
| EQM | SUPER - JOB | | 0.0 | 0.0 |
| EQM | CONSTRUCTION INSPECTOR | | 0.0 | 0.0 |
| EQM | CONSTRUCTION-RECORDS CLERK | | 0.0 | 0.0 |
| Griffin | OPERATING ENGINEER | | 0.0 | 0.0 |
| IES | LABORERS | | 1.0 | 8.0 |
| IES | OPERATING ENGINEER | | 2.0 | 16.0 |
| K&S Engineers | OPERATING ENGINEER | | 0.0 | 0.0 |
| Task Force | TRAFFIC CONTROL SIGNALER | | 2.0 | 14.0 |
| Thatcher Constructio | LABORER, STEEL HANDLING | | 0.0 | 0.0 |
| Total hours worked to date: | 10,501.5 | Total | 6.0 | 46.0 |

### EQUIPMENT HOURS

**The following equipment hours were Reported today:**

| Serial Number | Description | | Standby Hours | Operating Hours |
|---|---|---|---|---|
| DEF | Dewind Model 800 Treencher | | 8.0 | 0.0 |
| 2345 | Medium Excavator | | 8.0 | 0.0 |
| 3456 | Small Excavator | | 8.0 | 0.0 |
| 211 | Long Stick Excavator | | 0.0 | 8.0 |
| 212 | 3 CY Loader | | 0.0 | 8.0 |
| Total operating hours to date: 4,215.5 | | Total | 24.0 | 16.0 |

### ACCIDENT REPORTING (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 04 Feb 07 | | 04 Feb 07 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
341 

DATE
04 Feb 2007 - Sunday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912P6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Weather Caused No Delay
Temperature Min -3 °F, Max 7 °F; No Precipitation; No Wind

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
No constructuion work was performed.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
Three represntatives of Task Force.

**General Comments:**
None.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
None

**Safety: (Inspections made, Deficiencies noted):**
None

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 341 

DATE 04 Feb 2007 - Sunday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912P6-06-C-0003 NA

### LABOR HOURS

**The following labor hours were Reported today:**

| Employer | Labor Classification | | Number of Employees | Hours Worked |
|---|---|---|---|---|
| DLZ | SURVEYOR | | 0.0 | 0.0 |
| Dewind Dewatering | OPERATING ENGINEER | | 0.0 | 0.0 |
| EQM | SAFETY ENGINEER - ON SITE | | 0.0 | 0.0 |
| EQM | SUPER - JOB | | 0.0 | 0.0 |
| EQM | CONSTRUCTION INSPECTOR | | 0.0 | 0.0 |
| EQM | CONSTRUCTION-RECORDS CLERK | | 0.0 | 0.0 |
| Griffin | OPERATING ENGINEER | | 0.0 | 0.0 |
| IES | LABORERS | | 0.0 | 0.0 |
| IES | OPERATING ENGINEER | | 0.0 | 0.0 |
| K&S Engineers | OPERATING ENGINEER | | 0.0 | 0.0 |
| Task Force | TRAFFIC CONTROL SIGNALER | | 2.0 | 24.0 |
| Thatcher Constructio | LABORER, STEEL HANDLING | | 0.0 | 0.0 |
| Total hours worked to date: | 10,525.5 | Total | 2.0 | 24.0 |

### EQUIPMENT HOURS

**The following equipment hours were Reported today:**

| Serial Number | Description | | Standby Hours | Operating Hours |
|---|---|---|---|---|
| DEF | Dewind Model 800 Treencher | | 8.0 | 0.0 |
| 2345 | Medium Excavator | | 8.0 | 0.0 |
| 3456 | Small Excavator | | 8.0 | 0.0 |
| 211 | Long Stick Excavator | | 8.0 | 0.0 |
| 212 | 3 CY Loader | | 8.0 | 0.0 |
| Total operating hours to date: 4,215.5 | | Total | 40.0 | 0.0 |

### ACCIDENT REPORTING (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contrac plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 05 Feb 07 | | 05 Feb 07 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
342 

DATE
05 Feb 2007 - Monday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912P6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Weather Caused Critical Delay
Temperature Min -6 °F, Max 10 °F; No Precipitation; No Wind

QC NARRATIVES

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
Extremely cold weather caused a delay in work. 178 tons of CA-1 limestone was received today. A total of 2996 tons has been delivered. About 150 tons was placed for a toal of about 2850 tons. The material appears to be holding in place much better than the previous effort.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
Ben Letany (EQ), three representatives of IES (two operators and one laborer, and two represntatives of Task Force.

**General Comments:**
None.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
Ben Letany conducted a safety tail gate meeting.

**Safety: (Inspections made, Deficiencies noted):**
None

**Safety: Corrective Action taken:**
None.

PREP/INITIAL DATES (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

ACTIVITY START/FINISH

**No activities were started or finished today**

QC REQUIREMENTS

**No QC requirements were completed today**

QA/QC PUNCH LIST (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

CONTRACTORS ON SITE (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 342 

DATE 05 Feb 2007 - Monday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912P6-06-C-0003 NA

**LABOR HOURS**

**The following labor hours were Reported today:**

| Employer | Labor Classification | | Number of Employees | Hours Worked |
|---|---|---|---|---|
| DLZ | SURVEYOR | | 0.0 | 0.0 |
| Dewind Dewatering | OPERATING ENGINEER | | 0.0 | 0.0 |
| EQM | SAFETY ENGINEER - ON SITE | | 1.0 | 8.0 |
| EQM | SUPER - JOB | | 0.0 | 0.0 |
| EQM | CONSTRUCTION INSPECTOR | | 0.0 | 0.0 |
| EQM | CONSTRUCTION-RECORDS CLERK | | 0.0 | 0.0 |
| Griffin | OPERATING ENGINEER | | 0.0 | 0.0 |
| IES | LABORERS | | 1.0 | 8.0 |
| IES | OPERATING ENGINEER | | 2.0 | 16.0 |
| K&S Engineers | OPERATING ENGINEER | | 0.0 | 0.0 |
| Task Force | TRAFFIC CONTROL SIGNALER | | 2.0 | 14.0 |
| Thatcher Constructio | LABORER, STEEL HANDLING | | 0.0 | 0.0 |
| Total hours worked to date: | 10,571.5 | Total | 6.0 | 46.0 |

**EQUIPMENT HOURS**

**The following equipment hours were Reported today:**

| Serial Number | Description | | Standby Hours | Operating Hours |
|---|---|---|---|---|
| DEF | Dewind Model 800 Treencher | | 8.0 | 0.0 |
| 2345 | Medium Excavator | | 8.0 | 0.0 |
| 3456 | Small Excavator | | 8.0 | 0.0 |
| 211 | Long Stick Excavator | | 0.0 | 8.0 |
| 212 | 3 CY Loader | | 0.0 | 8.0 |
| Total operating hours to date: | 4,231.5 | Total | 24.0 | 16.0 |

**ACCIDENT REPORTING** (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contrac plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 06 Feb 07 | | 06 Feb 07 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
343 

DATE
06 Feb 2007 - Tuesday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912P6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Weather Caused No Delay
Temperature Min -3 °F, Max 12 °F; 0.16 IN Precipitation; No Wind

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
No new limestone was received. EQ completed installation of the stone. A total of 2996 tons was placed.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
Ed Wise (EQ). Ben Letany (EQ), three representatives of IES (two operators and one laborer, and two represntatives of Task Force.

**General Comments:**
None.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
Ben Letany conducted a safety tail gate meeting.

**Safety: (Inspections made, Deficiencies noted):**
None

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 343 

DATE 06 Feb 2007 - Tuesday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912P6-06-C-0003 NA

### LABOR HOURS

**The following labor hours were Reported today:**

| Employer | Labor Classification | | Number of Employees | Hours Worked |
|---|---|---|---|---|
| DLZ | SURVEYOR | | 0.0 | 0.0 |
| Dewind Dewatering | OPERATING ENGINEER | | 0.0 | 0.0 |
| EQM | SAFETY ENGINEER - ON SITE | | 1.0 | 8.0 |
| EQM | SUPER - JOB | | 0.0 | 0.0 |
| EQM | CONSTRUCTION INSPECTOR | | 1.0 | 8.0 |
| EQM | CONSTRUCTION-RECORDS CLERK | | 0.0 | 0.0 |
| Griffin | OPERATING ENGINEER | | 0.0 | 0.0 |
| IES | LABORERS | | 1.0 | 8.0 |
| IES | OPERATING ENGINEER | | 2.0 | 16.0 |
| K&S Engineers | OPERATING ENGINEER | | 0.0 | 0.0 |
| Task Force | TRAFFIC CONTROL SIGNALER | | 2.0 | 14.0 |
| Thatcher Constructio | LABORER, STEEL HANDLING | | 0.0 | 0.0 |
| Total hours worked to date: | 10,625.5 | Total | 7.0 | 54.0 |

### EQUIPMENT HOURS

**The following equipment hours were Reported today:**

| Serial Number | Description | | Standby Hours | Operating Hours |
|---|---|---|---|---|
| DEF | Dewind Model 800 Treencher | | 8.0 | 0.0 |
| 2345 | Medium Excavator | | 8.0 | 0.0 |
| 3456 | Small Excavator | | 8.0 | 0.0 |
| 211 | Long Stick Excavator | | 0.0 | 8.0 |
| 212 | 3 CY Loader | | 0.0 | 8.0 |
| Total operating hours to date: 4,247.5 | | Total | 24.0 | 16.0 |

### ACCIDENT REPORTING (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 07 Feb 07 | | 07 Feb 07 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
348 

DATE
11 Feb 2007 - Sunday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912P6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Weather Caused No Delay
Temperature Min 5 °F, Max 31 °F; No Precipitation; No Wind

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
No construction work was performed from 07Feb07 to 11Feb07.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
None.

**General Comments:**
None.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
None.

**Safety: (Inspections made, Deficiencies noted):**
None

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 348 

DATE 11 Feb 2007 - Sunday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912P6-06-C-0003 NA

### LABOR HOURS

**The following labor hours were Reported today:**

| Employer | Labor Classification | | Number of Employees | Hours Worked |
|---|---|---|---|---|
| DLZ | SURVEYOR | | 0.0 | 0.0 |
| Dewind Dewatering | OPERATING ENGINEER | | 0.0 | 0.0 |
| EQM | SAFETY ENGINEER - ON SITE | | 0.0 | 0.0 |
| EQM | SUPER - JOB | | 0.0 | 0.0 |
| EQM | CONSTRUCTION INSPECTOR | | 0.0 | 0.0 |
| EQM | CONSTRUCTION-RECORDS CLERK | | 0.0 | 0.0 |
| Griffin | OPERATING ENGINEER | | 0.0 | 0.0 |
| IES | LABORERS | | 0.0 | 0.0 |
| IES | OPERATING ENGINEER | | 0.0 | 0.0 |
| K&S Engineers | OPERATING ENGINEER | | 0.0 | 0.0 |
| Task Force | TRAFFIC CONTROL SIGNALER | | 0.0 | 0.0 |
| Thatcher Constructio | LABORER, STEEL HANDLING | | 0.0 | 0.0 |
| Total hours worked to date: | 10,625.5 | Total | 0.0 | 0.0 |

### EQUIPMENT HOURS

**The following equipment hours were Reported today:**

| Serial Number | Description | | Standby Hours | Operating Hours |
|---|---|---|---|---|
| DEF | Dewind Model 800 Treencher | | 8.0 | 0.0 |
| 2345 | Medium Excavator | | 8.0 | 0.0 |
| 3456 | Small Excavator | | 8.0 | 0.0 |
| Total operating hours to date: | 4,247.5 | Total | 24.0 | 0.0 |

### ACCIDENT REPORTING (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 12 Feb 07 | | 12 Feb 07 |

| CONTRACTORS QUALITY CONTROL REPORT (QCR)<br>DAILY LOG OF CONSTRUCTION - CIVIL | REPORT NUMBER<br>355 Page 1 of 2<br>DATE<br>18 Feb 2007 - Sunday |
|---|---|
| PROJECT<br>Indiana Harbor CDF, Slurry Wall Gaps | CONTRACT NUMBER<br>W912P6-06-C-0003 NA |
| CONTRACTOR<br>Environmental Quality Management Inc | WEATHER<br>Weather Caused No Delay<br>Temperature Min 11 °F, Max 28 °F; No Precipitation; No Wind |

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
No construction work was performed from 12Feb07 to 18Feb07.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
None.

**General Comments:**
None.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
None.

**Safety: (Inspections made, Deficiencies noted):**
None

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 355



DATE 18 Feb 2007 - Sunday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912P6-06-C-0003 NA

### LABOR HOURS

**The following labor hours were Reported today:**

| Employer | Labor Classification | | Number of Employees | Hours Worked |
|---|---|---|---|---|
| DLZ | SURVEYOR | | 0.0 | 0.0 |
| Dewind Dewatering | OPERATING ENGINEER | | 0.0 | 0.0 |
| EQM | SAFETY ENGINEER - ON SITE | | 0.0 | 0.0 |
| EQM | SUPER - JOB | | 0.0 | 0.0 |
| EQM | CONSTRUCTION INSPECTOR | | 0.0 | 0.0 |
| EQM | CONSTRUCTION-RECORDS CLERK | | 0.0 | 0.0 |
| Griffin | OPERATING ENGINEER | | 0.0 | 0.0 |
| IES | LABORERS | | 0.0 | 0.0 |
| IES | OPERATING ENGINEER | | 0.0 | 0.0 |
| K&S Engineers | OPERATING ENGINEER | | 0.0 | 0.0 |
| Task Force | TRAFFIC CONTROL SIGNALER | | 0.0 | 0.0 |
| Thatcher Constructio | LABORER, STEEL HANDLING | | 0.0 | 0.0 |
| Total hours worked to date: | 10,625.5 | Total | 0.0 | 0.0 |

### EQUIPMENT HOURS

**The following equipment hours were Reported today:**

| Serial Number | Description | | Standby Hours | Operating Hours |
|---|---|---|---|---|
| DEF | Dewind Model 800 Treencher | | 8.0 | 0.0 |
| 2345 | Medium Excavator | | 8.0 | 0.0 |
| 3456 | Small Excavator | | 8.0 | 0.0 |
| Total operating hours to date: 4,247.5 | | Total | 24.0 | 0.0 |

### ACCIDENT REPORTING (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 19 Feb 07 | | 19 Feb 07 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
356 

DATE
19 Feb 2007 - Monday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912P6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Weather Caused No Delay
Temperature Min 12 °F, Max 48 °F; No Precipitation; No Wind

QC NARRATIVES

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
Dewind arrived onsite and completed preparation for reworking the eastern segment from station 43+20 to station 44+50.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
Ed Wise (EQ), and three representatives of Dewind (three operators).

**General Comments:**
None.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
Ed Wise conducted a safety tail gate meeting.

**Safety: (Inspections made, Deficiencies noted):**
None

**Safety: Corrective Action taken:**
None.

PREP/INITIAL DATES (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

ACTIVITY START/FINISH

**No activities were started or finished today**

QC REQUIREMENTS

**No QC requirements were completed today**

QA/QC PUNCH LIST (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

CONTRACTORS ON SITE (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 356 

DATE 19 Feb 2007 - Monday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912P6-06-C-0003 NA

### LABOR HOURS

**The following labor hours were Reported today:**

| Employer | Labor Classification | | Number of Employees | Hours Worked |
|---|---|---|---|---|
| DLZ | SURVEYOR | | 0.0 | 0.0 |
| Dewind Dewatering | OPERATING ENGINEER | | 3.0 | 8.0 |
| EQM | SAFETY ENGINEER - ON SITE | | 1.0 | 4.0 |
| EQM | SUPER - JOB | | 0.0 | 0.0 |
| EQM | CONSTRUCTION INSPECTOR | | 1.0 | 4.0 |
| EQM | CONSTRUCTION-RECORDS CLERK | | 0.0 | 0.0 |
| Griffin | OPERATING ENGINEER | | 0.0 | 0.0 |
| IES | LABORERS | | 0.0 | 0.0 |
| IES | OPERATING ENGINEER | | 0.0 | 0.0 |
| K&S Engineers | OPERATING ENGINEER | | 0.0 | 0.0 |
| Task Force | TRAFFIC CONTROL SIGNALER | | 2.0 | 14.0 |
| Thatcher Constructio | LABORER, STEEL HANDLING | | 0.0 | 0.0 |
| Total hours worked to date: | 10,655.5 | Total | 7.0 | 30.0 |

### EQUIPMENT HOURS

**The following equipment hours were Reported today:**

| Serial Number | Description | | Standby Hours | Operating Hours |
|---|---|---|---|---|
| DEF | Dewind Model 800 Treencher | | 8.0 | 0.0 |
| 2345 | Medium Excavator | | 4.0 | 4.0 |
| 3456 | Small Excavator | | 4.0 | 4.0 |
| 212 | 3 CY Loader | | 4.0 | 4.0 |
| Total operating hours to date: 4,259.5 | | Total | 20.0 | 12.0 |

### ACCIDENT REPORTING (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 20 Feb 07 | | 20 Feb 07 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
357 

DATE
20 Feb 2007 - Tuesday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912P6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Weather Caused No Delay
Temperature Min 26 °F, Max 50 °F; 0.01 IN Precipitation; No Wind

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
Dewind completed reworking the eastern segment from station 43+20 to station 44+50. They began disassembly of their equipment.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
Ed Wise (EQ), and six representatives of Dewind (three operators each Dewind and Local 150).

**General Comments:**
None.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
Ed Wise conducted a safety tail gate meeting.

**Safety: (Inspections made, Deficiencies noted):**
None

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 357 

DATE 20 Feb 2007 - Tuesday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912P6-06-C-0003 NA

### LABOR HOURS

**The following labor hours were Reported today:**

| Employer | Labor Classification | | Number of Employees | Hours Worked |
|---|---|---|---|---|
| DLZ | SURVEYOR | | 0.0 | 0.0 |
| Dewind Dewatering | OPERATING ENGINEER | | 6.0 | 60.0 |
| EQM | SAFETY ENGINEER - ON SITE | | 1.0 | 5.0 |
| EQM | SUPER - JOB | | 0.0 | 0.0 |
| EQM | CONSTRUCTION INSPECTOR | | 1.0 | 5.0 |
| EQM | CONSTRUCTION-RECORDS CLERK | | 0.0 | 0.0 |
| Griffin | OPERATING ENGINEER | | 0.0 | 0.0 |
| IES | LABORERS | | 0.0 | 0.0 |
| IES | OPERATING ENGINEER | | 0.0 | 0.0 |
| K&S Engineers | OPERATING ENGINEER | | 0.0 | 0.0 |
| Task Force | TRAFFIC CONTROL SIGNALER | | 0.0 | 0.0 |
| Thatcher Constructio | LABORER, STEEL HANDLING | | 0.0 | 0.0 |
| Total hours worked to date: | 10,725.5 | Total | 8.0 | 70.0 |

### EQUIPMENT HOURS

**The following equipment hours were Reported today:**

| Serial Number | Description | | Standby Hours | Operating Hours |
|---|---|---|---|---|
| DEF | Dewind Model 800 Treencher | | 8.0 | 8.0 |
| 2345 | Medium Excavator | | 0.0 | 8.0 |
| 3456 | Small Excavator | | 0.0 | 8.0 |
| 212 | 3 CY Loader | | 0.0 | 8.0 |
| Total operating hours to date: 4,291.5 | | Total | 8.0 | 32.0 |

### ACCIDENT REPORTING (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contrac plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENTS INITIALS | DATE |
|---|---|---|---|
| | 21 Feb 07 | | 21 Feb 07 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
358 

DATE
21 Feb 2007 - Wednesday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912P6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Weather Caused No Delay
Temperature Min 27 °F, Max 50 °F; No Precipitation; No Wind

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
Dewind completed requipment decontamination and disassembly. They demobilized from the site. K&S advanced the verification boring at Station 43+50.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
Ed Wise (EQ), two representatives of K&S, and six representatives of Dewind (three operators each Dewind and Local 150).

**General Comments:**
None.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
Ed Wise conducted a safety tail gate meeting.

**Safety: (Inspections made, Deficiencies noted):**
None

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 358 

DATE 21 Feb 2007 - Wednesday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912P6-06-C-0003 NA

### LABOR HOURS

**The following labor hours were Reported today:**

| Employer | Labor Classification | | Number of Employees | Hours Worked |
|---|---|---|---|---|
| DLZ | SURVEYOR | | 0.0 | 0.0 |
| Dewind Dewatering | OPERATING ENGINEER | | 6.0 | 48.0 |
| EQM | SAFETY ENGINEER - ON SITE | | 1.0 | 4.0 |
| EQM | SUPER - JOB | | 0.0 | 0.0 |
| EQM | CONSTRUCTION INSPECTOR | | 1.0 | 4.0 |
| EQM | CONSTRUCTION-RECORDS CLERK | | 0.0 | 0.0 |
| Griffin | OPERATING ENGINEER | | 0.0 | 0.0 |
| IES | LABORERS | | 0.0 | 0.0 |
| IES | OPERATING ENGINEER | | 0.0 | 0.0 |
| K&S Engineers | OPERATING ENGINEER | | 2.0 | 8.0 |
| Task Force | TRAFFIC CONTROL SIGNALER | | 0.0 | 0.0 |
| Thatcher Constructio | LABORER, STEEL HANDLING | | 0.0 | 0.0 |
| Total hours worked to date: | 10,789.5 | Total | 10.0 | 64.0 |

### EQUIPMENT HOURS

**The following equipment hours were Reported today:**

| Serial Number | Description | | Standby Hours | Operating Hours |
|---|---|---|---|---|
| DEF | Dewind Model 800 Treencher | | 8.0 | 0.0 |
| 2345 | Medium Excavator | | 4.0 | 4.0 |
| 3456 | Small Excavator | | 4.0 | 4.0 |
| 212 | 3 CY Loader | | 4.0 | 4.0 |
| Total operating hours to date: 4,303.5 | | Total | 20.0 | 12.0 |

### ACCIDENT REPORTING (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contrac plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 22 feb 07 | | 22 Feb 07 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
365 

DATE
28 Feb 2007 - Wednesday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912P6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Weather Caused No Delay
Temperature Min 36 °F, Max 38 °F; No Precipitation; No Wind

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
No construction work was performed from 21Feb07 to 28Feb07.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
None.

**General Comments:**
None.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
None.

**Safety: (Inspections made, Deficiencies noted):**
None

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 365 

DATE 28 Feb 2007 - Wednesday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912P6-06-C-0003 NA

**LABOR HOURS**

**The following labor hours were Reported today:**

| Employer | Labor Classification | | Number of Employees | Hours Worked |
|---|---|---|---|---|
| DLZ | SURVEYOR | | 0.0 | 0.0 |
| Dewind Dewatering | OPERATING ENGINEER | | 0.0 | 0.0 |
| EQM | SAFETY ENGINEER - ON SITE | | 0.0 | 0.0 |
| EQM | SUPER - JOB | | 0.0 | 0.0 |
| EQM | CONSTRUCTION INSPECTOR | | 0.0 | 0.0 |
| EQM | CONSTRUCTION-RECORDS CLERK | | 0.0 | 0.0 |
| Griffin | OPERATING ENGINEER | | 0.0 | 0.0 |
| IES | LABORERS | | 0.0 | 0.0 |
| IES | OPERATING ENGINEER | | 0.0 | 0.0 |
| K&S Engineers | OPERATING ENGINEER | | 0.0 | 0.0 |
| Task Force | TRAFFIC CONTROL SIGNALER | | 0.0 | 0.0 |
| Thatcher Constructio | LABORER, STEEL HANDLING | | 0.0 | 0.0 |
| Total hours worked to date: | 10,789.5 | Total | 0.0 | 0.0 |

**EQUIPMENT HOURS**

**The following equipment hours were Reported today:**

| Serial Number | Description | | Standby Hours | Operating Hours |
|---|---|---|---|---|
| DEF | Dewind Model 800 Treencher | | 8.0 | 0.0 |
| Total operating hours to date: 4,303.5 | | Total | 8.0 | 0.0 |

**ACCIDENT REPORTING** (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 01 Mar 07 | | 01 Mar 07 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
# DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
367 

DATE
02 Mar 2007 - Friday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912P6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Weather Caused No Delay
Temperature Min 28 °F, Max 36 °F; 0.31 IN Precipitation; No Wind

## QC NARRATIVES

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
No construction work was performed from 28Feb07 to 02Mar07.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
None.

**General Comments:**
None.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
None.

**Safety: (Inspections made, Deficiencies noted):**
None

**Safety: Corrective Action taken:**
None.

## PREP/INITIAL DATES (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

## ACTIVITY START/FINISH

**No activities were started or finished today**

## QC REQUIREMENTS

**No QC requirements were completed today**

## QA/QC PUNCH LIST (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

## CONTRACTORS ON SITE (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 367 

DATE 02 Mar 2007 - Friday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912P6-06-C-0003 NA

**LABOR HOURS**

**No labor hours were Reported today**

Total hours worked to date: 10,789.5

**EQUIPMENT HOURS**

**The following equipment hours were Reported today:**

| Serial Number | Description | | Standby Hours | Operating Hours |
|---|---|---|---|---|
| DEF | Dewind Model 800 Treencher | | 8.0 | 0.0 |
| Total operating hours to date: 4,303.5 | | Total | 8.0 | 0.0 |

**ACCIDENT REPORTING** (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 5 Mar 07 | | 5 Mar 07 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
371 

DATE
06 Mar 2007 - Tuesday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912P6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Weather Caused No Delay
Temperature Min 16 °F, Max 28 °F; 0.03 IN Precipitation; No Wind

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
No construction work was performed from 03Mar07 to 06Mar07.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
None.

**General Comments:**
None.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
None.

**Safety: (Inspections made, Deficiencies noted):**
None

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 371 

DATE 06 Mar 2007 - Tuesday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912P6-06-C-0003 NA

**LABOR HOURS**

**No labor hours were Reported today**

Total hours worked to date: 10,789.5

**EQUIPMENT HOURS**

**The following equipment hours were Reported today:**

| Serial Number | Description | | Standby Hours | Operating Hours |
|---|---|---|---|---|
| DEF | Dewind Model 800 Treencher | | 8.0 | 0.0 |
| Total operating hours to date: 4,303.5 | | Total | 8.0 | 0.0 |

**ACCIDENT REPORTING** (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contrac plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 07 Mar 07 | | 07 Mar 07 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
372 

DATE
07 Mar 2007 - Wednesday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912P6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Weather Caused No Delay
Temperature Min 23 °F, Max 31 °F; No Precipitation; No Wind

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
DLZ began surveying of the new toe stone support for the steel sheet pile wall.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
Ed Wise, EQ, three representatives of DLZ surveying.

**General Comments:**
Work progressed smoothly.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
Ed Wise conducted a tailgate safety meeting.

**Safety: (Inspections made, Deficiencies noted):**
None

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 372 

DATE 07 Mar 2007 - Wednesday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912P6-06-C-0003 NA

**LABOR HOURS**

**The following labor hours were Reported today:**

| Employer | Labor Classification | | Number of Employees | Hours Worked |
|---|---|---|---|---|
| DLZ | SURVEYOR | | 3.0 | 24.0 |
| EQM | CONSTRUCTION INSPECTOR | | 1.0 | 8.0 |
| Total hours worked to date: | 10,821.5 | Total | 4.0 | 32.0 |

**EQUIPMENT HOURS**

**The following equipment hours were Reported today:**

| Serial Number | Description | | Standby Hours | Operating Hours |
|---|---|---|---|---|
| DEF | Dewind Model 800 Treencher | | 8.0 | 0.0 |
| Total operating hours to date: 4,303.5 | | Total | 8.0 | 0.0 |

**ACCIDENT REPORTING** (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 08 Mar, 07 | | 08 Mar 07 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
373



DATE
08 Mar 2007 - Thursday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912P6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Weather Caused No Delay
Temperature Min 23 °F, Max 40 °F; No Precipitation; No Wind

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
DLZ completed surveying of the new toe stone support for the steel sheet pile wall.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
Ed Wise, EQ, three representatives of DLZ surveying.

**General Comments:**
Work progressed smoothly.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
Ed Wise conducted a tailgate safety meeting.

**Safety: (Inspections made, Deficiencies noted):**
None

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 373 

DATE 08 Mar 2007 - Thursday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912P6-06-C-0003 NA

**LABOR HOURS**

**The following labor hours were Reported today:**

| Employer | Labor Classification | | Number of Employees | Hours Worked |
|---|---|---|---|---|
| DLZ | SURVEYOR | | 3.0 | 24.0 |
| EQM | CONSTRUCTION INSPECTOR | | 1.0 | 8.0 |
| Total hours worked to date: | 10,853.5 | Total | 4.0 | 32.0 |

**EQUIPMENT HOURS**

**The following equipment hours were Reported today:**

| Serial Number | Description | | Standby Hours | Operating Hours |
|---|---|---|---|---|
| DEF | Dewind Model 800 Treencher | | 8.0 | 0.0 |
| Total operating hours to date: 4,303.5 | | Total | 8.0 | 0.0 |

**ACCIDENT REPORTING** (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| [signature] | 09Mar07 | [signature] | 09Mar07 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
# DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
374



DATE
09 Mar 2007 - Friday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912P6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Weather Caused No Delay
Temperature Min 29 °F, Max 61 °F; 0.24 IN Precipitation; No Wind

## QC NARRATIVES

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
No construction work was performed from 09Mar07.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
None.

**General Comments:**
None.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
None.

**Safety: (Inspections made, Deficiencies noted):**
None

**Safety: Corrective Action taken:**
None.

## PREP/INITIAL DATES (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

## ACTIVITY START/FINISH

**No activities were started or finished today**

## QC REQUIREMENTS

**No QC requirements were completed today**

## QA/QC PUNCH LIST (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

## CONTRACTORS ON SITE (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 374 

DATE 09 Mar 2007 - Friday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912P6-06-C-0003 NA

**LABOR HOURS**

**No labor hours were Reported today**

Total hours worked to date: 10,853.5

**EQUIPMENT HOURS**

**The following equipment hours were Reported today:**

| Serial Number | Description | Standby Hours | Operating Hours |
|---|---|---|---|
| DEF | Dewind Model 800 Treencher | 8.0 | 0.0 |
| | Total | 8.0 | 0.0 |

Total operating hours to date: 4,303.5

**ACCIDENT REPORTING** (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 12 Mar 07 | | 12 Mar 07 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
381 

DATE
16 Mar 2007 - Friday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912P6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Weather Caused No Delay
Temperature Min 30 °F, Max 38 °F; No Precipitation; No Wind

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
No construction work was performed from 10Mar07 to 16Mar07.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
None.

**General Comments:**
Dewind removed their trencher on 15Mar07.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
None.

**Safety: (Inspections made, Deficiencies noted):**
None

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 381 

DATE 16 Mar 2007 - Friday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912P6-06-C-0003 NA

**LABOR HOURS**

**No labor hours were Reported today**

Total hours worked to date: 10,853.5

**EQUIPMENT HOURS**

**The following equipment hours were Reported today:**

| Serial Number | Description | | Standby Hours | Operating Hours |
|---|---|---|---|---|
| DEF | Dewind Model 800 Treencher | | 8.0 | 0.0 |
| Total operating hours to date: 4,303.5 | | Total | 8.0 | 0.0 |

**ACCIDENT REPORTING** (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contrac plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 19 Mar 07 | | 19 Mar 07 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
388



DATE
23 Mar 2007 - Friday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912P6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Weather Caused No Delay
Temperature Min 46 °F, Max 69 °F; No Precipitation; No Wind

QC NARRATIVES

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
No construction work was performed from 17Mar07 to 23Mar07.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
None.

**General Comments:**
None.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
None.

**Safety: (Inspections made, Deficiencies noted):**
None

**Safety: Corrective Action taken:**
None.

PREP/INITIAL DATES (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

ACTIVITY START/FINISH

**No activities were started or finished today**

QC REQUIREMENTS

**No QC requirements were completed today**

QA/QC PUNCH LIST (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

CONTRACTORS ON SITE (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 388 

DATE 23 Mar 2007 - Friday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912P6-06-C-0003 NA

**LABOR HOURS**

**No labor hours were Reported today**

Total hours worked to date: 10,853.5

**EQUIPMENT HOURS**

**No equipment hours were Reported today**

Total operating hours to date: 4,303.5

**ACCIDENT REPORTING** (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contrac. plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENTS INITIALS | DATE |
|---|---|---|---|
| | 26 Mar 07 | | 26 Mar 07 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
396 

DATE
31 Mar 2007 - Saturday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912P6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Weather Caused No Delay
Temperature Min 45 °F, Max 64 °F; 0.52 IN Precipitation; No Wind

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
No construction work was performed from 24Mar07 to 31Mar07.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
None.

**General Comments:**
None.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
None.

**Safety: (Inspections made, Deficiencies noted):**
None

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

| CONTRACTORS QUALITY CONTROL REPORT (QCR)<br>DAILY LOG OF CONSTRUCTION - CIVIL | REPORT NUMBER<br>396 Page 2 of 2<br>DATE<br>31 Mar 2007 - Saturday |
|---|---|
| PROJECT<br>Indiana Harbor CDF, Slurry Wall Gaps | CONTRACT NUMBER<br>W912P6-06-C-0003 NA |

**LABOR HOURS**

**No labor hours were Reported today**

Total hours worked to date: 10,853.5

**EQUIPMENT HOURS**

**No equipment hours were Reported today**

Total operating hours to date: 4,303.5

**ACCIDENT REPORTING** (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 02 APR 07 | | 02 APR 07 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
402



DATE
06 Apr 2007 - Friday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912P6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Previous Weather - Critical Delay
Temperature Min 29 °F, Max 37 °F; No Precipitation; No Wind

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
No construction work was performed from 01Apr07 to 06Apr07.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
None.

**General Comments:**
None.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
None.

**Safety: (Inspections made, Deficiencies noted):**
None

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 402 

DATE 06 Apr 2007 - Friday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912P6-06-C-0003 NA

**LABOR HOURS**

**No labor hours were Reported today**

Total hours worked to date: 10,853.5

**EQUIPMENT HOURS**

**No equipment hours were Reported today**

Total operating hours to date: 4,303.5

**ACCIDENT REPORTING** (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contra plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENTS INITIALS | DATE |
|---|---|---|---|
| | 4/9/7 | | 4/9/7 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
409



DATE
13 Apr 2007 - Friday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912P6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Previous Weather - Critical Delay
Temperature Min 34 °F, Max 54 °F; No Precipitation; No Wind

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
No construction work was performed from 07Apr07 to 13Apr07.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
None.

**General Comments:**
None.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
None.

**Safety: (Inspections made, Deficiencies noted):**
None

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 409 

DATE 13 Apr 2007 - Friday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912P6-06-C-0003 NA

**LABOR HOURS**

**No labor hours were Reported today**

Total hours worked to date: 10,853.5

**EQUIPMENT HOURS**

**No equipment hours were Reported today**

Total operating hours to date: 4,303.5

**ACCIDENT REPORTING** (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 4/16/7 | | 4/16/7 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
412 

DATE
16 Apr 2007 - Monday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912P6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Previous Weather - Critical Delay
Temperature Min 39 °F, Max 55 °F; No Precipitation; No Wind

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
No construction work was performed from 14Apr07 to 16Apr07.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
None.

**General Comments:**
None.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
None.

**Safety: (Inspections made, Deficiencies noted):**
None

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

| CONTRACTORS QUALITY CONTROL REPORT (QCR)<br>DAILY LOG OF CONSTRUCTION - CIVIL | REPORT NUMBER<br>412 Page 2 of 2<br>DATE<br>16 Apr 2007 - Monday |
|---|---|
| PROJECT<br>Indiana Harbor CDF, Slurry Wall Gaps | CONTRACT NUMBER<br>W912P6-06-C-0003 NA |

**LABOR HOURS**

**No labor hours were Reported today**

Total hours worked to date: 10,853.5

**EQUIPMENT HOURS**

**No equipment hours were Reported today**

Total operating hours to date: 4,303.5

**ACCIDENT REPORTING** (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 4/17/7 | | 4/17/7 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
413 

DATE
17 Apr 2007 - Tuesday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912P6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Previous Weather - Critical Delay
Temperature Min 34 °F, Max 75 °F; No Precipitation; No Wind

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
DLZ began surveying xyz coordinates of the top of the inside and outside of the slurry wall.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
Ben Letany (EQM), two representatives of DLZ Surveying, one representative of IES.

**General Comments:**
None.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
Ben Letany conducted a safety tailgate meeting.

**Safety: (Inspections made, Deficiencies noted):**
None

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 413 

DATE 17 Apr 2007 - Tuesday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912P6-06-C-0003 NA

**LABOR HOURS**

**The following labor hours were Reported today:**

| Employer | Labor Classification | | Number of Employees | Hours Worked |
|---|---|---|---|---|
| DLZ | SURVEYOR | | 2.0 | 16.0 |
| EQM | CONSTRUCTION INSPECTOR | | 1.0 | 8.0 |
| IES | OPERATING ENGINEER | | 1.0 | 8.0 |
| Total hours worked to date: | 10,885.5 | Total | 4.0 | 32.0 |

**EQUIPMENT HOURS**

**The following equipment hours were Reported today:**

| Serial Number | Description | | Standby Hours | Operating Hours |
|---|---|---|---|---|
| jkl | Forklift | | 0.0 | 8.0 |
| Total operating hours to date: 4,311.5 | | Total | 0.0 | 8.0 |

**ACCIDENT REPORTING** (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| [signature] | 04/13/07 | [signature] | 4/13/7 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
# DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
414 

DATE
18 Apr 2007 - Wednesday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912P6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Previous Weather - Critical Delay
Temperature Min 39 °F, Max 52 °F; No Precipitation; No Wind

## QC NARRATIVES

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
DLZ continued surveying xyz coordinates of the top of the inside and outside of the slurry wall.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
Ben Letany (EQM), two representatives of DLZ Surveying, one representative of IES.

**General Comments:**
None.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
Ben Letany conducted a safety tailgate meeting.

**Safety: (Inspections made, Deficiencies noted):**
None

**Safety: Corrective Action taken:**
None.

## PREP/INITIAL DATES (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

## ACTIVITY START/FINISH

**No activities were started or finished today**

## QC REQUIREMENTS

**No QC requirements were completed today**

## QA/QC PUNCH LIST (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

## CONTRACTORS ON SITE (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 414 

DATE 18 Apr 2007 - Wednesday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912P6-06-C-0003 NA

**LABOR HOURS**

**The following labor hours were Reported today:**

| Employer | Labor Classification | | Number of Employees | Hours Worked |
|---|---|---|---|---|
| DLZ | SURVEYOR | | 2.0 | 16.0 |
| EQM | CONSTRUCTION INSPECTOR | | 1.0 | 8.0 |
| IES | OPERATING ENGINEER | | 1.0 | 8.0 |
| Total hours worked to date: | 10,917.5 | Total | 4.0 | 32.0 |

**EQUIPMENT HOURS**

**The following equipment hours were Reported today:**

| Serial Number | Description | | Standby Hours | Operating Hours |
|---|---|---|---|---|
| jkl | Forklift | | 0.0 | 8.0 |
| Total operating hours to date: 4,319.5 | | Total | 0.0 | 8.0 |

**ACCIDENT REPORTING** (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contrac plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 4/19/7 | | 4/19/7 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
# DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
416



DATE
20 Apr 2007 - Friday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912P6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Previous Weather - Critical Delay
Temperature Min 36 °F, Max 63 °F; No Precipitation; No Wind

## QC NARRATIVES

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
No construction work was performed from 19Apr07 to 20Apr07.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
None.

**General Comments:**
None.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
None.

**Safety: (Inspections made, Deficiencies noted):**
None

**Safety: Corrective Action taken:**
None.

## PREP/INITIAL DATES (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

## ACTIVITY START/FINISH

**No activities were started or finished today**

## QC REQUIREMENTS

**No QC requirements were completed today**

## QA/QC PUNCH LIST (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

## CONTRACTORS ON SITE (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 416 

DATE 20 Apr 2007 - Friday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912P6-06-C-0003 NA

**LABOR HOURS**

**No labor hours were Reported today**

Total hours worked to date: 10,917.5

**EQUIPMENT HOURS**

**No equipment hours were Reported today**

Total operating hours to date: 4,319.5

**ACCIDENT REPORTING** (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 4/20/7 | | 4/21/7 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
418



DATE
22 Apr 2007 - Sunday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912P6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Previous Weather - Critical Delay
Temperature Min 53 °F, Max 85 °F; No Precipitation; No Wind

**QC NARRATIVES**

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
No construction work was performed from 21Apr07 to 22Apr07.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
None.

**General Comments:**
None.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
None.

**Safety: (Inspections made, Deficiencies noted):**
None

**Safety: Corrective Action taken:**
None.

**PREP/INITIAL DATES** (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

**ACTIVITY START/FINISH**

**No activities were started or finished today**

**QC REQUIREMENTS**

**No QC requirements were completed today**

**QA/QC PUNCH LIST** (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

**CONTRACTORS ON SITE** (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 418 

DATE 22 Apr 2007 - Sunday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912P6-06-C-0003 NA

**LABOR HOURS**

**No labor hours were Reported today**

Total hours worked to date: 10,917.5

**EQUIPMENT HOURS**

**No equipment hours were Reported today**

Total operating hours to date: 4,319.5

**ACCIDENT REPORTING** (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 4/23/7 | | 4/23/7 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
# DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
419 

DATE
23 Apr 2007 - Monday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912P6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Previous Weather - Critical Delay
Temperature Min 49 °F, Max 76 °F; No Precipitation; No Wind

## QC NARRATIVES

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
DLZ completed surveying xyz coordinates of the top of the inside and outside of the slurry wall.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
Ben Letany (EQM) and two representatives of DLZ Surveying.

**General Comments:**
None.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
Ben Letany conducted a safety tailgate meeting.

**Safety: (Inspections made, Deficiencies noted):**
None

**Safety: Corrective Action taken:**
None.

## PREP/INITIAL DATES (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

## ACTIVITY START/FINISH

**No activities were started or finished today**

## QC REQUIREMENTS

**No QC requirements were completed today**

## QA/QC PUNCH LIST (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

## CONTRACTORS ON SITE (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 419 

DATE 23 Apr 2007 - Monday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912P6-06-C-0003 NA

**LABOR HOURS**

**The following labor hours were Reported today:**

| Employer | Labor Classification | | Number of Employees | Hours Worked |
|---|---|---|---|---|
| DLZ | SURVEYOR | | 2.0 | 2.0 |
| EQM | CONSTRUCTION INSPECTOR | | 1.0 | 1.0 |
| Total hours worked to date: | 10,920.5 | Total | 3.0 | 3.0 |

**EQUIPMENT HOURS**

**No equipment hours were Reported today**

Total operating hours to date: 4,319.5

**ACCIDENT REPORTING** (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 4/24/7 | | 4/24/7 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
423



DATE
27 Apr 2007 - Friday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912P6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Previous Weather - Non-Critical Delay
Temperature Min 45 °F, Max 57 °F; No Precipitation; No Wind

QC NARRATIVES

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
No construction work was performed from 21Apr07 to 27Apr07.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
None.

**General Comments:**
None.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
None.

**Safety: (Inspections made, Deficiencies noted):**
None

**Safety: Corrective Action taken:**
None.

PREP/INITIAL DATES (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

ACTIVITY START/FINISH

**No activities were started or finished today**

QC REQUIREMENTS

**No QC requirements were completed today**

QA/QC PUNCH LIST (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

CONTRACTORS ON SITE (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 423 

DATE 27 Apr 2007 - Friday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912P6-06-C-0003 NA

**LABOR HOURS**

No labor hours were Reported today

Total hours worked to date: 10,920.5

**EQUIPMENT HOURS**

No equipment hours were Reported today

Total operating hours to date: 4,319.5

**ACCIDENT REPORTING** (Describe accidents)

No accidents reported today

CONTRACTOR CERTIFICATION On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as noted above.

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 30 Apr 07 | | 30 Apr 07 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
430 

DATE
04 May 2007 - Friday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912P6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Previous Weather - Critical Delay
Temperature Min 52 °F, Max 75 °F; No Precipitation; No Wind

QC NARRATIVES

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
No construction work was performed from 28Apr07 to 04may07.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
None.

**General Comments:**
None.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
None.

**Safety: (Inspections made, Deficiencies noted):**
None

**Safety: Corrective Action taken:**
None.

PREP/INITIAL DATES (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

ACTIVITY START/FINISH

**No activities were started or finished today**

QC REQUIREMENTS

**No QC requirements were completed today**

QA/QC PUNCH LIST (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

CONTRACTORS ON SITE (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER 430



DATE 04 May 2007 - Friday

PROJECT Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER W912P6-06-C-0003 NA

**LABOR HOURS**

No labor hours were Reported today

Total hours worked to date: 10,920.5

**EQUIPMENT HOURS**

No equipment hours were Reported today

Total operating hours to date: 4,319.5

**ACCIDENT REPORTING** (Describe accidents)

No accidents reported today

CONTRACTOR CERTIFICATION On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as noted above.

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 07 May 07 | | 07 May 07 |

# CONTRACTORS QUALITY CONTROL REPORT (QCR)
## DAILY LOG OF CONSTRUCTION - CIVIL

REPORT NUMBER
437



DATE
11 May 2007 - Friday

PROJECT
Indiana Harbor CDF, Slurry Wall Gaps

CONTRACT NUMBER
W912P6-06-C-0003 NA

CONTRACTOR
Environmental Quality Management Inc

WEATHER
Previous Weather - Critical Delay
Temperature Min 48 °F, Max 71 °F; No Precipitation; No Wind

QC NARRATIVES

**Did anything develope that may lead to a Change Order/Claim?**
No.

**Activities in Progress:**
No construction work was performed from May0507 to 11may07.

**Were there any Delays in Work Progress today?**
No

**Work Force, Personnel On Site**
None.

**General Comments:**
None.

**Verbal Instructions given by Government:**
None

**Safety Inspection / Safety Meetings:**
None.

**Safety: (Inspections made, Deficiencies noted):**
None

**Safety: Corrective Action taken:**
None.

PREP/INITIAL DATES (Preparatory and initial dates held and advance notice)

**No preparatory or initial inspections were held today**

ACTIVITY START/FINISH

**No activities were started or finished today**

QC REQUIREMENTS

**No QC requirements were completed today**

QA/QC PUNCH LIST (Describe QC Punch List items issued, Report QC and QA Punch List items corrected)

**No QC Punch List items were issued today**

**No Punch List items were corrected today**

CONTRACTORS ON SITE (Report first and/or last day contractors were on site)

**No contractors had their first or last day on site today**

| CONTRACTORS QUALITY CONTROL REPORT (QCR)<br>DAILY LOG OF CONSTRUCTION - CIVIL | REPORT NUMBER<br>437 Page 2 of 2<br>DATE<br>11 May 2007 - Friday |
|---|---|
| PROJECT<br>Indiana Harbor CDF, Slurry Wall Gaps | CONTRACT NUMBER<br>W912P6-06-C-0003 NA |

LABOR HOURS

**No labor hours were Reported today**

Total hours worked to date: 10,920.5

EQUIPMENT HOURS

**No equipment hours were Reported today**

Total operating hours to date: 4,319.5

ACCIDENT REPORTING (Describe accidents)

**No accidents reported today**

CONTRACTOR CERTIFICATION **On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as noted above.**

| QC REPRESENTATIVE'S SIGNATURE | DATE | SUPERINTENDENT'S INITIALS | DATE |
|---|---|---|---|
| | 14 May 07 | | 14 May 07 |

# ADDENDUM PROVIDING SUPPLEMENTAL INFORMATION TO APPENDIX F OF THE DAILY CONSTRUCTION QUALITY CONTROL REPORTS PRESENTED IN THE CONSTRUCTION DOCUMENTATION REPORT

## 1.0 Introduction

The RMS/QCS system does not allow Daily Construction Quality Control Reports (Daily Reports) to be edited once they are submitted to USACE by the Contractor. This addendum contains information designed to clarify inconsistencies and errors in the Daily Reports. In addition, the Daily Reports were originally written with the intent that they be reviewed by personnel familiar with the project. This addendum provides additional information to enhance the understanding of the project by someone unfamiliar with it.

## 2.0 Personnel and Contractors

Numerous personnel and contractors are regularly referenced in the Daily Reports. The following summarizes key individuals and contractors and their roles:

- John Wentz, P.E. Mr. Wentz served as Project Director. He was responsible for the overall project including quality of work, cost, and schedule. Mr. Wentz was primarily at EQ headquarters in Cincinnati during the project.

- Eric Bowman. Mr. Bowman served as Site Superintendent. See resume in Appendix E.

- Ed Wise, P.E. Mr. Wise served as the Contractor Quality Control Site Manager (CQCSM). Mr. Wise was on site for essentially all phases of the project and completed the daily log of construction and CQC reports. As CQCSM, he also provided engineering support in the field. See his resume in Appendix E.

- Nick Michailides. Mr. Michailides served as the Site Safety and Health Officer (SSHO). See his resume in Appendix E.

- Ben Letany. Mr. Letany served as backup SSHO when the primary SSHO Mr. Nick Michailides was not on site. He also served as backup CQCSM when Mr. Wise was not on site. See his resume in Appendix E.

- Andy Lucas. Mr. Lucas was a contract employee to Environmental Quality Management, Inc. (EQ) who served as the Site Certified Industrial Hygienist. He was typically on site once per week to oversee health and safety related issues.

- Sam Carrico. Mr. Carrico was an employee of Maintenance Dynamics who was contracted to EQ. He served as heavy equipment operator and foreman for the construction crews.

- Natalie Mills. Ms. Mills was an employee of the U.S. Army Corps of Engineers and served as the Construction Representative.

- Arthur Rundzaitis. Mr. Rundzaitis was an employee of the U.S. Army Corps of Engineers and served as the Field Construction Representative and Quality Assurance Officer.

- Joe Schulenberg. Mr. Schulenberg was an employee of the U.S. Army Corps of Engineers and provided technical consultation, particularly in the areas of geology and hydrogeology.

- Maintenance Dynamics. Maintenance Dynamics (MD) was EQs primary sub-contractor. It provided the majority of the labor and heavy equipment for the project. There are several references to MD (equipment operator/operating engineers, laborer, truck driver/teamster, etc.) personnel.

- Dewind. Dewind was a subcontractor to EQ and installed the slurry wall with its "One Pass" trencher equipment. Dewind's primary workers were equipment operators/operating engineers.

- Ramirez and Marsch. Ramirez and Marsch was a subcontractor to EQ and was primarily responsible for obstruction removal, including pipes and conduits. Electrical conduit removal was subcontracted by Ramirez and Marsch to Sargent Electric. The Ramirez and Marsch workers were primarily pipe fitters/plumbers.

- Griffin Dewatering. Griffin was a subcontractor to EQ and was responsible for installation and operation of the dewatering system. Griffin workers were equipment operators/operating engineers or laborers.

- Sargent Electric. Sargent Electric was a subcontractor to Rameriz and Marsch and performed electrical conduit obstruction removal. Sargent Electric workers were electricians.

- Great Lakes Soil and Environmental Testing. Great Lakes provided on-site soil compaction and off-site soil property (permeability, proctor, etc.) testing. Great Lakes workers were primarily field or laboratory technicians.

- K&S. K&S provided a drill rig and two operators to collect samples of the installed slurry wall at various locations and depths. K&S workers were equipment operators/operating engineers.

- Miller Electric. Miller Electric was a subcontractor to EQ. It provided electrical services for the site (power connections/deconnections, etc.). Miller workers were electricians.

- Task Force Security. Task Force Security was a subcontractor to EQ and provided security services for the site on a 24/7 basis. It was on site at all times and also prepared the admittance logs. Task Force workers were security guards/traffic control signalers.

- DLZ Surveyors. DLZ provided surveyors for all tasks requiring this work. This included locating the slurry wall, installing the center line and off-set stakes, and providing as-built locations of the slurry wall. DLZ workers were surveyors.

- IES. IES provided labor and equipment for installation of the toe stone berm. This work was not associated with the original contract and was added to reinforce a section of the sheet pile wall that was failing. IES workers were equipment operators/operating engineers or laborers.

- Tierra. Tierra provided a water jet truck and two operators. This equipment was used to control dust on an as-needed basis. Tierra workers were equipment operators/operating engineers or laborers.

- Allied Scale. Allied Scale provided a truck scale for weighing bulk obstructions. It set up the scale, certified it, and removed it from the site. Allied Scale workers were electricians.

- Illiana. Illiana was a contractor to EQ and provided non-hazardous municipal waste disposal services. Illiana workers were only on site to pick up refuse.

- NIPSCO. NIPSCO provided electrical power to the site. NIPSCO had no workers on site.

- Operators Union. There were several visits to the site by the Local 150 Operators (equipment operators/operating engineers) Union Representative. No visits to the site were made by representatives of the other Unions associated with the workers on site.

**3.0 Technical Terminology**

The following technical terms are related to these types of projects:

- Centerline Stakes. Stakes set by a professional surveyor (DLZ) to mark the centerline of the location of the slurry wall. These were set at 50-foot increments. Centerline stakes were by necessity set in an area of high construction activity and were frequently destroyed either inadvertently or intentionally to facilitate work. For convenience, off-set stakes were set 50 feet outside of the centerline. These off-set stakes made replacement of the centerline stakes a simple task that did not require a professional surveyor.

- Dewatering System. A system of dewatering wells and vacuum pump to remove groundwater. The purpose was to depress the groundwater table and permit obstruction removal in a dry environment. Recovered groundwater was treated in an oil water separator and discharged on site for infiltration back into the groundwater at an area removed from the immediate construction area.

- Jetting. Jetting is used in reference to the installation of groundwater dewatering wells. Water is pumped into the center of a vertical pipe. The pipe is lowered and the water pressure "jets" out the soil, thereby creating a hole. A dewatering pipe is then installed in the hole.

- LEL. Lower Explosive Limit. A field measurement of the percentage of flammable gas concentration versus the lower-most explosive concentration.

- Obstruction. For this project, this was a subsurface man-made object (pipe, concrete, railroad tie, etc.) that could pose a problem with the installation or performance of the slurry

wall. These were removed prior to installation of the slurry wall in the obstruction removal phase.

- Off-set Stakes. Stakes set by a professional surveyor (DLZ) to mark a location 50 feet outside of the centerline of the slurry wall. Centerline stakes were by necessity set in an area of high construction activity and were frequently destroyed either inadvertently or intentionally to facilitate work. For convenience, off-set stakes were set 50 feet outside of the centerline. These off-set stakes made replacement of the centerline stakes a simple task that did not require a professional surveyor.

- Dewind One-Pass Trencher. This is a specialized piece of equipment used for the installation of slurry walls, interceptor trenches, reactive walls, etc. For this project, it was a very large piece of equipment built on a Caterpillar 245 excavator chassis. It is capable of trenching to depths of about 45 feet. It excavates, mixes the soil with bentonite, and replaces the mixture in "one pass."

- Oil Water Separator (OWS). The OWS was used to separate free hydrocarbons from groundwater prior to reinfiltration. It was a part of the dewatering system.

- Permeability. A measure of a liquid's ability to pass through solid materials (specifically soil and water for this site). It effectively measures the soil's ability to predict the control/movement of contaminants dissolved in water. Its units of measurement are centimeters per second. For this project, the permeability goal of the slurry wall was $1.0 \times 10^{-7}$ cm/sec.

- Power Screener. A machine used to separate large objects from soil. For this project, the device was fitted with a 2-inch-square screen, and used to remove larger obstructions from the soil prior to reuse as backfill.

- Safety Tailgate Meeting. A brief meeting of all site workers held at the beginning of each day. Its purpose is to discuss relevant safety aspects of the work to be performed that day.

- Slurry Wall. For this project, it is a mixture of natural soil and bentonite. Bentonite is a fine solid that swells when contacted with water. It effectively serves to reduce void space in native soils and thereby reduce the permeability of the mixed soil and bentonite slurry wall.

- Stone Toe Berm. For this project, this was crushed limestone that was piled in front of a failing section of sheet pile wall. The stone serves to support the wall.

- VOC. Volatile Organic Compound. A field measurement of the total amount of organic compounds in the vapor phase.

- Yelomine Pipe. Yelowmine pipe refers to a specific brand of pipe. It is PVC in composition and has couplings that can be easily added or removed. This makes the system reusable and portable.

## 4.0 Specific Items of Correction or Clarification

4.1 The obstruction removal summary table was prepared to contain a summary of all obstructions encountered to date. It was an evolving document and was updated whenever new data was collected. This new data could be the identification of a new obstruction, closure of an existing obstruction, receipt of survey data, etc. Obstructions were added to the summary table when identified. When the obstruction closed, the date of closure was added to the table. Obstructions listed on the table without a removal date had been identified but had not been removed as of that date. A new obstruction summary table was prepared for each day that new data was collected. The summary table for that date was included in the daily CQC report. If no new data was collected (and the summary table did not therefore change), the summary table was not typically added to the daily CQC report.

4.2 On July 21, 2006 a relatively deep pipe (6-7 feet) was found and indicated from field observations believed to be located at about Station 85+45 to about 85+80 (EQ ID #309), which were the location indicated in the daily report. The excavation was heavily contaminated and the side slopes were unstable. The SSHO measured excessive levels of VOC with a high LEL and prohibited personnel from entering the excavation for inspection. Initially this pipe was thought to be 24 inches in diameter (based on remote visual estimation). When the excavation was later cleared for entry on July 28, 2006, however, this pipe was found to be 20 inches. This pipe was very unusual in that it emanated from inside the trench, proceeded to near the centerline of the trench, and exited to the inside of the trench (see attached Figure 1 which shows the approximate configuration and identified location between Station 86+00 and Station 87+00 as confirmed by actual field survey). This was the only obstruction found that did not either cross the trench from one side to the other, or run parallel to it. This pipe was found to be broken at a joint with a compression coupling. Based on safety considerations, removal of the pipe was not recommended. Instead, the trench was over-excavated and the pipe was physically bent with a track hoe and bull dozer toward the inside of the trench on July 29, 2006 (see attached Figure 2 showing the approximate configuration of the pipe as closed with location confirmed by field survey). The pipe was thereby removed from the path of the slurry wall, but not physically removed from the trench. The excavation was allowed to ventilate, and the SSHO permitted personnel to enter the excavation briefly to install grout plugs in both open ends. Grout plugs were typically installed with a premeasured cut piece of plywood used as a "backer." The "backer" served to hold the grout in place on the inside of the pipe until the grout could set. Because the pipe had been bent, it was no longer perfectly round. Cutting of the "backer' board would have been difficult and required extended time in the excavation for measuring and detail cutting. In lieu of a "backer" board, sand was packed in the pipe by an excavator. The sand served as the "backer" and could be easily placed from outside the excavation. The sand "backer" also served as a vapor barrier to minimize the movement of VOCs from the pipe into the excavation. The survey points represent the ends of the pipe as it was bent away from the path of the slurry wall and left in place. This work was performed in concurrence with the CQSM, SSHO, and USACE Field Construction Representative and Quality Assurance Officer.

The August 8, 2006 report specifies that "DLZ reset the centerline stakes on both sides of the site and the ends of obstruction 309." This work entailed replacement of the centerline stakes for the slurry wall on both sides of the site and the initial survey of the end points of obstruction 309. The centerline stakes were replaced because they had all been removed during obstruction removal, and replacement by a professional surveyor was more accurate than replacement based on direct measurement from the off-set stakes.

4.3 The Contract specified the slurry wall gaps to be installed on the east side between Stations 43+30 and 44+60 and on the west side between Stations 78+50 and 86+90 plus 10 feet of overlap into the existing slurry wall at each of the four ends of the new slurry wall gap installation. The end points for both segments were identified via site survey and staking per the Contract stated end point coordinates

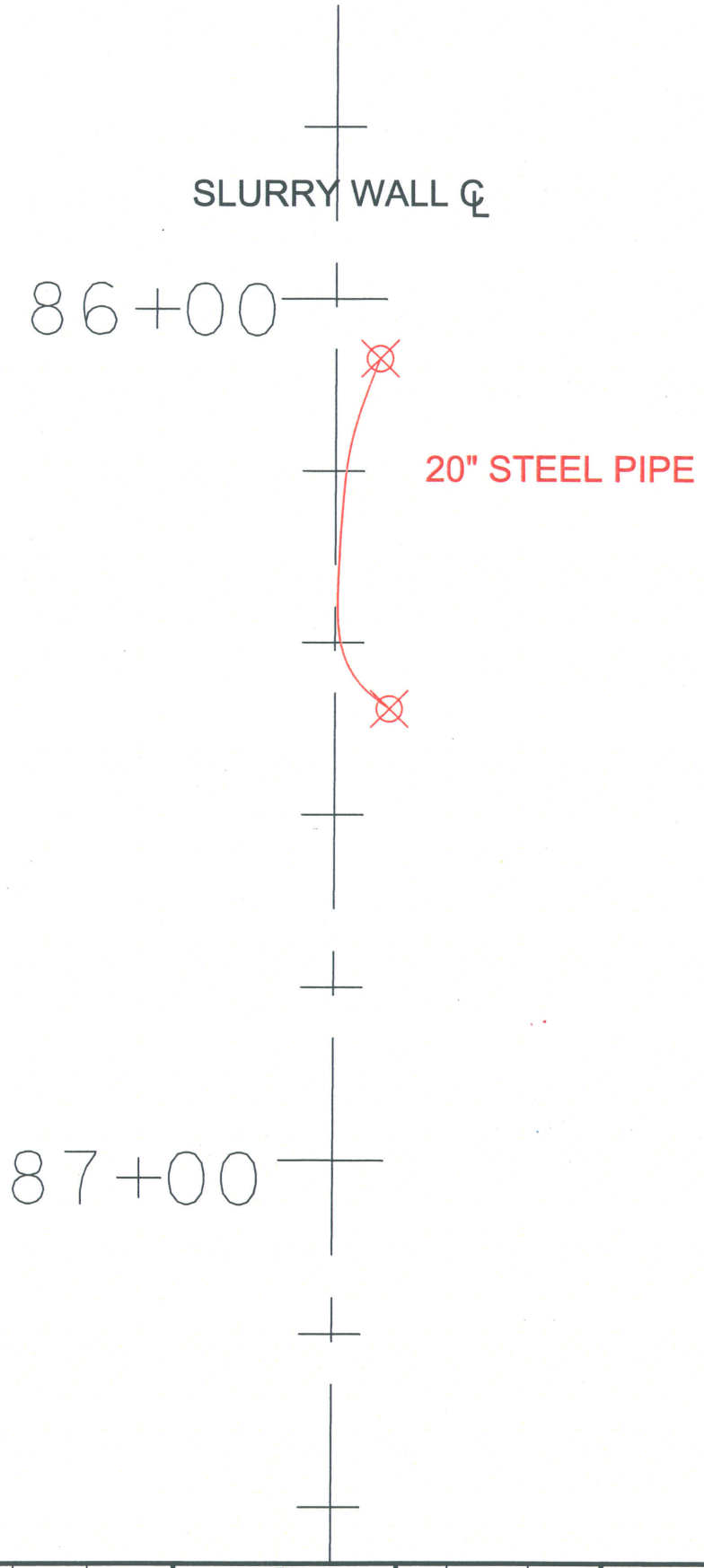
It should be noted that the slurry wall is of very distinctive grey color with a consistency of "jello" and is very easy to discern in the field based on visual observations. The end point near Station 86+90 was not identified by visual observation when installation was initiated.

As a result of EQ's diligence to assure complete tie-into the existing slurry wall and the requisite minimum overlap, the final slurry wall gap segment installations, inclusive of the overlaps were between Stations 43+20 and 44+70 on the east side, initially installed between August 31 and September 1, 2006 and between Stations 78+35 and 87+25 (35 feet beyond the specification), initially installed September 5 through 14, 2006 on the west side. Both segments had rework performed as summarized in the Slurry Wall Gaps Installation Dates table provided in D – Project Records. As indicated in the September 5, 2006 Daily CQC Report, a discrepancy was identified in the Contract end points on the west side. The As-Built Drawings from the existing slurry wall were consulted and a survey performed to identify that location yielded the end point of the existing slurry wall, thus the discrepancy between contract specified endpoints and actual installed endpoints.

4.4 Verification Borings. As noted in the Construction Documentation Report, segments of the slurry wall did not pass the requirements of the Construction Documents. These segments were replaced, and verification borings were repeated at the same locations as the previous borings to confirm adherence to the specification requirements at that particular location. Therefore, duplicate boring logs for these segments were prepared and submitted on varying dates.

4.5 Stone Toe Berm. During installation of the slurry wall, it was discovered that a segment of the sheet pile wall on the south edge of the property was failing. In an emergency effort to stabilize the wall, USACE contracted with EQ to install a stone toe berm. This work, which was not required by the Construction Documents was performed under a Field Change Order to the Contract, and involved the installation of stone in the canal to stabilize the sheet pile wall.

4.6 The last day EQ was on site performing construction activities was February 21, 2007. This was for final disassembly of the Dewind One Pass Trencher and advancement of the verification boring at Station 43+50. At the time when the daily CQC report for this day was prepared, it was not known if the sample would pass and that this would be the final day of construction work. Further, the slurry wall cap had not been installed over the slurry wall. The permeability test results for this boring were returned, identified passing results, and was subsequently accepted by USACE. The installation of the slurry wall cap, required under the Construction Specifications was later removed from the contract under a negotiated Field Change Order because it was deemed that future construction work associated with the gradient control system (future contract work) would destroy it. As a result, no additional field work was required after 21 February 2007, although that was not known at the time.




| REV | DESCRIPTION | DATE | APPROVED |
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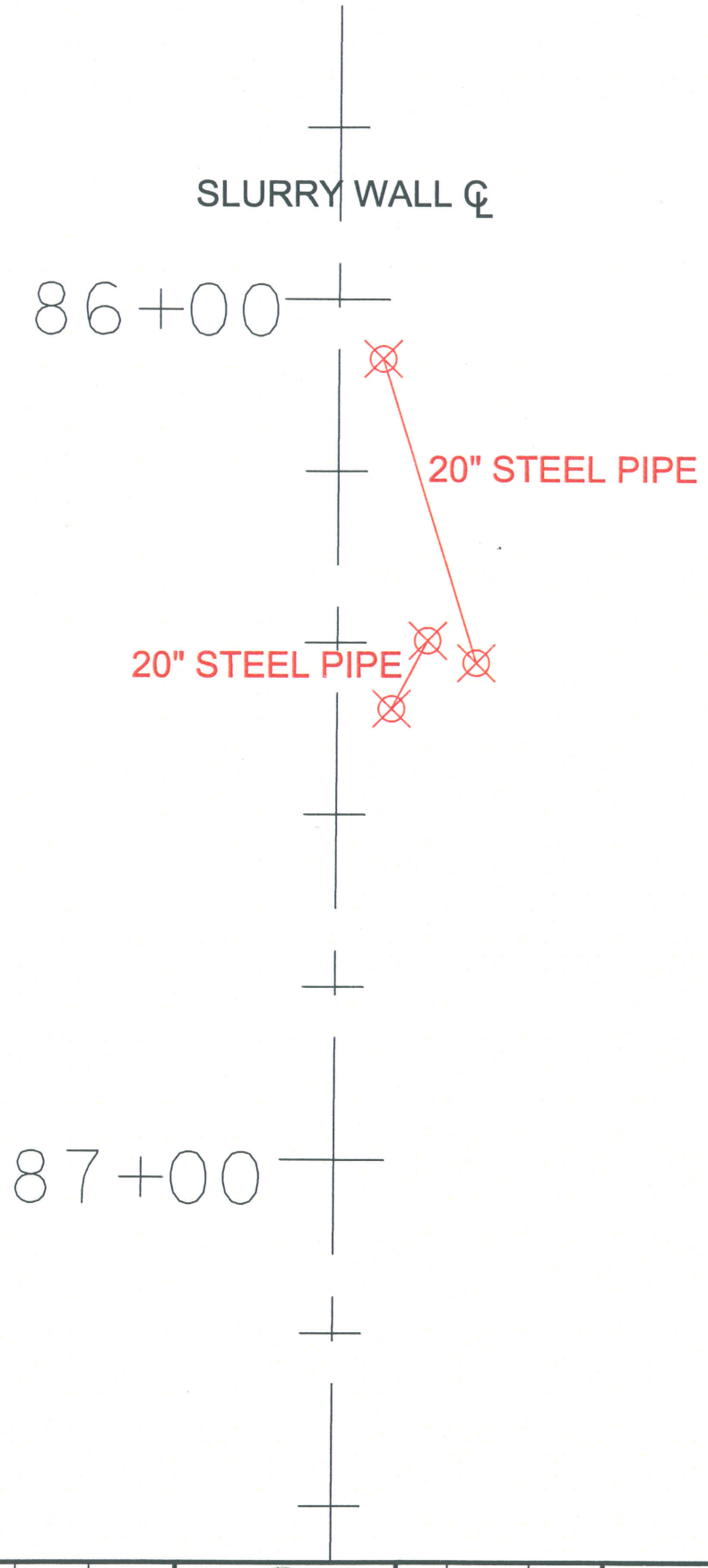
| | | |
|---|---|---|
| DRAWN | D.TOMO | 12/27/07 |
| CHECKED | | |
| APPROVED | | |
| SCALE: | 1"=20'-0" | |

# INDIANA HARBOR CDF APPROXIMATE ORIGINAL PIPE CONFIGURATION

| ORIGINAL SIZE | PROJECT NO. | DWG NO. | REV |
|---|---|---|---|
| A | 030249 | FIGURE 1 | 0 |




| REV | DESCRIPTION | DATE | APPROVED |
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| DRAWN | D.TOMO | 12/27/07 |
| CHECKED | | |
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| SCALE: | 1"=20'-0" | |

# INDIANA HARBOR CDF APPROXIMATE FINAL PIPE CONFIGURATION

| ORIGINAL SIZE | PROJECT NO. | DWG NO. | REV |
|---|---|---|---|
| A | 030249 | FIGURE 2 | 0 |

# APPENDIX G

# MONTHLY AIR MONITORING SUMMARIES WITH RAW MONITORING DATA AND SAMPLE LOCATION MAPS

Air Monitoring Monthly Summary – July 2006

Site: IHSWG
Location: 3500 Indianapolis Blvd., East Chicago, IN 46312
Prepared by: Nicholas Michailides
Sampling Performed by: Nick Michailides
Date: 7-29-06

## I. Significant Findings / Site Activities

Site activities consisted of exploratory shallow and deep trench dig, obstruction removal, make-up soil screening, and back-fill / compaction of exploratory trench.

## II. Report of / discussion of findings

Conducted two runs of dust monitoring per day one day a week during construction activities. No fugitive emissions observed during the construction activities.

Construction air monitoring was performed on a random one day per week basis (random when the construction activities for the week were the same). One upwind and two to three downwind points were monitored around the work area.

The overall average concentration of the sampling interval for each sample location are the values reported in the Summary Table. The time reported is indicated as the interval start time. These values, along with the value logged for each recording interval during the sampling event were used to determine exceedance status (of which none occurred).

## III. Problems encountered

Dump trucks on haul roads highest potential for dust leaving site. Controlled fugitive dusts from dump trucks on haul / access roads with daily dust control via water truck.

## IV. Potential action items / lessons learned

Continue dust control on haul / access roads.

See attached raw data (calibration sheet, sample results, monitoring locations)

Indiana Harbor and Canal Confined Disposal Facility
Obstructions Removal
Contract No. W912P6-06-C-0003

Particulates July-06

| pDR-1000 | Limit mg/m3 | week of 7/2/2006 | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 7/2/2006 | | 7/3/2006 | | 7/4/2006 | | 7/5/2006 | | 7/6/2006 | | 7/7/2006 | | 7/8/2006 | |
| | | Time | mg/m3 | Time | mg/m3 | Time | mg/m3 | Time | mg/m3 | Time | mg/m3 | Time | mg/m3 | Time | mg/m3 |
| Reading 1 | 10.0 | | | | | | | | | | | | | | |
| Reading 2 | 10.0 | | | | | | | | | | | | | | |
| Reading 3 | 10.0 | | | | | | | | | | | | | | |
| Reading 4 | 10.0 | | | | | | | | | | | | | | |
| Reading 5 | 10.0 | | | | | | | | | | | | | | |

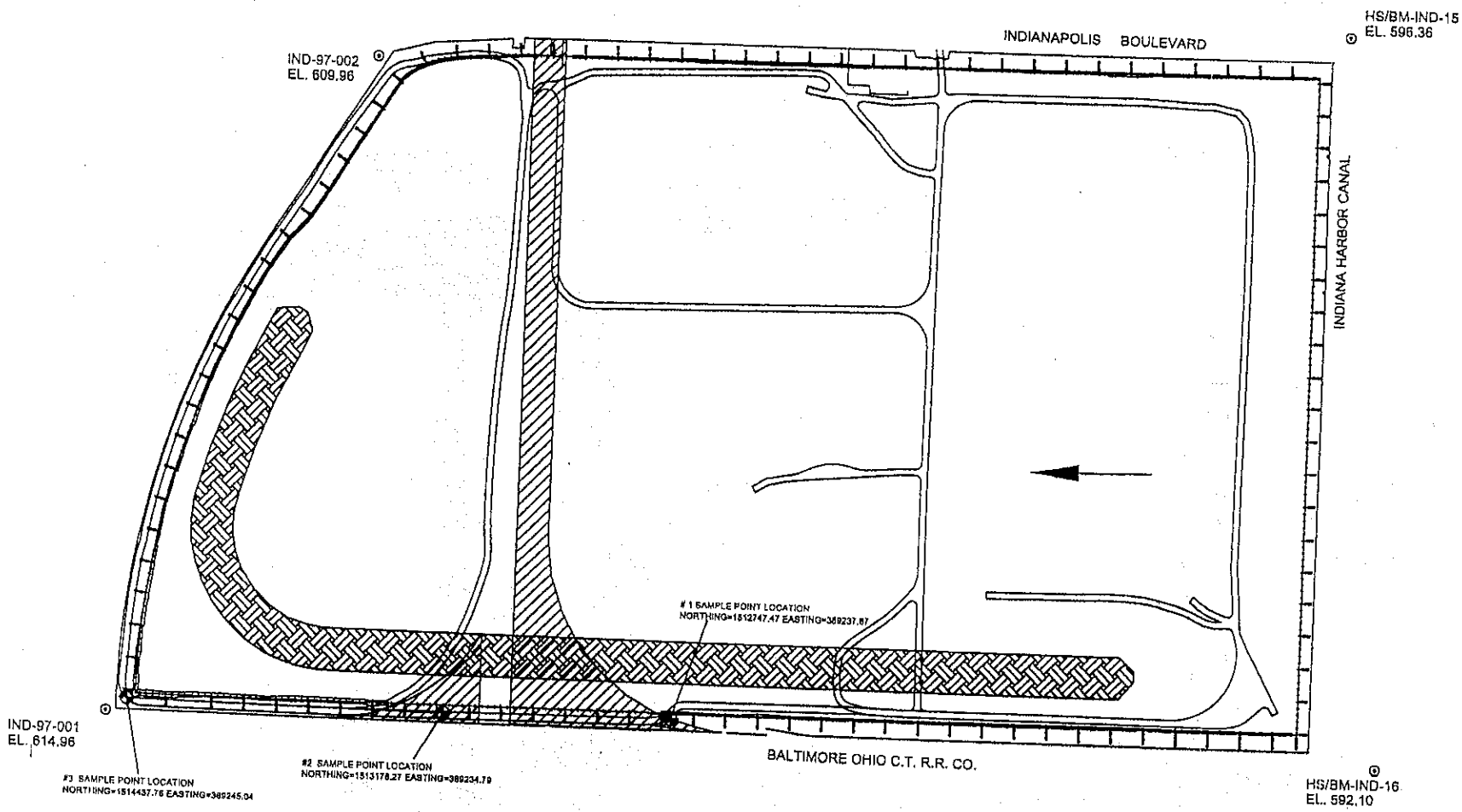
| pDR-1000 | Limit mg/m3 | week of 7/9/2006 | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 7/9/2006 | | 7/10/2006 | | 7/11/2006 | | 7/12/2006 | | 7/13/2006 | | 7/14/2006 | | 7/15/2006 | |
| | | Time | mg/m3 | Time | mg/m3 | Time | mg/m3 | Time | mg/m3 | Time | mg/m3 | Time | mg/m3 | Time | mg/m3 |
| Reading 1 | 10.0 | | | | | | | | | | | 9:13:56 UW | 0.060 | | |
| Reading 2 | 10.0 | | | | | | | | | | | 11:35:27 DW | 0.000 | | |
| Reading 3 | 10.0 | | | | | | | | | | | 13:12:16 DW | 0.001 | | |
| Reading 4 | 10.0 | | | | | | | | | | | | | | |
| Reading 5 | 10.0 | | | | | | | | | | | | | | |

| pDR-1000 | Limit mg/m3 | week of 7/16/2006 | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 7/16/2006 | | 7/17/2006 | | 7/18/2006 | | 7/19/2006 | | 7/20/2006 | | 7/21/2006 | | 7/22/2006 | |
| | | Time | mg/m3 | Time | mg/m3 | Time | mg/m3 | Time | mg/m3 | Time | mg/m3 | Time | mg/m3 | Time | mg/m3 |
| Reading 1 | 10.0 | | | | | 12:31:22 UW | 0.014 | | | | | | | | |
| Reading 2 | 10.0 | | | | | 12:39:21 DW | 0.009 | | | | | | | | |
| Reading 3 | 10.0 | | | | | 12:46:47 DW | 0.000 | | | | | | | | |
| Reading 4 | 10.0 | | | | | 14:36:56 UW | 0.000 | | | | | | | | |
| Reading 5 | 10.0 | | | | | 14:55:07 DW | 0.000 | | | | | | | | |
| Reading 6 | 10.0 | | | | | 15:19:03 DW | 0.000 | | | | | | | | |

| pDR-1000 | Limit mg/m3 | week of 7/23/2006 | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 7/23/2006 | | 7/24/2006 | | 7/25/2006 | | 7/26/2006 | | 7/27/2006 | | 7/28/2006 | | 7/29/2006 | |
| | | Time | mg/m3 | Time | mg/m3 | Time | mg/m3 | Time | mg/m3 | Time | mg/m3 | Time | mg/m3 | Time | mg/m3 |
| Reading 1 | 10.0 | | | | | | | | | 8:51:33 UW | 0.000 | | | | |
| Reading 2 | 10.0 | | | | | | | | | 8:57:42 DW | 0.000 | | | | |
| Reading 3 | 10.0 | | | | | | | | | 9:04:49 DW | 0.000 | | | | |
| Reading 4 | 10.0 | | | | | | | | | 2:00:23 UW | 0.000 | | | | |
| Reading 5 | 10.0 | | | | | | | | | 2:10:40 DW | 0.000 | | | | |
| Reading 6 | 10.0 | | | | | | | | | 2:14:41 DW | 0.000 | | | | |

| pDR-1000 | Limit mg/m3 | week of 7/30/2006 | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 7/30/2006 | | 7/31/2006 | | 8/1/2006 | | 8/2/2006 | | 8/3/2006 | | 8/4/2006 | | 8/5/2006 | |
| | | Time | mg/m3 | Time | mg/m3 | Time | mg/m3 | Time | mg/m3 | Time | mg/m3 | Time | mg/m3 | Time | mg/m3 |
| Reading 1 | 10.0 | | | | | | | | | | | 9:11:40 DW | 0.020 | | |
| Reading 2 | 10.0 | | | | | | | | | | | 9:17:16 DW | 0.020 | | |
| Reading 3 | 10.0 | | | | | | | | | | | 9:22:56 UW | 0.000 | | |
| Reading 4 | 10.0 | | | | | | | | | | | 15:07:12 DW | 0.019 | | |
| Reading 5 | 10.0 | | | | | | | | | | | 15:12:44 DW | 0.000 | | |
| Reading 6 | 10.0 | | | | | | | | | | | 15:18:56 UW | 0.000 | | |

Notes:
Values reported are the Overall Average Concentration of the sampling interval for each Tag Number with time reported as interval start time.
DW= Downwind
UW= Upwind




LEGEND

GENERAL WIND DIRECTION

SAMPLE POINT LOCATION

| REV | DESCRIPTION | DATE | APPROVED |
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|---|---|---|
| DRAWN | D.TOMO | 7/24/06 |
| CHECKED | J.WENTZ | |
| APPROVED | J.WENTZ | |
| SCALE: | NONE | |

# INDIANA HARBOR CDF
## CONSTRUCTION AIR MOINTORING
## LOCATION 7-14-06

| ORIGINAL SIZE | PROJECT NO. | DWG NO. | REV |
|---|---|---|---|
| A | 030249 | SWGAM 7-14-06 | 0 |

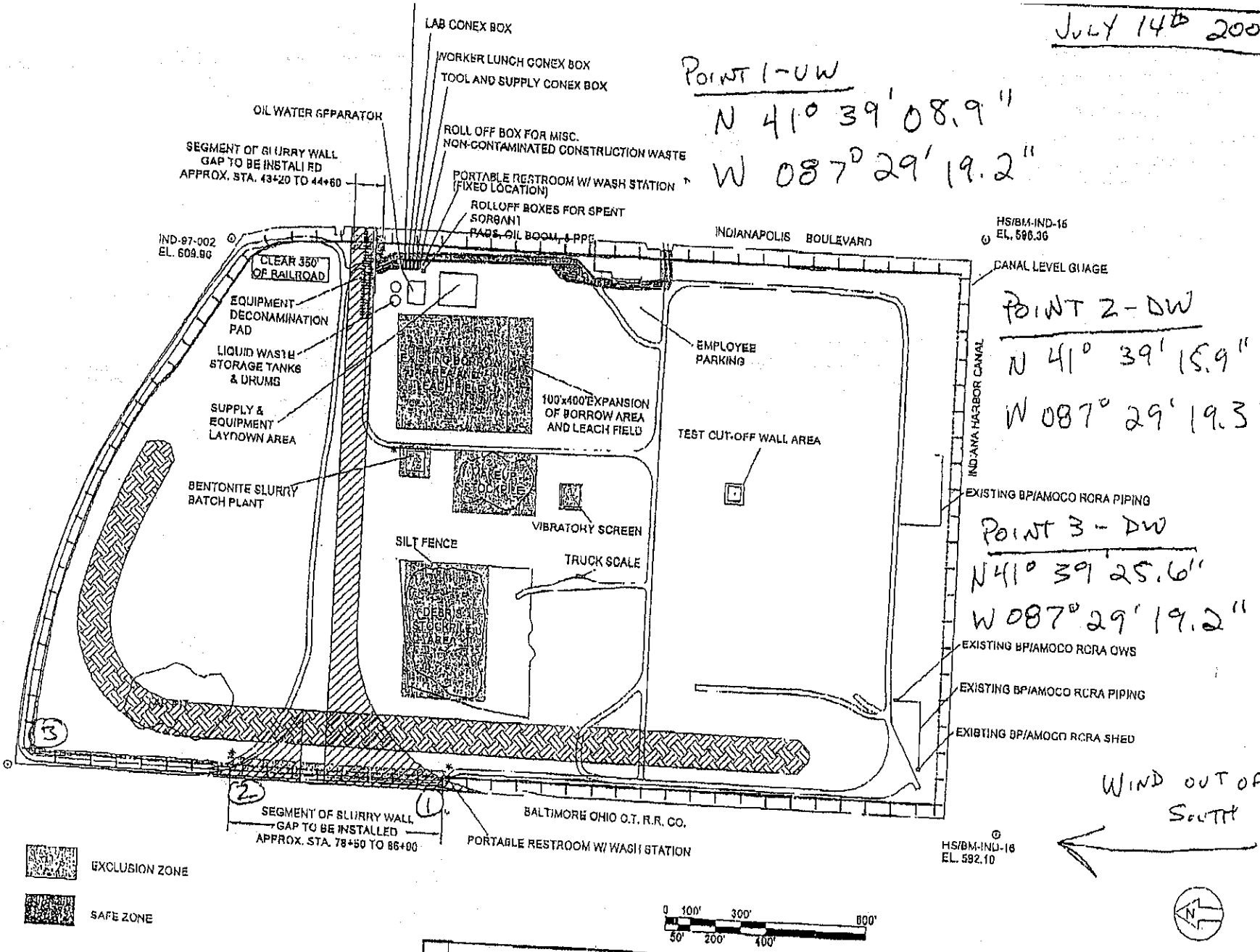
219-39/-/023

JULY 14th 2006

POINT 1-UW
N 41° 39' 08.9"
W 087° 29' 19.2"

POINT 2-DW
N 41° 39' 15.9"
W 087° 29' 19.3"

POINT 3-DW
N 41° 39' 25.6"
W 087° 29' 19.2"




| REVISIONS | | | |
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| NY | DESCRIPTION | DATE | APPROVAL |

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DRAWN D.TOMO 4/06/06
CHECKED
APPROVED
SCALE NONE

INDIANA HARBOR SLURRY WALL GAPS
WORK ZONE DECONAMINATION MAP

| MATERIAL SET | PROJECT NO. | FIG. NO. | REV. |
|---|---|---|---|
| B | 030249 | FIG 1 | 0 |

IHSWGP July 14th 2006
UW Point 1
Tag Number: 01
Number of logged points: 1
Start time and date: 09:13:56 14-Jul
Elapsed time: 00:05:00
Logging period (sec): 300
Calibration Factor (%): 100
Max Display Concentration: 2.567 mg/m³
Time at maximum: 09:13:59 Jul 14
Max STEL Concentration: 0.035 mg/m³
Time at max STEL: 09:14:26 Jul 14
Overall Avg Conc: 0.060 mg/m³
Logged Data:

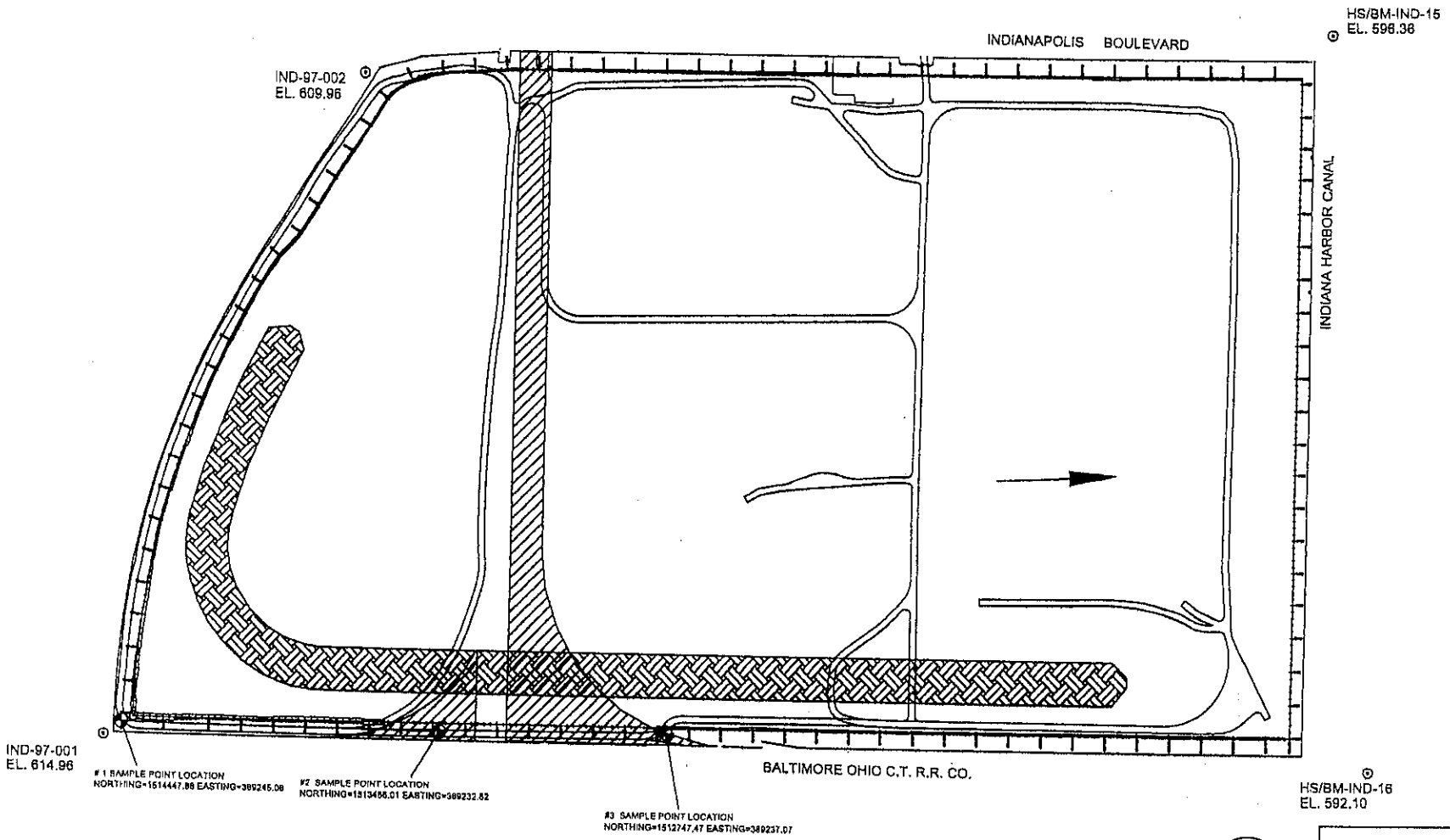
| Point | Date | Time | Avg.(mg/m³) |
|---|---|---|---|
| 1 | 14-Jul | 09:18:56 | 0.108 |

DW Point 2
Tag Number: 02
Number of logged points: 1
Start time and date: 11:35:27 14-Jul
Elapsed time: 00:05:00
Logging period (sec): 300
Calibration Factor (%): 100
Max Display Concentration: 0.036 mg/m³
Time at maximum: 11:37:08 Jul 14
Max STEL Concentration: 0.000 mg/m³
Time at max STEL: 11:35:27 Jul 14
Overall Avg Conc: 0.000 mg/m³
Logged Data:

| Point | Date | Time | Avg.(mg/m³) |
|---|---|---|---|
| 1 | 14-Jul | 11:40:27 | 0.005 |

DW Point 3
Tag Number: 03
Number of logged points: 1
Start time and date: 13:12:16 14-Jul
Elapsed time: 00:05:00
Logging period (sec): 300
Calibration Factor (%): 100
Max Display Concentration: 0.167 mg/m³
Time at maximum: 13:13:58 Jul 14
Max STEL Concentration: 0.000 mg/m³
Time at max STEL: 13:12:16 Jul 14
Overall Avg Conc: 0.001 mg/m³
Logged Data:

| Point | Date | Time | Avg.(mg/m³) |
|---|---|---|---|
| 1 | 14-Jul | 13:17:16 | 0.009 |




LEGEND

GENERAL WIND DIRECTION

SAMPLE POINT LOCATION

| REV | DESCRIPTION | DATE | APPROVED |
|---|---|---|---|
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

REVISIONS

ENVIRONMENTAL QUALITY MANAGEMENT, INC.
1800 CARILLON BLVD.
CINCINNATI, OHIO 45240
P (513)825-7500
F (513)825-7495

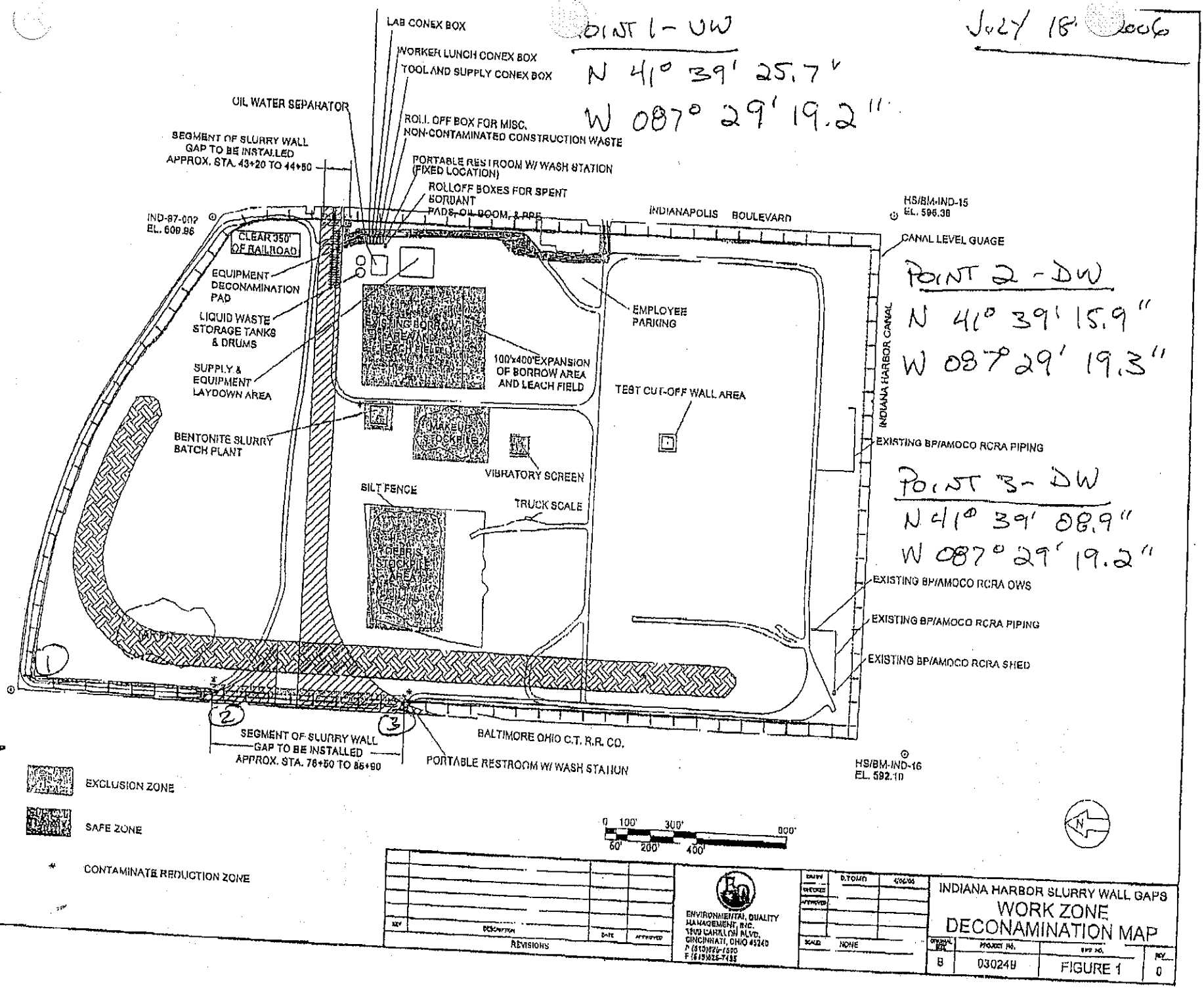
| | | |
|---|---|---|
| DRAWN | D.TOMO | 7/24/06 |
| CHECKED | J.WENTZ | |
| APPROVED | J.WENTZ | |
| SCALE: | NONE | |

# INDIANA HARBOR CDF
## CONSTRUCTION AIR MOINTORING
## LOCATION 7-18-06

| ORIGINAL SIZE | PROJECT NO. | DWG NO. | REV |
|---|---|---|---|
| A | 030249 | SWGAM 7-18-06 | 0 |

POINT 1 - UW
N 41° 39' 25.7"
W 087° 29' 19.2"

JULY 18 2006




POINT 2 - DW
N 41° 39' 15.9"
W 087° 29' 19.3"

POINT 3 - DW
N 41° 39' 08.9"
W 087° 29' 19.2"

WIND OUT OF NORTH

| REV | DESCRIPTION | DATE | APPROVED |
|---|---|---|---|
| | | | |

REVISIONS

ENVIRONMENTAL QUALITY MANAGEMENT, INC.
5500 CARILLON BLVD.
CINCINNATI, OHIO 45240
P (513)825-1500
F (513)825-7135

DRAWN B.TOWD 4/26/06
CHECKED
APPROVED
SCALE NONE

INDIANA HARBOR SLURRY WALL GAPS
WORK ZONE DECONAMINATION MAP

| ORIGINAL SIZE | PROJECT NO. | DWG NO. | REV. |
|---|---|---|---|
| B | 030249 | FIGURE 1 | 0 |

IHSWG
Tag Number: 07 - UW Point 1
Number of logged points: 1
Start time and date: 12:31:22 18-Jun
Elapsed time: 00:05:00
Logging period (sec): 300
Calibration Factor (%): 100
Max Display Concentration: 0.157 mg/m³
Time at maximum: 12:36:31 Jun 18
Max STEL Concentration: 0.006 mg/m³
Time at max STEL: 12:36:52 Jun 18
Overall Avg Conc: 0.014 mg/m³
Logged Data:

| Point | Date | Time | Avg.(mg/m³) |
|---|---|---|---|
| 1 | 18-Jun | 12:36:22 | 0.017 |

DW Point 2
Tag Number: 08
Number of logged points: 1
Start time and date: 12:39:21 18-Jun
Elapsed time: 00:05:00
Logging period (sec): 300
Calibration Factor (%): 100
Max Display Concentration: 0.091 mg/m³
Time at maximum: 12:44:08 Jun 18
Max STEL Concentration: 0.001 mg/m³
Time at max STEL: 12:39:51 Jun 18
Overall Avg Conc: 0.009 mg/m³
Logged Data:

| Point | Date | Time | Avg.(mg/m³) |
|---|---|---|---|
| 1 | 18-Jun | 12:44:21 | 0.019 |

DW Point 3
Tag Number: 09
Number of logged points: 1
Start time and date: 12:46:47 18-Jun
Elapsed time: 00:05:00
Logging period (sec): 300
Calibration Factor (%): 100
Max Display Concentration: 0.068 mg/m³
Time at maximum: 12:49:26 Jun 18
Max STEL Concentration: 0.001 mg/m³
Time at max STEL: 12:48:18 Jun 18
Overall Avg Conc: 0.000 mg/m³
Logged Data:

| Point | Date | Time | Avg.(mg/m³) |
|---|---|---|---|
| 1 | 18-Jun | 12:51:47 | 0.01 |

Incorrect date entry during calibration.
Correct date for this sheet July 18, 2006.
7-21-06

IHSWG
Tag Number: 10 - UW Point 1
Number of logged points: 1
Start time and date: 14:36:56 18-Jun
Elapsed time: 00:05:00
Logging period (sec): 300
Calibration Factor (%): 100
Max Display Concentration: 0.005 mg/m³
Time at maximum: 14:39:13 Jun 18
Max STEL Concentration: 0.000 mg/m³
Time at max STEL: 14:36:56 Jun 18
Overall Avg Conc: 0.000 mg/m³
Logged Data:

| Point | Date | Time | Avg.(mg/m³) |
|---|---|---|---|
| 1 | 18-Jun | 14:41:56 | 0.001 |

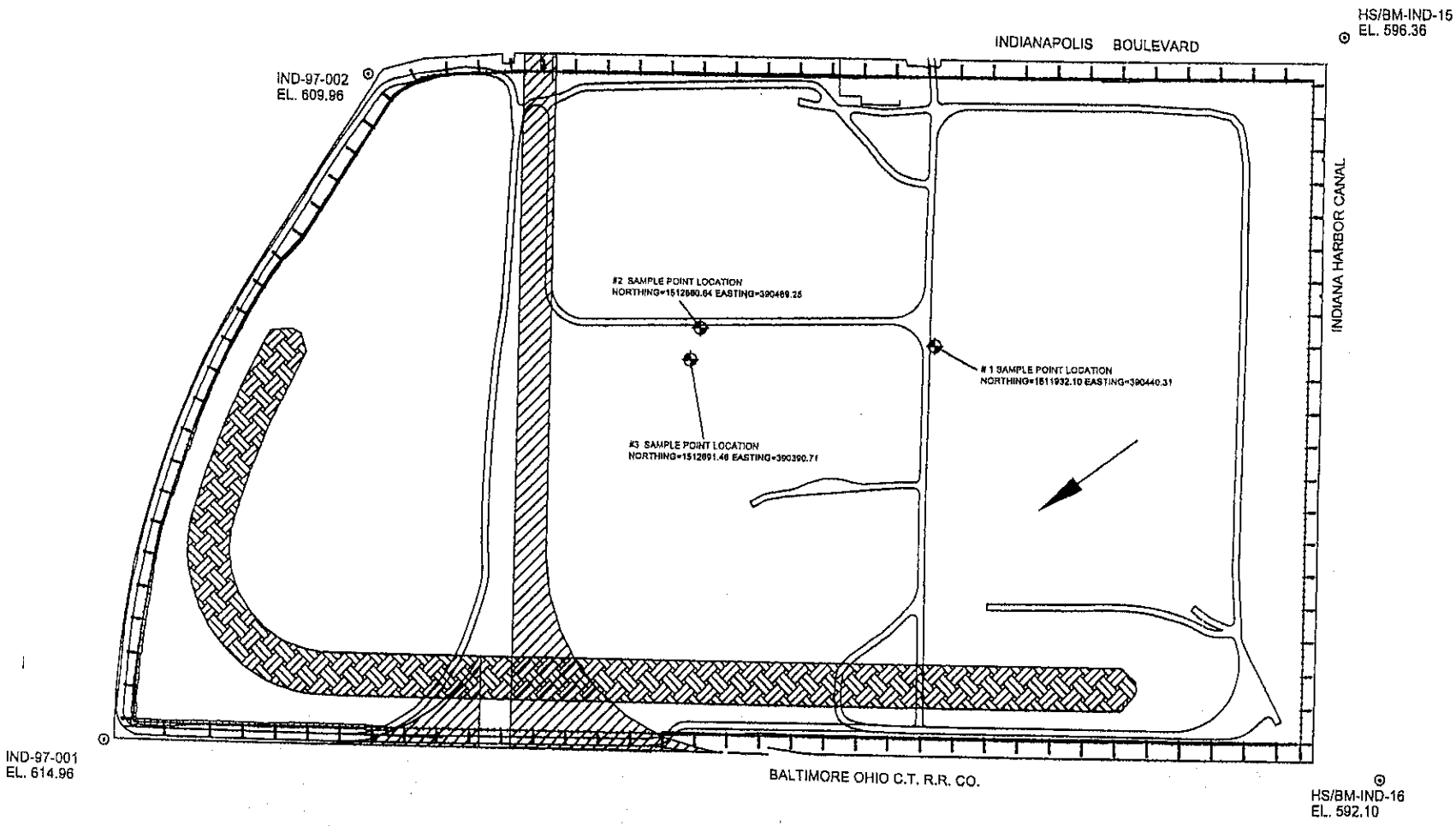
Incorrect date entry during calibration
Correct date for this sheet July 18, 2006.
7-21-06.

DW Point 2
Tag Number: 11
Number of logged points: 4
Start time and date: 14:55:07 18-Jun
Elapsed time: 00:20:00
Logging period (sec): 300
Calibration Factor (%): 100
Max Display Concentration: 0.002 mg/m³
Time at maximum: 15:17:15 Jun 18
Max STEL Concentration: 0.000 mg/m³
Time at max STEL: 14:55:07 Jun 18
Overall Avg Conc: 0.000 mg/m³
Logged Data:

| Point | Date | Time | Avg (mg/m³) |
|---|---|---|---|
| 1 | 18-Jun | 15:00:07 | 0 |
| 2 | 18-Jun | 15:05:07 | 0 |
| 3 | 18-Jun | 15:10:07 | 0 |
| 4 | 18-Jun | 15:15:07 | 0 |

DW Point 3
Tag Number: 12
Number of logged points: 1
Start time and date: 15:19:03 18-Jun
Elapsed time: 00:05:00
Logging period (sec): 300
Calibration Factor (%): 100
Max Display Concentration: 0.001 mg/m³
Time at maximum: 15:19:06 Jun 18
Max STEL Concentration: 0.000 mg/m³
Time at max STEL: 15:19:03 Jun 18
Overall Avg Conc: 0.000 mg/m³
Logged Data:

| Point | Date | Time | Avg.(mg/m³) |
|---|---|---|---|
| 1 | 18-Jun | 15:24:03 | 0 |




N

LEGEND

GENERAL WIND DIRECTION

SAMPLE POINT LOCATION

| REV | DESCRIPTION | DATE | APPROVED |
|---|---|---|---|
| | | | |

REVISIONS

ENVIRONMENTAL QUALITY MANAGEMENT, INC.
1800 CARILLON BLVD.
CINCINNATI, OHIO 45240
P (513)825-7500
F (513)825-7495

| | | |
|---|---|---|
| DRAWN | D.TOMO | 7/24/06 |
| CHECKED | J.WENTZ | |
| APPROVED | J.WENTZ | |
| SCALE: | NONE | |

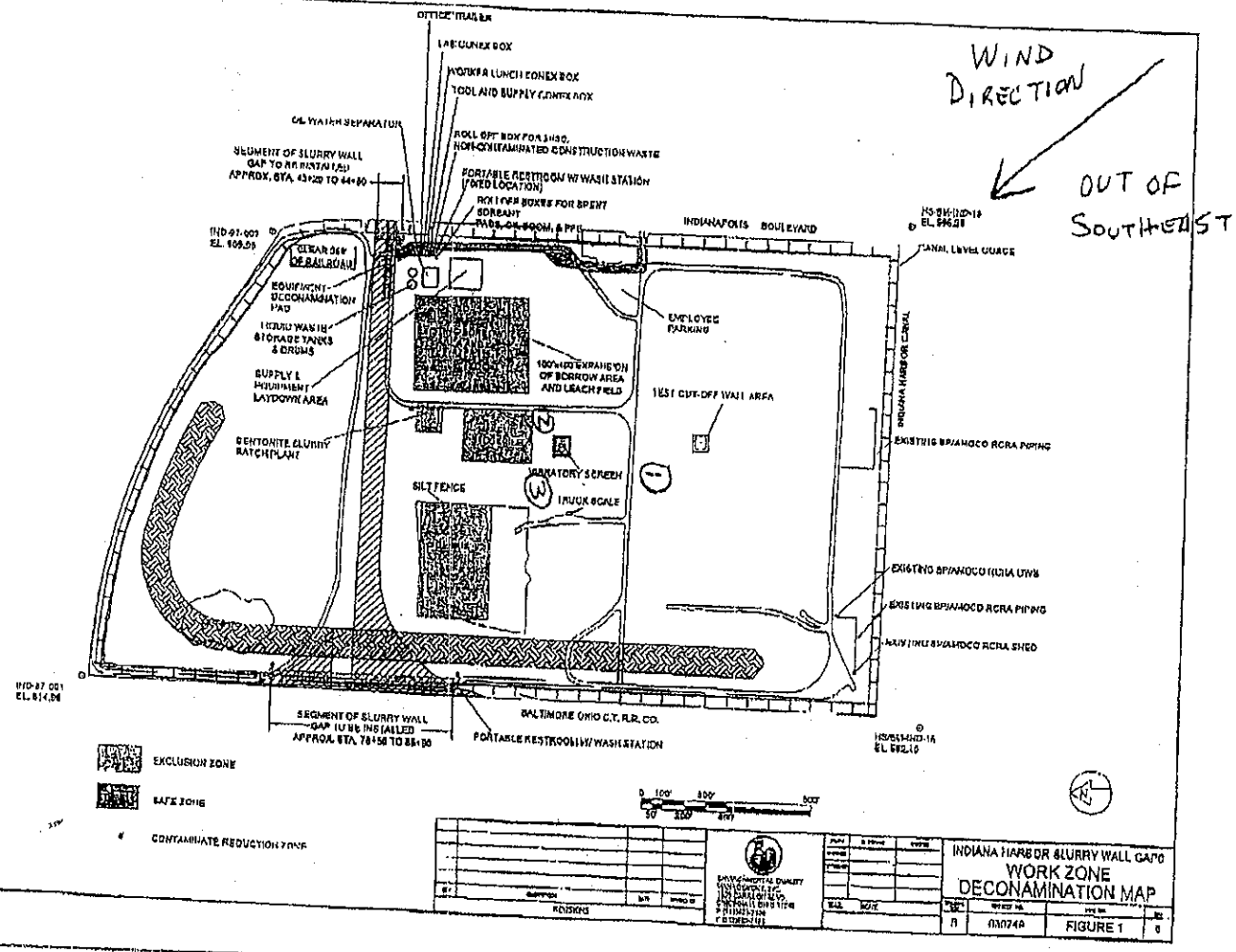
# INDIANA HARBOR CDF
## CONSTRUCTION AIR MOINTORING
## LOCATION 7-27-06

| ORIGINAL SIZE | PROJECT NO. | DWG NO. | REV |
|---|---|---|---|
| A | 030249 | SWGAM 7-27-06 | 0 |

POINT 1
N 41° 39' 00.9"
W 087° 29' 03.3"

POINT 2
N 41° 39' 08.1"
W 087° 29' 02.7"

POINT 3
N 41° 39' 08.4"
W 087° 29' 04.0"




WIND DIRECTION

OUT OF SOUTHEAST

NOTE: PDR SAMPLES TAKEN AT MAKE UP/SCREENER OPERATIONS

IHSWG Station 1 Upwind
Tag Number: 02
Number of logged points: 5
Start time and date: 8:51:33 27-Jul
Elapsed time: 00:05:00
Logging period (sec): 60
Calibration Factor (%): 100
Max Display Concentration: 0.000 mg/m³
Time at maximum: 8:51:33 Jul 27
Max STEL Concentration: 0 000 mg/m³
Time at max STEL: 8:51:33 Jul 27
Overall Avg Conc: 0.000 mg/m³
Logged Data:

| Point | Date | Time | Avg.(mg/m³) |
|---|---|---|---|
| 1 | 27-Jul | 8:52:33 | 0 |
| 2 | 27-Jul | 8:53:33 | 0 |
| 3 | 27-Jul | 8:54:33 | 0 |
| 4 | 27-Jul | 8:55:33 | 0 |
| 5 | 27-Jul | 8:56:33 | 0 001 |

Tag Number: 03 Station 2 Downwind
Number of logged points: 6
Start time and date: 8:57:42 27-Jul
Elapsed time: 00:06:00
Logging period (sec): 60
Calibration Factor (%): 100
Max Display Concentration: 0.000 mg/m³
Time at maximum: 8:57:42 Jul 27
Max STEL Concentration: 0.000 mg/m³
Time at max STEL: 8:57:42 Jul 27
Overall Avg Conc: 0 000 mg/m³
Logged Data:

| Point | Date | Time | Avg.(mg/m³) |
|---|---|---|---|
| 1 | 27-Jul | 8:58:42 | 0 |
| 2 | 27-Jul | 8:59:42 | 0 |
| 3 | 27-Jul | 9:00:42 | 0 |
| 4 | 27-Jul | 9:01:42 | 0 |
| 5 | 27-Jul | 9:02:42 | 0 |
| 6 | 27-Jul | 9:03:42 | 0 |

Tag Number: 04 Station 3 Downwind
Number of logged points: 5
Start time and date: 9:04:49 27-Jul
Elapsed time: 00:05:00
Logging period (sec): 60
Calibration Factor (%): 100
Max Display Concentration: 0 026 mg/m³
Time at maximum: 9:04:50 Jul 27
Max STEL Concentration: 0.000 mg/m³
Time at max STEL: 9:04:49 Jul 27
Overall Avg Conc: 0.000 mg/m³
Logged Data:

| Point | Date | Time | Avg (mg/m³) |
|---|---|---|---|
| 1 | 27-Jul | 9:05:49 | 0 |
| 2 | 27-Jul | 9:06:49 | 0 |
| 3 | 27-Jul | 9:07:49 | 0 |
| 4 | 27-Jul | 9:08:49 | 0 |
| 5 | 27-Jul | 9:09:49 | 0 |

IHSWG Station 1 Upwind
Tag Number: 05
Number of logged points: 5
Start time and date: 2:00:23 27-Jul
Elapsed time: 00:05:00
Logging period (sec): 60
Calibration Factor (%): 100
Max Display Concentration: 0 000 mg/m³
Time at maximum: 2:02:23 Jul 27
Max STEL Concentration: 0 000 mg/m³
Time at max STEL: 2:00:23 Jul 27
Overall Avg Conc: 0 000 mg/m³
Logged Data:

| Point | Date | Time | Avg.(mg/m³) |
|---|---|---|---|
| 1 | 27-Jul | 2:00:23 | 0 |
| 2 | 27-Jul | 2:01:23 | 0 |
| 3 | 27-Jul | 2:02:23 | 0 001 |
| 4 | 27-Jul | 2:03:23 | 0 |
| 5 | 27-Jul | 2:04:23 | 0 |

Tag Number: 06 Station 2 Downwind
Number of logged points: 5
Start time and date: 2:10:40 27-Jul
Elapsed time: 00:06:00
Logging period (sec): 60
Calibration Factor (%): 100
Max Display Concentration: 0 000 mg/m³
Time at maximum: 2:11:40 Jul 27
Max STEL Concentration: 0.000 mg/m³
Time at max STEL: 2:11:40 Jul 27
Overall Avg Conc: 0.000 mg/m³
Logged Data:

| Point | Date | Time | Avg.(mg/m³) |
|---|---|---|---|
| 1 | 27-Jul | 2:10:40 | 0 |
| 2 | 27-Jul | 2:11:40 | 0 |
| 3 | 27-Jul | 2:12:40 | 0 |
| 4 | 27-Jul | 2:13:40 | 0 |
| 5 | 27-Jul | 2:14:40 | 0 |

Tag Number: 07 Station 3 Downwind
Number of logged points: 5
Start time and date: 2:14:41 27-Jul
Elapsed time: 00:05:00
Logging period (sec): 60
Calibration Factor (%): 100
Max Display Concentration: 0 026 mg/m³
Time at maximum: 2:14:41 Jul 27
Max STEL Concentration: 0.000 mg/m³
Time at max STEL: 2:04:41 Jul 27
Overall Avg Conc: 0.000 mg/m³
Logged Data:

| Point | Date | Time | Avg.(mg/m³) |
|---|---|---|---|
| 1 | 27-Jul | 2:15:41 | 0 |
| 2 | 27-Jul | 2:16:41 | 0 |
| 3 | 27-Jul | 2:17:41 | 0 |
| 4 | 27-Jul | 2:18:41 | 0 |
| 5 | 27-Jul | 2:19:41 | 0 |

# EQ SAMPLING EQUIPMENT CALIBRATION LOG

Site Name: IHSWG

Project No.: 03024 9

| DATE/TIME | INSTRUMENT (Mfg./Model) | CALIBRATED BY | STANDARD (concent.-units) | METER READING | COMMENTS/ AMBIENT CONDITIONS |
|---|---|---|---|---|---|
| 7-14-06 | PDR | YM | ZERO CAL | CAL OK | |
| 7-18-06 | PDR | YM | ZERO CAL | "CAL OK" | |
| 7-27-06 | PDR | YM | ZERO CAL | "CAL OK" | |
| | | | | | |
| | | | | | |
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| | | | | | |
| | | | | | |

Page ___ of ___

MONITORING INSTRUMENTS

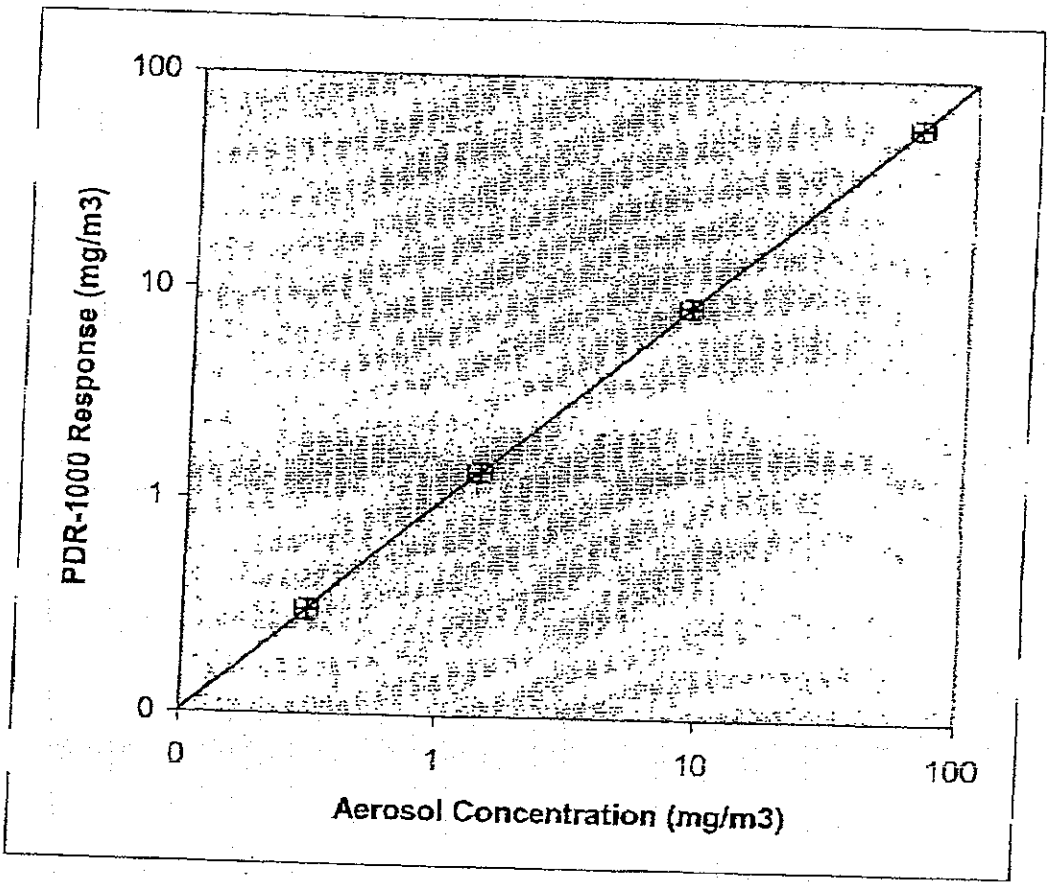
Industrial Environmental Monitoring Instruments, Inc.

7410 Worthington-Galena Road
Worthington, Ohio 43085
Phone: (614) 436-4933
Fax: (614) 436-9144

Website: www.ierents.com

Industrial Environmental Monitoring Instruments Inc.
Certificate of Calibration and Testing
MIE PDR-1000

Calibration Date: 7/6/2006
Environmental Quality Management
Serial# 4375




Calibration Conc: 304.4 ug/m3
Background: .360 mg/m3
Cal Factor:100%
Accuracy: 5%
Test Conditions
B.P.: 30.168 Temp.: 75.8F RH%: 44.0%

Calibrated by: Sam Shults

Calibration Due: 7/6/2007

Calibration Standard

Dataram 4 sn D360 Accuracy: 2% NIST Calibration Date:12/9/2005
All tolerances of accuracy are within the manufactures specifications.

July 2006
DAILY DUST CONTROL LOG
INDIANA HARBOR CDF
3500 Indianapolis Blvd., East Chicago, IN 46410

| DATE | SEGMENT CONTROLLED | TIME OF APPLICATION | METHOD OF APPLICATION (3) | VOLUME OF WATER (GAL) | CHEMICAL USED? | COMMENT |
|---|---|---|---|---|---|---|
| 07/01/06 | NA | NA | NA | NA | NA | No dust control measures performed, either due to wet conditions or no truck traffic |
| 07/02/06 | NA | NA | NA | NA | NA | No dust control measures performed, either due to wet conditions or no truck traffic |
| 07/03/06 | NA | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 07/04/06 | NA | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 07/05/06 | NA | NA | NA | NA | NA | No dust control measures performed, either due to wet conditions or no truck traffic |
| 07/06/06 | NA | NA | NA | NA | NA | No dust control measures performed, either due to wet conditions or no truck traffic |
| 07/07/06 | NA | NA | NA | NA | NA | No dust control measures performed, either due to wet conditions or no truck traffic |
| 07/08/06 | NA | NA | NA | NA | NA | No dust control measures performed, either due to wet conditions or no truck traffic |
| 07/09/06 | NA | NA | NA | NA | NA | No dust control measures performed, either due to wet conditions or no truck traffic |
| 07/10/06 | NA | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 07/11/06 | NA | NA | NA | NA | NA | No dust control measures performed, either due to wet conditions or no truck traffic |
| 07/12/06 | NA | NA | NA | NA | NA | No dust control measures performed, either due to wet conditions or no truck traffic |
| 07/13/06 | NA | NA | NA | NA | NA | No dust control measures performed, either due to wet conditions or no truck traffic |
| 07/14/06 | NA | NA | NA | NA | NA | No dust control measures performed, either due to wet conditions or no truck traffic |
| 07/15/06 | NA | NA | NA | NA | NA | No dust control measures performed, either due to wet conditions or no truck traffic |
| 07/16/06 | NA | NA | NA | NA | NA | No dust control measures performed, either due to wet conditions or no truck traffic |
| 07/17/06 | NA | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 07/18/06 | NA | NA | NA | NA | NA | No dust control measures performed, either due to wet conditions or no truck traffic |
| 07/19/06 | NA | NA | NA | NA | NA | No dust control measures performed, either due to wet conditions or no truck traffic |
| 07/20/06 | NA | NA | NA | NA | NA | A semi truck was fitted with a water system. Dust control measures began |
| 07/21/06 | All | 7 am to 5 pm | 1 | 3000 | No | All roads watered throughout the day |
| 07/22/06 | All | 7 am to 5 pm | 1 | 3000 | No | All roads watered throughout the day |
| 07/23/06 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 07/24/06 | All | 7 am to 5 pm | 1 | 3000 | No | All roads watered throughout the day |
| 07/25/06 | All | 7 am to 5 pm | 1 | 3000 | No | All roads watered throughout the day |
| 07/26/06 | All | 7 am to 5 pm | 1 | 3000 | No | All roads watered throughout the day |
| 07/27/06 | None | NA | NA | NA | NA | Raods wet due to recent rain, no dust control measures performed |
| 07/28/06 | All | 7 am to 5 pm | 1 | 3000 | No | All roads watered throughout the day |
| 07/29/06 | All | 7 am to 5 pm | 1 | 3000 | No | All roads watered throughout the day |
| 07/30/06 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 07/31/06 | All | 7 am to 5 pm | 1 | 3000 | No | All roads watered throughout the day |

Notes:

1) If chemicals are used additional requirements are presented in the permit. Consult before use and collect the requisite data.
2) The width of the application is 8 ft unless noted in the comments column.
3) Method of application code. #1 Water Truck Spray Bar, #2 Spray Hose, #3 Other as noted in Comments

Air Monitoring Monthly Summary – August 2006

Site: IHSWG
Location: 3500 Indianapolis Blvd., East Chicago, IN 46312
Prepared by: Nicholas Michailides
Sampling Performed by: Nicholas Michailides
Date: 9-05-06

## I. Significant Findings / Site Activities

Construction activities were limited during the month of August. Site set-up of the batch plant, stringing of water lines, and placing of bentonite super sacks occupied the first two weeks of August (non-construction activities). Backfilling of the exploratory trench (west side) was completed on 08-08-06. Construction emission monitoring was conducted on 08-04-06 and 08-08-06 during this backfill process.

On 08-14-06 slurry wall construction started and ceased almost immediately due to insufficient deep excavation machinery. Site construction was stopped from 08-14-06 until 08-31-06.

Continuous, real-time monitoring was performed on a random one-day per week basis (random when the construction activities for the week were the same). One upwind and two to three downwind points were monitored around the work area. Once EQ learned of USACE's concern about random monitoring vs daily monitoring, EQ immediately began daily particulate monitoring once work resumed on 8-31-06.

Construction emissions air monitoring restarted on 08-31-06 when the Dewind one pass trenching / slurry wall installation operation began.

## II. Report of / discussion of findings

No exceedances or exposure issues for site personnel, however, bentonite mixing is a dusty operation, all personnel directly involved to the mixing and one pass trenching operations who are not enclosed in a heavy equipment cab were required to wear respirator protection (minimum ½ face APR with HEPA cartridge). Site personnel adjacent to trenching and mixing operations are not required to wear respirator protection but are recommended to observe from an upwind position.

Also dust suppression of bentonite bag breaking activities was employed during the 08-31-06 sampling event to suppress dust migration to adjacent site areas. No dust was reported leaving the site. Although air monitoring data did not indicate the need for this dust control, EQ was sensitive to the proximity of the task to Indianapolis Blvd. EQ therefore, elected to perform dust control for aesthetic purposes on the east segment. Water was brought on site in a jetter truck provided by Tierra Environmental Services. It is estimated that 600-700 gallons of water was used over an 8-hour period. EQ utilized

Tierra Environmental Services to perform dust control for the breaking and emptying the betonite bags in the near proximity of Indianapolis Boulevard. EQ had learned from past experience that the best way to suppress dust released from emptying the bentonite bags was to put a water spray to suppress the dust releases. The jetter truck gives the flexibility to apply the water spray at the point of the bag opening, while using the least amount of water to suppress the dust. Minimizing water spray in the work areas keep mud conditions minimized, and therefore minimizes slip, trip, and fall hazards, and mud tracking issues.

## III. Problems encountered

No problems encountered.

## IV. Potential action items / lessons learned

Bentonite mixing and slurry wall installation is a very dusty operation and along with personal respiratory protection, orientation of site operations (administration controls) related to wind direction is very important to help lesson any exposure issues (both personal and environmental).

See attached raw data (calibration sheet, sample results, monitoring locations)

Indiana Harbor and Canal Confined Disposal Facility
Obstructions Removal
Contract No. W912P6-06-C-0003

Particulates August-06

| pDR-1000 | Limit mg/m3 | week of 7/30/2006 Time | mg/m3 | 7/31/2006 Time | mg/m3 | 8/1/2006 Time | mg/m3 | 8/2/2006 Time | mg/m3 | 8/3/2006 Time | mg/m3 | 8/4/2006 Time | mg/m3 | 8/5/2006 Time | mg/m3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Reading 1 | 10.0 | | | | | | | | | | | 9:11:40 DW | 0.020 | | |
| Reading 2 | 10.0 | | | | | | | | | | | 9:17:16 DW | 0.020 | | |
| Reading 3 | 10.0 | | | | | | | | | | | 9:22:56 UW | 0.000 | | |
| Reading 4 | 10.0 | | | | | | | | | | | 15:07:12 DW | 0.019 | | |
| Reading 5 | 10.0 | | | | | | | | | | | 15:12:44 DW | 0.000 | | |
| Reading 6 | 10.0 | | | | | | | | | | | 15:18:56 UW | 0.000 | | |

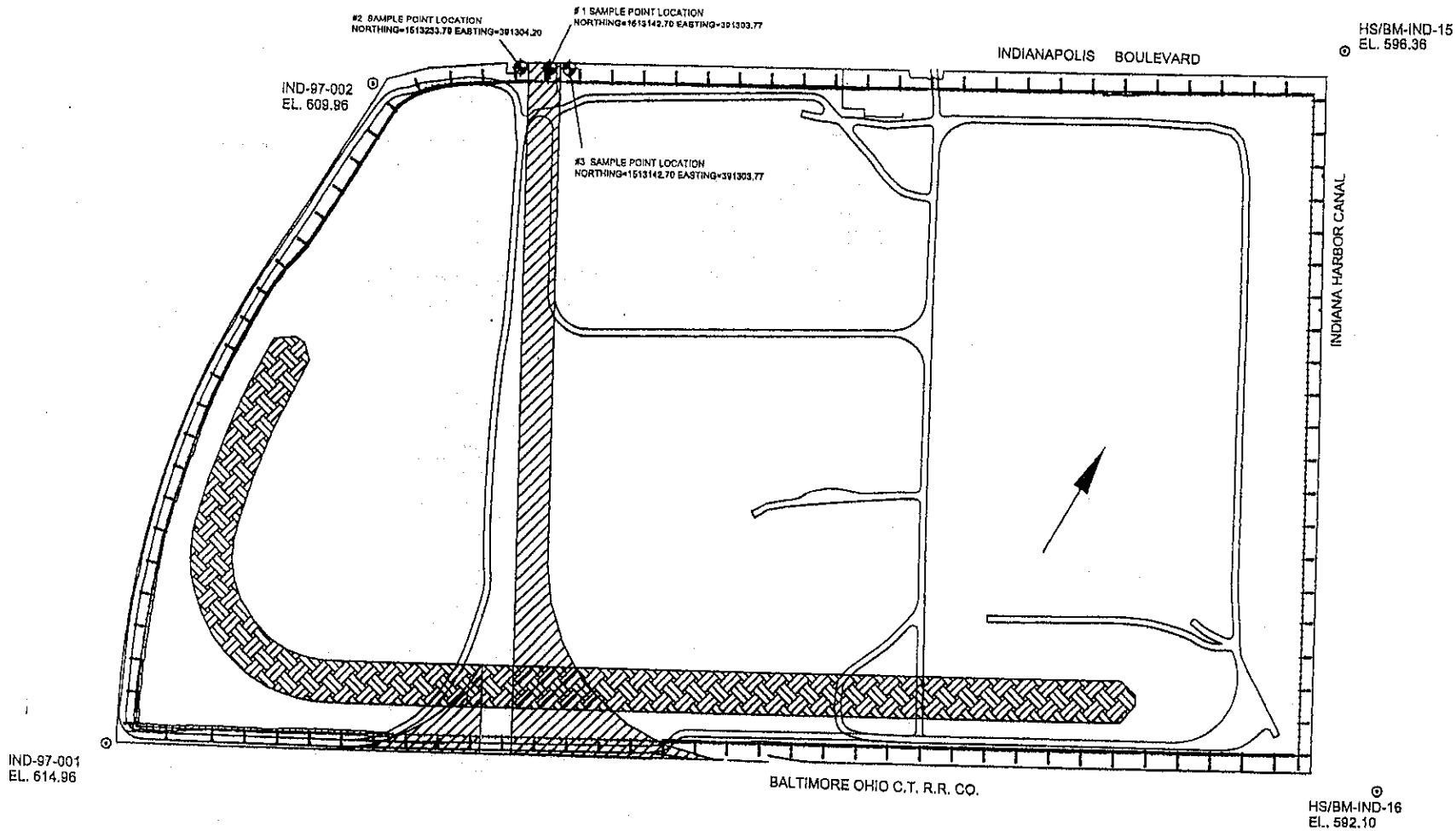
| pDR-1000 | Limit mg/m3 | week of 8/6/2006 Time | mg/m3 | 8/7/2006 Time | mg/m3 | 8/8/2006 Time | mg/m3 | 8/9/2006 Time | mg/m3 | 8/10/2006 Time | mg/m3 | 8/11/2006 Time | mg/m3 | 8/12/2006 Time | mg/m3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Reading 1 | 10.0 | | | | | 10:19:35 UW | 0.000 | | | | | | | | |
| Reading 2 | 10.0 | | | | | 10:28:52 DW | 0.000 | | | | | | | | |
| Reading 3 | 10.0 | | | | | 10:36:25 DW | 0.000 | | | | | | | | |
| Reading 4 | 10.0 | | | | | 15:08:49 UW | 0.003 | | | | | | | | |
| Reading 5 | 10.0 | | | | | 15:23:10 DW | 0.000 | | | | | | | | |
| Reading 6 | 10.0 | | | | | 15:33:26 DW | 0.002 | | | | | | | | |

| pDR-1000 | Limit mg/m3 | week of 8/13/2006 Time | mg/m3 | 8/14/2006 Time | mg/m3 | 8/15/2006 Time | mg/m3 | 8/16/2006 Time | mg/m3 | 8/17/2006 Time | mg/m3 | 8/18/2006 Time | mg/m3 | 8/19/2006 Time | mg/m3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Reading 1 | 10.0 | | | | | | | | | | | | | | |
| Reading 2 | 10.0 | | | | | | | | | | | | | | |
| Reading 3 | 10.0 | | | | | | | | | | | | | | |
| Reading 4 | 10.0 | | | | | | | | | | | | | | |
| Reading 5 | 10.0 | | | | | | | | | | | | | | |

| pDR-1000 | Limit mg/m3 | week of 8/20/2006 Time | mg/m3 | 8/21/2006 Time | mg/m3 | 8/22/2006 Time | mg/m3 | 8/23/2006 Time | mg/m3 | 8/24/2006 Time | mg/m3 | 8/25/2006 Time | mg/m3 | 8/26/2006 Time | mg/m3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Reading 1 | 10.0 | | | | | | | | | | | | | | |
| Reading 2 | 10.0 | | | | | | | | | | | | | | |
| Reading 3 | 10.0 | | | | | | | | | | | | | | |
| Reading 4 | 10.0 | | | | | | | | | | | | | | |
| Reading 5 | 10.0 | | | | | | | | | | | | | | |

| pDR-1000 | Limit mg/m3 | week of 8/27/2006 Time | mg/m3 | 8/28/2006 Time | mg/m3 | 8/29/2006 Time | mg/m3 | 8/30/2006 Time | mg/m3 | 8/31/2006 Time | mg/m3 | 9/1/2006 Time | mg/m3 | 9/2/2006 Time | mg/m3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Reading 1 | 10.0 | | | | | | | | | | | | | | |
| Reading 2 | 10.0 | | | | | | | | | 13:14:27 DW | 0.042 | 9:20:26 DW | 0.609 | | |
| Reading 3 | 10.0 | | | | | | | | | 13:21:46 DW | 0.021 | 9:28:38 DW | 5.794 | | |
| Reading 4 | 10.0 | | | | | | | | | 13:28:26 UW | 0.018 | 9:33:58 UW | 0.000 | | |
| Reading 5 | 10.0 | | | | | | | | | 15:16:37 DW | 3.181 | 11:49:50 DW | 0.129 | | |
| Reading 6 | 10.0 | | | | | | | | | 15:22:24 DW | 0.055 | 11:55:27 DW | 0.022 | | |
| Reading 7 | 10.0 | | | | | | | | | 15:32:10 UW | 0.006 | 12:01:39 UW | 0.075 | | |
| Reading 8 | 10.0 | | | | | | | | | 15:32:55 DW | 0.050 | | | | |
| Reading 9 | 10.0 | | | | | | | | | 16:39:37 DW | 0.145 | | | | |
| | | | | | | | | | | 16:46:15 UW | 0.032 | | | | |

Notes:
Values reported are the Overall Average Concentration of the sampling interval for each Tag Number with time reported as interval start time.
DW= Downwind
UW= Upwind




LEGEND

GENERAL WIND DIRECTION

SAMPLE POINT LOCATION

| REV | DESCRIPTION | DATE | APPROVED |
|---|---|---|---|
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REVISIONS

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CINCINNATI, OHIO 45240
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F (513)825-7495

| | | |
|---|---|---|
| DRAWN | D.TOMO | 7/24/06 |
| CHECKED | J.WENTZ | |
| APPROVED | J.WENTZ | |
| SCALE: | NONE | |

# INDIANA HARBOR CDF
## CONSTRUCTION AIR MOINTORING
## LOCATION 8-04-06

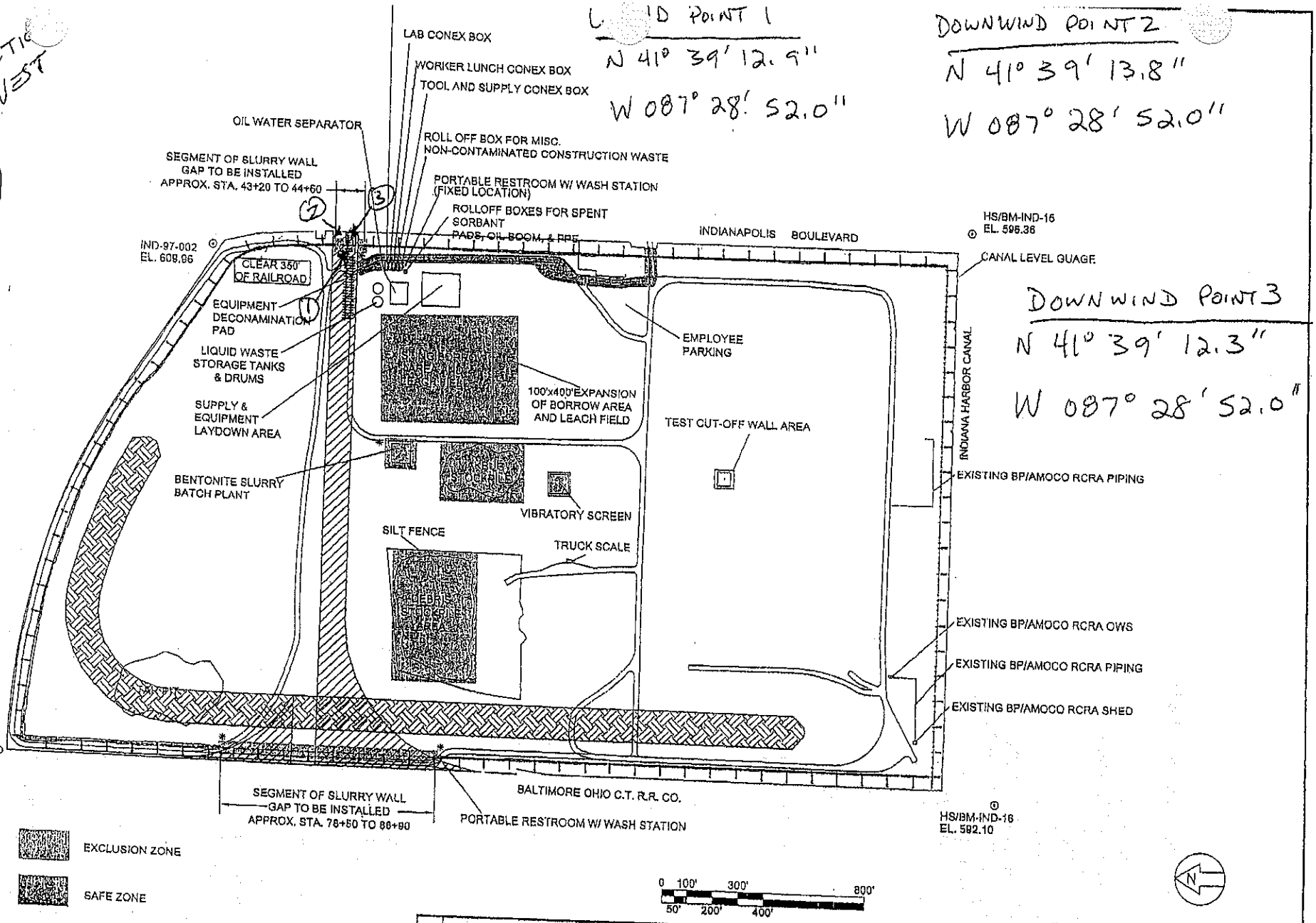
| ORIGINAL SIZE | PROJECT NO. | DWG NO. | REV |
|---|---|---|---|
| A | 030249 | SWGAM 8-04-06 | 0 |

WIND DIRECTION OUT OF WEST

L[illegible]D POINT 1
N 41° 39' 12.9"
W 087° 28' 52.0"

DOWNWIND POINT 2
N 41° 39' 13.8"
W 087° 28' 52.0"

DOWNWIND POINT 3
N 41° 39' 12.3"
W 087° 28' 52.0"




| REV | DESCRIPTION | DATE | APPRV'D |
|---|---|---|---|
| | REVISIONS | | |

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| | | |
|---|---|---|
| DRAWN | D.TOMO | 4/26/06 |
| CHECKED | | |
| APPROVED | | |
| SCALE | NONE | |

INDIANA HARBOR SLURRY WALL GAPS
WORK ZONE DECONAMINATION MAP

| ORIGINAL SIZE | PROJECT NO. | DWG NO. | REV |
|---|---|---|---|
| B | 030249 | FIGURE 1 | 0 |

August 4 2006 - IHSWG Station 1 Upwind
Tag Number: 07
Number of logged points: 5
Start time and date: 09:22:56 04-Aug
Elapsed time: 00:05:00
Logging period (sec): 60
Calibration Factor (%): 100
Max Display Concentration: 0.032 mg/m³
Time at maximum: 09:27:41 Aug 04
Max STEL Concentration: 0.001 mg/m³
Time at max STEL: 09:23:26 Aug 04
Overall Avg Conc: 0.000 mg/m³
Logged Data:

| Point | Date | Time | Avg.(mg/m³) |
|---|---|---|---|
| 1 | 4-Aug | 09:23:56 | 0.009 |
| 2 | 4-Aug | 09:24:56 | 0 |
| 3 | 4-Aug | 09:25:56 | 0 |
| 4 | 4-Aug | 09:26:56 | 0 |
| 5 | 4-Aug | 09:27:56 | 0 006 |

Tag Number: 06 Station 2 Downwind
Number of logged points: 5
Start time and date: 09:17:16 04-Aug
Elapsed time: 00:05:00
Logging period (sec): 60
Calibration Factor (%): 100
Max Display Concentration: 0.042 mg/m³
Time at maximum: 09:18:34 Aug 04
Max STEL Concentration: 0.007 mg/m³
Time at max STEL: 09:22:16 Aug 04
Overall Avg Conc: 0.020 mg/m³
Logged Data:

| Point | Date | Time | Avg.(mg/m³) |
|---|---|---|---|
| 1 | 4-Aug | 09:18:16 | 0.024 |
| 2 | 4-Aug | 09:19:16 | 0.024 |
| 3 | 4-Aug | 09:20:16 | 0.018 |
| 4 | 4-Aug | 09:21:16 | 0.017 |
| 5 | 4-Aug | 09:22:16 | 0.017 |

Tag Number: 05 Station 3 Downwind
Number of logged points: 5
Start time and date: 09:11:40 04-Aug
Elapsed time: 00:05:00
Logging period (sec): 60
Calibration Factor (%): 100
Max Display Concentration: 0.187 mg/m³
Time at maximum: 09:13:07 Aug 04
Max STEL Concentration: 0.003 mg/m³
Time at max STEL: 09:16:10 Aug 04
Overall Avg Conc: 0.020 mg/m³
Logged Data:

| Point | Date | Time | Avg.(mg/m³) |
|---|---|---|---|
| 1 | 4-Aug | 09:12:40 | 0.006 |
| 2 | 4-Aug | 09:13:40 | 0.053 |
| 3 | 4-Aug | 09:14:40 | 0.018 |
| 4 | 4-Aug | 09:15:40 | 0.02 |
| 5 | 4-Aug | 09:16:40 | 0.014 |

August 4 2006 - IHSWG Station 1 Upwind
Tag Number: 10
Number of logged points: 7
Start time and date: 15:18:56 04-Aug
Elapsed time: 00:07:00
Logging period (sec): 60
Calibration Factor (%): 100
Max Display Concentration: 0.000 mg/m³
Time at maximum: 15:18:56 Aug 04
Max STEL Concentration: 0.000 mg/m³
Time at max STEL: 15:18:56 Aug 04
Overall Avg Conc: 0.000 mg/m³
Logged Data:

| Point | Date | Time | Avg (mg/m³) |
|---|---|---|---|
| 1 | 4-Aug | 15:19:56 | 0 |
| 2 | 4-Aug | 15:20:56 | 0 |
| 3 | 4-Aug | 15:21:56 | 0 |
| 4 | 4-Aug | 15:22:56 | 0 |
| 5 | 4-Aug | 15:23:56 | 0 |
| 6 | 4-Aug | 15:24:56 | 0 |
| 7 | 4-Aug | 15:25:56 | 0 |

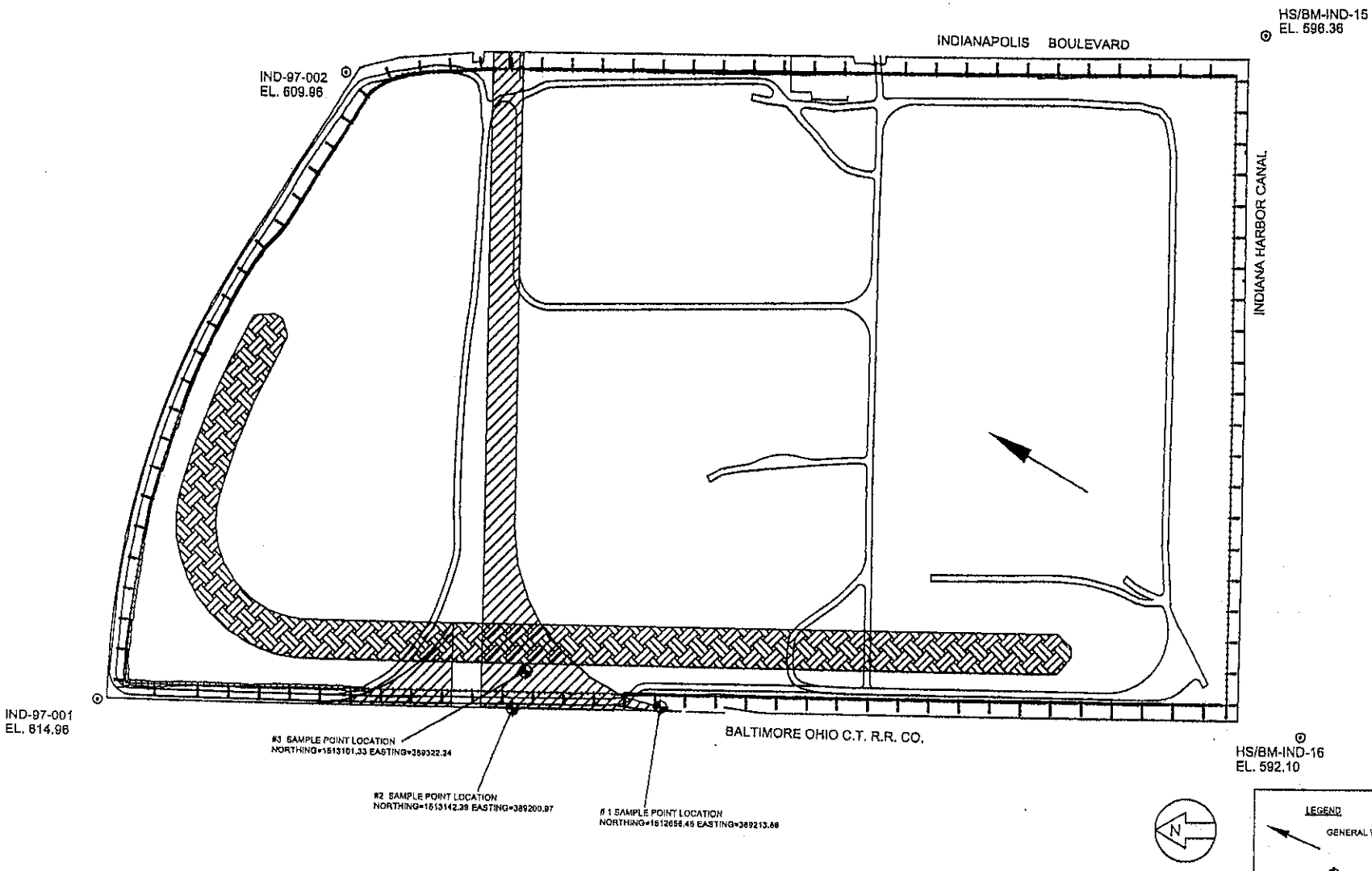
Tag Number: 09 Station 2 Downwind
Number of logged points: 5
Start time and date: 15:12:44 04-Aug
Elapsed time: 00:05:00
Logging period (sec): 60
Calibration Factor (%): 100
Max Display Concentration: 0.059 mg/m³
Time at maximum: 15:15:14 Aug 04
Max STEL Concentration: 0.000 mg/m³
Time at max STEL: 15:12:44 Aug 04
Overall Avg Conc: 0.000 mg/m³
Logged Data:

| Point | Date | Time | Avg (mg/m³) |
|---|---|---|---|
| 1 | 4-Aug | 15:13:44 | 0 |
| 2 | 4-Aug | 15:14:44 | 0 |
| 3 | 4-Aug | 15:15:44 | 0.019 |
| 4 | 4-Aug | 15:16:44 | 0 |
| 5 | 4-Aug | 15:17:44 | 0 |

Tag Number: 08 Station 3 Downwind
Number of logged points: 5
Start time and date: 15:07:12 04-Aug
Elapsed time: 00:05:00
Logging period (sec): 60
Calibration Factor (%): 100
Max Display Concentration: 0.073 mg/m³
Time at maximum: 15:10:30 Aug 04
Max STEL Concentration: 0.006 mg/m³
Time at max STEL: 15:10:42 Aug 04
Overall Avg Conc: 0.019 mg/m³

Logged Data:

| Point | Date | Time | Avg.(mg/m³) |
|---|---|---|---|
| 1 | 4-Aug | 15:08:12 | 0.015 |
| 2 | 4-Aug | 15:09:12 | 0 035 |
| 3 | 4-Aug | 15:10:12 | 0.026 |
| 4 | 4-Aug | 15:11:12 | 0 021 |
| 5 | 4-Aug | 15:12:12 | 0.012 |




| REV | DESCRIPTION | DATE | APPROVED |
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F (513)825-7495

| | | |
|---|---|---|
| DRAWN | D.TOMO | 9-07-06 |
| CHECKED | J.WENTZ | |
| APPROVED | J.WENTZ | |
| SCALE | NONE | |

# INDIANA HARBOR CDF
## CONSTRUCTION AIR MOINTORING
## LOCATION 8-08-06

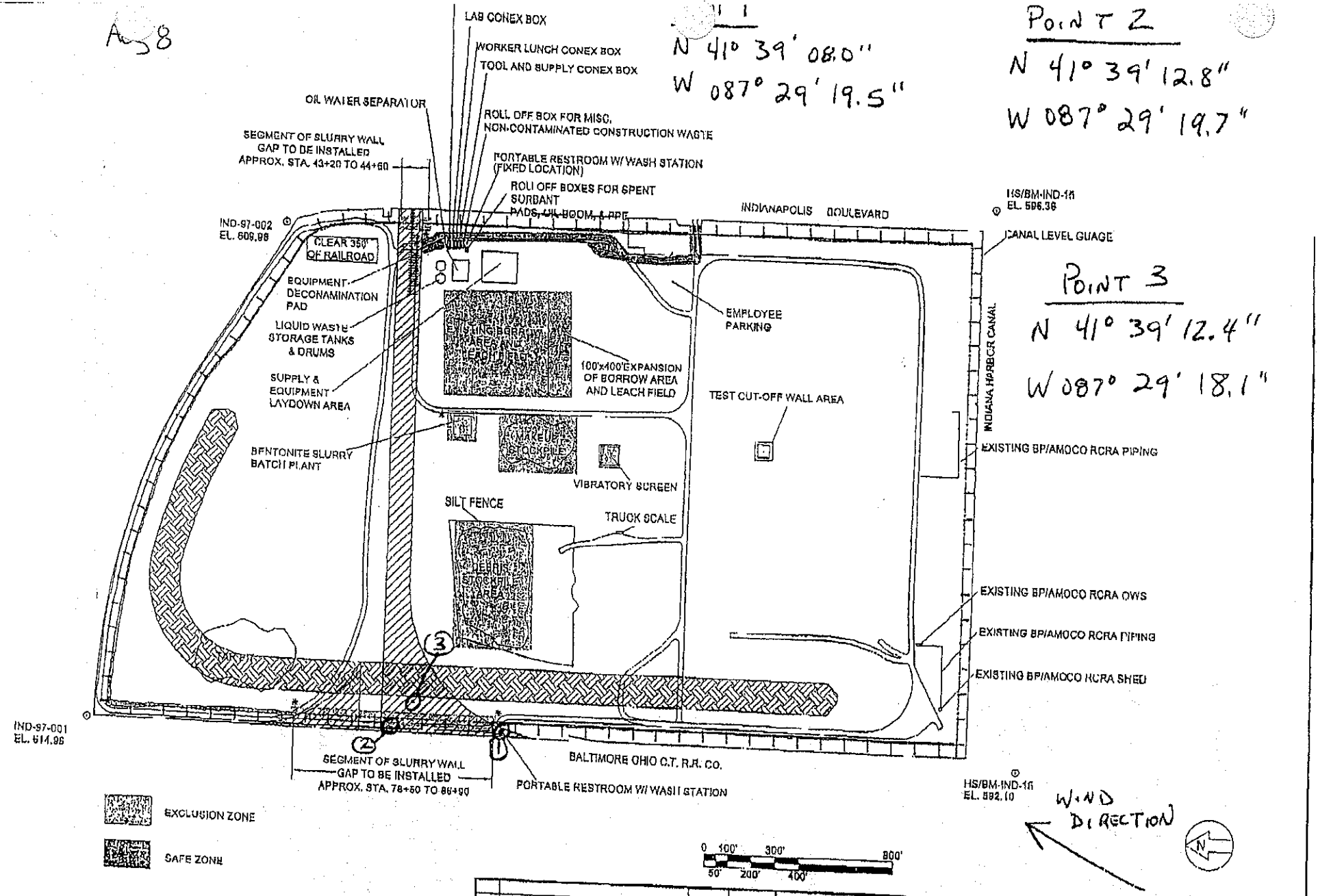
| ORIGINAL SIZE | PROJECT NO. | DWG NO. | REV |
|---|---|---|---|
| A | 030249 | SWGAM 8-08-06 | 0 |

Aug 8

POINT 1
N 41° 39' 08.0"
W 087° 29' 19.5"

POINT 2
N 41° 39' 12.8"
W 087° 29' 19.7"

POINT 3
N 41° 39' 12.4"
W 087° 29' 18.1"




| REV | DESCRIPTION | DATE | APPROVED |
|---|---|---|---|
| | | | |

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DRAWN D.TOMO
CHECKED
APPROVED
SCALE NONE

INDIANA HARBOR SLURRY WALL GAPS
WORK ZONE DECONAMINATION MAP

| DRAWING SIZE | PROJECT NO. | DWG NO. | REV |
|---|---|---|---|
| B | 030249 | FIGURE 1 | 0 |

August 8 2006 - IHSWG Station 1 Upwind
pDR-1000
Tag Number: 01
Number of logged points: 1
Start time and date: 10:19:35 08-Aug
Elapsed time: 00:05:00
Logging period (sec): 300
Calibration Factor (%): 100
Max Display Concentration: 0.055 mg/m³
Time at maximum: 10:19:53 Aug 08
Max STEL Concentration: 0.001 mg/m³
Time at max STEL: 10:20:05 Aug 08
Overall Avg Conc: 0.000 mg/m³
Logged Data:

| Point | Date | Time | Avg.(mg/m³) |
|---|---|---|---|
| Upwind | 8-Aug | 10:24:35 | 0.004 |

Tag Number: 02 Station 2 Downwind
Number of logged points: 1
Start time and date: 10:28:52 08-Aug
Elapsed time: 00:05:00
Logging period (sec): 300
Calibration Factor (%): 100
Max Display Concentration: 0.089 mg/m³
Time at maximum: 10:29:25 Aug 08
Max STEL Concentration: 0.000 mg/m³
Time at max STEL: 10:30:52 Aug 08
Overall Avg Conc: 0.000 mg/m³
Logged Data:

| Point | Date | Time | Avg.(mg/m³) |
|---|---|---|---|
| 1 | 8-Aug | 10:33:52 | 0.007 |

Tag Number: 03 Station 3 Downwind
Number of logged points: 1
Start time and date: 10:36:25 08-Aug
Elapsed time: 00:05:00
Logging period (sec): 300
Calibration Factor (%): 100
Max Display Concentration: 0.000 mg/m³
Time at maximum: 10:36:25 Aug 08
Max STEL Concentration: 0.000 mg/m³
Time at max STEL: 10:36:25 Aug 08
Overall Avg Conc: 0.000 mg/m³
Logged Data:

| Point | Date | Time | Avg (mg/m³) |
|---|---|---|---|
| 1 | 8-Aug | 10:41:25 | 0 |

August 8 2006 - IHSWG Station 1 Upwind
Tag Number: 04
Number of logged points: 1
Start time and date: 15:08:49 08-Aug
Elapsed time: 00:05:00
Logging period (sec): 300
Calibration Factor (%): 100
Max Display Concentration: 0.094 mg/m³
Time at maximum: 15:13:37 Aug 08
Max STEL Concentration: 0.000 mg/m³
Time at max STEL: 15:08:49 Aug 08
Overall Avg Conc: 0.003 mg/m³
Logged Data:

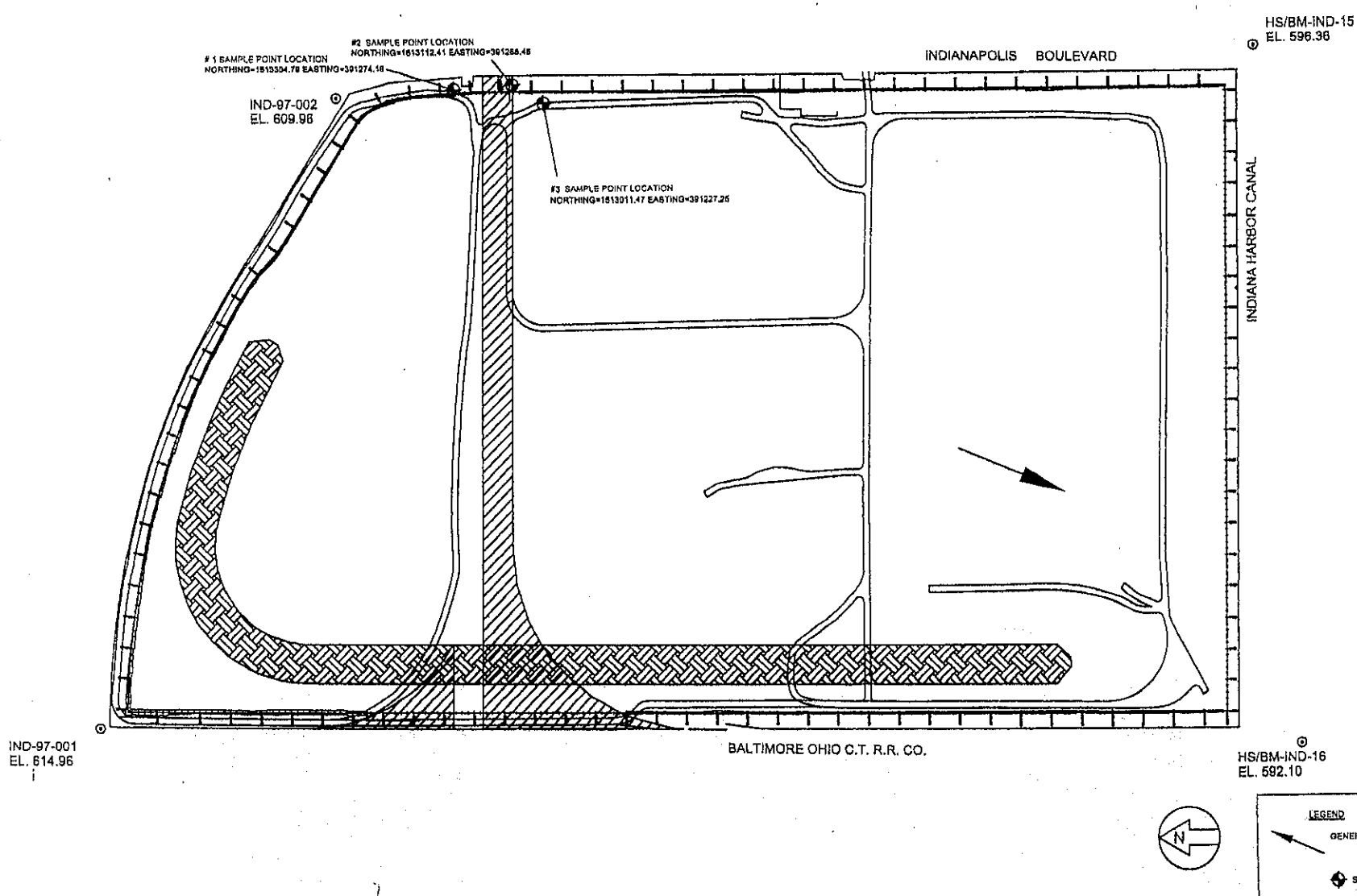
| Point | Date | Time | Avg.(mg/m³) |
|---|---|---|---|
| 1 | 8-Aug | 15:13:49 | 0.005 |

Tag Number: 05 Station 2 Downwind
Number of logged points: 1
Start time and date: 15:23:10 08-Aug
Elapsed time: 00:05:00
Logging period (sec): 300
Calibration Factor (%): 100
Max Display Concentration: 0.020 mg/m³
Time at maximum: 15:25:34 Aug 08
Max STEL Concentration: 0.000 mg/m³
Time at max STEL: 15:23:10 Aug 08
Overall Avg Conc: 0.000 mg/m³
Logged Data:

| Point | Date | Time | Avg.(mg/m³) |
|---|---|---|---|
| 1 | 8-Aug | 15:28:10 | 0.001 |

Tag Number: 06 Station 3 Downwind
Number of logged points: 1
Start time and date: 15:33:26 08-Aug
Elapsed time: 00:05:00
Logging period (sec): 300
Calibration Factor (%): 100
Max Display Concentration: 0.039 mg/m³
Time at maximum: 15:35:34 Aug 08
Max STEL Concentration: 0.000 mg/m³
Time at max STEL: 15:36:19 Aug 08
Overall Avg Conc: 0.002 mg/m³
Logged Data:

| Point | Date | Time | Avg.(mg/m³) |
|---|---|---|---|
| 1 | 8-Aug | 15:38:26 | 0.004 |




| REV | DESCRIPTION | DATE | APPROVED |
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1600 CARILLON BLVD.
CINCINNATI, OHIO 45240
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F (513)825-7495

| | | |
|---|---|---|
| DRAWN | D.TOMO | 7/24/06 |
| CHECKED | J.WENTZ | |
| APPROVED | J.WENTZ | |
| SCALE | NONE | |

# INDIANA HARBOR CDF
## CONSTRUCTION AIR MOINTORING
## LOCATION 8-31-06

| ORIGINAL SIZE | PROJECT NO. | DWG NO. | REV |
|---|---|---|---|
| A | 030249 | SWGAM 8-31-06 | 0 |

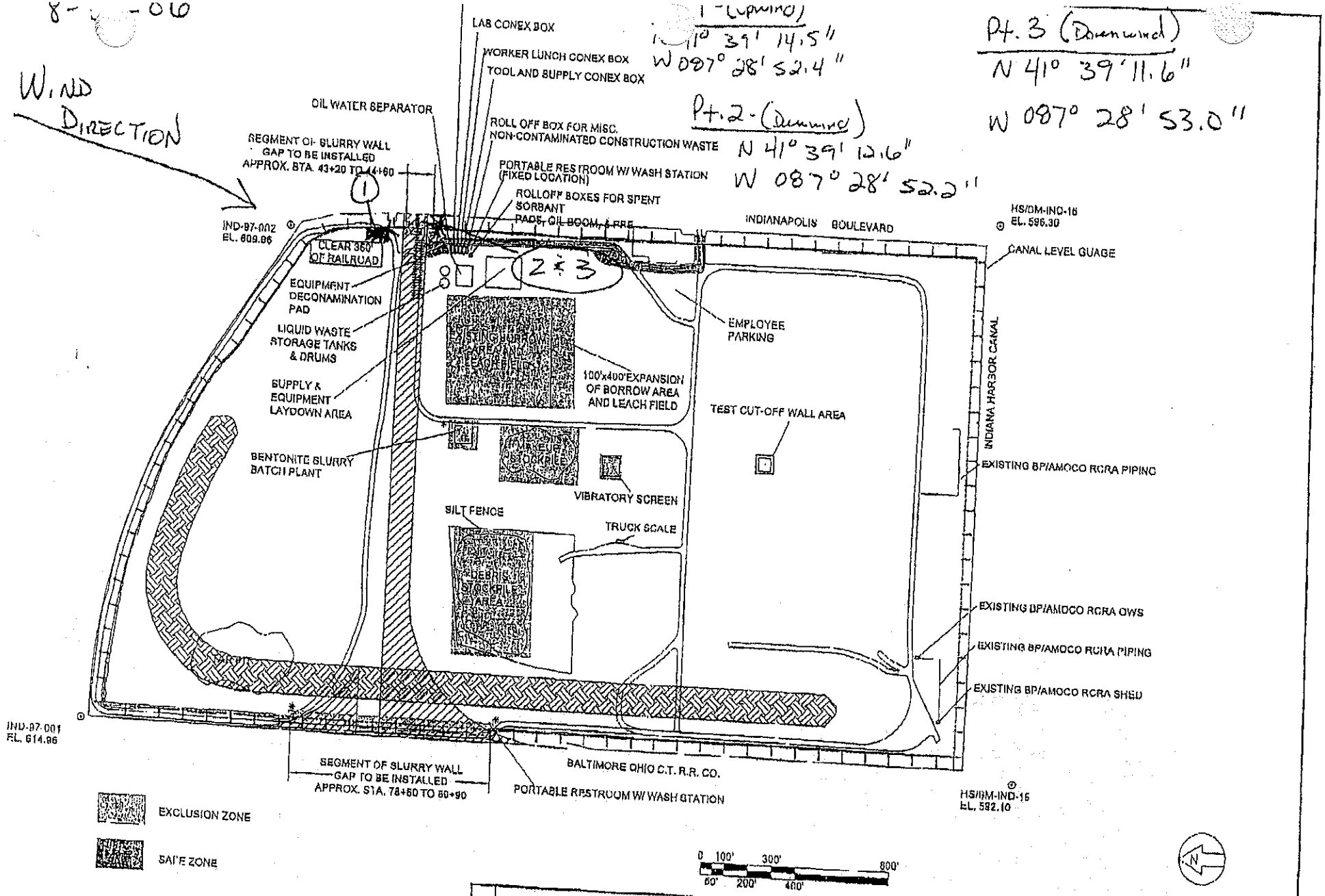
8- -06

WIND DIRECTION

Pt. 1 (Upwind)
N 41° 39' 14.5"
W 087° 28' 52.4"

Pt. 2 - (Downwind)
N 41° 39' 12.6"
W 087° 28' 52.2"

Pt. 3 (Downwind)
N 41° 39' 11.6"
W 087° 28' 53.0"




| REVISIONS | | | |
|---|---|---|---|
| KEY | DESCRIPTION | DATE | APPROVED |

ENVIRONMENTAL QUALITY MANAGEMENT, INC.
1000 CARILLON BLVD.
CINCINNATI, OHIO 45240
P (513)825-7500
F (513)825-7485

| DRAWN | DATE | CHECKED |
|---|---|---|
| N Ferrer | | |
| APPROVED | | |
| SCALE | NONE | |

INDIANA HARBOR SLURRY WALL GAPS
WORK ZONE DECONAMINATION MAP

| ORIGINAL SIZE | PROJECT No. | Dwg No. | REV |
|---|---|---|---|
| B | 030249 | FIGURE 1 | 0 |

Pt 1 - Upwind
Tag Number: 03
Number of logged points: 5
Start time and date: 13:28:26 31-Aug
Elapsed time: 00:05:00
Logging period (sec): 60
Calibration Factor (%): 100
Max Display Concentration: 0.061 mg/m³
Time at maximum: 13:32:40 Aug 31
Max STEL Concentration: 0.005 mg/m³
Time at max STEL: 13:32:56 Aug 31
**Overall Avg Conc: 0.018 mg/m³**
Logged Data:

| Point | Date | Time | Avg.(mg/m³) |
|---|---|---|---|
| 1 | 31-Aug | 13:29:26 | 0.014 |
| 2 | 31-Aug | 13:30:26 | 0.024 |
| 3 | 31-Aug | 13:31:26 | 0.029 |
| 4 | 31-Aug | 13:32:26 | 0.03 |
| 5 | 31-Aug | 13:33:26 | 0.028 |

Tag Number: 02 Pt. 2 Downwind
Number of logged points: 5
Start time and date: 13:21:46 31-Aug
Elapsed time: 00:05:00
Logging period (sec): 60
Calibration Factor (%): 100
Max Display Concentration: 0.216 mg/m³
Time at maximum: 13:21:51 Aug 31
Max STEL Concentration: 0.007 mg/m³
Time at max STEL: 13:26:46 Aug 31
**Overall Avg Conc: 0.021 mg/m³**
Logged Data:

| Point | Date | Time | Avg.(mg/m³) |
|---|---|---|---|
| 1 | 31-Aug | 13:22:46 | 0.044 |
| 2 | 31-Aug | 13:23:46 | 0.022 |
| 3 | 31-Aug | 13:24:46 | 0.017 |
| 4 | 31-Aug | 13:25:46 | 0.024 |
| 5 | 31-Aug | 13:26:46 | 0.023 |

Tag Number: 01 Pt. 3 Downwind
Number of logged points: 6
Start time and date: 13:14:27 31-Aug
Elapsed time: 00:06:00
Logging period (sec): 60
Calibration Factor (%): 100
Max Display Concentration: 0.479 mg/m³
Time at maximum: 13:17:39 Aug 31
Max STEL Concentration: 0.016 mg/m³
Time at max STEL: 13:19:57 Aug 31
**Overall Avg Conc: 0.042 mg/m³**
Logged Data:

| Point | Date | Time | Avg.(mg/m³) |
|---|---|---|---|

| | | | |
|---|---|---|---|
| 1 | 31-Aug | 13:15:27 | 0.021 |
| 2 | 31-Aug | 13:16:27 | 0 022 |
| 3 | 31-Aug | 13:17:27 | 0.025 |
| 4 | 31-Aug | 13:18:27 | 0.133 |
| 5 | 31-Aug | 13:19:27 | 0.037 |
| 6 | 31-Aug | 13:20:27 | 0.017 |

Tag Number: 12 Pt. 1 Upwind
Number of logged points: 5
Start time and date: 15:32:10 31-Aug
Elapsed time: 00:05:00
Logging period (sec): 60
Calibration Factor (%): 100
Max Display Concentration: 0.056 mg/m³
Time at maximum: 15:32:11 Aug 31
Max STEL Concentration: 0.006 mg/m³
Time at max STEL: 15:36:40 Aug 31
**Overall Avg Conc: 0.006 mg/m³**
Logged Data:

| Point | Date | Time | Avg.(mg/m³) |
|---|---|---|---|
| 1 | 31-Aug | 15:33:10 | 0.018 |
| 2 | 31-Aug | 15:34:10 | 0.019 |
| 3 | 31-Aug | 15:35:10 | 0.024 |
| 4 | 31-Aug | 15:36:10 | 0.032 |
| 5 | 31-Aug | 15:37:10 | 0.02 |

Tag Number: 11 Pt. 2 Downwind
Number of logged points: 5
Start time and date: 15:22:24 31-Aug
Elapsed time: 00:05:00
Logging period (sec): 60
Calibration Factor (%): 100
Max Display Concentration: 0.419 mg/m³
Time at maximum: 15:24:12 Aug 31
Max STEL Concentration: 0.019 mg/m³
Time at max STEL: 15:27:24 Aug 31
**Overall Avg Conc: 0.055 mg/m³**
Logged Data:

| Point | Date | Time | Avg.(mg/m³) |
|---|---|---|---|
| 1 | 31-Aug | 15:23:24 | 0.103 |
| 2 | 31-Aug | 15:24:24 | 0.102 |
| 3 | 31-Aug | 15:25:24 | 0.024 |
| 4 | 31-Aug | 15:26:24 | 0.025 |
| 5 | 31-Aug | 15:27:24 | 0.024 |

Tag Number: 04 Pt. 3 Downwind
Number of logged points: 5
Start time and date: 15:16:37 31-Aug
Elapsed time: 00:05:00
Logging period (sec): 60
Calibration Factor (%): 100
Max Display Concentration: 18.971 mg/m³
Time at maximum: 15:19:54 Aug 31
Max STEL Concentration: 1 081 mg/m³
Time at max STEL: 15:21:37 Aug 31
**Overall Avg Conc: 3.181 mg/m³**
Logged Data:

| Point | Date | Time | Avg.(mg/m³) |
|---|---|---|---|
| 1 | 31-Aug | 15:17:37 | 0 037 |

| | | | |
|---|---|---|---|
| 2 | 31-Aug | 15:18:37 | 4.13 |
| 3 | 31-Aug | 15:19:37 | 5.73 |
| 4 | 31-Aug | 15:20:37 | 6.08 |
| 5 | 31-Aug | 15:21:37 | 0.239 |

Tag Number: 16 Pt. 1 Upwind
Number of logged points: 7
Start time and date: 16:48:15 31-Aug
Elapsed time: 00:07:00
Logging period (sec): 60
Calibration Factor (%): 100
Max Display Concentration: 1.219 mg/m³
Time at maximum: 16:48:18 Aug 31
Max STEL Concentration: 0.017 mg/m³
Time at max STEL: 16:55:45 Aug 31
**Overall Avg Conc: 0.032 mg/m³**
Logged Data:

| Point | Date | Time | Avg.(mg/m³) |
|---|---|---|---|
| 1 | 31-Aug | 16:49:15 | 0.099 |
| 2 | 31-Aug | 16:50:15 | 0.018 |
| 3 | 31-Aug | 16:51:15 | 0.019 |
| 4 | 31-Aug | 16:52:15 | 0.036 |
| 5 | 31-Aug | 16:53:15 | 0.021 |
| 6 | 31-Aug | 16:54:15 | 0.024 |
| 7 | 31-Aug | 16:55:15 | 0.021 |

Tag Number: 15 Pt. 2 Downwind
Number of logged points: 5
Start time and date: 16:39:37 31-Aug
Elapsed time: 00:05:00
Logging period (sec): 60
Calibration Factor (%): 100
Max Display Concentration: 1.703 mg/m³
Time at maximum: 16:40:03 Aug 31
Max STEL Concentration: 0.052 mg/m³
Time at max STEL: 16:44:37 Aug 31
**Overall Avg Conc: 0.145 mg/m³**
Logged Data:

| Point | Date | Time | Avg.(mg/m³) |
|---|---|---|---|
| 1 | 31-Aug | 16:40:37 | 0.389 |
| 2 | 31-Aug | 16:41:37 | 0.06 |
| 3 | 31-Aug | 16:42:37 | 0.085 |
| 4 | 31-Aug | 16:43:37 | 0.072 |
| 5 | 31-Aug | 16:44:37 | 0.184 |

Tag Number: 14 Pt. 3 Downwind
Number of logged points: 5
Start time and date: 16:32:55 31-Aug
Elapsed time: 00:05:00
Logging period (sec): 60
Calibration Factor (%): 100
Max Display Concentration: 0.179 mg/m³
Time at maximum: 16:36:59 Aug 31
Max STEL Concentration: 0.016 mg/m³
Time at max STEL: 16:37:55 Aug 31
**Overall Avg Conc: 0.050 mg/m³**
Logged Data:

| Point | Date | Time | Avg.(mg/m³) |
|---|---|---|---|
| 1 | 31-Aug | 16:33:55 | 0 012 |
| 2 | 31-Aug | 16:34:55 | 0.043 |
| 3 | 31-Aug | 16:35:55 | 0.016 |
| 4 | 31-Aug | 16:36:55 | 0.058 |
| 5 | 31-Aug | 16:37:55 | 0.109 |

# EQ SAMPLING EQUIPMENT CALIBRATION LOG

Site Name: Indiana Harbor SWG

Project No.: 050249

| DATE/TIME | INSTRUMENT (Mfg./Model) | CALIBRATED BY | STANDARD (concent.-units) | METER READING | COMMENTS/ AMBIENT CONDITIONS |
|---|---|---|---|---|---|
| 080406 | PDR-MIE | NJM | ZERO CAL | "CAL OK" | |
| | | | | | |
| 8/8/2006 | PDR-MIE | [illegible] | ZERO CAL | "CAL OK" | |
| | | | | | |
| 8/31/06 | PDR MIE | [illegible] | Zero CAL | "CAL OK" | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

Page 1 of 1

August 2006
DAILY DUST CONTROL LOG
INDIANA HARBOR CDF
3500 Indianapolis Blvd., East Chicago, IN 46410

| DATE | SEGMENT CONTROLLED | TIME OF APPLICATION | METHOD OF APPLICATION (3) | VOLUME OF WATER (GAL) | CHEMICAL USED? | COMMENT |
|---|---|---|---|---|---|---|
| 08/01/06 | All | 7 am to 5 pm | 1 | 3000 | No | All roads watered throughout the day |
| 08/02/06 | All | 7 am to 5 pm | 1 | 3000 | No | All roads watered throughout the day |
| 08/03/06 | All | 07:00 to 17:00 | 1 | 3000 | No | All roads watered throughout the day |
| 08/04/06 | All | 07:00 to 17:00 | 1 | 3000 | No | All roads watered throughout the day |
| 08/05/06 | All | 07:00 to 17:00 | 1 | 3000 | No | All roads watered throughout the day |
| 08/06/06 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 08/07/06 | None | NA | NA | NA | NA | Raods wet due to recent rain, no dust control measures performed |
| 08/08/06 | None | NA | NA | NA | NA | Raods wet due to recent rain, no dust control measures performed |
| 08/09/06 | None | NA | NA | NA | NA | Raods wet due to recent rain, no dust control measures performed |
| 08/10/06 | None | NA | NA | NA | NA | Raods wet due to recent rain, no dust control measures performed |
| 08/11/06 | None | NA | NA | NA | NA | Raods wet due to recent rain, no dust control measures performed |
| 08/12/06 | None | NA | NA | NA | NA | Raods wet due to recent rain, no dust control measures performed |
| 08/13/06 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 08/14/06 | None | NA | NA | NA | NA | No dust control measures performed, no truck traffic. |
| 08/15/06 | None | NA | NA | NA | NA | No dust control measures performed, no truck traffic. |
| 08/16/06 | None | NA | NA | NA | NA | No dust control measures performed, no truck traffic. |
| 08/17/06 | None | NA | NA | NA | NA | No dust control measures performed, no truck traffic. |
| 08/18/06 | None | NA | NA | NA | NA | No dust control measures performed, no truck traffic. |
| 08/19/06 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 08/20/06 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 08/21/06 | None | NA | NA | NA | NA | No dust control measures performed, no truck traffic. |
| 08/22/06 | None | NA | NA | NA | NA | No dust control measures performed, no truck traffic. |
| 08/23/06 | None | NA | NA | NA | NA | No dust control measures performed, no truck traffic. |
| 08/24/06 | None | NA | NA | NA | NA | No dust control measures performed, no truck traffic. |
| 08/25/06 | None | NA | NA | NA | NA | No dust control measures performed, no truck traffic. |
| 08/26/06 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 08/27/06 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 08/28/06 | None | NA | NA | NA | NA | Raods wet due to recent rain, no dust control measures performed |
| 08/29/06 | None | NA | NA | NA | NA | Raods wet due to recent rain, no dust control measures performed |
| 08/30/06 | None | NA | NA | NA | NA | Raods wet due to recent rain, no dust control measures performed |
| 08/31/06 | Bag Opening | 07:00 to 16:00 | Note #4 | 600 | No | No roadway dust control measures performed, no truck traffic. Note comment #4. |

Notes:

1) If chemicals are used additional requirements are presented in the permit. Consult before use and collect the requisite data.

2) The width of the application is 8 ft unless noted in the comments column.

3) Method of application code. #1 Water Truck Spray Bar, #2 Spray Hose, #3 Other as noted in Comments

4) Control was for bentonite sack opening and placement and was manually with jetter truck. Dust control was for aesthetic purposes due to the proximity to Indianapolis Blvd. Air quality data did not indicate a technical need for dust control.

Air Monitoring Monthly Summary – September 2006

Site: IHSWG
Location: 3500 Indianapolis Blvd., East Chicago, IN 46312
Prepared by: Nicholas Michailides
Sampling Performed by: Nicholas Michailides
Date: 9-30-06

## I. Significant Findings / Site Activities

Construction emissions air monitoring continued in September with the Dewind one pass trenching / slurry wall installation operation. These operations were performed 9/1 on the east side with equipment then relocated to the west side. Installation was performed on the west side 9/5, 9/6, 9/8, and 9/14. Extremely wet conditions from heavy rains reduced overall work days.

## II. Report of / discussion of findings

Bentonite mixing is a dusty operation; all personnel directly involved to the mixing and one pass trenching operations who were not enclosed in an equipment cab were required to wear respirator protection (minimum ½ face APR with HEPA cartridge = APF 10). Site personnel not directly involved but adjacent to trenching and mixing operations were not required to wear respirator protection but were recommended to observe from an upwind position. On 9/8/06, personnel sampling was preformed on the bentonite mixing operators and the trenching operator. One of the three samples showed an OSHA PEL exceedance for respirable dust. However, this exceedance did not change the current PPE protection being utilized on site because the PEL did not exceed the protection factor for a half-face respirator. Please see attached NIOSH sampling method and laboratory report.

Also dust suppression of bentonite bag breaking activities was employed during the 9/1/06 slurry wall installation on the east side to suppress dust migration to adjacent site areas. No dust was reported leaving the site. Although air monitoring data did not indicate the need for this dust control, EQ was sensitive to the proximity of the task to Indianapolis Blvd. EQ therefore, elected to perform dust control for aesthetic purposes on the east segment. This was not deemed necessary for the west segment and dust control was not performed in this area. Water was brought on site in a jetter truck provided by Tierra Environmental Services. It is estimated that 600-700 gallons of water was used over an 8-hour period. EQ utilized Tierra Environmental Services to perform dust control for the breaking and emptying the bentonite bags in the near proximity of Indianapolis Boulevard. EQ had learned from past experience that the best way to suppress dust released from emptying the bentonite bags was to put a water spray to suppress the dust releases. The jetter truck gives the flexibility to apply the water spray at the point of the bag opening, while using the least amount of water to suppress the

dust. Minimizing water spray in the work areas keep mud conditions minimized, and therefore minimizes slip, trip, and fall hazards, and mud tracking issues.

## III. Problems encountered

No problems encountered.

## IV. Potential action items / lessons learned

Bentonite mixing and slurry wall installation is a dusty operation and along with personal respiratory protection, orientation of site operations (administration controls) related to wind direction is very important to help lesson any exposure issues (both personal and environmental).

Obstructions Re. ... Disposal Facility
Contract No. W91 ... -C-0003

Particulates September-06

| pDR-1000 | Limit mg/m3 | week of 8/27/2006 | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 8/27/2006 | | 8/28/2006 | | 8/29/2006 | | 8/30/2006 | | 8/31/2006 | | 9/1/2006 | | 9/2/2006 | |
| | | Time | mg/m3 | Time | mg/m3 | Time | mg/m3 | Time | mg/m3 | Time | mg/m3 | Time | mg/m3 | Time | mg/m3 |
| Reading 1 | 10.0 | | | | | | | | | 13:14:27 DW | 0.042 | 9:20:26 DW | 0.609 | | |
| Reading 2 | 10.0 | | | | | | | | | 13:21:46 DW | 0.021 | 9:28:38 DW | 5.794 | | |
| Reading 3 | 10.0 | | | | | | | | | 13:28:26 UW | 0.018 | 9:33:58 UW | 0.000 | | |
| Reading 4 | 10.0 | | | | | | | | | 15:16:37 DW | 3.181 | 11:49:50 DW | 0.129 | | |
| Reading 5 | 10.0 | | | | | | | | | 15:22:24 DW | 0.055 | 11:55:27 DW | 0.022 | | |
| Reading 6 | 10.0 | | | | | | | | | 15:32:10 UW | 0.006 | 12:01:39 UW | 0.075 | | |
| Reading 7 | 10.0 | | | | | | | | | 16:32:55 DW | 0.050 | | | | |
| Reading 8 | 10.0 | | | | | | | | | 16:39:37 DW | 0.145 | | | | |
| Reading 9 | 10.0 | | | | | | | | | 16:48:15 UW | 0.032 | | | | |

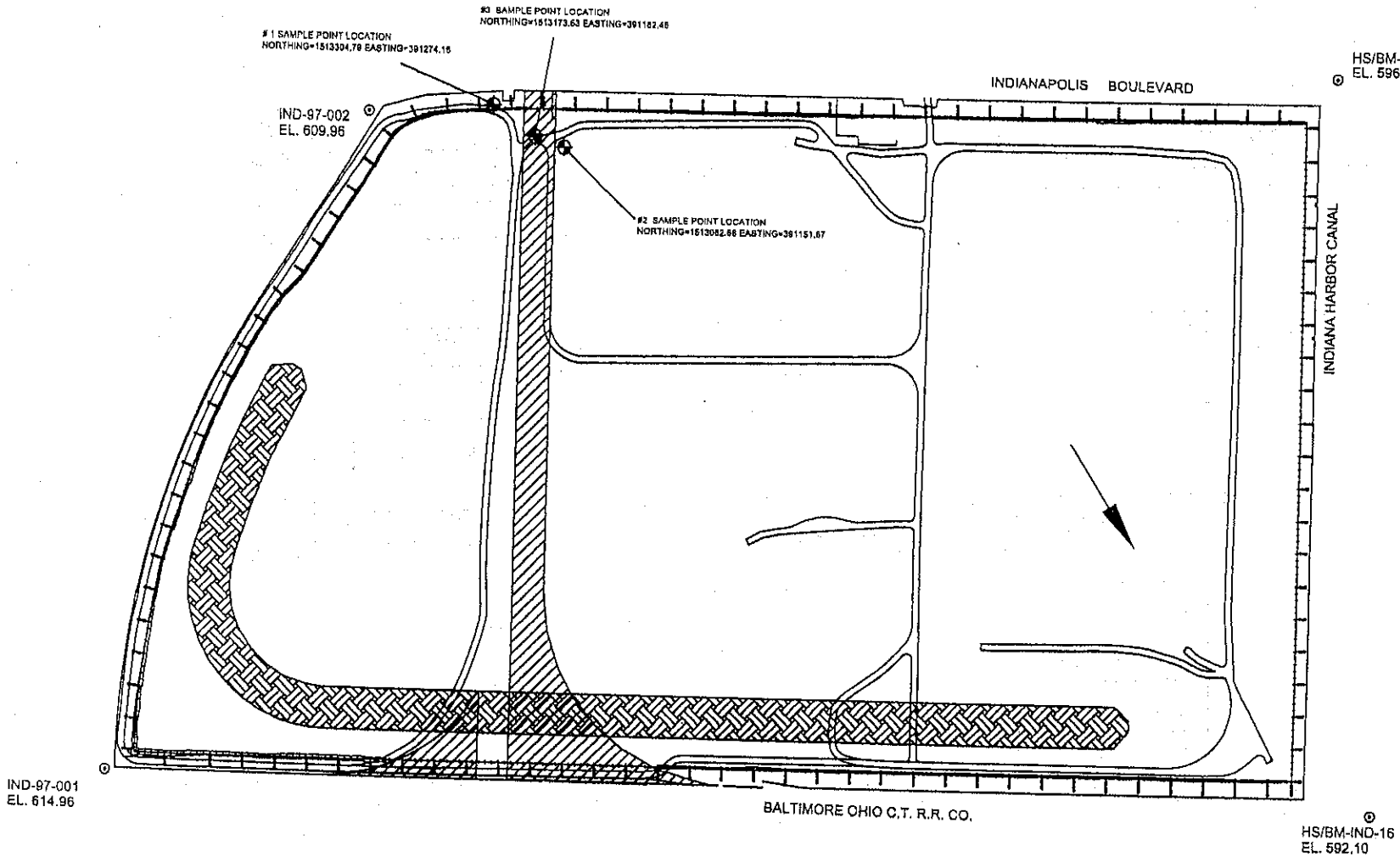
| pDR-1000 | Limit mg/m3 | week of 9/3/2006 | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 9/3/2006 | | 9/4/2006 | | 9/5/2006 | | 9/6/2006 | | 9/7/2006 | | 9/8/2006 | | 9/9/2006 | |
| | | Time | mg/m3 | Time | mg/m3 | Time | mg/m3 | Time | mg/m3 | Time | mg/m3 | Time | mg/m3 | Time | mg/m3 |
| Reading 1 | 10.0 | | | | | 14:57:06 UW | 0.000 | 9:57:50 UW | 0.000 | | | 9:43:02 DW | 0.466 | | |
| Reading 2 | 10.0 | | | | | 15:04:50 DW | 0.003 | 10:03:20 DW | 0.111 | | | 9:49:14 DW | 0.013 | | |
| Reading 3 | 10.0 | | | | | 15:10:38 DW | 0.132 | 10:08:55 DW | 0.000 | | | 10:00:02 UW | 0.000 | | |
| Reading 4 | 10.0 | | | | | 15:46:38 UW | 0.000 | 11:44:17 UW | 0.000 | | | 13:35:53 DW | 0.184 | | |
| Reading 5 | 10.0 | | | | | 15:54:23 DW | 0.131 | 11:50:01 DW | 0.390 | | | 13:42:38 DW | 0.093 | | |
| Reading 6 | 10.0 | | | | | 15:46:38 DW | 0.000 | 11:56:05 DW | 0.000 | | | 13:49:41 UW | 0.000 | | |
| Reading 7 | 10.0 | | | | | 15:59:42 DW | 0.159 | 13:32:09 UW | 0.000 | | | 16:37:07 UW | 0.000 | | |
| Reading 8 | 10.0 | | | | | 17:23:46 DW | 0.000 | 13:37:36 DW | 0.051 | | | 16:42:57 DW | 0.012 | | |
| Reading 9 | 10.0 | | | | | 17:30:28 DW | 0.000 | 13:43:36 DW | 1.468 | | | 16:50:37 DW | 0.011 | | |
| Reading 10 | 10.0 | | | | | 17:37:15 UW | 0.111 | | | | | | | | |

| pDR-1000 | Limit mg/m3 | week of 9/10/2006 | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 9/10/2006 | | 9/11/2006 | | 9/12/2006 | | 9/13/2006 | | 9/14/2006 | | 9/15/2006 | | 9/16/2006 | |
| | | Time | mg/m3 | Time | mg/m3 | Time | mg/m3 | Time | mg/m3 | Time | mg/m3 | Time | mg/m3 | Time | mg/m3 |
| Reading 1 | 10.0 | | | | | | | | | | | | | | |
| Reading 2 | 10.0 | | | | | | | | | | | | | | |
| Reading 3 | 10.0 | | | | | | | | | | | | | | |
| Reading 4 | 10.0 | | | | | | | | | | | | | | |
| Reading 5 | 10.0 | | | | | | | | | | | | | | |

| pDR-1000 | Limit mg/m3 | week of 9/17/2006 | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 9/17/2006 | | 9/18/2006 | | 9/19/2006 | | 9/20/2006 | | 9/21/2006 | | 9/22/2006 | | 9/23/2006 | |
| | | Time | mg/m3 | Time | mg/m3 | Time | mg/m3 | Time | mg/m3 | Time | mg/m3 | Time | mg/m3 | Time | mg/m3 |
| Reading 1 | 10.0 | | | | | | | | | | | | | | |
| Reading 2 | 10.0 | | | | | | | | | | | | | | |
| Reading 3 | 10.0 | | | | | | | | | | | | | | |
| Reading 4 | 10.0 | | | | | | | | | | | | | | |
| Reading 5 | 10.0 | | | | | | | | | | | | | | |

| pDR-1000 | Limit mg/m3 | week of 9/24/2006 | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 9/24/2006 | | 9/25/2006 | | 9/26/2006 | | 9/27/2006 | | 9/28/2006 | | 9/29/2006 | | 9/30/2006 | |
| | | Time | mg/m3 | Time | mg/m3 | Time | mg/m3 | Time | mg/m3 | Time | mg/m3 | Time | mg/m3 | Time | mg/m3 |
| Reading 1 | 10.0 | | | | | | | | | | | | | | |
| Reading 2 | 10.0 | | | | | | | | | | | | | | |
| Reading 3 | 10.0 | | | | | | | | | | | | | | |
| Reading 4 | 10.0 | | | | | | | | | | | | | | |
| Reading 5 | 10.0 | | | | | | | | | | | | | | |

Notes:
Values reported are the Overall Average Concentration of the sampling interval for each Tag Number with time reported as interval start time.
DW= Downwind
UW= Upwind




| REV | DESCRIPTION | DATE | APPROVED |
|---|---|---|---|
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

REVISIONS

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F (513)825-7495

| | | |
|---|---|---|
| DRAWN | D.TOMO | 9-07-06 |
| CHECKED | J.WENTZ | |
| APPROVED | J.WENTZ | |
| SCALE: | NONE | |

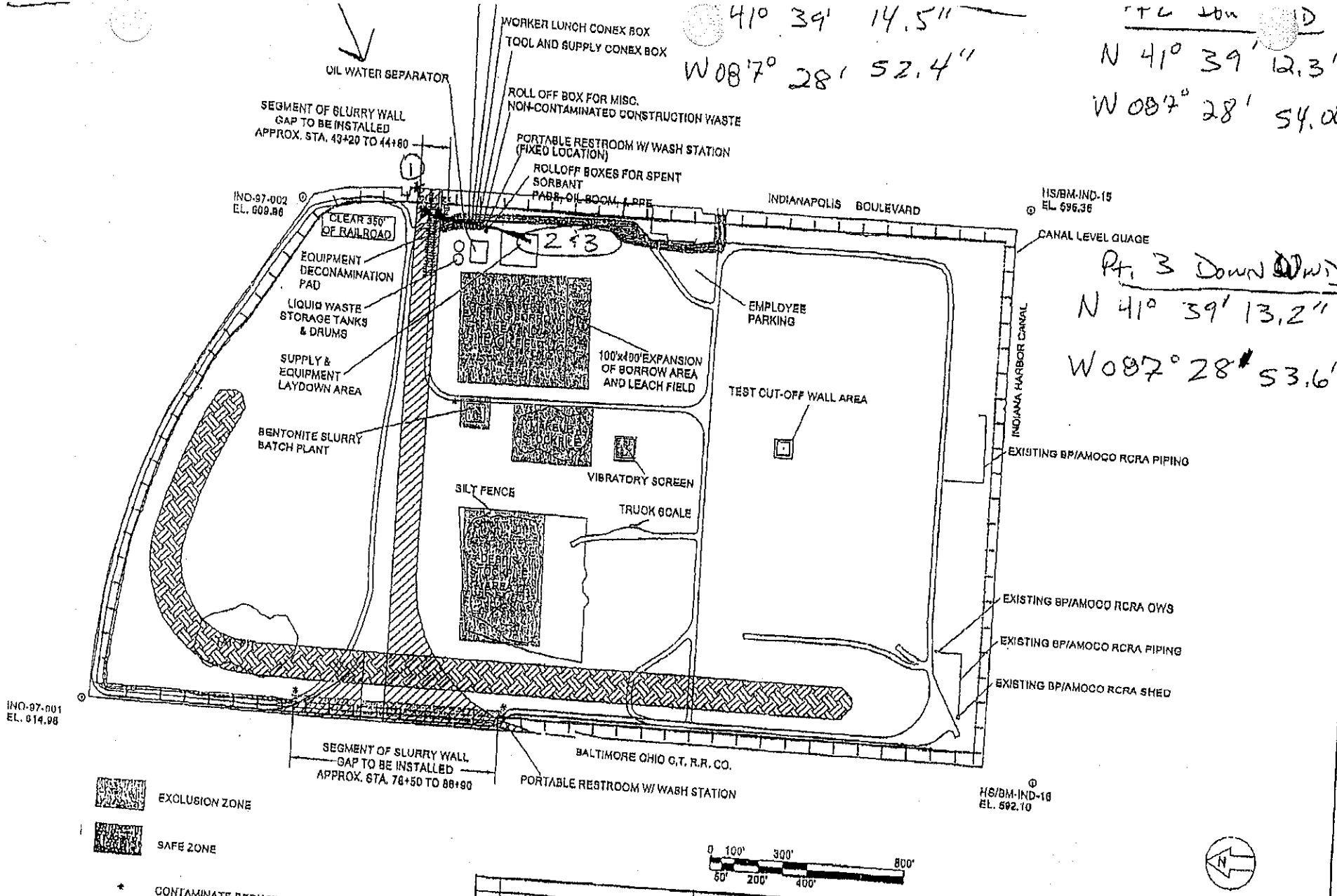
# INDIANA HARBOR CDF
## CONSTRUCTION AIR MOINTORING
## LOCATION 9-01-06

| ORIGINAL SIZE | PROJECT NO. | DWG NO. | REV |
|---|---|---|---|
| A | 030249 | SWGAM 9-01-06 | 0 |

41° 39' 14.5"
W087° 28' 52.4"

Pt 2 Down Wind
N 41° 39' 12.3"
W 087° 28' 54.00"

Pt. 3 Down Wind
N 41° 39' 13.2"
W087° 28' 53.6"




| REV | DESCRIPTION | DATE | APPROVED |
|---|---|---|---|
| | | | |

REVISIONS

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F (513)825-7485

| | | |
|---|---|---|
| DRAWN | D.TOMO | 10/06/06 |
| CHECKED | | |
| APPROVED | | |
| SCALE | NONE | |

INDIANA HARBOR SLURRY WALL GAPS
WORK ZONE DECONAMINATION MAP

| ORIGINAL SIZE | PROJECT No. | DWG No. | REV |
|---|---|---|---|
| B | 030249 | FIGURE 1 | 0 |

Pt. 1 Upwind
Tag Number: 03
Number of logged points: 5
Start time and date: 09:33:58 01-Sep
Elapsed time: 00:05:00
Logging period (sec): 60
Calibration Factor (%): 100
Max Display Concentration: 0.108 mg/m³
Time at maximum: 09:34:20 Sep 01
Max STEL Concentration: 0.001 mg/m³
Time at max STEL: 09:34:28 Sep 01
Overall Avg Conc: 0.000 mg/m³
Logged Data:

| Point | Date | Time | Avg.(mg/m³) |
|---|---|---|---|
| 1 | 1-Sep | 09:34:58 | 0.021 |
| 2 | 1-Sep | 09:35:58 | 0.001 |
| 3 | 1-Sep | 09:36:58 | 0 |
| 4 | 1-Sep | 09:37:58 | 0 |
| 5 | 1-Sep | 09:38:58 | 0 |

Tag Number: 02 Pt. 2 Downwind
Number of logged points: 5
Start time and date: 09:28:38 01-Sep
Elapsed time: 00:05:00
Logging period (sec): 60
Calibration Factor (%): 100
Max Display Concentration: 98.930 mg/m³
Time at maximum: 09:30:26 Sep 01
Max STEL Concentration: 1.956 mg/m³
Time at max STEL: 09:33:38 Sep 01
Overall Avg Conc: 5.794 mg/m³
Logged Data:

| Point | Date | Time | Avg.(mg/m³) |
|---|---|---|---|
| 1 | 1-Sep | 09:29:38 | 0.007 |
| 2 | 1-Sep | 09:30:38 | 28.79 |
| 3 | 1-Sep | 09:31:38 | 0.43 |
| 4 | 1-Sep | 09:32:38 | 0.028 |
| 5 | 1-Sep | 09:33:38 | 0.112 |

Tag Number: 01 Pt 3 Downwind
Number of logged points: 6
Start time and date: 09:20:26 01-Sep
Elapsed time: 00:06:00
Logging period (sec): 60
Calibration Factor (%): 100
Max Display Concentration: 10.247 mg/m³
Time at maximum: 09:20:27 Sep 01
Max STEL Concentration: 0.264 mg/m³
Time at max STEL: 09:25:26 Sep 01
Overall Avg Conc: 0.609 mg/m³
Logged Data:

| Point | Date | Time | Avg.(mg/m³) |
|---|---|---|---|

| | | |
|---|---|---|
| 1 | 1-Sep 09:21:26 | 2.395 |
| 2 | 1-Sep 09:22:26 | 0.975 |
| 3 | 1-Sep 09:23:26 | 0.515 |
| 4 | 1-Sep 09:24:26 | 0.024 |
| 5 | 1-Sep 09:25:26 | 0.047 |
| 6 | 1-Sep 09:26:26 | 0.011 |

Tag Number: 06 Pt. 1 Upwind
Number of logged points: 5
Start time and date: 12:01:39 01-Sep
Elapsed time: 00:05:00
Logging period (sec): 60
Calibration Factor (%): 100
Max Display Concentration: 0.406 mg/m³
Time at maximum: 12:02:39 Sep 01
Max STEL Concentration: 0.025 mg/m³
Time at max STEL: 12:06:39 Sep 01
Overall Avg Conc: 0.075 mg/m³
Logged Data:

| Point | Date | Time | Avg.(mg/m³) |
|---|---|---|---|
| 1 | 1-Sep | 12:02:39 | 0.134 |
| 2 | 1-Sep | 12:03:39 | 0.056 |
| 3 | 1-Sep | 12:04:39 | 0.064 |
| 4 | 1-Sep | 12:05:39 | 0.089 |
| 5 | 1-Sep | 12:06:39 | 0.037 |

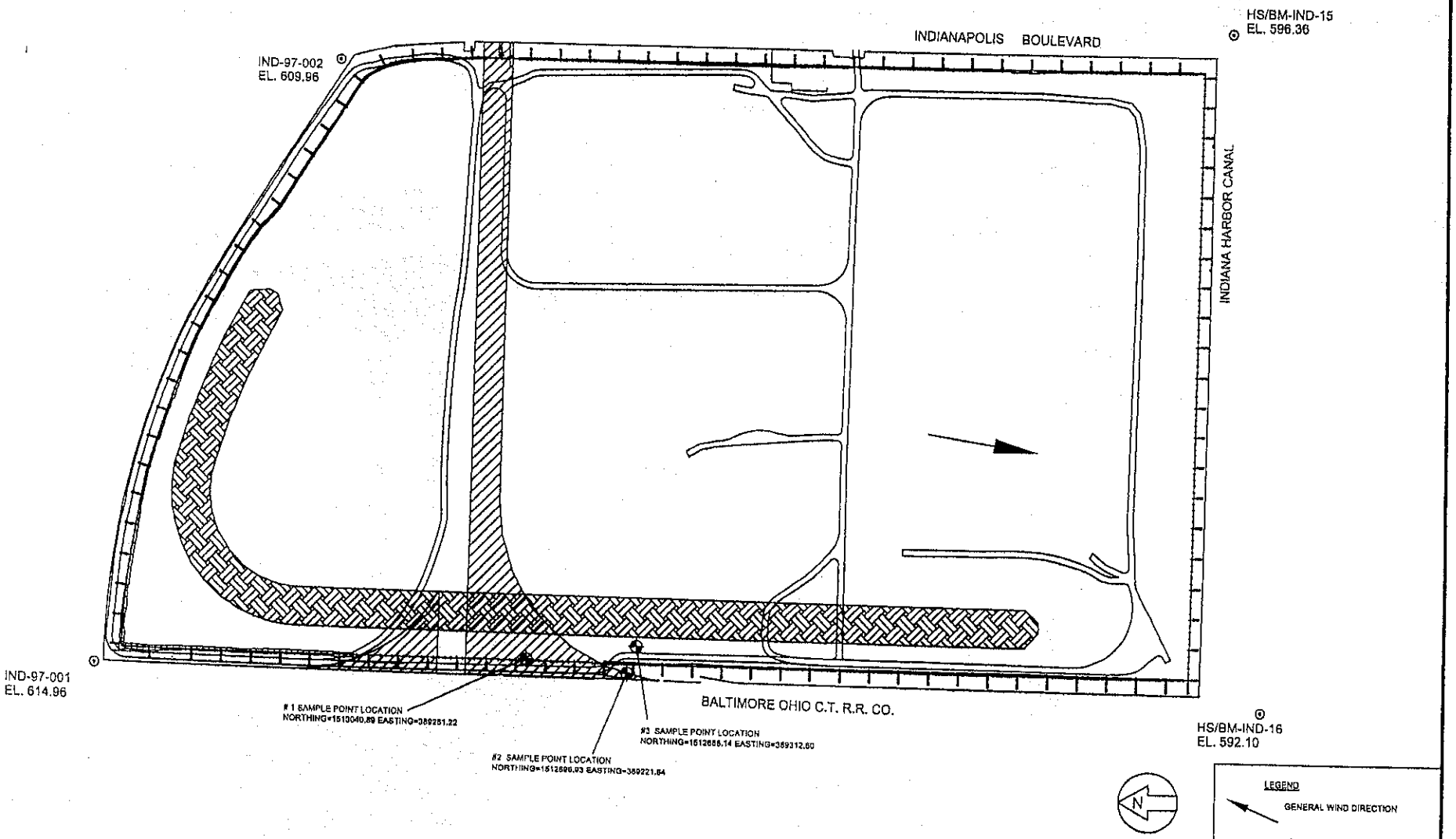
Tag Number: 05 Pt. 2 Downwind
Number of logged points: 5
Start time and date: 11:55:27 01-Sep
Elapsed time: 00:05:00
Logging period (sec): 60
Calibration Factor (%): 100
Max Display Concentration: 0.191 mg/m³
Time at maximum: 12:00:12 Sep 01
Max STEL Concentration: 0.007 mg/m³
Time at max STEL: 12:00:27 Sep 01
Overall Avg Conc: 0.022 mg/m³
Logged Data:

| Point | Date | Time | Avg.(mg/m³) |
|---|---|---|---|
| 1 | 1-Sep | 11:56:27 | 0.02 |
| 2 | 1-Sep | 11:57:27 | 0.005 |
| 3 | 1-Sep | 11:58:27 | 0.007 |
| 4 | 1-Sep | 11:59:27 | 0.01 |
| 5 | 1-Sep | 12:00:27 | 0.09 |

Tag Number: 04 Pt. 3 Downwind
Number of logged points: 5
Start time and date: 11:49:50 01-Sep
Elapsed time: 00:05:00
Logging period (sec): 60
Calibration Factor (%): 100
Max Display Concentration: 1.358 mg/m³
Time at maximum: 11:52:52 Sep 01
Max STEL Concentration: 0.043 mg/m³
Time at max STEL: 11:54:50 Sep 01
Overall Avg Conc: 0.129 mg/m³
Logged Data:

| Point | Date | Time | Avg.(mg/m³) |
|---|---|---|---|
| 1 | 1-Sep | 11:50:50 | 0.159 |

| | | | |
|---|---|---|---|
| 2 | 1-Sep | 11:51:50 | 0.003 |
| 3 | 1-Sep | 11:52:50 | 0 277 |
| 4 | 1-Sep | 11:53:50 | 0.191 |
| 5 | 1-Sep | 11:54:50 | 0.052 |




| REV | DESCRIPTION | DATE | APPROVED |
|---|---|---|---|
| | | | |

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F (513)825-7495

| | | |
|---|---|---|
| DRAWN | D.TOMO | 7/24/06 |
| CHECKED | J.WENTZ | |
| APPROVED | J.WENTZ | |
| SCALE: | NONE | |

# INDIANA HARBOR CDF
## CONSTRUCTION AIR MOINTORING
## LOCATION 9-05-06

| ORIGINAL SIZE | PROJECT NO. | DWG NO. | REV |
|---|---|---|---|
| A | 030249 | SWGAM 9-05-06 | 0 |

Pt. 1 upwind

N 41° 39' 11.8"

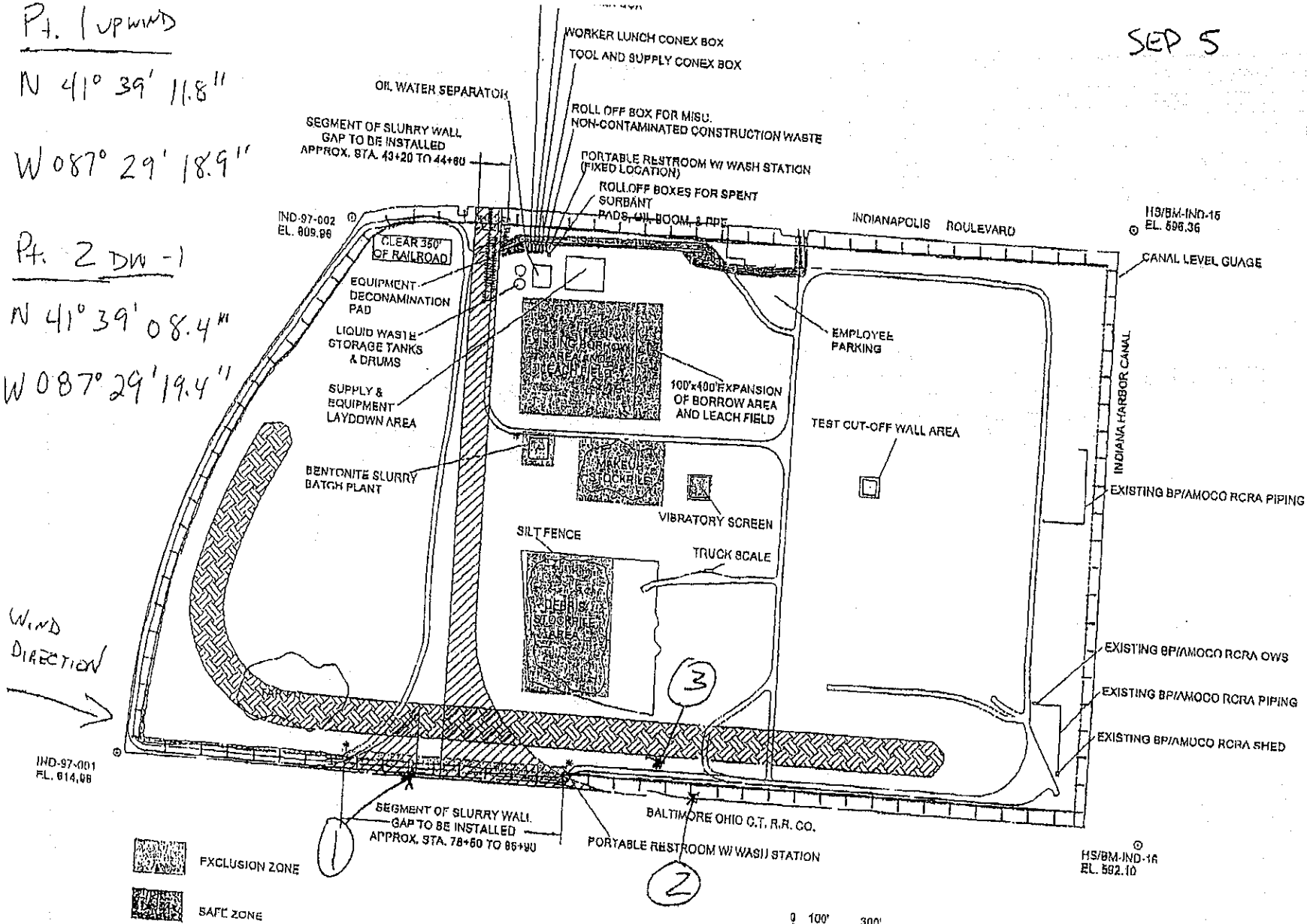
W 087° 29' 18.9"

Pt. 2 DW-1

N 41° 39' 08.4"

W 087° 29' 19.4"

SEP 5




Pt. 3 DW-2

N 41° 39' 08.7"

W 087° 29' 18.2"

| REV | DESCRIPTION | DATE | APPROVED |
|---|---|---|---|
| | | | |

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F (513)825-7495

| | | |
|---|---|---|
| DRAWN | D.TOMO | 4/06/06 |
| CHECKED | | |
| APPROVED | | |
| ISSUED | NONE | |

INDIANA HARBOR SLURRY WALL GAPS
WORK ZONE DECONAMINATION MAP

| OPTIONAL SIZE | PROJECT NO. | DWG NO. | REV. |
|---|---|---|---|
| B | 030249 | FIGURE 1 | 0 |

Tag Number: 01 Pt. 1 Upwind
Number of logged points: 5
Start time and date: 14:57:06 05-Sep
Elapsed time: 00:05:00
Logging period (sec): 60
Calibration Factor (%): 100
Max Display Concentration: 0.000 mg/m³
Time at maximum: 14:57:06 Sep 05
Max STEL Concentration: 0.000 mg/m³
Time at max STEL: 14:57:06 Sep 05
Overall Avg Conc: 0.000 mg/m³
Logged Data:

| Point | Date | Time | Avg.(mg/m³) |
|---|---|---|---|
| 1 | 5-Sep | 14:58:06 | 0 |
| 2 | 5-Sep | 14:59:06 | 0 |
| 3 | 5-Sep | 15:00:06 | 0 |
| 4 | 5-Sep | 15:01:06 | 0 |
| 5 | 5-Sep | 15:02:06 | 0.001 |

Tag Number: 02 Pt 2 Downwind
Number of logged points: 5
Start time and date: 15:04:50 05-Sep
Elapsed time: 00:05:00
Logging period (sec): 60
Calibration Factor (%): 100
Max Display Concentration: 0.295 mg/m³
Time at maximum: 15:05:40 Sep 05
Max STEL Concentration: 0.000 mg/m³
Time at max STEL: 15:04:50 Sep 05
Overall Avg Conc: 0.003 mg/m³
Logged Data:

| Point | Date | Time | Avg.(mg/m³) |
|---|---|---|---|
| 1 | 5-Sep | 15:05:50 | 0.061 |
| 2 | 5-Sep | 15:06:50 | 0 |
| 3 | 5-Sep | 15:07:50 | 0 |
| 4 | 5-Sep | 15:08:50 | 0 |
| 5 | 5-Sep | 15:09:50 | 0.031 |

Pt. 3 Downwind
Tag Number: 03
Number of logged points: 6
Start time and date: 15:10:38 05-Sep
Elapsed time: 00:06:00
Logging period (sec): 60
Calibration Factor (%): 100
Max Display Concentration: 3.086 mg/m³
Time at maximum: 15:16:17 Sep 05
Max STEL Concentration: 0.036 mg/m³
Time at max STEL: 15:16:38 Sep 05
Overall Avg Conc: 0.132 mg/m³

Logged Data:

| Point | Date | Time | Avg.(mg/m³) |
|---|---|---|---|
| 1 | 5-Sep | 15:11:38 | 0 |
| 2 | 5-Sep | 15:12:38 | 0 |
| 3 | 5-Sep | 15:13:38 | 0 113 |
| 4 | 5-Sep | 15:14:38 | 0 271 |
| 5 | 5-Sep | 15:15:38 | 0 |
| 6 | 5-Sep | 15:16:38 | 0.741 |

Tag Number: 04 Pt. 1 Upwind
Number of logged points: 5
Start time and date: 15:46:38 05-Sep
Elapsed time: 00:05:00
Logging period (sec): 60
Calibration Factor (%): 100
Max Display Concentration: 0.000 mg/m³
Time at maximum: 15:46:38 Sep 05
Max STEL Concentration: 0.000 mg/m³
Time at max STEL: 15:46:38 Sep 05
Overall Avg Conc: 0.000 mg/m³
Logged Data:

| Point | Date | Time | Avg.(mg/m³) |
|---|---|---|---|
| 1 | 5-Sep | 15:47:38 | 0 |
| 2 | 5-Sep | 15:48:38 | 0 |
| 3 | 5-Sep | 15:49:38 | 0 |
| 4 | 5-Sep | 15:50:38 | 0 |
| 5 | 5-Sep | 15:51:38 | 0 |

Tag Number: 05
Number of logged points: 5
Start time and date: 15:54:23 05-Sep
Elapsed time: 00:05:00
Logging period (sec): 60
Calibration Factor (%): 100
Max Display Concentration: 2.115 mg/m³
Time at maximum: 15:59:29 Sep 05
Max STEL Concentration: 0.015 mg/m³
Time at max STEL: 15:59:23 Sep 05
Overall Avg Conc: 0.131 mg/m³
Logged Data:

| Point | Date | Time | Avg (mg/m³) |
|---|---|---|---|
| 1 | 5-Sep | 15:55:23 | 0 |
| 2 | 5-Sep | 15:56:23 | 0 |
| 3 | 5-Sep | 15:57:23 | 0.134 |
| 4 | 5-Sep | 15:58:23 | 0.373 |
| 5 | 5-Sep | 15:59:23 | 0.175 |

Tag Number: 04 Pt. 2 Downwind
Number of logged points: 5
Start time and date: 15:46:38 05-Sep
Elapsed time: 00:05:00
Logging period (sec): 60
Calibration Factor (%): 100
Max Display Concentration: 0.000 mg/m³
Time at maximum: 15:46:38 Sep 05
Max STEL Concentration: 0.000 mg/m³
Time at max STEL: 15:46:38 Sep 05
Overall Avg Conc: 0.000 mg/m³
Logged Data:

| Point | Date | Time | Avg.(mg/m³) |
|---|---|---|---|
| 1 | 5-Sep | 15:47:38 | 0 |

| | | | |
|---|---|---|---|
| 2 | 5-Sep | 15:48:38 | 0 |
| 3 | 5-Sep | 15:49:38 | 0 |
| 4 | 5-Sep | 15:50:38 | 0 |
| 5 | 5-Sep | 15:51:38 | 0 |

Tag Number: 06 Pt. 3 Downwind
Number of logged points: 5
Start time and date: 15:59:42 05-Sep
Elapsed time: 00:05:00
Logging period (sec): 60
Calibration Factor (%): 100
Max Display Concentration: 4.463 mg/m³
Time at maximum: 16:00:41 Sep 05
Max STEL Concentration: 0 087 mg/m³
Time at max STEL: 16:02:42 Sep 05
Overall Avg Conc: 0 159 mg/m³
Logged Data:

| Point | Date | Time | Avg.(mg/m³) |
|---|---|---|---|
| 1 | 5-Sep | 16:00:42 | 1.145 |
| 2 | 5-Sep | 16:01:42 | 0.1 |
| 3 | 5-Sep | 16:02:42 | 0.222 |
| 4 | 5-Sep | 16:03:42 | 0 |
| 5 | 5-Sep | 16:04:42 | 0 |

Tag Number: 09 Pt. 1 Upwind
Number of logged points: 5
Start time and date: 17:37:15 05-Sep
Elapsed time: 00:05:00
Logging period (sec): 60
Calibration Factor (%): 100
Max Display Concentration: 8.716 mg/m³
Time at maximum: 17:37:29 Sep 05
Max STEL Concentration: 0.094 mg/m³
Time at max STEL: 17:37:45 Sep 05
Overall Avg Conc: 0.111 mg/m³
Logged Data:

| Point | Date | Time | Avg.(mg/m³) |
|---|---|---|---|
| 1 | 5-Sep | 17:38:15 | 1.458 |
| 2 | 5-Sep | 17:39:15 | 0.012 |
| 3 | 5-Sep | 17:40:15 | 0 |
| 4 | 5-Sep | 17:41:15 | 0 |
| 5 | 5-Sep | 17:42:15 | 0 |

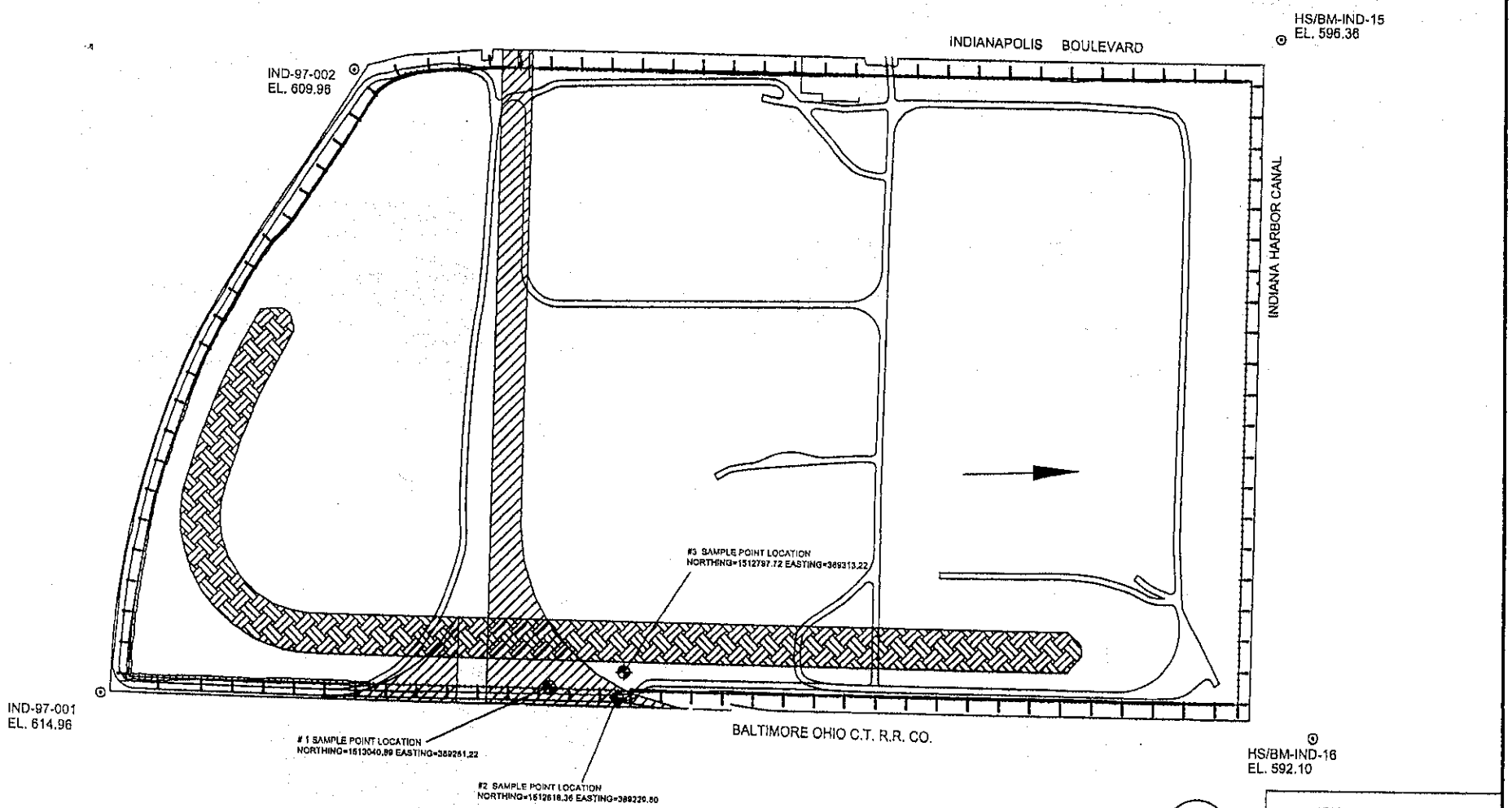
Tag Number: 08 Pt. 2 Downwind
Number of logged points: 5
Start time and date: 17:30:28 05-Sep
Elapsed time: 00:05:00
Logging period (sec): 60
Calibration Factor (%): 100
Max Display Concentration: 0.000 mg/m³
Time at maximum: 17:30:28 Sep 05
Max STEL Concentration: 0.000 mg/m³
Time at max STEL: 17:30:28 Sep 05
Overall Avg Conc: 0.000 mg/m³
Logged Data:

| Point | Date | Time | Avg (mg/m³) |
|---|---|---|---|
| 1 | 5-Sep | 17:31:28 | 0 |
| 2 | 5-Sep | 17:32:28 | 0 |
| 3 | 5-Sep | 17:33:28 | 0 |
| 4 | 5-Sep | 17:34:28 | 0 |
| 5 | 5-Sep | 17:35:28 | 0 |

Tag Number: 07 Pt. 3 Downwind
Number of logged points: 5
Start time and date: 17:23:46 05-Sep
Elapsed time: 00:05:00
Logging period (sec): 60
Calibration Factor (%): 100
Max Display Concentration: 0.560 mg/m³
Time at maximum: 17:27:41 Sep 05
Max STEL Concentration: 0 000 mg/m³
Time at max STEL: 17:23:46 Sep 05
Overall Avg Conc: 0.000 mg/m³
Logged Data:

| Point | Date | Time | Avg.(mg/m³) |
|---|---|---|---|
| 1 | 5-Sep | 17:24:46 | 0 |

| | | | |
|---|---|---|---|
| 2 | 5-Sep | 17:25:46 | 0.081 |
| 3 | 5-Sep | 17:26:46 | 0.08 |
| 4 | 5-Sep | 17:27:46 | 0 114 |
| 5 | 5-Sep | 17:28:46 | 0 |




| REV | DESCRIPTION | DATE | APPROVED |
|---|---|---|---|
| | | | |

REVISIONS

ENVIRONMENTAL QUALITY MANAGEMENT, INC.
1800 CARILLON BLVD.
CINCINNATI, OHIO 45240
P (513)825-7500
F (513)825-7495

| | | |
|---|---|---|
| DRAWN | D.TOMO | 7/24/06 |
| CHECKED | J.WENTZ | |
| APPROVED | J.WENTZ | |
| SCALE | NONE | |

# INDIANA HARBOR CDF
## CONSTRUCTION AIR MOINTORING
## LOCATION 9-06-06

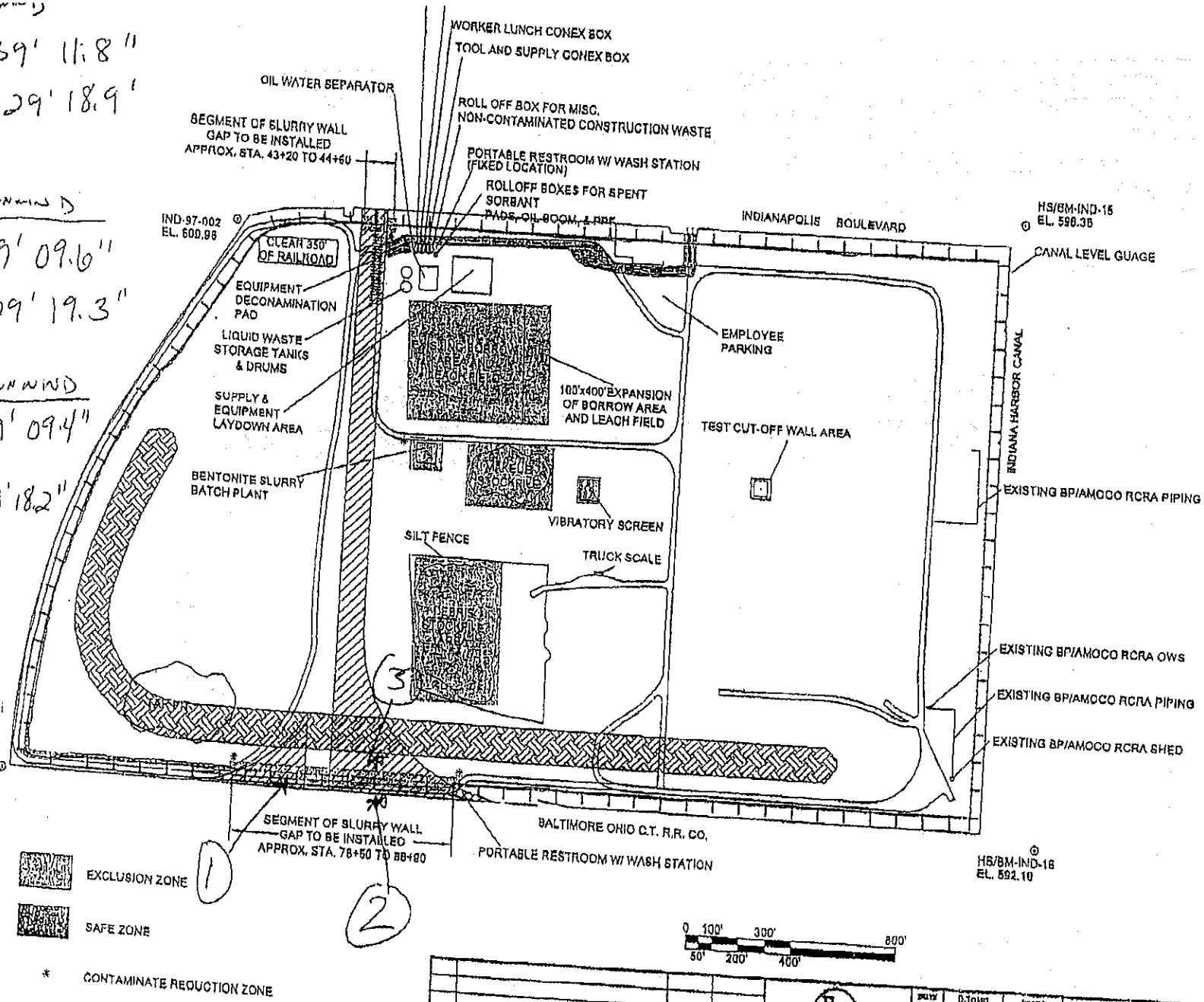
| ORIGINAL SIZE | PROJECT NO. | DWG NO. | REV |
|---|---|---|---|
| A | 030249 | SWGAM 9-06-06 | 0 |

Pt. 1 Downwind
N 41° 39' 11.8"
W 087° 29' 18.9'

Pt. 2 Downwind
N 41° 39' 09.6"
W 087° 29' 19.3"

Pt. 3 Downwind
N 41° 39' 09.4"
W 087° 29' 18.2"

Wind Direction




| REV | DESCRIPTION | DATE | APPROVED |
|---|---|---|---|
| | | | |

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1800 CARILLON BLVD.
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F (513)825-7485

| | | |
|---|---|---|
| DRAWN | D.TOURO | 4/06/06 |
| CHECKED | | |
| APPROVED | | |
| SCALE | NONE | |

INDIANA HARBOR SLURRY WALL GAPS
WORK ZONE DECONAMINATION MAP

| ORIGINAL SIZE | PROJECT NO. | DWG NO. | REV |
|---|---|---|---|
| B | 030249 | FIGURE 1 | 0 |

Pt 1 Upwind
Tag Number: 01
Number of logged points: 5
Start time and date: 09:57:50 06-Sep
Elapsed time: 00:05:00
Logging period (sec): 60
Calibration Factor (%): 100
Max Display Concentration: 0.040 mg/m³
Time at maximum: 09:59:13 Sep 06
Max STEL Concentration: 0.000 mg/m³
Time at max STEL: 09:57:50 Sep 06
Overall Avg Conc: 0.000 mg/m³
Logged Data:

| Point | Date | Time | Avg (mg/m³) |
|---|---|---|---|
| 1 | 6-Sep | 09:58:50 | 0 |
| 2 | 6-Sep | 09:59:50 | 0.015 |
| 3 | 6-Sep | 10:00:50 | 0.001 |
| 4 | 6-Sep | 10:01:50 | 0.003 |
| 5 | 6-Sep | 10:02:50 | 0 |

Tag Number: 02 Pt. 2 Downwind
Number of logged points: 5
Start time and date: 10:03:20 06-Sep
Elapsed time: 00:05:00
Logging period (sec): 60
Calibration Factor (%): 100
Max Display Concentration: 6.666 mg/m³
Time at maximum: 10:06:42 Sep 06
Max STEL Concentration: 0.056 mg/m³
Time at max STEL: 10:06:50 Sep 06
Overall Avg Conc: 0.111 mg/m³
Logged Data:

| Point | Date | Time | Avg.(mg/m³) |
|---|---|---|---|
| 1 | 6-Sep | 10:04:20 | 0.004 |
| 2 | 6-Sep | 10:05:20 | 0 |
| 3 | 6-Sep | 10:06:20 | 0 |
| 4 | 6-Sep | 10:07:20 | 1.114 |
| 5 | 6-Sep | 10:08:20 | 0 |

Tag Number: 03 Pt. 3 Downwind
Number of logged points: 5
Start time and date: 10:08:55 06-Sep
Elapsed time: 00:05:00
Logging period (sec): 60
Calibration Factor (%): 100
Max Display Concentration: 0.866 mg/m³
Time at maximum: 10:10:56 Sep 06
Max STEL Concentration: 0.000 mg/m³
Time at max STEL: 10:08:55 Sep 06
Overall Avg Conc: 0.000 mg/m³
Logged Data:

| Point | Date | Time | Avg.(mg/m³) |
|---|---|---|---|

| | | | |
|---|---|---|---|
| 1 | 6-Sep | 10:09:55 | 0.002 |
| 2 | 6-Sep | 10:10:55 | 0.144 |
| 3 | 6-Sep | 10:11:55 | 0 |
| 4 | 6-Sep | 10:12:55 | 0.019 |
| 5 | 6-Sep | 10:13:55 | 0 085 |

Tag Number: 04 Pt 1 Upwind
Number of logged points: 5
Start time and date: 11:44:17 06-Sep
Elapsed time: 00:05:00
Logging period (sec): 60
Calibration Factor (%): 100
Max Display Concentration: 0.000 mg/m³
Time at maximum: 11:44:17 Sep 06
Max STEL Concentration: 0 000 mg/m³
Time at max STEL: 11:44:17 Sep 06
Overall Avg Conc: 0 000 mg/m³
Logged Data:

| Point | Date | Time | Avg.(mg/m³) |
|---|---|---|---|
| 1 | 6-Sep | 11:45:17 | 0 |
| 2 | 6-Sep | 11:46:17 | 0 |
| 3 | 6-Sep | 11:47:17 | 0 |
| 4 | 6-Sep | 11:48:17 | 0 |
| 5 | 6-Sep | 11:49:17 | 0 |

Tag Number: 05 Pt. 2 Downwind
Number of logged points: 5
Start time and date: 11:50:01 06-Sep
Elapsed time: 00:05:00
Logging period (sec): 60
Calibration Factor (%): 100
Max Display Concentration: 3.885 mg/m³
Time at maximum: 11:53:52 Sep 06
Max STEL Concentration: 0 134 mg/m³
Time at max STEL: 11:54:01 Sep 06
Overall Avg Conc: 0.390 mg/m³
Logged Data:

| Point | Date | Time | Avg.(mg/m³) |
|---|---|---|---|
| 1 | 6-Sep | 11:51:01 | 0.913 |
| 2 | 6-Sep | 11:52:01 | 0.176 |
| 3 | 6-Sep | 11:53:01 | 0 |
| 4 | 6-Sep | 11:54:01 | 1.236 |
| 5 | 6-Sep | 11:55:01 | 0.072 |

Tag Number: 06 Pt. 3 Downwind
Number of logged points: 5
Start time and date: 11:56:05 06-Sep
Elapsed time: 00:05:00
Logging period (sec): 60
Calibration Factor (%): 100
Max Display Concentration: 0.403 mg/m³
Time at maximum: 12:00:35 Sep 06
Max STEL Concentration: 0 000 mg/m³
Time at max STEL: 11:56:05 Sep 06
Overall Avg Conc: 0.000 mg/m³
Logged Data:

| Point | Date | Time | Avg.(mg/m³) |
|---|---|---|---|
| 1 | 6-Sep | 11:57:05 | 0 |

| | | | |
|---|---|---|---|
| 2 | 6-Sep | 11:58:05 | 0 |
| 3 | 6-Sep | 11:59:05 | 0.009 |
| 4 | 6-Sep | 12:00:05 | 0 |
| 5 | 6-Sep | 12:01:05 | 0.098 |

Tag Number: 07 Pt. 1 Upwind
Number of logged points: 5
Start time and date: 13:32:09 06-Sep
Elapsed time: 00:05:00
Logging period (sec): 60
Calibration Factor (%): 100
Max Display Concentration: 1.413 mg/m³
Time at maximum: 13:33:23 Sep 06
Max STEL Concentration: 0 000 mg/m³
Time at max STEL: 13:32:09 Sep 06
Overall Avg Conc: 0.000 mg/m³
Logged Data:

| Point | Date | Time | Avg.(mg/m³) |
|---|---|---|---|
| 1 | 6-Sep | 13:33:09 | 0 |
| 2 | 6-Sep | 13:34:09 | 0 239 |
| 3 | 6-Sep | 13:35:09 | 0 |
| 4 | 6-Sep | 13:36:09 | 0 |
| 5 | 6-Sep | 13:37:09 | 0.02 |

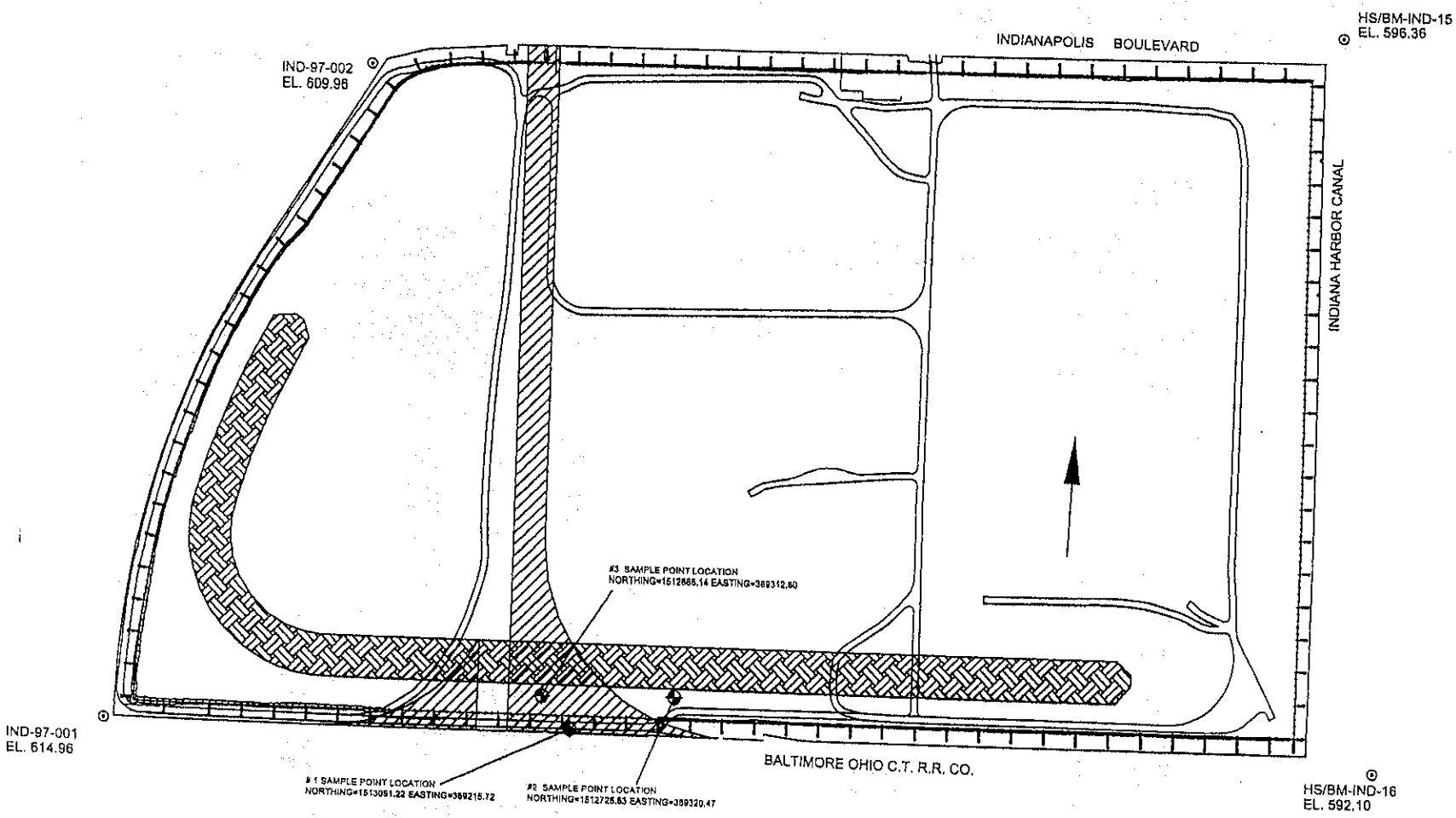
Tag Number: 08 Pt. 2 Downwind
Number of logged points: 5
Start time and date: 13:37:36 06-Sep
Elapsed time: 00:05:00
Logging period (sec): 60
Calibration Factor (%): 100
Max Display Concentration: 4.554 mg/m³
Time at maximum: 13:40:08 Sep 06
Max STEL Concentration: 0.013 mg/m³
Time at max STEL: 13:40:06 Sep 06
Overall Avg Conc: 0 051 mg/m³
Logged Data:

| Point | Date | Time | Avg.(mg/m³) |
|---|---|---|---|
| 1 | 6-Sep | 13:38:36 | 0.055 |
| 2 | 6-Sep | 13:39:36 | 0 012 |
| 3 | 6-Sep | 13:40:36 | 0.816 |
| 4 | 6-Sep | 13:41:36 | 0 |
| 5 | 6-Sep | 13:42:36 | 0.001 |

Tag Number: 09 Pt. 3 Downwind
Number of logged points: 5
Start time and date: 13:43:36 06-Sep
Elapsed time: 00:05:00
Logging period (sec): 60
Calibration Factor (%): 100
Max Display Concentration: 19.248 mg/m³
Time at maximum: 13:46:24 Sep 06
Max STEL Concentration: 0.485 mg/m³
Time at max STEL: 13:47:06 Sep 06
Overall Avg Conc: 1 468 mg/m³
Logged Data:

| Point | Date | Time | Avg (mg/m³) |
|---|---|---|---|
| 1 | 6-Sep | 13:44:36 | 0 |

| | | | |
|---|---|---|---|
| 2 | 6-Sep | 13:45:36 | 3.009 |
| 3 | 6-Sep | 13:46:36 | 4.2 |
| 4 | 6-Sep | 13:47:36 | 0.619 |
| 5 | 6-Sep | 13:48:36 | 0.08 |




LEGEND

GENERAL WIND DIRECTION

SAMPLE POINT LOCATION

| REV | DESCRIPTION | DATE | APPROVED |
|---|---|---|---|
| | | | |

REVISIONS

ENVIRONMENTAL QUALITY MANAGEMENT, INC.
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| | | |
|---|---|---|
| DRAWN | D.TOMO | 7/24/06 |
| CHECKED | J.WENTZ | |
| APPROVED | J.WENTZ | |
| SCALE | NONE | |

# INDIANA HARBOR CDF
## CONSTRUCTION AIR MOINTORING
## LOCATION 9-08-06

| ORIGINAL SIZE | PROJECT NO. | DWG NO. | REV |
|---|---|---|---|
| A | 030249 | SWGAM 9-08-06 | 0 |

Pt. 1 - UPWIND

N 41° 39' [redacted] 11.9"

W 087° 29' 19.5"

Pt. 2 - DOWNWIND

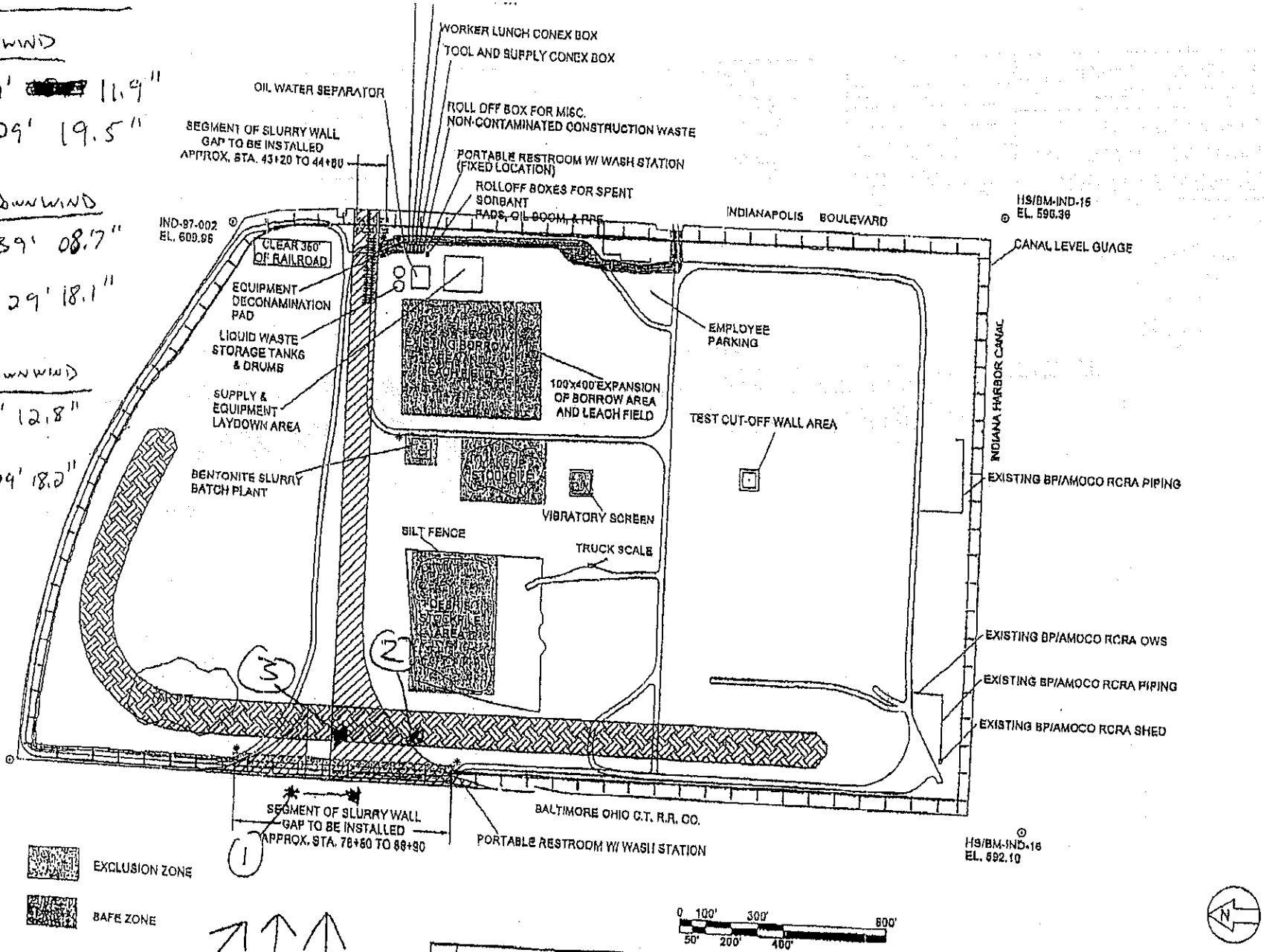
N 41° 39' 08.7"

W087° 29' 18.1"

Pt. 3 - DOWNWIND

N 41° 39' 12.8"

W 087° 29' 18.2"




| REV | DESCRIPTION | DATE | APPROVED |
|---|---|---|---|
| | | | |

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DRAWN D.TOMO
SCALE NONE

INDIANA HARBOR SLURRY WALL GAPS
WORK ZONE DECONAMINATION MAP

| DRAWING SIZE | PROJECT NO. | DWG NO. | REV |
|---|---|---|---|
| B | 030249 | FIGURE 1 | 0 |

Pt 1 Upwind
Tag Number: 12
Number of logged points: 5
Start time and date: 10:00:02 08-Sep
Elapsed time: 00:05:00
Logging period (sec): 60
Calibration Factor (%): 100
Max Display Concentration: 0.044 mg/m³
Time at maximum: 10:00:03 Sep 08
Max STEL Concentration: 0 001 mg/m³
Time at max STEL: 10:00:32 Sep 08
Overall Avg Conc: 0.000 mg/m³
Logged Data:

| Point | Date | Time | Avg.(mg/m³) |
|---|---|---|---|
| 1 | 8-Sep | 10:01:02 | 0 014 |
| 2 | 8-Sep | 10:02:02 | 0.001 |
| 3 | 8-Sep | 10:03:02 | 0 001 |
| 4 | 8-Sep | 10:04:02 | 0 |
| 5 | 8-Sep | 10:05:02 | 0.009 |

Tag Number: 11 Pt. 3 Downwind
Number of logged points: 9
Start time and date: 09:49:14 08-Sep
Elapsed time: 00:09:00
Logging period (sec): 60
Calibration Factor (%): 100
Max Display Concentration: 0.697 mg/m³
Time at maximum: 09:58:24 Sep 08
Max STEL Concentration: 0.004 mg/m³
Time at max STEL: 09:50:14 Sep 08
Overall Avg Conc: 0.013 mg/m³
Logged Data:

| Point | Date | Time | Avg.(mg/m³) |
|---|---|---|---|
| 1 | 8-Sep | 09:50:14 | 0.059 |
| 2 | 8-Sep | 09:51:14 | 0 |
| 3 | 8-Sep | 09:52:14 | 0.002 |
| 4 | 8-Sep | 09:53:14 | 0 |
| 5 | 8-Sep | 09:54:14 | 0 |
| 6 | 8-Sep | 09:55:14 | 0 |
| 7 | 8-Sep | 09:56:14 | 0 |
| 8 | 8-Sep | 09:57:14 | 0 |
| 9 | 8-Sep | 09:58:14 | 0 |

Tag Number: 10 Pt. 3 Downwind
Number of logged points: 5
Start time and date: 09:43:02 08-Sep
Elapsed time: 00:05:00
Logging period (sec): 60
Calibration Factor (%): 100
Max Display Concentration: 3.599 mg/m³
Time at maximum: 09:44:52 Sep 08
Max STEL Concentration: 0.175 mg/m³

Time at max STEL: 09:47:32 Sep 08
Overall Avg Conc: 0.466 mg/m³
Logged Data:

| Point | Date | Time | Avg.(mg/m³) |
|---|---|---|---|
| 1 | 8-Sep | 09:44:02 | 1.44 |
| 2 | 8-Sep | 09:45:02 | 1.025 |
| 3 | 8-Sep | 09:46:02 | 0.073 |
| 4 | 8-Sep | 09:47:02 | 0.069 |
| 5 | 8-Sep | 09:48:02 | 0.022 |

Tag Number: 15 Pt. 1 Upwind
Number of logged points: 5
Start time and date: 13:49:41 08-Sep
Elapsed time: 00:05:00
Logging period (sec): 60
Calibration Factor (%): 100
Max Display Concentration: 0.000 mg/m³
Time at maximum: 13:49:41 Sep 08
Max STEL Concentration: 0.000 mg/m³
Time at max STEL: 13:49:41 Sep 08
Overall Avg Conc: 0 000 mg/m³
Logged Data:

| Point | Date | Time | Avg.(mg/m³) |
|---|---|---|---|
| 1 | 8-Sep | 13:50:41 | 0 |
| 2 | 8-Sep | 13:51:41 | 0 |
| 3 | 8-Sep | 13:52:41 | 0 |
| 4 | 8-Sep | 13:53:41 | 0 |
| 5 | 8-Sep | 13:54:41 | 0 |

Tag Number: 14 Pt. 2 Downwind
Number of logged points: 5
Start time and date: 13:42:38 08-Sep
Elapsed time: 00:05:00
Logging period (sec): 60
Calibration Factor (%): 100
Max Display Concentration: 0.776 mg/m³
Time at maximum: 13:43:35 Sep 08
Max STEL Concentration: 0 040 mg/m³
Time at max STEL: 13:43:38 Sep 08
Overall Avg Conc: 0.093 mg/m³
Logged Data:

| Point | Date | Time | Avg.(mg/m³) |
|---|---|---|---|
| 1 | 8-Sep | 13:43:38 | 0.596 |
| 2 | 8-Sep | 13:44:38 | 0.022 |
| 3 | 8-Sep | 13:45:38 | 0 |
| 4 | 8-Sep | 13:46:38 | 0 |
| 5 | 8-Sep | 13:47:38 | 0 |

Tag Number: 13 Pt. 3 Downwind
Number of logged points: 6
Start time and date: 13:35:53 08-Sep
Elapsed time: 00:06:00
Logging period (sec): 60
Calibration Factor (%): 100
Max Display Concentration: 4.561 mg/m³
Time at maximum: 13:37:26 Sep 08
Max STEL Concentration: 0.075 mg/m³
Time at max STEL: 13:39:53 Sep 08
Overall Avg Conc: 0.184 mg/m³
Logged Data:

| Point | Date | Time | Avg.(mg/m³) |
|---|---|---|---|
| 1 | 8-Sep | 13:36:53 | 0 |

| | | | |
|---|---|---|---|
| 2 | 8-Sep | 13:37:53 | 0.944 |
| 3 | 8-Sep | 13:38:53 | 0.027 |
| 4 | 8-Sep | 13:39:53 | 0.229 |
| 5 | 8-Sep | 13:40:53 | 0 |
| 6 | 8-Sep | 13:41:53 | 0.026 |

Tag Number: 16 Pt. 1 Upwind
Number of logged points: 5
Start time and date: 16:37:07 08-Sep
Elapsed time: 00:05:00
Logging period (sec): 60
Calibration Factor (%): 100
Max Display Concentration: 0.000 mg/m³
Time at maximum: 16:37:07 Sep 08
Max STEL Concentration: 0.000 mg/m³
Time at max STEL: 16:37:07 Sep 08
Overall Avg Conc: 0.000 mg/m³
Logged Data:

| Point | Date | Time | Avg.(mg/m³) |
|---|---|---|---|
| 1 | 8-Sep | 16:38:07 | 0 |
| 2 | 8-Sep | 16:39:07 | 0 |
| 3 | 8-Sep | 16:40:07 | 0 |
| 4 | 8-Sep | 16:41:07 | 0.001 |
| 5 | 8-Sep | 16:42:07 | 0.003 |

Tag Number: 17 Pt. 2 Downwind
Number of logged points: 5
Start time and date: 16:42:57 08-Sep
Elapsed time: 00:05:00
Logging period (sec): 60
Calibration Factor (%): 100
Max Display Concentration: 0.198 mg/m³
Time at maximum: 16:43:18 Sep 08
Max STEL Concentration: 0.005 mg/m³
Time at max STEL: 16:47:27 Sep 08
Overall Avg Conc: 0.012 mg/m³
Logged Data:

| Point | Date | Time | Avg.(mg/m³) |
|---|---|---|---|
| 1 | 8-Sep | 16:43:57 | 0 038 |
| 2 | 8-Sep | 16:44:57 | 0 006 |
| 3 | 8-Sep | 16:45:57 | 0.065 |
| 4 | 8-Sep | 16:46:57 | 0 034 |
| 5 | 8-Sep | 16:47:57 | 0.028 |

Tag Number: 18 Pt. 3 Downwind
Number of logged points: 5
Start time and date: 16:50:37 08-Sep
Elapsed time: 00:05:00
Logging period (sec): 60
Calibration Factor (%): 100
Max Display Concentration: 0.478 mg/m³
Time at maximum: 16:53:38 Sep 08
Max STEL Concentration: 0.000 mg/m³
Time at max STEL: 16:50:37 Sep 08
Overall Avg Conc: 0.011 mg/m³
Logged Data:

| Point | Date | Time | Avg.(mg/m³) |
|---|---|---|---|
| 1 | 8-Sep | 16:51:37 | 0.025 |

| | | | |
|---|---|---|---|
| 2 | 8-Sep | 16:52:37 | 0 |
| 3 | 8-Sep | 16:53:37 | 0.082 |
| 4 | 8-Sep | 16:54:37 | 0 009 |
| 5 | 8-Sep | 16:55:37 | 0 |

180[illegible] on Blvd
Cinc[illegible], OH 45240
(513) 825-7500

# Environmental Quality M[illegible]gement, Inc.
## Chain of Custody Record

COC Tracking: **EQ- 12655**

| Project No. | Project Name |
|---|---|
| 03249.0001.0001.02 | IHSW G |

Samplers/Affiliation: (Print Name and Sign): Nick Michaelides

Lab P.O. No:

| Sample ID: | Date | Time | Description/Matrix: | Sample Volume / Comments | No. of Containers | TESTS: RESP PM NIOSH 0600 |
|---|---|---|---|---|---|---|
| 090806-BPO-1 | 9/8/06 | 1515-1530 | PVC 5.0um CASSETTE | 1,242 L | 1 | X |
| 090806-TO | 9/8/06 | ↓ | ↓ | 1,228 L | 1 | X |
| 090806-BPO-2 | 9/8/06 | ↓ | ↓ | 1,228 L | 1 | X |
| BLANK | 9/8/06 | ↓ | ↓ | ~~0~~ | 1 | X |

* NOTE: SEE "EQ SAMPLE DATA SHEET FOR CASSETTE PRE-WEIGHTS"

| Relinquished by: (Signature) | Date | Time | Received by: (Signature) | Date | Time |
|---|---|---|---|---|---|
| [signature] | 9/8/06 | 1630 | [signature] | 9-11-06 | 1024 |
| Relinquished by: (Signature) | Date | Time | Received by: (Signature) | Date | Time |
| | | | | | |
| Relinquished by: (Signature) | Date | Time | Received by: (Signature) | Date | Time |
| | | | | | |

Ship To: RICHARD HARDING
EMSL
2001 EAST 52nd ST
INDIANAPOLIS INDIANA

Airbill Number: 8573 6981 4170

Reporting/QA Requirements:

Turn Around Time (EXACT DUE DATE): /

Report To: AARON ROSKE (EQM)

Chain of Custody Seal Numbers: ☑

Distribution: White - Accompanies Shipment Pink - Project Files Yellow - Laboratory File

5 D/S

09/29/2006 10:32 3178033047 EMSL PAGE 03/03

**EMSL Analytical, Inc.-** *2001 E. 52nd St.*
*Indianapolis, IN 46205*
*(317) 803-2997*

**Attention:** Aaron Roski

**Environmental Quality Management, Inc.**
1800 Carillon Blvd
Cincinnati, OH 45240

**Project:** IHSWG 030249.0001.0001.02
**Ref. Number:** 160610426

# Total/Respirable Nuisance Dust Analysis
# Performed by Modified Method NIOSH 0500 / 0600

| Sample ID | Location | Volume (L) | Sample Weight (mg) | Concentration ($mg/m^3$) |
|---|---|---|---|---|
| 090806-BPO-1 | | 1242 | 6.50 | 5.25 |
| 090806-TO | | 1228 | <0.03 | <0.02 |
| 090806-BPO-2 | | 1228 | 1.38 | 1.13 |
| Blank | | - | <0.03 | - |

Acceptable Limits According to CFR1910.1000 : Respirable Fraction = $5mg/m^3$
Total Dust = $15mg/m^3$

Analysis Performed By: Krystle Burke
Krystle Burke

9/13/06
Date

# EQ SAMPLING EQUIPMENT CALIBRATION LOG

Site Name: LHSWG

Project No.: 030249

| DATE/TIME | INSTRUMENT (Mfg./Model) | CALIBRATED BY | STANDARD (concent.-units) | METER READING | COMMENTS/ AMBIENT CONDITIONS |
|---|---|---|---|---|---|
| 9-1-06 | PDR-MIE | | ZERO CAL | "CAL OK" | |
| 9-5-06 | PDR-MIE | | ZERO CAL | "CAL OK" | |
| 9-6-06 | PDR-MIE | | ZERO CAL | "CAL OK" | |
| 9-7-06 | PDR-MIE | | ZERO CAL | "CAL OK" | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

Page 1 of 1

September 2006

DAILY DUST CONTROL LOG

INDIANA HARBOR CDF

3500 Indianapolis Blvd., East Chicago, IN 46410

| DATE | SEGMENT CONTROLLED | TIME OF APPLICATION | METHOD OF APPLICATION (3) | VOLUME OF WATER (GAL) | CHEMICAL USED? | COMMENT |
|---|---|---|---|---|---|---|
| 09/01/06 | Bag Opening | 07:00 to 16:00 | Note #4 | 600 | No | No roadway dust control measures performed, no truck traffic. Note comment #4. |
| 09/02/06 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 09/03/06 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 09/04/06 | None | NA | NA | NA | NA | No dust control measures performed, no truck traffic. |
| 09/05/06 | None | NA | NA | NA | NA | No dust control measures performed, no truck traffic. |
| 09/06/06 | None | NA | NA | NA | NA | No dust control measures performed, no truck traffic. |
| 09/07/06 | None | NA | NA | NA | NA | No dust control measures performed, no truck traffic. |
| 09/08/06 | None | NA | NA | NA | NA | No dust control measures performed, no truck traffic. |
| 09/09/06 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 09/10/06 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 09/11/06 | None | NA | NA | NA | NA | No dust control measures performed, no truck traffic. |
| 09/12/06 | None | NA | NA | NA | NA | No dust control measures performed, no truck traffic. |
| 09/13/06 | None | NA | NA | NA | NA | No dust control measures performed, no truck traffic. |
| 09/14/06 | None | NA | NA | NA | NA | No dust control measures performed, no truck traffic. |
| 09/15/06 | None | NA | NA | NA | NA | No dust control measures performed, no truck traffic. |
| 09/16/06 | None | NA | NA | NA | NA | No dust control measures performed, no truck traffic. |
| 09/17/06 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 09/18/06 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 09/19/06 | None | NA | NA | NA | NA | No dust control measures performed, no truck traffic. |
| 09/20/06 | None | NA | NA | NA | NA | No dust control measures performed, no truck traffic. |
| 09/21/06 | None | NA | NA | NA | NA | No dust control measures performed, no truck traffic. |
| 09/22/06 | None | NA | NA | NA | NA | No dust control measures performed, no truck traffic. |
| 09/23/06 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 09/24/06 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 09/25/06 | None | NA | NA | NA | NA | No dust control measures performed, no truck traffic. |
| 09/26/06 | None | NA | NA | NA | NA | No dust control measures performed, no truck traffic. |
| 09/27/06 | None | NA | NA | NA | NA | No dust control measures performed, no truck traffic. |
| 09/28/06 | None | NA | NA | NA | NA | No dust control measures performed, no truck traffic. |
| 09/29/06 | None | NA | NA | NA | NA | No dust control measures performed, no truck traffic. |
| 09/30/06 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| | | | | | | |

Notes:

1) If chemicals are used additional requirements are presented in the permit. Consult before use and collect the requisite data.

2) The width of the application is 8 ft unless noted in the comments column.

3) Method of application code. #1 Water Truck Spray Bar, #2 Spray Hose, #3 Other as noted in Comments

4) Control was for bentonite sack opening and placement and was manually with jetter truck. Dust control was for aesthetic purposes due to the proximity to Indianapolis Blvd. Air quality data did not indicate a technical need for dust control.

Air Monitoring Monthly Summary – October 2006

Site: IHSWG
Location: 3500 Indianapolis Blvd., East Chicago, IN 46312
Prepared by: John Wentz

## I. Significant Findings / Site Activities

All equipment and supplies were removed from the site in September. Completion of clay cap pending results of soil boring permeability tests. No work was performed on the site during the month of October 2006.

## II. Report of / discussion of findings

No work was performed on the site during the month of October 2006.

## III. Problems encountered

No problems encountered as no work was performed on the site during the month of October 2006.

## IV. Potential action items / lessons learned

No work was performed on the site during the month of October 2006.

October 2006
DAILY DUST CONTROL LOG
INDIANA HARBOR CDF
3500 Indianapolis Blvd., East Chicago, IN 46410

| DATE | SEGMENT CONTROLLED | TIME OF APPLICATION | METHOD OF APPLICATION (3) | VOLUME OF WATER (GAL) | CHEMICAL USED? | COMMENT |
|---|---|---|---|---|---|---|
| 10/01/06 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 10/02/06 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 10/03/06 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 10/04/06 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 10/05/06 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 10/06/06 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 10/07/06 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 10/08/06 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 10/09/06 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 10/10/06 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 10/11/06 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 10/12/06 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 10/13/06 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 10/14/06 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 10/15/06 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 10/16/06 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 10/17/06 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 10/18/06 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 10/19/06 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 10/20/06 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 10/21/06 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 10/22/06 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 10/23/06 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 10/24/06 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 10/25/06 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 10/26/06 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 10/27/06 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 10/28/06 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 10/29/06 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 10/30/06 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| | | | | | | |

Notes:

1) If chemicals are used additional requirements are presented in the permit. Consult before use and collect the requisite data.

2) The width of the application is 8 ft unless noted in the comments column.

3) Method of application code. #1 Water Truck Spray Bar, #2 Spray Hose, #3 Other as noted in Comments

Air Monitoring Monthly Summary – November 2006

Site: IHSWG
Location: 3500 Indianapolis Blvd., East Chicago, IN 46312
Prepared by: John Wentz

## I. Significant Findings / Site Activities

All equipment and supplies were removed from the site in September. Completion of clay cap pending results of soil boring permeability tests. No work was performed on the site during the month of November 2006.

## II. Report of / discussion of findings

No work was performed on the site during the month of November 2006.

## III. Problems encountered

No problems encountered as no work was performed on the site during the month of November 2006.

## IV. Potential action items / lessons learned

No work was performed on the site during the month of November 2006.

November 2006
DAILY DUST CONTROL LOG
INDIANA HARBOR CDF
3500 Indianapolis Blvd., East Chicago, IN 46410

| DATE | SEGMENT CONTROLLED | TIME OF APPLICATION | METHOD OF APPLICATION (3) | VOLUME OF WATER (GAL) | CHEMICAL USED? | COMMENT |
|---|---|---|---|---|---|---|
| 11/01/06 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 11/02/06 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 11/03/06 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 11/04/06 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 11/05/06 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 11/06/06 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 11/07/06 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 11/08/06 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 11/09/06 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 11/10/06 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 11/11/06 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 11/12/06 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 11/13/06 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 11/14/06 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 11/15/06 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 11/16/06 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 11/17/06 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 11/18/06 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 11/19/06 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 11/20/06 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 11/21/06 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 11/22/06 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 11/23/06 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 11/24/06 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 11/25/06 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 11/26/06 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 11/27/06 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 11/28/06 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 11/29/06 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 11/30/06 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| | | | | | | |

Notes:

1) If chemicals are used additional requirements are presented in the permit. Consult before use and collect the requisite data.

2) The width of the application is 8 ft unless noted in the comments column.

3) Method of application code. #1 Water Truck Spray Bar, #2 Spray Hose, #3 Other as noted in Comments

Air Monitoring Monthly Summary – December 2006

Site: IHSWG
Location: 3500 Indianapolis Blvd., East Chicago, IN 46312
Prepared by: Ben Letany
Sampling preformed by: Ben Letany
Date: 1-08-07

## I. Significant Findings / Site Activities

Construction activities during the month of December consisted of re-mixing (with additional bentonite) the slurry wall from stations 43+20 to 44+50 on the east side and 79+85 to 86+70 on the west side using Dewind's one-pass trencher. Rework began and was finished on the east side on 12-05-06. Continuous construction emissions monitoring was conducted on 12-05-06 at 4 sample locations, 1 upwind and 3 downwind. Two monitors were used sampling 2 locations in the morning and 2 in the afternoon.

Re-work on the west side began on 12-06-06 and, again, monitoring was conducted at 4 locations. Due to severe cold temperatures and freezing, trenching took place only between 1610 and 1650pm on 12-07-06. Due to this short work duration only 2 sample locations were used (1 upwind and 1 downwind). Trenching did not resume until 12-11-06 and only lasted approximately 1 hour. Therefore, monitoring was only performed at 2 locations (1 upwind and 1 downwind). Again, 2 locations were sampled on 12-12-06 when trenching operations ceased after only1.5 hours due to a broken arm on the trencher.

Construction emissions air monitoring restarted on 12-20-06 when the Dewind one pass trenching / slurry wall re-work operation resumed and was finished. Again, 2 locations were continuously sampled during the final 3 hours of operation.

## II. Report of / discussion of findings

There were no exceedances or exposure issues for site personnel, however, bentonite mixing is a dusty operation, all personnel directly involved to the mixing and one pass trenching operations who are not enclosed in a heavy equipment cab are required to wear respirator protection (minimum ½ face APR with HEPA cartridge). Site personnel adjacent to trenching and mixing operations are not required to wear respirator protection but are recommended to observe from an upwind position.

## III. Problems encountered

No problems encountered.

## IV. Potential action items / lessons learned

Bentonite mixing and slurry wall installation is a very dusty operation and along with personal respiratory protection, orientation of site operations (administration controls) related to wind direction is very important to help lesson any exposure issues (both personal and environmental).

See attached raw data (calibration sheet, sample results, monitoring locations)

Indiana Harbor and Canal Confined Disposal Facility
Obstructions Removal
Contract No. W912P6-06-C-0003

Particulates

December '06

| pDR-1000 | Limit mg/m3 | week of 12/3/2006 Time | mg/m3 | 12/4/2006 Time | mg/m3 | 12/5/2006 Time | mg/m3 | 12/6/2006 Time | mg/m3 | 12/7/2006 Time | mg/m3 | 12/8/2006 Time | mg/m3 | 12/9/2006 Time | mg/m3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Reading 1 | 10.0 | | | | | 10:26:17 SW | 0.000 | 12:07:14 SW | 0.214 | 16:08:42 NW | 0.178 | | | | |
| Reading 2 | 10.0 | | | | | 10:31:06 SW | 0.141 | 12:10:06 SW | 0.000 | 16:10:37 NW | 0.022 | | | | |
| Reading 3 | 10.0 | | | | | 14:01:37 SW | 0.019 | 15:41:59 SW | 0.242 | | | | | | |
| Reading 4 | 10.0 | | | | | 14:06:32 SW | 0.035 | 15:39:14 SW | 0.000 | | | | | | |
| Reading 5 | 10.0 | | | | | | | | | | | | | | |
| Reading 6 | 10.0 | | | | | | | | | | | | | | |

| pDR-1000 | Limit mg/m3 | week of 12/10/2006 Time | mg/m3 | 12/11/2006 Time | mg/m3 | 12/12/2006 Time | mg/m3 | 12/13/2006 Time | mg/m3 | 12/14/2006 Time | mg/m3 | 12/15/2006 Time | mg/m3 | 12/16/2006 Time | mg/m3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Reading 1 | 10.0 | | | 13:02:03 S | 0.187 | 15:46:10 S | 0.179 | | | | | | | | |
| Reading 2 | 10.0 | | | 13:02:06 S | 0.021 | 15:48:19 S | 0.071 | | | | | | | | |
| Reading 3 | 10.0 | | | | | | | | | | | | | | |
| Reading 4 | 10.0 | | | | | | | | | | | | | | |
| Reading 5 | 10.0 | | | | | | | | | | | | | | |
| Reading 6 | 10.0 | | | | | | | | | | | | | | |

| pDR-1000 | Limit mg/m3 | week of 12/17/2006 Time | mg/m3 | 12/18/2006 Time | mg/m3 | 12/19/2006 Time | mg/m3 | 12/20/2006 Time | mg/m3 | 12/21/2006 Time | mg/m3 | 12/22/2006 Time | mg/m3 | 12/23/2006 Time | mg/m3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Reading 1 | 10.0 | | | | | | | 10:26:39 SW | 0.028 | | | | | | |
| Reading 2 | 10.0 | | | | | | | 10:32:15 SW | 0.027 | | | | | | |
| Reading 3 | 10.0 | | | | | | | | | | | | | | |
| Reading 4 | 10.0 | | | | | | | | | | | | | | |
| Reading 5 | 10.0 | | | | | | | | | | | | | | |

| pDR-1000 | Limit mg/m3 | week of 12/24/2006 Time | mg/m3 | 12/25/2006 Time | mg/m3 | 12/26/2006 Time | mg/m3 | 12/27/2006 Time | mg/m3 | 12/28/2006 Time | mg/m3 | 12/29/2006 Time | mg/m3 | 12/30/2006 Time | mg/m3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Reading 1 | 10.0 | | | | | | | | | | | | | | |
| Reading 2 | 10.0 | | | | | | | | | | | | | | |
| Reading 3 | 10.0 | | | | | | | | | | | | | | |
| Reading 4 | 10.0 | | | | | | | | | | | | | | |
| Reading 5 | 10.0 | | | | | | | | | | | | | | |

| pDR-1000 | Limit mg/m3 | week of 12/31/2006 Time | mg/m3 | 1/1/2007 Time | mg/m3 | 1/2/2007 Time | mg/m3 | 1/3/2007 Time | mg/m3 | 1/4/2007 Time | mg/m3 | 1/5/2007 Time | mg/m3 | 1/6/2007 Time | mg/m3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Reading 1 | 10.0 | | | | | | | | | | | | | | |
| Reading 2 | 10.0 | | | | | | | | | | | | | | |
| Reading 3 | 10.0 | | | | | | | | | | | | | | |
| Reading 4 | 10.0 | | | | | | | | | | | | | | |
| Reading 5 | 10.0 | | | | | | | | | | | | | | |
| Reading 6 | 10.0 | | | | | | | | | | | | | | |
| Reading 7 | 10.0 | | | | | | | | | | | | | | |
| Reading 8 | 10.0 | | | | | | | | | | | | | | |
| Reading 9 | 10.0 | | | | | | | | | | | | | | |

Notes:
Values reported are the Overall Average Concentration of the sampling interval for each Tag Number with time reported as interval start time.
SW = Wind From South West
NW= Wind from North West
S= Wind from the South

Point 1
pDR-1000 S/N: 00000
Tag Number: 01
Number of logged points: 162
Start time and date: 10:26:17 05-Dec
Elapsed time: 02:42:00
Logging period (sec): 60
Calibration Factor (%): 100
Max Display Concentration: 0.036 mg/m³
Time at maximum: 12:38:22 Dec 05
Max STEL Concentration: 0.000 mg/m³
Time at max STEL: 10:26:17 Dec 05
Overall Avg Conc: 0.000 mg/m³
Logged Data:

| Point | Date | Time | Avg.(mg/m³) |
|---|---|---|---|
| 1 | 5-Dec | 10:27:17 | 0 |
| 2 | 5-Dec | 10:28:17 | 0 |
| 3 | 5-Dec | 10:29:17 | 0 |
| 4 | 5-Dec | 10:30:17 | 0 |
| 5 | 5-Dec | 10:31:17 | 0 |
| 6 | 5-Dec | 10:32:17 | 0 |
| 7 | 5-Dec | 10:33:17 | 0 |
| 8 | 5-Dec | 10:34:17 | 0 |
| 9 | 5-Dec | 10:35:17 | 0 |
| 10 | 5-Dec | 10:36:17 | 0 |
| 11 | 5-Dec | 10:37:17 | 0 |
| 12 | 5-Dec | 10:38:17 | 0 |
| 13 | 5-Dec | 10:39:17 | 0 |
| 14 | 5-Dec | 10:40:17 | 0 |
| 15 | 5-Dec | 10:41:17 | 0 |
| 16 | 5-Dec | 10:42:17 | 0 |
| 17 | 5-Dec | 10:43:17 | 0 |
| 18 | 5-Dec | 10:44:17 | 0 |
| 19 | 5-Dec | 10:45:17 | 0 |
| 20 | 5-Dec | 10:46:17 | 0 |
| 21 | 5-Dec | 10:47:17 | 0 |
| 22 | 5-Dec | 10:48:17 | 0.001 |
| 23 | 5-Dec | 10:49:17 | 0.001 |
| 24 | 5-Dec | 10:50:17 | 0 |
| 25 | 5-Dec | 10:51:17 | 0 |
| 26 | 5-Dec | 10:52:17 | 0 |
| 27 | 5-Dec | 10:53:17 | 0 |
| 28 | 5-Dec | 10:54:17 | 0 |
| 29 | 5-Dec | 10:55:17 | 0 |
| 30 | 5-Dec | 10:56:17 | 0 |
| 31 | 5-Dec | 10:57:17 | 0 |
| 32 | 5-Dec | 10:58:17 | 0 |
| 33 | 5-Dec | 10:59:17 | 0 |
| 34 | 5-Dec | 11:00:17 | 0 |
| 35 | 5-Dec | 11:01:17 | 0 |
| 36 | 5-Dec | 11:02:17 | 0.001 |
| 37 | 5-Dec | 11:03:17 | 0 |

| | | | |
|---|---|---|---|
| 38 | 5-Dec | 11:04:17 | 0.001 |
| 39 | 5-Dec | 11:05:17 | 0.002 |
| 40 | 5-Dec | 11:06:17 | 0.001 |
| 41 | 5-Dec | 11:07:17 | 0.001 |
| 42 | 5-Dec | 11:08:17 | 0 |
| 43 | 5-Dec | 11:09:17 | 0 |
| 44 | 5-Dec | 11:10:17 | 0 |
| 45 | 5-Dec | 11:11:17 | 0.002 |
| 46 | 5-Dec | 11:12:17 | 0 |
| 47 | 5-Dec | 11:13:17 | 0 |
| 48 | 5-Dec | 11:14:17 | 0 |
| 49 | 5-Dec | 11:15:17 | 0 |
| 50 | 5-Dec | 11:16:17 | 0 |
| 51 | 5-Dec | 11:17:17 | 0 |
| 52 | 5-Dec | 11:18:17 | 0 |
| 53 | 5-Dec | 11:19:17 | 0 |
| 54 | 5-Dec | 11:20:17 | 0 |
| 55 | 5-Dec | 11:21:17 | 0 |
| 56 | 5-Dec | 11:22:17 | 0 |
| 57 | 5-Dec | 11:23:17 | 0.003 |
| 58 | 5-Dec | 11:24:17 | 0.002 |
| 59 | 5-Dec | 11:25:17 | 0.001 |
| 60 | 5-Dec | 11:26:17 | 0.002 |
| 61 | 5-Dec | 11:27:17 | 0.001 |
| 62 | 5-Dec | 11:28:17 | 0.001 |
| 63 | 5-Dec | 11:29:17 | 0.001 |
| 64 | 5-Dec | 11:30:17 | 0 |
| 65 | 5-Dec | 11:31:17 | 0.004 |
| 66 | 5-Dec | 11:32:17 | 0.003 |
| 67 | 5-Dec | 11:33:17 | 0.002 |
| 68 | 5-Dec | 11:34:17 | 0.003 |
| 69 | 5-Dec | 11:35:17 | 0.003 |
| 70 | 5-Dec | 11:36:17 | 0 |
| 71 | 5-Dec | 11:37:17 | 0.001 |
| 72 | 5-Dec | 11:38:17 | 0.003 |
| 73 | 5-Dec | 11:39:17 | 0.007 |
| 74 | 5-Dec | 11:40:17 | 0.003 |
| 75 | 5-Dec | 11:41:17 | 0.002 |
| 76 | 5-Dec | 11:42:17 | 0.001 |
| 77 | 5-Dec | 11:43:17 | 0.005 |
| 78 | 5-Dec | 11:44:17 | 0.001 |
| 79 | 5-Dec | 11:45:17 | 0.005 |
| 80 | 5-Dec | 11:46:17 | 0.005 |
| 81 | 5-Dec | 11:47:17 | 0.008 |
| 82 | 5-Dec | 11:48:17 | 0.002 |
| 83 | 5-Dec | 11:49:17 | 0 |
| 84 | 5-Dec | 11:50:17 | 0.001 |
| 85 | 5-Dec | 11:51:17 | 0 |
| 86 | 5-Dec | 11:52:17 | 0 |
| 87 | 5-Dec | 11:53:17 | 0 |
| 88 | 5-Dec | 11:54:17 | 0 |
| 89 | 5-Dec | 11:55:17 | 0 |

| | | | |
|---|---|---|---|
| 90 | 5-Dec | 11:56:17 | 0 |
| 91 | 5-Dec | 11:57:17 | 0 |
| 92 | 5-Dec | 11:58:17 | 0 |
| 93 | 5-Dec | 11:59:17 | 0 |
| 94 | 5-Dec | 12:00:17 | 0 |
| 95 | 5-Dec | 12:01:17 | 0 |
| 96 | 5-Dec | 12:02:17 | 0 |
| 97 | 5-Dec | 12:03:17 | 0 |
| 98 | 5-Dec | 12:04:17 | 0 |
| 99 | 5-Dec | 12:05:17 | 0 |
| 100 | 5-Dec | 12:06:17 | 0 |
| 101 | 5-Dec | 12:07:17 | 0 |
| 102 | 5-Dec | 12:08:17 | 0 |
| 103 | 5-Dec | 12:09:17 | 0 |
| 104 | 5-Dec | 12:10:17 | 0 |
| 105 | 5-Dec | 12:11:17 | 0 |
| 106 | 5-Dec | 12:12:17 | 0.002 |
| 107 | 5-Dec | 12:13:17 | 0 |
| 108 | 5-Dec | 12:14:17 | 0 |
| 109 | 5-Dec | 12:15:17 | 0 |
| 110 | 5-Dec | 12:16:17 | 0 |
| 111 | 5-Dec | 12:17:17 | 0.001 |
| 112 | 5-Dec | 12:18:17 | 0 |
| 113 | 5-Dec | 12:19:17 | 0 |
| 114 | 5-Dec | 12:20:17 | 0.004 |
| 115 | 5-Dec | 12:21:17 | 0.003 |
| 116 | 5-Dec | 12:22:17 | 0 |
| 117 | 5-Dec | 12:23:17 | 0.004 |
| 118 | 5-Dec | 12:24:17 | 0.003 |
| 119 | 5-Dec | 12:25:17 | 0 |
| 120 | 5-Dec | 12:26:17 | 0 |
| 121 | 5-Dec | 12:27:17 | 0.003 |
| 122 | 5-Dec | 12:28:17 | 0.002 |
| 123 | 5-Dec | 12:29:17 | 0 |
| 124 | 5-Dec | 12:30:17 | 0.002 |
| 125 | 5-Dec | 12:31:17 | 0 |
| 126 | 5-Dec | 12:32:17 | 0 |
| 127 | 5-Dec | 12:33:17 | 0.001 |
| 128 | 5-Dec | 12:34:17 | 0 |
| 129 | 5-Dec | 12:35:17 | 0.001 |
| 130 | 5-Dec | 12:36:17 | 0 |
| 131 | 5-Dec | 12:37:17 | 0.004 |
| 132 | 5-Dec | 12:38:17 | 0.005 |
| 133 | 5-Dec | 12:39:17 | 0.005 |
| 134 | 5-Dec | 12:40:17 | 0.002 |
| 135 | 5-Dec | 12:41:17 | 0.008 |
| 136 | 5-Dec | 12:42:17 | 0.002 |
| 137 | 5-Dec | 12:43:17 | 0.002 |
| 138 | 5-Dec | 12:44:17 | 0.002 |
| 139 | 5-Dec | 12:45:17 | 0 |
| 140 | 5-Dec | 12:46:17 | 0 |
| 141 | 5-Dec | 12:47:17 | 0 |

| | | | |
|---|---|---|---|
| 142 | 5-Dec | 12:48:17 | 0.001 |
| 143 | 5-Dec | 12:49:17 | 0.006 |
| 144 | 5-Dec | 12:50:17 | 0 |
| 145 | 5-Dec | 12:51:17 | 0 |
| 146 | 5-Dec | 12:52:17 | 0 |
| 147 | 5-Dec | 12:53:17 | 0 |
| 148 | 5-Dec | 12:54:17 | 0 |
| 149 | 5-Dec | 12:55:17 | 0 |
| 150 | 5-Dec | 12:56:17 | 0 |
| 151 | 5-Dec | 12:57:17 | 0 |
| 152 | 5-Dec | 12:58:17 | 0 |
| 153 | 5-Dec | 12:59:17 | 0 |
| 154 | 5-Dec | 13:00:17 | 0 |
| 155 | 5-Dec | 13:01:17 | 0 |
| 156 | 5-Dec | 13:02:17 | 0 |
| 157 | 5-Dec | 13:03:17 | 0 |
| 158 | 5-Dec | 13:04:17 | 0 |
| 159 | 5-Dec | 13:05:17 | 0 |
| 160 | 5-Dec | 13:06:17 | 0 |
| 161 | 5-Dec | 13:07:17 | 0 |
| 162 | 5-Dec | 13:08:17 | 0 |

Point 2
pDR-1000 S/N: 04789
Tag Number: 01
Number of logged points: 175
Start time and date: 10:31:06 05-Dec
Elapsed time: 02:55:00
Logging period (sec): 60
Calibration Factor (%): 100
Max Display Concentration: 9.720 mg/m³
Time at maximum: 12:36:58 Dec 05
Max STEL Concentration: 0.879 mg/m³
Time at max STEL: 12:48:36 Dec 05
Overall Avg Conc: 0.141 mg/m³
Logged Data:

| Point | Date | Time | Avg.(mg/m³) |
|---|---|---|---|
| 1 | 5-Dec | 10:32:06 | 0.029 |
| 2 | 5-Dec | 10:33:06 | 0.029 |
| 3 | 5-Dec | 10:34:06 | 0.013 |
| 4 | 5-Dec | 10:35:06 | 0.032 |
| 5 | 5-Dec | 10:36:06 | 0.022 |
| 6 | 5-Dec | 10:37:06 | 0.014 |
| 7 | 5-Dec | 10:38:06 | 0.014 |
| 8 | 5-Dec | 10:39:06 | 0.016 |
| 9 | 5-Dec | 10:40:06 | 0.016 |
| 10 | 5-Dec | 10:41:06 | 0.017 |
| 11 | 5-Dec | 10:42:06 | 0.026 |
| 12 | 5-Dec | 10:43:06 | 0.015 |
| 13 | 5-Dec | 10:44:06 | 0.017 |
| 14 | 5-Dec | 10:45:06 | 0.018 |

| | | | |
|---|---|---|---|
| 15 | 5-Dec | 10:46:06 | 0.024 |
| 16 | 5-Dec | 10:47:06 | 0.028 |
| 17 | 5-Dec | 10:48:06 | 0.02 |
| 18 | 5-Dec | 10:49:06 | 0.02 |
| 19 | 5-Dec | 10:50:06 | 0.017 |
| 20 | 5-Dec | 10:51:06 | 0.023 |
| 21 | 5-Dec | 10:52:06 | 0.018 |
| 22 | 5-Dec | 10:53:06 | 0.02 |
| 23 | 5-Dec | 10:54:06 | 0.018 |
| 24 | 5-Dec | 10:55:06 | 0.019 |
| 25 | 5-Dec | 10:56:06 | 0.02 |
| 26 | 5-Dec | 10:57:06 | 0.021 |
| 27 | 5-Dec | 10:58:06 | 0.024 |
| 28 | 5-Dec | 10:59:06 | 0.053 |
| 29 | 5-Dec | 11:00:06 | 0.027 |
| 30 | 5-Dec | 11:01:06 | 0.018 |
| 31 | 5-Dec | 11:02:06 | 0.047 |
| 32 | 5-Dec | 11:03:06 | 0.059 |
| 33 | 5-Dec | 11:04:06 | 0.02 |
| 34 | 5-Dec | 11:05:06 | 0.027 |
| 35 | 5-Dec | 11:06:06 | 0.021 |
| 36 | 5-Dec | 11:07:06 | 0.02 |
| 37 | 5-Dec | 11:08:06 | 0.018 |
| 38 | 5-Dec | 11:09:06 | 0.016 |
| 39 | 5-Dec | 11:10:06 | 0.015 |
| 40 | 5-Dec | 11:11:06 | 0.02 |
| 41 | 5-Dec | 11:12:06 | 0.018 |
| 42 | 5-Dec | 11:13:06 | 0.023 |
| 43 | 5-Dec | 11:14:06 | 0.016 |
| 44 | 5-Dec | 11:15:06 | 0.056 |
| 45 | 5-Dec | 11:16:06 | 0.037 |
| 46 | 5-Dec | 11:17:06 | 0.108 |
| 47 | 5-Dec | 11:18:06 | 0.02 |
| 48 | 5-Dec | 11:19:06 | 0.02 |
| 49 | 5-Dec | 11:20:06 | 0.021 |
| 50 | 5-Dec | 11:21:06 | 0.023 |
| 51 | 5-Dec | 11:22:06 | 0.021 |
| 52 | 5-Dec | 11:23:06 | 0.024 |
| 53 | 5-Dec | 11:24:06 | 0.033 |
| 54 | 5-Dec | 11:25:06 | 0.04 |
| 55 | 5-Dec | 11:26:06 | 0.034 |
| 56 | 5-Dec | 11:27:06 | 0.037 |
| 57 | 5-Dec | 11:28:06 | 0.032 |
| 58 | 5-Dec | 11:29:06 | 0.056 |
| 59 | 5-Dec | 11:30:06 | 0.05 |
| 60 | 5-Dec | 11:31:06 | 0.053 |
| 61 | 5-Dec | 11:32:06 | 0.036 |
| 62 | 5-Dec | 11:33:06 | 0.059 |
| 63 | 5-Dec | 11:34:06 | 0.09 |
| 64 | 5-Dec | 11:35:06 | 0.028 |
| 65 | 5-Dec | 11:36:06 | 0.021 |
| 66 | 5-Dec | 11:37:06 | 0.043 |

| | | | |
|---|---|---|---|
| 67 | 5-Dec | 11:38:06 | 0.033 |
| 68 | 5-Dec | 11:39:06 | 0.025 |
| 69 | 5-Dec | 11:40:06 | 0.017 |
| 70 | 5-Dec | 11:41:06 | 0.021 |
| 71 | 5-Dec | 11:42:06 | 0.032 |
| 72 | 5-Dec | 11:43:06 | 0.02 |
| 73 | 5-Dec | 11:44:06 | 0.032 |
| 74 | 5-Dec | 11:45:06 | 0.027 |
| 75 | 5-Dec | 11:46:06 | 0.017 |
| 76 | 5-Dec | 11:47:06 | 0.016 |
| 77 | 5-Dec | 11:48:06 | 0.031 |
| 78 | 5-Dec | 11:49:06 | 0.017 |
| 79 | 5-Dec | 11:50:06 | 0.023 |
| 80 | 5-Dec | 11:51:06 | 0.012 |
| 81 | 5-Dec | 11:52:06 | 0.015 |
| 82 | 5-Dec | 11:53:06 | 0.089 |
| 83 | 5-Dec | 11:54:06 | 0.058 |
| 84 | 5-Dec | 11:55:06 | 0.019 |
| 85 | 5-Dec | 11:56:06 | 0.01 |
| 86 | 5-Dec | 11:57:06 | 0.011 |
| 87 | 5-Dec | 11:58:06 | 0.073 |
| 88 | 5-Dec | 11:59:06 | 0.046 |
| 89 | 5-Dec | 12:00:06 | 0.109 |
| 90 | 5-Dec | 12:01:06 | 0.031 |
| 91 | 5-Dec | 12:02:06 | 0.171 |
| 92 | 5-Dec | 12:03:06 | 0.257 |
| 93 | 5-Dec | 12:04:06 | 0.362 |
| 94 | 5-Dec | 12:05:06 | 0.127 |
| 95 | 5-Dec | 12:06:06 | 0.012 |
| 96 | 5-Dec | 12:07:06 | 0.01 |
| 97 | 5-Dec | 12:08:06 | 0.009 |
| 98 | 5-Dec | 12:09:06 | 0.19 |
| 99 | 5-Dec | 12:10:06 | 0.224 |
| 100 | 5-Dec | 12:11:06 | 0.167 |
| 101 | 5-Dec | 12:12:06 | 0.036 |
| 102 | 5-Dec | 12:13:06 | 0.09 |
| 103 | 5-Dec | 12:14:06 | 0.232 |
| 104 | 5-Dec | 12:15:06 | 0.06 |
| 105 | 5-Dec | 12:16:06 | 0.03 |
| 106 | 5-Dec | 12:17:06 | 0.094 |
| 107 | 5-Dec | 12:18:06 | 0.352 |
| 108 | 5-Dec | 12:19:06 | 0.29 |
| 109 | 5-Dec | 12:20:06 | 0.257 |
| 110 | 5-Dec | 12:21:06 | 0.025 |
| 111 | 5-Dec | 12:22:06 | 0.275 |
| 112 | 5-Dec | 12:23:06 | 0.015 |
| 113 | 5-Dec | 12:24:06 | 0.02 |
| 114 | 5-Dec | 12:25:06 | 0.277 |
| 115 | 5-Dec | 12:26:06 | 0.023 |
| 116 | 5-Dec | 12:27:06 | 0.015 |
| 117 | 5-Dec | 12:28:06 | 0.036 |
| 118 | 5-Dec | 12:29:06 | 0.327 |

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|---|---|---|---|
| 119 | 5-Dec | 12:30:06 | 1.431 |
| 120 | 5-Dec | 12:31:06 | 0.414 |
| 121 | 5-Dec | 12:32:06 | 0.06 |
| 122 | 5-Dec | 12:33:06 | 0.184 |
| 123 | 5-Dec | 12:34:06 | 0.041 |
| 124 | 5-Dec | 12:35:06 | 0.313 |
| 125 | 5-Dec | 12:36:06 | 0.156 |
| 126 | 5-Dec | 12:37:06 | 2.633 |
| 127 | 5-Dec | 12:38:06 | 3.585 |
| 128 | 5-Dec | 12:39:06 | 2.456 |
| 129 | 5-Dec | 12:40:06 | 0.066 |
| 130 | 5-Dec | 12:41:06 | 0.055 |
| 131 | 5-Dec | 12:42:06 | 0.31 |
| 132 | 5-Dec | 12:43:06 | 0.343 |
| 133 | 5-Dec | 12:44:06 | 0.161 |
| 134 | 5-Dec | 12:45:06 | 0.012 |
| 135 | 5-Dec | 12:46:06 | 0.772 |
| 136 | 5-Dec | 12:47:06 | 1.95 |
| 137 | 5-Dec | 12:48:06 | 0.25 |
| 138 | 5-Dec | 12:49:06 | 0.094 |
| 139 | 5-Dec | 12:50:06 | 0.088 |
| 140 | 5-Dec | 12:51:06 | 0.067 |
| 141 | 5-Dec | 12:52:06 | 0.034 |
| 142 | 5-Dec | 12:53:06 | 0.06 |
| 143 | 5-Dec | 12:54:06 | 0.256 |
| 144 | 5-Dec | 12:55:06 | 0.098 |
| 145 | 5-Dec | 12:56:06 | 0.025 |
| 146 | 5-Dec | 12:57:06 | 0.238 |
| 147 | 5-Dec | 12:58:06 | 0.197 |
| 148 | 5-Dec | 12:59:06 | 0.051 |
| 149 | 5-Dec | 13:00:06 | 0.105 |
| 150 | 5-Dec | 13:01:06 | 0.237 |
| 151 | 5-Dec | 13:02:06 | 0.014 |
| 152 | 5-Dec | 13:03:06 | 0.024 |
| 153 | 5-Dec | 13:04:06 | 0.057 |
| 154 | 5-Dec | 13:05:06 | 0.112 |
| 155 | 5-Dec | 13:06:06 | 0.079 |
| 156 | 5-Dec | 13:07:06 | 0.068 |
| 157 | 5-Dec | 13:08:06 | 0.109 |
| 158 | 5-Dec | 13:09:06 | 0.073 |
| 159 | 5-Dec | 13:10:06 | 0.063 |
| 160 | 5-Dec | 13:11:06 | 0.104 |
| 161 | 5-Dec | 13:12:06 | 0.03 |
| 162 | 5-Dec | 13:13:06 | 0.087 |
| 163 | 5-Dec | 13:14:06 | 0.107 |
| 164 | 5-Dec | 13:15:06 | 0.082 |
| 165 | 5-Dec | 13:16:06 | 0.029 |
| 166 | 5-Dec | 13:17:06 | 0.031 |
| 167 | 5-Dec | 13:18:06 | 0.032 |
| 168 | 5-Dec | 13:19:06 | 0.036 |
| 169 | 5-Dec | 13:20:06 | 0.012 |
| 170 | 5-Dec | 13:21:06 | 0.021 |

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|---|---|---|---|
| 171 | 5-Dec | 13:22:06 | 0.016 |
| 172 | 5-Dec | 13:23:06 | 0.019 |
| 173 | 5-Dec | 13:24:06 | 0.014 |
| 174 | 5-Dec | 13:25:06 | 0.032 |
| 175 | 5-Dec | 13:26:06 | 0.046 |

Point 3
pDR-1000 S/N: 00000
Tag Number: 02
Number of logged points: 149
Start time and date: 14:01:37 05-Dec
Elapsed time: 02:29:00
Logging period (sec): 60
Calibration Factor (%): 100
Max Display Concentration: 0.391 mg/m³
Time at maximum: 16:30:29 Dec 05
Max STEL Concentration: 0.034 mg/m³
Time at max STEL: 16:30:37 Dec 05
Overall Avg Conc: 0.019 mg/m³
Logged Data:

| Point | Date | Time | Avg.(mg/m³) |
|---|---|---|---|
| 1 | 5-Dec | 14:02:37 | 0.011 |
| 2 | 5-Dec | 14:03:37 | 0.001 |
| 3 | 5-Dec | 14:04:37 | 0.002 |
| 4 | 5-Dec | 14:05:37 | 0.001 |
| 5 | 5-Dec | 14:06:37 | 0.001 |
| 6 | 5-Dec | 14:07:37 | 0.002 |
| 7 | 5-Dec | 14:08:37 | 0.002 |
| 8 | 5-Dec | 14:09:37 | 0.001 |
| 9 | 5-Dec | 14:10:37 | 0.002 |
| 10 | 5-Dec | 14:11:37 | 0.002 |
| 11 | 5-Dec | 14:12:37 | 0.002 |
| 12 | 5-Dec | 14:13:37 | 0.001 |
| 13 | 5-Dec | 14:14:37 | 0.001 |
| 14 | 5-Dec | 14:15:37 | 0.002 |
| 15 | 5-Dec | 14:16:37 | 0.002 |
| 16 | 5-Dec | 14:17:37 | 0.002 |
| 17 | 5-Dec | 14:18:37 | 0.002 |
| 18 | 5-Dec | 14:19:37 | 0.003 |
| 19 | 5-Dec | 14:20:37 | 0.003 |
| 20 | 5-Dec | 14:21:37 | 0.004 |
| 21 | 5-Dec | 14:22:37 | 0.003 |
| 22 | 5-Dec | 14:23:37 | 0.003 |
| 23 | 5-Dec | 14:24:37 | 0.002 |
| 24 | 5-Dec | 14:25:37 | 0.002 |
| 25 | 5-Dec | 14:26:37 | 0.004 |
| 26 | 5-Dec | 14:27:37 | 0.003 |
| 27 | 5-Dec | 14:28:37 | 0.002 |
| 28 | 5-Dec | 14:29:37 | 0.002 |
| 29 | 5-Dec | 14:30:37 | 0.001 |
| 30 | 5-Dec | 14:31:37 | 0.003 |

| | | | |
|---|---|---|---|
| 31 | 5-Dec | 14:32:37 | 0.002 |
| 32 | 5-Dec | 14:33:37 | 0.002 |
| 33 | 5-Dec | 14:34:37 | 0.001 |
| 34 | 5-Dec | 14:35:37 | 0.002 |
| 35 | 5-Dec | 14:36:37 | 0.002 |
| 36 | 5-Dec | 14:37:37 | 0.002 |
| 37 | 5-Dec | 14:38:37 | 0.001 |
| 38 | 5-Dec | 14:39:37 | 0.005 |
| 39 | 5-Dec | 14:40:37 | 0.002 |
| 40 | 5-Dec | 14:41:37 | 0.002 |
| 41 | 5-Dec | 14:42:37 | 0.001 |
| 42 | 5-Dec | 14:43:37 | 0.002 |
| 43 | 5-Dec | 14:44:37 | 0.003 |
| 44 | 5-Dec | 14:45:37 | 0.002 |
| 45 | 5-Dec | 14:46:37 | 0.005 |
| 46 | 5-Dec | 14:47:37 | 0.022 |
| 47 | 5-Dec | 14:48:37 | 0.018 |
| 48 | 5-Dec | 14:49:37 | 0.025 |
| 49 | 5-Dec | 14:50:37 | 0.021 |
| 50 | 5-Dec | 14:51:37 | 0.022 |
| 51 | 5-Dec | 14:52:37 | 0.022 |
| 52 | 5-Dec | 14:53:37 | 0.023 |
| 53 | 5-Dec | 14:54:37 | 0.021 |
| 54 | 5-Dec | 14:55:37 | 0.018 |
| 55 | 5-Dec | 14:56:37 | 0.021 |
| 56 | 5-Dec | 14:57:37 | 0.027 |
| 57 | 5-Dec | 14:58:37 | 0.018 |
| 58 | 5-Dec | 14:59:37 | 0.023 |
| 59 | 5-Dec | 15:00:37 | 0.023 |
| 60 | 5-Dec | 15:01:37 | 0.035 |
| 61 | 5-Dec | 15:02:37 | 0.02 |
| 62 | 5-Dec | 15:03:37 | 0.023 |
| 63 | 5-Dec | 15:04:37 | 0.028 |
| 64 | 5-Dec | 15:05:37 | 0.024 |
| 65 | 5-Dec | 15:06:37 | 0.023 |
| 66 | 5-Dec | 15:07:37 | 0.037 |
| 67 | 5-Dec | 15:08:37 | 0.028 |
| 68 | 5-Dec | 15:09:37 | 0.022 |
| 69 | 5-Dec | 15:10:37 | 0.025 |
| 70 | 5-Dec | 15:11:37 | 0.025 |
| 71 | 5-Dec | 15:12:37 | 0.021 |
| 72 | 5-Dec | 15:13:37 | 0.022 |
| 73 | 5-Dec | 15:14:37 | 0.025 |
| 74 | 5-Dec | 15:15:37 | 0.063 |
| 75 | 5-Dec | 15:16:37 | 0.023 |
| 76 | 5-Dec | 15:17:37 | 0.025 |
| 77 | 5-Dec | 15:18:37 | 0.033 |
| 78 | 5-Dec | 15:19:37 | 0.026 |
| 79 | 5-Dec | 15:20:37 | 0.023 |
| 80 | 5-Dec | 15:21:37 | 0.023 |
| 81 | 5-Dec | 15:22:37 | 0.023 |
| 82 | 5-Dec | 15:23:37 | 0.02 |

| | | | |
|---|---|---|---|
| 83 | 5-Dec | 15:24:37 | 0.024 |
| 84 | 5-Dec | 15:25:37 | 0.036 |
| 85 | 5-Dec | 15:26:37 | 0.02 |
| 86 | 5-Dec | 15:27:37 | 0.019 |
| 87 | 5-Dec | 15:28:37 | 0.017 |
| 88 | 5-Dec | 15:29:37 | 0.023 |
| 89 | 5-Dec | 15:30:37 | 0.029 |
| 90 | 5-Dec | 15:31:37 | 0.024 |
| 91 | 5-Dec | 15:32:37 | 0.022 |
| 92 | 5-Dec | 15:33:37 | 0.05 |
| 93 | 5-Dec | 15:34:37 | 0.016 |
| 94 | 5-Dec | 15:35:37 | 0.023 |
| 95 | 5-Dec | 15:36:37 | 0.034 |
| 96 | 5-Dec | 15:37:37 | 0.064 |
| 97 | 5-Dec | 15:38:37 | 0.02 |
| 98 | 5-Dec | 15:39:37 | 0.017 |
| 99 | 5-Dec | 15:40:37 | 0.026 |
| 100 | 5-Dec | 15:41:37 | 0.023 |
| 101 | 5-Dec | 15:42:37 | 0.023 |
| 102 | 5-Dec | 15:43:37 | 0.034 |
| 103 | 5-Dec | 15:44:37 | 0.03 |
| 104 | 5-Dec | 15:45:37 | 0.029 |
| 105 | 5-Dec | 15:46:37 | 0.03 |
| 106 | 5-Dec | 15:47:37 | 0.026 |
| 107 | 5-Dec | 15:48:37 | 0.023 |
| 108 | 5-Dec | 15:49:37 | 0.024 |
| 109 | 5-Dec | 15:50:37 | 0.025 |
| 110 | 5-Dec | 15:51:37 | 0.038 |
| 111 | 5-Dec | 15:52:37 | 0.024 |
| 112 | 5-Dec | 15:53:37 | 0.03 |
| 113 | 5-Dec | 15:54:37 | 0.027 |
| 114 | 5-Dec | 15:55:37 | 0.027 |
| 115 | 5-Dec | 15:56:37 | 0.024 |
| 116 | 5-Dec | 15:57:37 | 0.033 |
| 117 | 5-Dec | 15:58:37 | 0.027 |
| 118 | 5-Dec | 15:59:37 | 0.025 |
| 119 | 5-Dec | 16:00:37 | 0.02 |
| 120 | 5-Dec | 16:01:37 | 0.06 |
| 121 | 5-Dec | 16:02:37 | 0.035 |
| 122 | 5-Dec | 16:03:37 | 0.027 |
| 123 | 5-Dec | 16:04:37 | 0.027 |
| 124 | 5-Dec | 16:05:37 | 0.024 |
| 125 | 5-Dec | 16:06:37 | 0.037 |
| 126 | 5-Dec | 16:07:37 | 0.04 |
| 127 | 5-Dec | 16:08:37 | 0.02 |
| 128 | 5-Dec | 16:09:37 | 0.03 |
| 129 | 5-Dec | 16:10:37 | 0.025 |
| 130 | 5-Dec | 16:11:37 | 0.026 |
| 131 | 5-Dec | 16:12:37 | 0.019 |
| 132 | 5-Dec | 16:13:37 | 0.026 |
| 133 | 5-Dec | 16:14:37 | 0.031 |
| 134 | 5-Dec | 16:15:37 | 0.028 |

| | | | |
|---|---|---|---|
| 135 | 5-Dec | 16:16:37 | 0.061 |
| 136 | 5-Dec | 16:17:37 | 0.048 |
| 137 | 5-Dec | 16:18:37 | 0.025 |
| 138 | 5-Dec | 16:19:37 | 0.021 |
| 139 | 5-Dec | 16:20:37 | 0.025 |
| 140 | 5-Dec | 16:21:37 | 0.02 |
| 141 | 5-Dec | 16:22:37 | 0.026 |
| 142 | 5-Dec | 16:23:37 | 0.025 |
| 143 | 5-Dec | 16:24:37 | 0.034 |
| 144 | 5-Dec | 16:25:37 | 0.024 |
| 145 | 5-Dec | 16:26:37 | 0.03 |
| 146 | 5-Dec | 16:27:37 | 0.03 |
| 147 | 5-Dec | 16:28:37 | 0.023 |
| 148 | 5-Dec | 16:29:37 | 0.023 |
| 149 | 5-Dec | 16:30:37 | 0.102 |

Point 4
pDR-1000 S/N: 04789
Tag Number: 02
Number of logged points: 142
Start time and date: 14:06:32 05-Dec
Elapsed time: 02:22:00
Logging period (sec): 60
Calibration Factor (%): 100
Max Display Concentration: 2.358 mg/m³
Time at maximum: 14:32:56 Dec 05
Max STEL Concentration: 0.123 mg/m³
Time at max STEL: 14:46:32 Dec 05
Overall Avg Conc: 0.035 mg/m³
Logged Data:

| Point | Date | Time | Avg.(mg/m³) |
|---|---|---|---|
| 1 | 5-Dec | 14:07:32 | 0.097 |
| 2 | 5-Dec | 14:08:32 | 0.06 |
| 3 | 5-Dec | 14:09:32 | 0.019 |
| 4 | 5-Dec | 14:10:32 | 0.016 |
| 5 | 5-Dec | 14:11:32 | 0.015 |
| 6 | 5-Dec | 14:12:32 | 0.033 |
| 7 | 5-Dec | 14:13:32 | 0.03 |
| 8 | 5-Dec | 14:14:32 | 0.015 |
| 9 | 5-Dec | 14:15:32 | 0.017 |
| 10 | 5-Dec | 14:16:32 | 0.015 |
| 11 | 5-Dec | 14:17:32 | 0.016 |
| 12 | 5-Dec | 14:18:32 | 0.015 |
| 13 | 5-Dec | 14:19:32 | 0.025 |
| 14 | 5-Dec | 14:20:32 | 0.022 |
| 15 | 5-Dec | 14:21:32 | 0.014 |
| 16 | 5-Dec | 14:22:32 | 0.017 |
| 17 | 5-Dec | 14:23:32 | 0.017 |
| 18 | 5-Dec | 14:24:32 | 0.034 |
| 19 | 5-Dec | 14:25:32 | 0.018 |
| 20 | 5-Dec | 14:26:32 | 0.014 |

| | | | |
|---|---|---|---|
| 21 | 5-Dec | 14:27:32 | 0.015 |
| 22 | 5-Dec | 14:28:32 | 0.013 |
| 23 | 5-Dec | 14:29:32 | 0.012 |
| 24 | 5-Dec | 14:30:32 | 0.015 |
| 25 | 5-Dec | 14:31:32 | 0.013 |
| 26 | 5-Dec | 14:32:32 | 0.026 |
| 27 | 5-Dec | 14:33:32 | 0.956 |
| 28 | 5-Dec | 14:34:32 | 0.142 |
| 29 | 5-Dec | 14:35:32 | 0.022 |
| 30 | 5-Dec | 14:36:32 | 0.037 |
| 31 | 5-Dec | 14:37:32 | 0.23 |
| 32 | 5-Dec | 14:38:32 | 0.067 |
| 33 | 5-Dec | 14:39:32 | 0.019 |
| 34 | 5-Dec | 14:40:32 | 0.019 |
| 35 | 5-Dec | 14:41:32 | 0.02 |
| 36 | 5-Dec | 14:42:32 | 0.018 |
| 37 | 5-Dec | 14:43:32 | 0.023 |
| 38 | 5-Dec | 14:44:32 | 0.132 |
| 39 | 5-Dec | 14:45:32 | 0.107 |
| 40 | 5-Dec | 14:46:32 | 0.027 |
| 41 | 5-Dec | 14:47:32 | 0.019 |
| 42 | 5-Dec | 14:48:32 | 0.025 |
| 43 | 5-Dec | 14:49:32 | 0.017 |
| 44 | 5-Dec | 14:50:32 | 0.094 |
| 45 | 5-Dec | 14:51:32 | 0.023 |
| 46 | 5-Dec | 14:52:32 | 0.019 |
| 47 | 5-Dec | 14:53:32 | 0.017 |
| 48 | 5-Dec | 14:54:32 | 0.017 |
| 49 | 5-Dec | 14:55:32 | 0.018 |
| 50 | 5-Dec | 14:56:32 | 0.018 |
| 51 | 5-Dec | 14:57:32 | 0.017 |
| 52 | 5-Dec | 14:58:32 | 0.017 |
| 53 | 5-Dec | 14:59:32 | 0.037 |
| 54 | 5-Dec | 15:00:32 | 0.038 |
| 55 | 5-Dec | 15:01:32 | 0.016 |
| 56 | 5-Dec | 15:02:32 | 0.017 |
| 57 | 5-Dec | 15:03:32 | 0.021 |
| 58 | 5-Dec | 15:04:32 | 0.018 |
| 59 | 5-Dec | 15:05:32 | 0.021 |
| 60 | 5-Dec | 15:06:32 | 0.032 |
| 61 | 5-Dec | 15:07:32 | 0.044 |
| 62 | 5-Dec | 15:08:32 | 0.023 |
| 63 | 5-Dec | 15:09:32 | 0.02 |
| 64 | 5-Dec | 15:10:32 | 0.021 |
| 65 | 5-Dec | 15:11:32 | 0.016 |
| 66 | 5-Dec | 15:12:32 | 0.015 |
| 67 | 5-Dec | 15:13:32 | 0.048 |
| 68 | 5-Dec | 15:14:32 | 0.016 |
| 69 | 5-Dec | 15:15:32 | 0.022 |
| 70 | 5-Dec | 15:16:32 | 0.017 |
| 71 | 5-Dec | 15:17:32 | 0.017 |
| 72 | 5-Dec | 15:18:32 | 0.017 |

| | | | |
|---|---|---|---|
| 73 | 5-Dec | 15:19:32 | 0.015 |
| 74 | 5-Dec | 15:20:32 | 0.015 |
| 75 | 5-Dec | 15:21:32 | 0.019 |
| 76 | 5-Dec | 15:22:32 | 0.019 |
| 77 | 5-Dec | 15:23:32 | 0.019 |
| 78 | 5-Dec | 15:24:32 | 0.023 |
| 79 | 5-Dec | 15:25:32 | 0.016 |
| 80 | 5-Dec | 15:26:32 | 0.033 |
| 81 | 5-Dec | 15:27:32 | 0.046 |
| 82 | 5-Dec | 15:28:32 | 0.017 |
| 83 | 5-Dec | 15:29:32 | 0.018 |
| 84 | 5-Dec | 15:30:32 | 0.021 |
| 85 | 5-Dec | 15:31:32 | 0.017 |
| 86 | 5-Dec | 15:32:32 | 0.017 |
| 87 | 5-Dec | 15:33:32 | 0.015 |
| 88 | 5-Dec | 15:34:32 | 0.015 |
| 89 | 5-Dec | 15:35:32 | 0.016 |
| 90 | 5-Dec | 15:36:32 | 0.017 |
| 91 | 5-Dec | 15:37:32 | 0.017 |
| 92 | 5-Dec | 15:38:32 | 0.033 |
| 93 | 5-Dec | 15:39:32 | 0.019 |
| 94 | 5-Dec | 15:40:32 | 0.016 |
| 95 | 5-Dec | 15:41:32 | 0.017 |
| 96 | 5-Dec | 15:42:32 | 0.016 |
| 97 | 5-Dec | 15:43:32 | 0.032 |
| 98 | 5-Dec | 15:44:32 | 0.016 |
| 99 | 5-Dec | 15:45:32 | 0.017 |
| 100 | 5-Dec | 15:46:32 | 0.025 |
| 101 | 5-Dec | 15:47:32 | 0.023 |
| 102 | 5-Dec | 15:48:32 | 0.016 |
| 103 | 5-Dec | 15:49:32 | 0.043 |
| 104 | 5-Dec | 15:50:32 | 0.039 |
| 105 | 5-Dec | 15:51:32 | 0.014 |
| 106 | 5-Dec | 15:52:32 | 0.015 |
| 107 | 5-Dec | 15:53:32 | 0.02 |
| 108 | 5-Dec | 15:54:32 | 0.017 |
| 109 | 5-Dec | 15:55:32 | 0.015 |
| 110 | 5-Dec | 15:56:32 | 0.017 |
| 111 | 5-Dec | 15:57:32 | 0.181 |
| 112 | 5-Dec | 15:58:32 | 0.025 |
| 113 | 5-Dec | 15:59:32 | 0.016 |
| 114 | 5-Dec | 16:00:32 | 0.015 |
| 115 | 5-Dec | 16:01:32 | 0.019 |
| 116 | 5-Dec | 16:02:32 | 0.014 |
| 117 | 5-Dec | 16:03:32 | 0.014 |
| 118 | 5-Dec | 16:04:32 | 0.017 |
| 119 | 5-Dec | 16:05:32 | 0.018 |
| 120 | 5-Dec | 16:06:32 | 0.015 |
| 121 | 5-Dec | 16:07:32 | 0.014 |
| 122 | 5-Dec | 16:08:32 | 0.016 |
| 123 | 5-Dec | 16:09:32 | 0.014 |
| 124 | 5-Dec | 16:10:32 | 0.014 |

| | | | |
|---|---|---|---|
| 125 | 5-Dec | 16:11:32 | 0.016 |
| 126 | 5-Dec | 16:12:32 | 0.035 |
| 127 | 5-Dec | 16:13:32 | 0.098 |
| 128 | 5-Dec | 16:14:32 | 0.019 |
| 129 | 5-Dec | 16:15:32 | 0.033 |
| 130 | 5-Dec | 16:16:32 | 0.016 |
| 131 | 5-Dec | 16:17:32 | 0.017 |
| 132 | 5-Dec | 16:18:32 | 0.034 |
| 133 | 5-Dec | 16:19:32 | 0.016 |
| 134 | 5-Dec | 16:20:32 | 0.017 |
| 135 | 5-Dec | 16:21:32 | 0.018 |
| 136 | 5-Dec | 16:22:32 | 0.019 |
| 137 | 5-Dec | 16:23:32 | 0.036 |
| 138 | 5-Dec | 16:24:32 | 0.018 |
| 139 | 5-Dec | 16:25:32 | 0.017 |
| 140 | 5-Dec | 16:26:32 | 0.016 |
| 141 | 5-Dec | 16:27:32 | 0.015 |
| 142 | 5-Dec | 16:28:32 | 0.084 |

Point 1
pDR-1000 S/N: 00000
Tag Number: 03
Number of logged points: 212
Start time and date: 12:07:14 06-Dec
Elapsed time: 03:32:00
Logging period (sec): 60
Calibration Factor (%): 100
Max Display Concentration: 0.347 mg/m³
Time at maximum: 13:06:21 Dec 06
Max STEL Concentration: 0.258 mg/m³
Time at max STEL: 14:02:44 Dec 06
Overall Avg Conc: 0.214 mg/m³
Logged Data:

| Point | Date | Time | Avg.(mg/m³) |
|---|---|---|---|
| 1 | 6-Dec | 12:08:14 | 0.081 |
| 2 | 6-Dec | 12:09:14 | 0.12 |
| 3 | 6-Dec | 12:10:14 | 0.237 |
| 4 | 6-Dec | 12:11:14 | 0.229 |
| 5 | 6-Dec | 12:12:14 | 0.243 |
| 6 | 6-Dec | 12:13:14 | 0.218 |
| 7 | 6-Dec | 12:14:14 | 0.22 |
| 8 | 6-Dec | 12:15:14 | 0.233 |
| 9 | 6-Dec | 12:16:14 | 0.215 |
| 10 | 6-Dec | 12:17:14 | 0.236 |
| 11 | 6-Dec | 12:18:14 | 0.242 |
| 12 | 6-Dec | 12:19:14 | 0.239 |
| 13 | 6-Dec | 12:20:14 | 0.23 |
| 14 | 6-Dec | 12:21:14 | 0.236 |
| 15 | 6-Dec | 12:22:14 | 0.26 |
| 16 | 6-Dec | 12:23:14 | 0.248 |
| 17 | 6-Dec | 12:24:14 | 0.242 |
| 18 | 6-Dec | 12:25:14 | 0.255 |
| 19 | 6-Dec | 12:26:14 | 0.241 |
| 20 | 6-Dec | 12:27:14 | 0.248 |
| 21 | 6-Dec | 12:28:14 | 0.237 |
| 22 | 6-Dec | 12:29:14 | 0.243 |
| 23 | 6-Dec | 12:30:14 | 0.248 |
| 24 | 6-Dec | 12:31:14 | 0.247 |
| 25 | 6-Dec | 12:32:14 | 0.243 |
| 26 | 6-Dec | 12:33:14 | 0.247 |
| 27 | 6-Dec | 12:34:14 | 0.244 |
| 28 | 6-Dec | 12:35:14 | 0.245 |
| 29 | 6-Dec | 12:36:14 | 0.246 |
| 30 | 6-Dec | 12:37:14 | 0.246 |
| 31 | 6-Dec | 12:38:14 | 0.246 |
| 32 | 6-Dec | 12:39:14 | 0.249 |
| 33 | 6-Dec | 12:40:14 | 0.247 |
| 34 | 6-Dec | 12:41:14 | 0.218 |
| 35 | 6-Dec | 12:42:14 | 0.259 |
| 36 | 6-Dec | 12:43:14 | 0.266 |
| 37 | 6-Dec | 12:44:14 | 0.233 |

| | | | |
|---|---|---|---|
| 38 | 6-Dec | 12:45:14 | 0.206 |
| 39 | 6-Dec | 12:46:14 | 0.278 |
| 40 | 6-Dec | 12:47:14 | 0.224 |
| 41 | 6-Dec | 12:48:14 | 0.247 |
| 42 | 6-Dec | 12:49:14 | 0.237 |
| 43 | 6-Dec | 12:50:14 | 0.221 |
| 44 | 6-Dec | 12:51:14 | 0.246 |
| 45 | 6-Dec | 12:52:14 | 0.247 |
| 46 | 6-Dec | 12:53:14 | 0.244 |
| 47 | 6-Dec | 12:54:14 | 0.248 |
| 48 | 6-Dec | 12:55:14 | 0.243 |
| 49 | 6-Dec | 12:56:14 | 0.242 |
| 50 | 6-Dec | 12:57:14 | 0.245 |
| 51 | 6-Dec | 12:58:14 | 0.248 |
| 52 | 6-Dec | 12:59:14 | 0.17 |
| 53 | 6-Dec | 13:00:14 | 0.126 |
| 54 | 6-Dec | 13:01:14 | 0.09 |
| 55 | 6-Dec | 13:02:14 | 0 |
| 56 | 6-Dec | 13:03:14 | 0 |
| 57 | 6-Dec | 13:04:14 | 0 |
| 58 | 6-Dec | 13:05:14 | 0.008 |
| 59 | 6-Dec | 13:06:14 | 0.129 |
| 60 | 6-Dec | 13:07:14 | 0.241 |
| 61 | 6-Dec | 13:08:14 | 0.256 |
| 62 | 6-Dec | 13:09:14 | 0.264 |
| 63 | 6-Dec | 13:10:14 | 0.26 |
| 64 | 6-Dec | 13:11:14 | 0.259 |
| 65 | 6-Dec | 13:12:14 | 0.252 |
| 66 | 6-Dec | 13:13:14 | 0.253 |
| 67 | 6-Dec | 13:14:14 | 0.255 |
| 68 | 6-Dec | 13:15:14 | 0.251 |
| 69 | 6-Dec | 13:16:14 | 0.248 |
| 70 | 6-Dec | 13:17:14 | 0.242 |
| 71 | 6-Dec | 13:18:14 | 0.033 |
| 72 | 6-Dec | 13:19:14 | 0.21 |
| 73 | 6-Dec | 13:20:14 | 0.222 |
| 74 | 6-Dec | 13:21:14 | 0.221 |
| 75 | 6-Dec | 13:22:14 | 0 |
| 76 | 6-Dec | 13:23:14 | 0.136 |
| 77 | 6-Dec | 13:24:14 | 0.25 |
| 78 | 6-Dec | 13:25:14 | 0.213 |
| 79 | 6-Dec | 13:26:14 | 0.064 |
| 80 | 6-Dec | 13:27:14 | 0 |
| 81 | 6-Dec | 13:28:14 | 0 |
| 82 | 6-Dec | 13:29:14 | 0.12 |
| 83 | 6-Dec | 13:30:14 | 0.246 |
| 84 | 6-Dec | 13:31:14 | 0.182 |
| 85 | 6-Dec | 13:32:14 | 0 |
| 86 | 6-Dec | 13:33:14 | 0 |
| 87 | 6-Dec | 13:34:14 | 0 |
| 88 | 6-Dec | 13:35:14 | 0 |
| 89 | 6-Dec | 13:36:14 | 0 |

| | | | |
|---|---|---|---|
| 90 | 6-Dec | 13:37:14 | 0 |
| 91 | 6-Dec | 13:38:14 | 0.065 |
| 92 | 6-Dec | 13:39:14 | 0.238 |
| 93 | 6-Dec | 13:40:14 | 0.247 |
| 94 | 6-Dec | 13:41:14 | 0.242 |
| 95 | 6-Dec | 13:42:14 | 0.25 |
| 96 | 6-Dec | 13:43:14 | 0.245 |
| 97 | 6-Dec | 13:44:14 | 0.248 |
| 98 | 6-Dec | 13:45:14 | 0.251 |
| 99 | 6-Dec | 13:46:14 | 0.254 |
| 100 | 6-Dec | 13:47:14 | 0.247 |
| 101 | 6-Dec | 13:48:14 | 0.251 |
| 102 | 6-Dec | 13:49:14 | 0.25 |
| 103 | 6-Dec | 13:50:14 | 0.256 |
| 104 | 6-Dec | 13:51:14 | 0.258 |
| 105 | 6-Dec | 13:52:14 | 0.253 |
| 106 | 6-Dec | 13:53:14 | 0.26 |
| 107 | 6-Dec | 13:54:14 | 0.256 |
| 108 | 6-Dec | 13:55:14 | 0.258 |
| 109 | 6-Dec | 13:56:14 | 0.263 |
| 110 | 6-Dec | 13:57:14 | 0.266 |
| 111 | 6-Dec | 13:58:14 | 0.266 |
| 112 | 6-Dec | 13:59:14 | 0.258 |
| 113 | 6-Dec | 14:00:14 | 0.261 |
| 114 | 6-Dec | 14:01:14 | 0.255 |
| 115 | 6-Dec | 14:02:14 | 0.252 |
| 116 | 6-Dec | 14:03:14 | 0.252 |
| 117 | 6-Dec | 14:04:14 | 0.259 |
| 118 | 6-Dec | 14:05:14 | 0.258 |
| 119 | 6-Dec | 14:06:14 | 0.258 |
| 120 | 6-Dec | 14:07:14 | 0.25 |
| 121 | 6-Dec | 14:08:14 | 0.253 |
| 122 | 6-Dec | 14:09:14 | 0.255 |
| 123 | 6-Dec | 14:10:14 | 0.251 |
| 124 | 6-Dec | 14:11:14 | 0.251 |
| 125 | 6-Dec | 14:12:14 | 0.248 |
| 126 | 6-Dec | 14:13:14 | 0.252 |
| 127 | 6-Dec | 14:14:14 | 0.257 |
| 128 | 6-Dec | 14:15:14 | 0.244 |
| 129 | 6-Dec | 14:16:14 | 0.254 |
| 130 | 6-Dec | 14:17:14 | 0.248 |
| 131 | 6-Dec | 14:18:14 | 0.25 |
| 132 | 6-Dec | 14:19:14 | 0.246 |
| 133 | 6-Dec | 14:20:14 | 0.245 |
| 134 | 6-Dec | 14:21:14 | 0.249 |
| 135 | 6-Dec | 14:22:14 | 0.249 |
| 136 | 6-Dec | 14:23:14 | 0.251 |
| 137 | 6-Dec | 14:24:14 | 0.251 |
| 138 | 6-Dec | 14:25:14 | 0.248 |
| 139 | 6-Dec | 14:26:14 | 0.258 |
| 140 | 6-Dec | 14:27:14 | 0.254 |
| 141 | 6-Dec | 14:28:14 | 0.257 |

| | | | |
|---|---|---|---|
| 142 | 6-Dec | 14:29:14 | 0.25 |
| 143 | 6-Dec | 14:30:14 | 0.262 |
| 144 | 6-Dec | 14:31:14 | 0.248 |
| 145 | 6-Dec | 14:32:14 | 0.259 |
| 146 | 6-Dec | 14:33:14 | 0.256 |
| 147 | 6-Dec | 14:34:14 | 0.254 |
| 148 | 6-Dec | 14:35:14 | 0.262 |
| 149 | 6-Dec | 14:36:14 | 0.264 |
| 150 | 6-Dec | 14:37:14 | 0.258 |
| 151 | 6-Dec | 14:38:14 | 0.254 |
| 152 | 6-Dec | 14:39:14 | 0.257 |
| 153 | 6-Dec | 14:40:14 | 0.259 |
| 154 | 6-Dec | 14:41:14 | 0.259 |
| 155 | 6-Dec | 14:42:14 | 0.258 |
| 156 | 6-Dec | 14:43:14 | 0.254 |
| 157 | 6-Dec | 14:44:14 | 0.254 |
| 158 | 6-Dec | 14:45:14 | 0.257 |
| 159 | 6-Dec | 14:46:14 | 0.253 |
| 160 | 6-Dec | 14:47:14 | 0.25 |
| 161 | 6-Dec | 14:48:14 | 0.252 |
| 162 | 6-Dec | 14:49:14 | 0.249 |
| 163 | 6-Dec | 14:50:14 | 0.253 |
| 164 | 6-Dec | 14:51:14 | 0.255 |
| 165 | 6-Dec | 14:52:14 | 0.253 |
| 166 | 6-Dec | 14:53:14 | 0.24 |
| 167 | 6-Dec | 14:54:14 | 0.248 |
| 168 | 6-Dec | 14:55:14 | 0.253 |
| 169 | 6-Dec | 14:56:14 | 0.254 |
| 170 | 6-Dec | 14:57:14 | 0.255 |
| 171 | 6-Dec | 14:58:14 | 0.248 |
| 172 | 6-Dec | 14:59:14 | 0.25 |
| 173 | 6-Dec | 15:00:14 | 0.249 |
| 174 | 6-Dec | 15:01:14 | 0.245 |
| 175 | 6-Dec | 15:02:14 | 0.254 |
| 176 | 6-Dec | 15:03:14 | 0.248 |
| 177 | 6-Dec | 15:04:14 | 0.253 |
| 178 | 6-Dec | 15:05:14 | 0.248 |
| 179 | 6-Dec | 15:06:14 | 0.253 |
| 180 | 6-Dec | 15:07:14 | 0.262 |
| 181 | 6-Dec | 15:08:14 | 0.258 |
| 182 | 6-Dec | 15:09:14 | 0.251 |
| 183 | 6-Dec | 15:10:14 | 0.25 |
| 184 | 6-Dec | 15:11:14 | 0.242 |
| 185 | 6-Dec | 15:12:14 | 0.243 |
| 186 | 6-Dec | 15:13:14 | 0.246 |
| 187 | 6-Dec | 15:14:14 | 0.251 |
| 188 | 6-Dec | 15:15:14 | 0.252 |
| 189 | 6-Dec | 15:16:14 | 0.252 |
| 190 | 6-Dec | 15:17:14 | 0.254 |
| 191 | 6-Dec | 15:18:14 | 0.256 |
| 192 | 6-Dec | 15:19:14 | 0.264 |
| 193 | 6-Dec | 15:20:14 | 0.259 |

| | | | |
|---|---|---|---|
| 194 | 6-Dec | 15:21:14 | 0.249 |
| 195 | 6-Dec | 15:22:14 | 0.255 |
| 196 | 6-Dec | 15:23:14 | 0.243 |
| 197 | 6-Dec | 15:24:14 | 0.256 |
| 198 | 6-Dec | 15:25:14 | 0.25 |
| 199 | 6-Dec | 15:26:14 | 0.255 |
| 200 | 6-Dec | 15:27:14 | 0.26 |
| 201 | 6-Dec | 15:28:14 | 0.252 |
| 202 | 6-Dec | 15:29:14 | 0.258 |
| 203 | 6-Dec | 15:30:14 | 0.25 |
| 204 | 6-Dec | 15:31:14 | 0.258 |
| 205 | 6-Dec | 15:32:14 | 0.256 |
| 206 | 6-Dec | 15:33:14 | 0.252 |
| 207 | 6-Dec | 15:34:14 | 0.26 |
| 208 | 6-Dec | 15:35:14 | 0.249 |
| 209 | 6-Dec | 15:36:14 | 0.255 |
| 210 | 6-Dec | 15:37:14 | 0.167 |
| 211 | 6-Dec | 15:38:14 | 0 |
| 212 | 6-Dec | 15:39:14 | 0.18 |

Point 2
pDR-1000 S/N: 04789
Tag Number: 03
Number of logged points: 205
Start time and date: 12:10:06 06-Dec
Elapsed time: 03:25:00
Logging period (sec): 60
Calibration Factor (%): 100
Max Display Concentration: 0.457 mg/m³
Time at maximum: 12:10:07 Dec 06
Max STEL Concentration: 0.000 mg/m³
Time at max STEL: 12:10:06 Dec 06
Overall Avg Conc: 0.000 mg/m³
Logged Data:

| Point | Date | Time | Avg.(mg/m³) |
|---|---|---|---|
| 1 | 6-Dec | 12:11:06 | 0.022 |
| 2 | 6-Dec | 12:12:06 | 0.018 |
| 3 | 6-Dec | 12:13:06 | 0.011 |
| 4 | 6-Dec | 12:14:06 | 0.012 |
| 5 | 6-Dec | 12:15:06 | 0 |
| 6 | 6-Dec | 12:16:06 | 0.001 |
| 7 | 6-Dec | 12:17:06 | 0.001 |
| 8 | 6-Dec | 12:18:06 | 0 |
| 9 | 6-Dec | 12:19:06 | 0 |
| 10 | 6-Dec | 12:20:06 | 0.001 |
| 11 | 6-Dec | 12:21:06 | 0.002 |
| 12 | 6-Dec | 12:22:06 | 0 |
| 13 | 6-Dec | 12:23:06 | 0 |
| 14 | 6-Dec | 12:24:06 | 0.001 |
| 15 | 6-Dec | 12:25:06 | 0.001 |
| 16 | 6-Dec | 12:26:06 | 0 |

| | | | |
|---|---|---|---|
| 17 | 6-Dec | 12:27:06 | 0.001 |
| 18 | 6-Dec | 12:28:06 | 0 |
| 19 | 6-Dec | 12:29:06 | 0 |
| 20 | 6-Dec | 12:30:06 | 0 |
| 21 | 6-Dec | 12:31:06 | 0 |
| 22 | 6-Dec | 12:32:06 | 0 |
| 23 | 6-Dec | 12:33:06 | 0 |
| 24 | 6-Dec | 12:34:06 | 0 |
| 25 | 6-Dec | 12:35:06 | 0 |
| 26 | 6-Dec | 12:36:06 | 0 |
| 27 | 6-Dec | 12:37:06 | 0 |
| 28 | 6-Dec | 12:38:06 | 0 |
| 29 | 6-Dec | 12:39:06 | 0 |
| 30 | 6-Dec | 12:40:06 | 0 |
| 31 | 6-Dec | 12:41:06 | 0 |
| 32 | 6-Dec | 12:42:06 | 0 |
| 33 | 6-Dec | 12:43:06 | 0 |
| 34 | 6-Dec | 12:44:06 | 0 |
| 35 | 6-Dec | 12:45:06 | 0 |
| 36 | 6-Dec | 12:46:06 | 0 |
| 37 | 6-Dec | 12:47:06 | 0 |
| 38 | 6-Dec | 12:48:06 | 0 |
| 39 | 6-Dec | 12:49:06 | 0 |
| 40 | 6-Dec | 12:50:06 | 0 |
| 41 | 6-Dec | 12:51:06 | 0 |
| 42 | 6-Dec | 12:52:06 | 0 |
| 43 | 6-Dec | 12:53:06 | 0 |
| 44 | 6-Dec | 12:54:06 | 0 |
| 45 | 6-Dec | 12:55:06 | 0 |
| 46 | 6-Dec | 12:56:06 | 0 |
| 47 | 6-Dec | 12:57:06 | 0 |
| 48 | 6-Dec | 12:58:06 | 0 |
| 49 | 6-Dec | 12:59:06 | 0.001 |
| 50 | 6-Dec | 13:00:06 | 0.001 |
| 51 | 6-Dec | 13:01:06 | 0 |
| 52 | 6-Dec | 13:02:06 | 0 |
| 53 | 6-Dec | 13:03:06 | 0 |
| 54 | 6-Dec | 13:04:06 | 0 |
| 55 | 6-Dec | 13:05:06 | 0 |
| 56 | 6-Dec | 13:06:06 | 0 |
| 57 | 6-Dec | 13:07:06 | 0 |
| 58 | 6-Dec | 13:08:06 | 0.001 |
| 59 | 6-Dec | 13:09:06 | 0 |
| 60 | 6-Dec | 13:10:06 | 0 |
| 61 | 6-Dec | 13:11:06 | 0 |
| 62 | 6-Dec | 13:12:06 | 0 |
| 63 | 6-Dec | 13:13:06 | 0 |
| 64 | 6-Dec | 13:14:06 | 0 |
| 65 | 6-Dec | 13:15:06 | 0 |
| 66 | 6-Dec | 13:16:06 | 0 |
| 67 | 6-Dec | 13:17:06 | 0 |
| 68 | 6-Dec | 13:18:06 | 0 |

| | | | |
|---|---|---|---|
| 69 | 6-Dec | 13:19:06 | 0 |
| 70 | 6-Dec | 13:20:06 | 0 |
| 71 | 6-Dec | 13:21:06 | 0 |
| 72 | 6-Dec | 13:22:06 | 0 |
| 73 | 6-Dec | 13:23:06 | 0 |
| 74 | 6-Dec | 13:24:06 | 0 |
| 75 | 6-Dec | 13:25:06 | 0 |
| 76 | 6-Dec | 13:26:06 | 0 |
| 77 | 6-Dec | 13:27:06 | 0 |
| 78 | 6-Dec | 13:28:06 | 0 |
| 79 | 6-Dec | 13:29:06 | 0 |
| 80 | 6-Dec | 13:30:06 | 0 |
| 81 | 6-Dec | 13:31:06 | 0 |
| 82 | 6-Dec | 13:32:06 | 0 |
| 83 | 6-Dec | 13:33:06 | 0 |
| 84 | 6-Dec | 13:34:06 | 0 |
| 85 | 6-Dec | 13:35:06 | 0 |
| 86 | 6-Dec | 13:36:06 | 0 |
| 87 | 6-Dec | 13:37:06 | 0 |
| 88 | 6-Dec | 13:38:06 | 0 |
| 89 | 6-Dec | 13:39:06 | 0 |
| 90 | 6-Dec | 13:40:06 | 0 |
| 91 | 6-Dec | 13:41:06 | 0 |
| 92 | 6-Dec | 13:42:06 | 0.015 |
| 93 | 6-Dec | 13:43:06 | 0.016 |
| 94 | 6-Dec | 13:44:06 | 0 |
| 95 | 6-Dec | 13:45:06 | 0 |
| 96 | 6-Dec | 13:46:06 | 0 |
| 97 | 6-Dec | 13:47:06 | 0 |
| 98 | 6-Dec | 13:48:06 | 0.001 |
| 99 | 6-Dec | 13:49:06 | 0 |
| 100 | 6-Dec | 13:50:06 | 0 |
| 101 | 6-Dec | 13:51:06 | 0 |
| 102 | 6-Dec | 13:52:06 | 0 |
| 103 | 6-Dec | 13:53:06 | 0 |
| 104 | 6-Dec | 13:54:06 | 0 |
| 105 | 6-Dec | 13:55:06 | 0 |
| 106 | 6-Dec | 13:56:06 | 0 |
| 107 | 6-Dec | 13:57:06 | 0 |
| 108 | 6-Dec | 13:58:06 | 0 |
| 109 | 6-Dec | 13:59:06 | 0 |
| 110 | 6-Dec | 14:00:06 | 0 |
| 111 | 6-Dec | 14:01:06 | 0.002 |
| 112 | 6-Dec | 14:02:06 | 0 |
| 113 | 6-Dec | 14:03:06 | 0 |
| 114 | 6-Dec | 14:04:06 | 0 |
| 115 | 6-Dec | 14:05:06 | 0 |
| 116 | 6-Dec | 14:06:06 | 0 |
| 117 | 6-Dec | 14:07:06 | 0 |
| 118 | 6-Dec | 14:08:06 | 0 |
| 119 | 6-Dec | 14:09:06 | 0.009 |
| 120 | 6-Dec | 14:10:06 | 0 |

| | | | |
|---|---|---|---|
| 121 | 6-Dec | 14:11:06 | 0 |
| 122 | 6-Dec | 14:12:06 | 0 |
| 123 | 6-Dec | 14:13:06 | 0 |
| 124 | 6-Dec | 14:14:06 | 0 |
| 125 | 6-Dec | 14:15:06 | 0 |
| 126 | 6-Dec | 14:16:06 | 0 |
| 127 | 6-Dec | 14:17:06 | 0 |
| 128 | 6-Dec | 14:18:06 | 0 |
| 129 | 6-Dec | 14:19:06 | 0 |
| 130 | 6-Dec | 14:20:06 | 0 |
| 131 | 6-Dec | 14:21:06 | 0 |
| 132 | 6-Dec | 14:22:06 | 0 |
| 133 | 6-Dec | 14:23:06 | 0 |
| 134 | 6-Dec | 14:24:06 | 0 |
| 135 | 6-Dec | 14:25:06 | 0 |
| 136 | 6-Dec | 14:26:06 | 0 |
| 137 | 6-Dec | 14:27:06 | 0.001 |
| 138 | 6-Dec | 14:28:06 | 0 |
| 139 | 6-Dec | 14:29:06 | 0 |
| 140 | 6-Dec | 14:30:06 | 0 |
| 141 | 6-Dec | 14:31:06 | 0 |
| 142 | 6-Dec | 14:32:06 | 0 |
| 143 | 6-Dec | 14:33:06 | 0 |
| 144 | 6-Dec | 14:34:06 | 0 |
| 145 | 6-Dec | 14:35:06 | 0 |
| 146 | 6-Dec | 14:36:06 | 0 |
| 147 | 6-Dec | 14:37:06 | 0 |
| 148 | 6-Dec | 14:38:06 | 0 |
| 149 | 6-Dec | 14:39:06 | 0 |
| 150 | 6-Dec | 14:40:06 | 0 |
| 151 | 6-Dec | 14:41:06 | 0 |
| 152 | 6-Dec | 14:42:06 | 0 |
| 153 | 6-Dec | 14:43:06 | 0 |
| 154 | 6-Dec | 14:44:06 | 0 |
| 155 | 6-Dec | 14:45:06 | 0 |
| 156 | 6-Dec | 14:46:06 | 0 |
| 157 | 6-Dec | 14:47:06 | 0 |
| 158 | 6-Dec | 14:48:06 | 0 |
| 159 | 6-Dec | 14:49:06 | 0 |
| 160 | 6-Dec | 14:50:06 | 0 |
| 161 | 6-Dec | 14:51:06 | 0 |
| 162 | 6-Dec | 14:52:06 | 0 |
| 163 | 6-Dec | 14:53:06 | 0 |
| 164 | 6-Dec | 14:54:06 | 0 |
| 165 | 6-Dec | 14:55:06 | 0 |
| 166 | 6-Dec | 14:56:06 | 0 |
| 167 | 6-Dec | 14:57:06 | 0 |
| 168 | 6-Dec | 14:58:06 | 0 |
| 169 | 6-Dec | 14:59:06 | 0 |
| 170 | 6-Dec | 15:00:06 | 0 |
| 171 | 6-Dec | 15:01:06 | 0.001 |
| 172 | 6-Dec | 15:02:06 | 0.002 |

| | | | |
|---|---|---|---|
| 173 | 6-Dec | 15:03:06 | 0 |
| 174 | 6-Dec | 15:04:06 | 0 |
| 175 | 6-Dec | 15:05:06 | 0 |
| 176 | 6-Dec | 15:06:06 | 0 |
| 177 | 6-Dec | 15:07:06 | 0 |
| 178 | 6-Dec | 15:08:06 | 0 |
| 179 | 6-Dec | 15:09:06 | 0 |
| 180 | 6-Dec | 15:10:06 | 0 |
| 181 | 6-Dec | 15:11:06 | 0 |
| 182 | 6-Dec | 15:12:06 | 0 |
| 183 | 6-Dec | 15:13:06 | 0 |
| 184 | 6-Dec | 15:14:06 | 0 |
| 185 | 6-Dec | 15:15:06 | 0 |
| 186 | 6-Dec | 15:16:06 | 0.005 |
| 187 | 6-Dec | 15:17:06 | 0 |
| 188 | 6-Dec | 15:18:06 | 0 |
| 189 | 6-Dec | 15:19:06 | 0 |
| 190 | 6-Dec | 15:20:06 | 0 |
| 191 | 6-Dec | 15:21:06 | 0.001 |
| 192 | 6-Dec | 15:22:06 | 0 |
| 193 | 6-Dec | 15:23:06 | 0 |
| 194 | 6-Dec | 15:24:06 | 0 |
| 195 | 6-Dec | 15:25:06 | 0 |
| 196 | 6-Dec | 15:26:06 | 0 |
| 197 | 6-Dec | 15:27:06 | 0 |
| 198 | 6-Dec | 15:28:06 | 0 |
| 199 | 6-Dec | 15:29:06 | 0 |
| 200 | 6-Dec | 15:30:06 | 0 |
| 201 | 6-Dec | 15:31:06 | 0 |
| 202 | 6-Dec | 15:32:06 | 0 |
| 203 | 6-Dec | 15:33:06 | 0 |
| 204 | 6-Dec | 15:34:06 | 0 |
| 205 | 6-Dec | 15:35:06 | 0 |

Point 3
pDR-1000 S/N: 00000
Tag Number: 04
Number of logged points: 154
Start time and date: 15:41:59 06-Dec
Elapsed time: 02:34:00
Logging period (sec): 60
Calibration Factor (%): 100
Max Display Concentration: 0.284 mg/m³
Time at maximum: 16:20:27 Dec 06
Max STEL Concentration: 0.254 mg/m³
Time at max STEL: 16:27:59 Dec 06
Overall Avg Conc: 0.242 mg/m³
Logged Data:

| Point | Date | Time | Avg.(mg/m³) |
|---|---|---|---|
| 1 | 6-Dec | 15:42:59 | 0.181 |
| 2 | 6-Dec | 15:43:59 | 0.248 |

| | | | |
|---|---|---|---|
| 3 | 6-Dec | 15:44:59 | 0.246 |
| 4 | 6-Dec | 15:45:59 | 0.248 |
| 5 | 6-Dec | 15:46:59 | 0.251 |
| 6 | 6-Dec | 15:47:59 | 0.247 |
| 7 | 6-Dec | 15:48:59 | 0.248 |
| 8 | 6-Dec | 15:49:59 | 0.249 |
| 9 | 6-Dec | 15:50:59 | 0.25 |
| 10 | 6-Dec | 15:51:59 | 0.242 |
| 11 | 6-Dec | 15:52:59 | 0.241 |
| 12 | 6-Dec | 15:53:59 | 0.244 |
| 13 | 6-Dec | 15:54:59 | 0.238 |
| 14 | 6-Dec | 15:55:59 | 0.239 |
| 15 | 6-Dec | 15:56:59 | 0.243 |
| 16 | 6-Dec | 15:57:59 | 0.241 |
| 17 | 6-Dec | 15:58:59 | 0.24 |
| 18 | 6-Dec | 15:59:59 | 0.238 |
| 19 | 6-Dec | 16:00:59 | 0.237 |
| 20 | 6-Dec | 16:01:59 | 0.238 |
| 21 | 6-Dec | 16:02:59 | 0.239 |
| 22 | 6-Dec | 16:03:59 | 0.237 |
| 23 | 6-Dec | 16:04:59 | 0.24 |
| 24 | 6-Dec | 16:05:59 | 0.237 |
| 25 | 6-Dec | 16:06:59 | 0.235 |
| 26 | 6-Dec | 16:07:59 | 0.236 |
| 27 | 6-Dec | 16:08:59 | 0.235 |
| 28 | 6-Dec | 16:09:59 | 0.236 |
| 29 | 6-Dec | 16:10:59 | 0.238 |
| 30 | 6-Dec | 16:11:59 | 0.239 |
| 31 | 6-Dec | 16:12:59 | 0.236 |
| 32 | 6-Dec | 16:13:59 | 0.236 |
| 33 | 6-Dec | 16:14:59 | 0.241 |
| 34 | 6-Dec | 16:15:59 | 0.26 |
| 35 | 6-Dec | 16:16:59 | 0.261 |
| 36 | 6-Dec | 16:17:59 | 0.255 |
| 37 | 6-Dec | 16:18:59 | 0.256 |
| 38 | 6-Dec | 16:19:59 | 0.256 |
| 39 | 6-Dec | 16:20:59 | 0.272 |
| 40 | 6-Dec | 16:21:59 | 0.259 |
| 41 | 6-Dec | 16:22:59 | 0.255 |
| 42 | 6-Dec | 16:23:59 | 0.271 |
| 43 | 6-Dec | 16:24:59 | 0.252 |
| 44 | 6-Dec | 16:25:59 | 0.25 |
| 45 | 6-Dec | 16:26:59 | 0.24 |
| 46 | 6-Dec | 16:27:59 | 0.24 |
| 47 | 6-Dec | 16:28:59 | 0.238 |
| 48 | 6-Dec | 16:29:59 | 0.238 |
| 49 | 6-Dec | 16:30:59 | 0.247 |
| 50 | 6-Dec | 16:31:59 | 0.253 |
| 51 | 6-Dec | 16:32:59 | 0.241 |
| 52 | 6-Dec | 16:33:59 | 0.238 |
| 53 | 6-Dec | 16:34:59 | 0.255 |
| 54 | 6-Dec | 16:35:59 | 0.259 |

| | | | |
|---|---|---|---|
| 55 | 6-Dec | 16:36:59 | 0.246 |
| 56 | 6-Dec | 16:37:59 | 0.257 |
| 57 | 6-Dec | 16:38:59 | 0.238 |
| 58 | 6-Dec | 16:39:59 | 0.236 |
| 59 | 6-Dec | 16:40:59 | 0.236 |
| 60 | 6-Dec | 16:41:59 | 0.239 |
| 61 | 6-Dec | 16:42:59 | 0.236 |
| 62 | 6-Dec | 16:43:59 | 0.241 |
| 63 | 6-Dec | 16:44:59 | 0.246 |
| 64 | 6-Dec | 16:45:59 | 0.239 |
| 65 | 6-Dec | 16:46:59 | 0.239 |
| 66 | 6-Dec | 16:47:59 | 0.24 |
| 67 | 6-Dec | 16:48:59 | 0.241 |
| 68 | 6-Dec | 16:49:59 | 0.236 |
| 69 | 6-Dec | 16:50:59 | 0.236 |
| 70 | 6-Dec | 16:51:59 | 0.233 |
| 71 | 6-Dec | 16:52:59 | 0.233 |
| 72 | 6-Dec | 16:53:59 | 0.235 |
| 73 | 6-Dec | 16:54:59 | 0.238 |
| 74 | 6-Dec | 16:55:59 | 0.235 |
| 75 | 6-Dec | 16:56:59 | 0.235 |
| 76 | 6-Dec | 16:57:59 | 0.234 |
| 77 | 6-Dec | 16:58:59 | 0.235 |
| 78 | 6-Dec | 16:59:59 | 0.236 |
| 79 | 6-Dec | 17:00:59 | 0.255 |
| 80 | 6-Dec | 17:01:59 | 0.246 |
| 81 | 6-Dec | 17:02:59 | 0.234 |
| 82 | 6-Dec | 17:03:59 | 0.244 |
| 83 | 6-Dec | 17:04:59 | 0.243 |
| 84 | 6-Dec | 17:05:59 | 0.235 |
| 85 | 6-Dec | 17:06:59 | 0.239 |
| 86 | 6-Dec | 17:07:59 | 0.24 |
| 87 | 6-Dec | 17:08:59 | 0.237 |
| 88 | 6-Dec | 17:09:59 | 0.246 |
| 89 | 6-Dec | 17:10:59 | 0.243 |
| 90 | 6-Dec | 17:11:59 | 0.243 |
| 91 | 6-Dec | 17:12:59 | 0.24 |
| 92 | 6-Dec | 17:13:59 | 0.244 |
| 93 | 6-Dec | 17:14:59 | 0.239 |
| 94 | 6-Dec | 17:15:59 | 0.24 |
| 95 | 6-Dec | 17:16:59 | 0.24 |
| 96 | 6-Dec | 17:17:59 | 0.238 |
| 97 | 6-Dec | 17:18:59 | 0.237 |
| 98 | 6-Dec | 17:19:59 | 0.241 |
| 99 | 6-Dec | 17:20:59 | 0.239 |
| 100 | 6-Dec | 17:21:59 | 0.236 |
| 101 | 6-Dec | 17:22:59 | 0.237 |
| 102 | 6-Dec | 17:23:59 | 0.233 |
| 103 | 6-Dec | 17:24:59 | 0.235 |
| 104 | 6-Dec | 17:25:59 | 0.234 |
| 105 | 6-Dec | 17:26:59 | 0.245 |
| 106 | 6-Dec | 17:27:59 | 0.241 |

| | | | |
|---|---|---|---|
| 107 | 6-Dec | 17:28:59 | 0.242 |
| 108 | 6-Dec | 17:29:59 | 0.24 |
| 109 | 6-Dec | 17:30:59 | 0.246 |
| 110 | 6-Dec | 17:31:59 | 0.241 |
| 111 | 6-Dec | 17:32:59 | 0.242 |
| 112 | 6-Dec | 17:33:59 | 0.244 |
| 113 | 6-Dec | 17:34:59 | 0.248 |
| 114 | 6-Dec | 17:35:59 | 0.245 |
| 115 | 6-Dec | 17:36:59 | 0.244 |
| 116 | 6-Dec | 17:37:59 | 0.243 |
| 117 | 6-Dec | 17:38:59 | 0.245 |
| 118 | 6-Dec | 17:39:59 | 0.246 |
| 119 | 6-Dec | 17:40:59 | 0.247 |
| 120 | 6-Dec | 17:41:59 | 0.243 |
| 121 | 6-Dec | 17:42:59 | 0.242 |
| 122 | 6-Dec | 17:43:59 | 0.242 |
| 123 | 6-Dec | 17:44:59 | 0.244 |
| 124 | 6-Dec | 17:45:59 | 0.242 |
| 125 | 6-Dec | 17:46:59 | 0.239 |
| 126 | 6-Dec | 17:47:59 | 0.24 |
| 127 | 6-Dec | 17:48:59 | 0.242 |
| 128 | 6-Dec | 17:49:59 | 0.24 |
| 129 | 6-Dec | 17:50:59 | 0.244 |
| 130 | 6-Dec | 17:51:59 | 0.241 |
| 131 | 6-Dec | 17:52:59 | 0.241 |
| 132 | 6-Dec | 17:53:59 | 0.249 |
| 133 | 6-Dec | 17:54:59 | 0.241 |
| 134 | 6-Dec | 17:55:59 | 0.243 |
| 135 | 6-Dec | 17:56:59 | 0.242 |
| 136 | 6-Dec | 17:57:59 | 0.239 |
| 137 | 6-Dec | 17:58:59 | 0.24 |
| 138 | 6-Dec | 17:59:59 | 0.242 |
| 139 | 6-Dec | 18:00:59 | 0.249 |
| 140 | 6-Dec | 18:01:59 | 0.243 |
| 141 | 6-Dec | 18:02:59 | 0.242 |
| 142 | 6-Dec | 18:03:59 | 0.242 |
| 143 | 6-Dec | 18:04:59 | 0.243 |
| 144 | 6-Dec | 18:05:59 | 0.239 |
| 145 | 6-Dec | 18:06:59 | 0.245 |
| 146 | 6-Dec | 18:07:59 | 0.24 |
| 147 | 6-Dec | 18:08:59 | 0.24 |
| 148 | 6-Dec | 18:09:59 | 0.243 |
| 149 | 6-Dec | 18:10:59 | 0.251 |
| 150 | 6-Dec | 18:11:59 | 0.247 |
| 151 | 6-Dec | 18:12:59 | 0.241 |
| 152 | 6-Dec | 18:13:59 | 0.251 |
| 153 | 6-Dec | 18:14:59 | 0.244 |
| 154 | 6-Dec | 18:15:59 | 0.252 |

Point 4
pDR-1000 S/N: 04789

Tag Number: 04
Number of logged points: 156
Start time and date: 15:39:14 06-Dec
Elapsed time: 02:36:00
Logging period (sec): 60
Calibration Factor (%): 100
Max Display Concentration: 0.005 mg/m³
Time at maximum: 17:29:07 Dec 06
Max STEL Concentration: 0.000 mg/m³
Time at max STEL: 15:39:14 Dec 06
Overall Avg Conc: 0.000 mg/m³
Logged Data:

| Point | Date | Time | Avg.(mg/m³) |
|---|---|---|---|
| 1 | 6-Dec | 15:40:14 | 0 |
| 2 | 6-Dec | 15:41:14 | 0 |
| 3 | 6-Dec | 15:42:14 | 0 |
| 4 | 6-Dec | 15:43:14 | 0 |
| 5 | 6-Dec | 15:44:14 | 0 |
| 6 | 6-Dec | 15:45:14 | 0 |
| 7 | 6-Dec | 15:46:14 | 0 |
| 8 | 6-Dec | 15:47:14 | 0 |
| 9 | 6-Dec | 15:48:14 | 0 |
| 10 | 6-Dec | 15:49:14 | 0 |
| 11 | 6-Dec | 15:50:14 | 0 |
| 12 | 6-Dec | 15:51:14 | 0 |
| 13 | 6-Dec | 15:52:14 | 0.001 |
| 14 | 6-Dec | 15:53:14 | 0 |
| 15 | 6-Dec | 15:54:14 | 0 |
| 16 | 6-Dec | 15:55:14 | 0 |
| 17 | 6-Dec | 15:56:14 | 0 |
| 18 | 6-Dec | 15:57:14 | 0 |
| 19 | 6-Dec | 15:58:14 | 0 |
| 20 | 6-Dec | 15:59:14 | 0 |
| 21 | 6-Dec | 16:00:14 | 0 |
| 22 | 6-Dec | 16:01:14 | 0 |
| 23 | 6-Dec | 16:02:14 | 0 |
| 24 | 6-Dec | 16:03:14 | 0 |
| 25 | 6-Dec | 16:04:14 | 0 |
| 26 | 6-Dec | 16:05:14 | 0 |
| 27 | 6-Dec | 16:06:14 | 0 |
| 28 | 6-Dec | 16:07:14 | 0 |
| 29 | 6-Dec | 16:08:14 | 0 |
| 30 | 6-Dec | 16:09:14 | 0 |
| 31 | 6-Dec | 16:10:14 | 0 |
| 32 | 6-Dec | 16:11:14 | 0 |
| 33 | 6-Dec | 16:12:14 | 0 |
| 34 | 6-Dec | 16:13:14 | 0 |
| 35 | 6-Dec | 16:14:14 | 0 |
| 36 | 6-Dec | 16:15:14 | 0 |
| 37 | 6-Dec | 16:16:14 | 0 |
| 38 | 6-Dec | 16:17:14 | 0 |
| 39 | 6-Dec | 16:18:14 | 0 |

| | | | |
|---|---|---|---|
| 40 | 6-Dec | 16:19:14 | 0 |
| 41 | 6-Dec | 16:20:14 | 0 |
| 42 | 6-Dec | 16:21:14 | 0 |
| 43 | 6-Dec | 16:22:14 | 0 |
| 44 | 6-Dec | 16:23:14 | 0 |
| 45 | 6-Dec | 16:24:14 | 0 |
| 46 | 6-Dec | 16:25:14 | 0 |
| 47 | 6-Dec | 16:26:14 | 0 |
| 48 | 6-Dec | 16:27:14 | 0 |
| 49 | 6-Dec | 16:28:14 | 0 |
| 50 | 6-Dec | 16:29:14 | 0 |
| 51 | 6-Dec | 16:30:14 | 0.001 |
| 52 | 6-Dec | 16:31:14 | 0 |
| 53 | 6-Dec | 16:32:14 | 0 |
| 54 | 6-Dec | 16:33:14 | 1 |
| 55 | 6-Dec | 16:34:14 | 0 |
| 56 | 6-Dec | 16:35:14 | 0 |
| 57 | 6-Dec | 16:36:14 | 0 |
| 58 | 6-Dec | 16:37:14 | 0 |
| 59 | 6-Dec | 16:38:14 | 0 |
| 60 | 6-Dec | 16:39:14 | 0 |
| 61 | 6-Dec | 16:40:14 | 0 |
| 62 | 6-Dec | 16:41:14 | 0 |
| 63 | 6-Dec | 16:42:14 | 0 |
| 64 | 6-Dec | 16:43:14 | 0 |
| 65 | 6-Dec | 16:44:14 | 0 |
| 66 | 6-Dec | 16:45:14 | 0 |
| 67 | 6-Dec | 16:46:14 | 0 |
| 68 | 6-Dec | 16:47:14 | 0 |
| 69 | 6-Dec | 16:48:14 | 0 |
| 70 | 6-Dec | 16:49:14 | 0 |
| 71 | 6-Dec | 16:50:14 | 0 |
| 72 | 6-Dec | 16:51:14 | 0 |
| 73 | 6-Dec | 16:52:14 | 0.002 |
| 74 | 6-Dec | 16:53:14 | 0 |
| 75 | 6-Dec | 16:54:14 | 0 |
| 76 | 6-Dec | 16:55:14 | 0 |
| 77 | 6-Dec | 16:56:14 | 0 |
| 78 | 6-Dec | 16:57:14 | 0 |
| 79 | 6-Dec | 16:58:14 | 0 |
| 80 | 6-Dec | 16:59:14 | 0 |
| 81 | 6-Dec | 17:00:14 | 0 |
| 82 | 6-Dec | 17:01:14 | 0 |
| 83 | 6-Dec | 17:02:14 | 0 |
| 84 | 6-Dec | 17:03:14 | 0 |
| 85 | 6-Dec | 17:04:14 | 0.002 |
| 86 | 6-Dec | 17:05:14 | 0 |
| 87 | 6-Dec | 17:06:14 | 0.001 |
| 88 | 6-Dec | 17:07:14 | 0 |
| 89 | 6-Dec | 17:08:14 | 0 |
| 90 | 6-Dec | 17:09:14 | 0 |
| 91 | 6-Dec | 17:10:14 | 0 |

| | | | |
|---|---|---|---|
| 92 | 6-Dec | 17:11:14 | 0 |
| 93 | 6-Dec | 17:12:14 | 0 |
| 94 | 6-Dec | 17:13:14 | 0 |
| 95 | 6-Dec | 17:14:14 | 0 |
| 96 | 6-Dec | 17:15:14 | 0 |
| 97 | 6-Dec | 17:16:14 | 0 |
| 98 | 6-Dec | 17:17:14 | 0 |
| 99 | 6-Dec | 17:18:14 | 0 |
| 100 | 6-Dec | 17:19:14 | 0 |
| 101 | 6-Dec | 17:20:14 | 0 |
| 102 | 6-Dec | 17:21:14 | 0 |
| 103 | 6-Dec | 17:22:14 | 0 |
| 104 | 6-Dec | 17:23:14 | 0 |
| 105 | 6-Dec | 17:24:14 | 0 |
| 106 | 6-Dec | 17:25:14 | 0 |
| 107 | 6-Dec | 17:26:14 | 0 |
| 108 | 6-Dec | 17:27:14 | 0 |
| 109 | 6-Dec | 17:28:14 | 0 |
| 110 | 6-Dec | 17:29:14 | 0.003 |
| 111 | 6-Dec | 17:30:14 | 0 |
| 112 | 6-Dec | 17:31:14 | 0 |
| 113 | 6-Dec | 17:32:14 | 0 |
| 114 | 6-Dec | 17:33:14 | 0 |
| 115 | 6-Dec | 17:34:14 | 0 |
| 116 | 6-Dec | 17:35:14 | 0 |
| 117 | 6-Dec | 17:36:14 | 0 |
| 118 | 6-Dec | 17:37:14 | 0 |
| 119 | 6-Dec | 17:38:14 | 0 |
| 120 | 6-Dec | 17:39:14 | 0 |
| 121 | 6-Dec | 17:40:14 | 0 |
| 122 | 6-Dec | 17:41:14 | 0 |
| 123 | 6-Dec | 17:42:14 | 0 |
| 124 | 6-Dec | 17:43:14 | 0 |
| 125 | 6-Dec | 17:44:14 | 0 |
| 126 | 6-Dec | 17:45:14 | 0 |
| 127 | 6-Dec | 17:46:14 | 0 |
| 128 | 6-Dec | 17:47:14 | 0 |
| 129 | 6-Dec | 17:48:14 | 0 |
| 130 | 6-Dec | 17:49:14 | 0 |
| 131 | 6-Dec | 17:50:14 | 0.001 |
| 132 | 6-Dec | 17:51:14 | 0 |
| 133 | 6-Dec | 17:52:14 | 0 |
| 134 | 6-Dec | 17:53:14 | 0 |
| 135 | 6-Dec | 17:54:14 | 0 |
| 136 | 6-Dec | 17:55:14 | 0 |
| 137 | 6-Dec | 17:56:14 | 0 |
| 138 | 6-Dec | 17:57:14 | 0 |
| 139 | 6-Dec | 17:58:14 | 0 |
| 140 | 6-Dec | 17:59:14 | 0 |
| 141 | 6-Dec | 18:00:14 | 0 |
| 142 | 6-Dec | 18:01:14 | 0 |
| 143 | 6-Dec | 18:02:14 | 0 |

| | | | |
|---|---|---|---|
| 144 | 6-Dec | 18:03:14 | 0 |
| 145 | 6-Dec | 18:04:14 | 0 |
| 146 | 6-Dec | 18:05:14 | 0 |
| 147 | 6-Dec | 18:06:14 | 0 |
| 148 | 6-Dec | 18:07:14 | 0 |
| 149 | 6-Dec | 18:08:14 | 0 |
| 150 | 6-Dec | 18:09:14 | 0 |
| 151 | 6-Dec | 18:10:14 | 0 |
| 152 | 6-Dec | 18:11:14 | 0 |
| 153 | 6-Dec | 18:12:14 | 0 |
| 154 | 6-Dec | 18:13:14 | 0 |
| 155 | 6-Dec | 18:14:14 | 0 |
| 156 | 6-Dec | 18:15:14 | 0 |

Point 1
pDR-1000 S/N: 00000
Tag Number: 05
Number of logged points: 39
Start time and date: 16:08:42 07-Dec
Elapsed time: 00:39:00
Logging period (sec): 60
Calibration Factor (%): 100
Max Display Concentration: 0.192 mg/m³
Time at maximum: 16:28:13 Dec 07
Max STEL Concentration: 0.180 mg/m³
Time at max STEL: 16:24:42 Dec 07
Overall Avg Conc: 0.178 mg/m³
Logged Data:

| Point | Date | Time | Avg.(mg/m³) |
|---|---|---|---|
| 1 | 7-Dec | 16:09:42 | 0.172 |
| 2 | 7-Dec | 16:10:42 | 0.179 |
| 3 | 7-Dec | 16:11:42 | 0.179 |
| 4 | 7-Dec | 16:12:42 | 0.179 |
| 5 | 7-Dec | 16:13:42 | 0.179 |
| 6 | 7-Dec | 16:14:42 | 0.179 |
| 7 | 7-Dec | 16:15:42 | 0.179 |
| 8 | 7-Dec | 16:16:42 | 0.179 |
| 9 | 7-Dec | 16:17:42 | 0.178 |
| 10 | 7-Dec | 16:18:42 | 0.18 |
| 11 | 7-Dec | 16:19:42 | 0.181 |
| 12 | 7-Dec | 16:20:42 | 0.18 |
| 13 | 7-Dec | 16:21:42 | 0.182 |
| 14 | 7-Dec | 16:22:42 | 0.179 |
| 15 | 7-Dec | 16:23:42 | 0.18 |
| 16 | 7-Dec | 16:24:42 | 0.178 |
| 17 | 7-Dec | 16:25:42 | 0.179 |
| 18 | 7-Dec | 16:26:42 | 0.175 |
| 19 | 7-Dec | 16:27:42 | 0.176 |
| 20 | 7-Dec | 16:28:42 | 0.179 |
| 21 | 7-Dec | 16:29:42 | 0.177 |
| 22 | 7-Dec | 16:30:42 | 0.177 |
| 23 | 7-Dec | 16:31:42 | 0.179 |
| 24 | 7-Dec | 16:32:42 | 0.177 |
| 25 | 7-Dec | 16:33:42 | 0.177 |
| 26 | 7-Dec | 16:34:42 | 0.177 |
| 27 | 7-Dec | 16:35:42 | 0.177 |
| 28 | 7-Dec | 16:36:42 | 0.177 |
| 29 | 7-Dec | 16:37:42 | 0.177 |
| 30 | 7-Dec | 16:38:42 | 0.177 |
| 31 | 7-Dec | 16:39:42 | 0.177 |
| 32 | 7-Dec | 16:40:42 | 0.177 |
| 33 | 7-Dec | 16:41:42 | 0.178 |
| 34 | 7-Dec | 16:42:42 | 0.177 |
| 35 | 7-Dec | 16:43:42 | 0.177 |
| 36 | 7-Dec | 16:44:42 | 0.177 |
| 37 | 7-Dec | 16:45:42 | 0.177 |

| | | | |
|---|---|---|---|
| 38 | 7-Dec | 16:46:42 | 0.177 |
| 39 | 7-Dec | 16:47:42 | 0.178 |

Point 2
pDR-1000 S/N: 04789
Tag Number: 05
Number of logged points: 39
Start time and date: 16:10:37 07-Dec
Elapsed time: 00:39:00
Logging period (sec): 60
Calibration Factor (%): 100
Max Display Concentration: 6.078 mg/m³
Time at maximum: 16:11:17 Dec 07
Max STEL Concentration: 0.095 mg/m³
Time at max STEL: 16:11:37 Dec 07
Overall Avg Conc: 0.022 mg/m³
Logged Data:

| Point | Date | Time | Avg.(mg/m³) |
|---|---|---|---|
| 1 | 7-Dec | 16:11:37 | 1.426 |
| 2 | 7-Dec | 16:12:37 | 0.01 |
| 3 | 7-Dec | 16:13:37 | 0 |
| 4 | 7-Dec | 16:14:37 | 0 |
| 5 | 7-Dec | 16:15:37 | 0 |
| 6 | 7-Dec | 16:16:37 | 0 |
| 7 | 7-Dec | 16:17:37 | 0 |
| 8 | 7-Dec | 16:18:37 | 0 |
| 9 | 7-Dec | 16:19:37 | 0 |
| 10 | 7-Dec | 16:20:37 | 0.001 |
| 11 | 7-Dec | 16:21:37 | 0 |
| 12 | 7-Dec | 16:22:37 | 0 |
| 13 | 7-Dec | 16:23:37 | 0 |
| 14 | 7-Dec | 16:24:37 | 0 |
| 15 | 7-Dec | 16:25:37 | 0 |
| 16 | 7-Dec | 16:26:37 | 0 |
| 17 | 7-Dec | 16:27:37 | 0 |
| 18 | 7-Dec | 16:28:37 | 0 |
| 19 | 7-Dec | 16:29:37 | 0 |
| 20 | 7-Dec | 16:30:37 | 0 |
| 21 | 7-Dec | 16:31:37 | 0 |
| 22 | 7-Dec | 16:32:37 | 0 |
| 23 | 7-Dec | 16:33:37 | 0 |
| 24 | 7-Dec | 16:34:37 | 0 |
| 25 | 7-Dec | 16:35:37 | 0 |
| 26 | 7-Dec | 16:36:37 | 0 |
| 27 | 7-Dec | 16:37:37 | 0 |
| 28 | 7-Dec | 16:38:37 | 0 |
| 29 | 7-Dec | 16:39:37 | 0 |
| 30 | 7-Dec | 16:40:37 | 0 |
| 31 | 7-Dec | 16:41:37 | 0 |
| 32 | 7-Dec | 16:42:37 | 0 |

| | | | |
|---|---|---|---|
| 33 | 7-Dec | 16:43:37 | 0 |
| 34 | 7-Dec | 16:44:37 | 0 |
| 35 | 7-Dec | 16:45:37 | 0 |
| 36 | 7-Dec | 16:46:37 | 0 |
| 37 | 7-Dec | 16:47:37 | 0 |
| 38 | 7-Dec | 16:48:37 | 0 |
| 39 | 7-Dec | 16:49:37 | 0 |

Poin1 1
pDR-1000 S/N: 00000
Tag Number: 06
Number of logged points: 56
Start time and date: 13:02:03 11-Dec
Elapsed time: 00:56:00
Logging period (sec): 60
Calibration Factor (%): 100
Max Display Concentration: 3.162 mg/m³
Time at maximum: 13:03:36 Dec 11
Max STEL Concentration: 0.214 mg/m³
Time at max STEL: 13:17:03 Dec 11
Overall Avg Conc: 0.187 mg/m³
Logged Data:

| Point | Date | Time | Avg.(mg/m³) |
|---|---|---|---|
| 1 | 11-Dec | 13:03:03 | 0.183 |
| 2 | 11-Dec | 13:04:03 | 0.679 |
| 3 | 11-Dec | 13:05:03 | 0.183 |
| 4 | 11-Dec | 13:06:03 | 0.183 |
| 5 | 11-Dec | 13:07:03 | 0.181 |
| 6 | 11-Dec | 13:08:03 | 0.18 |
| 7 | 11-Dec | 13:09:03 | 0.181 |
| 8 | 11-Dec | 13:10:03 | 0.181 |
| 9 | 11-Dec | 13:11:03 | 0.179 |
| 10 | 11-Dec | 13:12:03 | 0.18 |
| 11 | 11-Dec | 13:13:03 | 0.179 |
| 12 | 11-Dec | 13:14:03 | 0.178 |
| 13 | 11-Dec | 13:15:03 | 0.178 |
| 14 | 11-Dec | 13:16:03 | 0.178 |
| 15 | 11-Dec | 13:17:03 | 0.178 |
| 16 | 11-Dec | 13:18:03 | 0.177 |
| 17 | 11-Dec | 13:19:03 | 0.178 |
| 18 | 11-Dec | 13:20:03 | 0.179 |
| 19 | 11-Dec | 13:21:03 | 0.178 |
| 20 | 11-Dec | 13:22:03 | 0.177 |
| 21 | 11-Dec | 13:23:03 | 0.178 |
| 22 | 11-Dec | 13:24:03 | 0.177 |
| 23 | 11-Dec | 13:25:03 | 0.178 |
| 24 | 11-Dec | 13:26:03 | 0.178 |
| 25 | 11-Dec | 13:27:03 | 0.177 |
| 26 | 11-Dec | 13:28:03 | 0.178 |
| 27 | 11-Dec | 13:29:03 | 0.179 |
| 28 | 11-Dec | 13:30:03 | 0.178 |
| 29 | 11-Dec | 13:31:03 | 0.179 |
| 30 | 11-Dec | 13:32:03 | 0.179 |
| 31 | 11-Dec | 13:33:03 | 0.179 |
| 32 | 11-Dec | 13:34:03 | 0.176 |
| 33 | 11-Dec | 13:35:03 | 0.177 |
| 34 | 11-Dec | 13:36:03 | 0.176 |
| 35 | 11-Dec | 13:37:03 | 0.179 |
| 36 | 11-Dec | 13:38:03 | 0.178 |
| 37 | 11-Dec | 13:39:03 | 0.179 |

| | | | |
|---|---|---|---|
| 38 | 11-Dec | 13:40:03 | 0.178 |
| 39 | 11-Dec | 13:41:03 | 0.178 |
| 40 | 11-Dec | 13:42:03 | 0.178 |
| 41 | 11-Dec | 13:43:03 | 0.177 |
| 42 | 11-Dec | 13:44:03 | 0.177 |
| 43 | 11-Dec | 13:45:03 | 0.178 |
| 44 | 11-Dec | 13:46:03 | 0.178 |
| 45 | 11-Dec | 13:47:03 | 0.178 |
| 46 | 11-Dec | 13:48:03 | 0.179 |
| 47 | 11-Dec | 13:49:03 | 0.178 |
| 48 | 11-Dec | 13:50:03 | 0.178 |
| 49 | 11-Dec | 13:51:03 | 0.179 |
| 50 | 11-Dec | 13:52:03 | 0.178 |
| 51 | 11-Dec | 13:53:03 | 0.178 |
| 52 | 11-Dec | 13:54:03 | 0.179 |
| 53 | 11-Dec | 13:55:03 | 0.178 |
| 54 | 11-Dec | 13:56:03 | 0.178 |
| 55 | 11-Dec | 13:57:03 | 0.179 |
| 56 | 11-Dec | 13:58:03 | 0.178 |

Point 2
pDR-1000 S/N: 04789
Tag Number: 06
Number of logged points: 61
Start time and date: 13:02:06 11-Dec
Elapsed time: 01:01:00
Logging period (sec): 60
Calibration Factor (%): 100
Max Display Concentration: 0.121 mg/m³
Time at maximum: 13:02:07 Dec 11
Max STEL Concentration: 0.029 mg/m³
Time at max STEL: 13:51:06 Dec 11
Overall Avg Conc: 0.021 mg/m³
Logged Data:

| Point | Date | Time | Avg.(mg/m³) |
|---|---|---|---|
| 1 | 11-Dec | 13:03:06 | 0.036 |
| 2 | 11-Dec | 13:04:06 | 0.003 |
| 3 | 11-Dec | 13:05:06 | 0.007 |
| 4 | 11-Dec | 13:06:06 | 0.008 |
| 5 | 11-Dec | 13:07:06 | 0.008 |
| 6 | 11-Dec | 13:08:06 | 0.007 |
| 7 | 11-Dec | 13:09:06 | 0.009 |
| 8 | 11-Dec | 13:10:06 | 0.011 |
| 9 | 11-Dec | 13:11:06 | 0.012 |
| 10 | 11-Dec | 13:12:06 | 0.012 |
| 11 | 11-Dec | 13:13:06 | 0.012 |
| 12 | 11-Dec | 13:14:06 | 0.012 |
| 13 | 11-Dec | 13:15:06 | 0.013 |
| 14 | 11-Dec | 13:16:06 | 0.014 |
| 15 | 11-Dec | 13:17:06 | 0.015 |

| | | | |
|---|---|---|---|
| 16 | 11-Dec | 13:18:06 | 0.016 |
| 17 | 11-Dec | 13:19:06 | 0.015 |
| 18 | 11-Dec | 13:20:06 | 0.015 |
| 19 | 11-Dec | 13:21:06 | 0.016 |
| 20 | 11-Dec | 13:22:06 | 0.017 |
| 21 | 11-Dec | 13:23:06 | 0.018 |
| 22 | 11-Dec | 13:24:06 | 0.018 |
| 23 | 11-Dec | 13:25:06 | 0.02 |
| 24 | 11-Dec | 13:26:06 | 0.02 |
| 25 | 11-Dec | 13:27:06 | 0.021 |
| 26 | 11-Dec | 13:28:06 | 0.018 |
| 27 | 11-Dec | 13:29:06 | 0.021 |
| 28 | 11-Dec | 13:30:06 | 0.021 |
| 29 | 11-Dec | 13:31:06 | 0.022 |
| 30 | 11-Dec | 13:32:06 | 0.024 |
| 31 | 11-Dec | 13:33:06 | 0.024 |
| 32 | 11-Dec | 13:34:06 | 0.025 |
| 33 | 11-Dec | 13:35:06 | 0.025 |
| 34 | 11-Dec | 13:36:06 | 0.025 |
| 35 | 11-Dec | 13:37:06 | 0.025 |
| 36 | 11-Dec | 13:38:06 | 0.026 |
| 37 | 11-Dec | 13:39:06 | 0.025 |
| 38 | 11-Dec | 13:40:06 | 0.027 |
| 39 | 11-Dec | 13:41:06 | 0.026 |
| 40 | 11-Dec | 13:42:06 | 0.027 |
| 41 | 11-Dec | 13:43:06 | 0.028 |
| 42 | 11-Dec | 13:44:06 | 0.029 |
| 43 | 11-Dec | 13:45:06 | 0.029 |
| 44 | 11-Dec | 13:46:06 | 0.033 |
| 45 | 11-Dec | 13:47:06 | 0.032 |
| 46 | 11-Dec | 13:48:06 | 0.032 |
| 47 | 11-Dec | 13:49:06 | 0.031 |
| 48 | 11-Dec | 13:50:06 | 0.03 |
| 49 | 11-Dec | 13:51:06 | 0.03 |
| 50 | 11-Dec | 13:52:06 | 0.029 |
| 51 | 11-Dec | 13:53:06 | 0.03 |
| 52 | 11-Dec | 13:54:06 | 0.027 |
| 53 | 11-Dec | 13:55:06 | 0.027 |
| 54 | 11-Dec | 13:56:06 | 0.027 |
| 55 | 11-Dec | 13:57:06 | 0.026 |
| 56 | 11-Dec | 13:58:06 | 0.026 |
| 57 | 11-Dec | 13:59:06 | 0.026 |
| 58 | 11-Dec | 14:00:06 | 0.025 |
| 59 | 11-Dec | 14:01:06 | 0.024 |
| 60 | 11-Dec | 14:02:06 | 0.024 |
| 61 | 11-Dec | 14:03:06 | 0.023 |

Point 1
pDR-1000 S/N: 00000
Tag Number: 08
Number of logged points: 101
Start time and date: 15:46:10 12-Dec
Elapsed time: 01:41:00
Logging period (sec): 60
Calibration Factor (%): 100
Max Display Concentration: 0.190 mg/m³
Time at maximum: 16:41:24 Dec 12
Max STEL Concentration: 0.181 mg/m³
Time at max STEL: 16:01:10 Dec 12
Overall Avg Conc: 0.179 mg/m³
Logged Data:

| Point | Date | Time | Avg.(mg/m³) |
|---|---|---|---|
| 1 | 12-Dec | 15:47:10 | 0.179 |
| 2 | 12-Dec | 15:48:10 | 0.18 |
| 3 | 12-Dec | 15:49:10 | 0.18 |
| 4 | 12-Dec | 15:50:10 | 0.181 |
| 5 | 12-Dec | 15:51:10 | 0.181 |
| 6 | 12-Dec | 15:52:10 | 0.182 |
| 7 | 12-Dec | 15:53:10 | 0.182 |
| 8 | 12-Dec | 15:54:10 | 0.182 |
| 9 | 12-Dec | 15:55:10 | 0.181 |
| 10 | 12-Dec | 15:56:10 | 0.182 |
| 11 | 12-Dec | 15:57:10 | 0.182 |
| 12 | 12-Dec | 15:58:10 | 0.182 |
| 13 | 12-Dec | 15:59:10 | 0.181 |
| 14 | 12-Dec | 16:00:10 | 0.181 |
| 15 | 12-Dec | 16:01:10 | 0.18 |
| 16 | 12-Dec | 16:02:10 | 0.181 |
| 17 | 12-Dec | 16:03:10 | 0.181 |
| 18 | 12-Dec | 16:04:10 | 0.181 |
| 19 | 12-Dec | 16:05:10 | 0.181 |
| 20 | 12-Dec | 16:06:10 | 0.181 |
| 21 | 12-Dec | 16:07:10 | 0.181 |
| 22 | 12-Dec | 16:08:10 | 0.18 |
| 23 | 12-Dec | 16:09:10 | 0.181 |
| 24 | 12-Dec | 16:10:10 | 0.181 |
| 25 | 12-Dec | 16:11:10 | 0.181 |
| 26 | 12-Dec | 16:12:10 | 0.181 |
| 27 | 12-Dec | 16:13:10 | 0.18 |
| 28 | 12-Dec | 16:14:10 | 0.182 |
| 29 | 12-Dec | 16:15:10 | 0.182 |
| 30 | 12-Dec | 16:16:10 | 0.181 |
| 31 | 12-Dec | 16:17:10 | 0.181 |
| 32 | 12-Dec | 16:18:10 | 0.181 |
| 33 | 12-Dec | 16:19:10 | 0.181 |
| 34 | 12-Dec | 16:20:10 | 0.18 |
| 35 | 12-Dec | 16:21:10 | 0.182 |
| 36 | 12-Dec | 16:22:10 | 0.18 |
| 37 | 12-Dec | 16:23:10 | 0.18 |

| | | | |
|---|---|---|---|
| 38 | 12-Dec | 16:24:10 | 0.18 |
| 39 | 12-Dec | 16:25:10 | 0.18 |
| 40 | 12-Dec | 16:26:10 | 0.18 |
| 41 | 12-Dec | 16:27:10 | 0.18 |
| 42 | 12-Dec | 16:28:10 | 0.18 |
| 43 | 12-Dec | 16:29:10 | 0.18 |
| 44 | 12-Dec | 16:30:10 | 0.18 |
| 45 | 12-Dec | 16:31:10 | 0.179 |
| 46 | 12-Dec | 16:32:10 | 0.179 |
| 47 | 12-Dec | 16:33:10 | 0.179 |
| 48 | 12-Dec | 16:34:10 | 0.179 |
| 49 | 12-Dec | 16:35:10 | 0.179 |
| 50 | 12-Dec | 16:36:10 | 0.18 |
| 51 | 12-Dec | 16:37:10 | 0.18 |
| 52 | 12-Dec | 16:38:10 | 0.179 |
| 53 | 12-Dec | 16:39:10 | 0.178 |
| 54 | 12-Dec | 16:40:10 | 0.179 |
| 55 | 12-Dec | 16:41:10 | 0.179 |
| 56 | 12-Dec | 16:42:10 | 0.183 |
| 57 | 12-Dec | 16:43:10 | 0.179 |
| 58 | 12-Dec | 16:44:10 | 0.178 |
| 59 | 12-Dec | 16:45:10 | 0.178 |
| 60 | 12-Dec | 16:46:10 | 0.178 |
| 61 | 12-Dec | 16:47:10 | 0.179 |
| 62 | 12-Dec | 16:48:10 | 0.178 |
| 63 | 12-Dec | 16:49:10 | 0.178 |
| 64 | 12-Dec | 16:50:10 | 0.178 |
| 65 | 12-Dec | 16:51:10 | 0.178 |
| 66 | 12-Dec | 16:52:10 | 0.177 |
| 67 | 12-Dec | 16:53:10 | 0.177 |
| 68 | 12-Dec | 16:54:10 | 0.178 |
| 69 | 12-Dec | 16:55:10 | 0.177 |
| 70 | 12-Dec | 16:56:10 | 0.178 |
| 71 | 12-Dec | 16:57:10 | 0.177 |
| 72 | 12-Dec | 16:58:10 | 0.177 |
| 73 | 12-Dec | 16:59:10 | 0.177 |
| 74 | 12-Dec | 17:00:10 | 0.176 |
| 75 | 12-Dec | 17:01:10 | 0.178 |
| 76 | 12-Dec | 17:02:10 | 0.177 |
| 77 | 12-Dec | 17:03:10 | 0.177 |
| 78 | 12-Dec | 17:04:10 | 0.177 |
| 79 | 12-Dec | 17:05:10 | 0.176 |
| 80 | 12-Dec | 17:06:10 | 0.176 |
| 81 | 12-Dec | 17:07:10 | 0.177 |
| 82 | 12-Dec | 17:08:10 | 0.177 |
| 83 | 12-Dec | 17:09:10 | 0.177 |
| 84 | 12-Dec | 17:10:10 | 0.177 |
| 85 | 12-Dec | 17:11:10 | 0.176 |
| 86 | 12-Dec | 17:12:10 | 0.176 |
| 87 | 12-Dec | 17:13:10 | 0.176 |
| 88 | 12-Dec | 17:14:10 | 0.176 |
| 89 | 12-Dec | 17:15:10 | 0.177 |

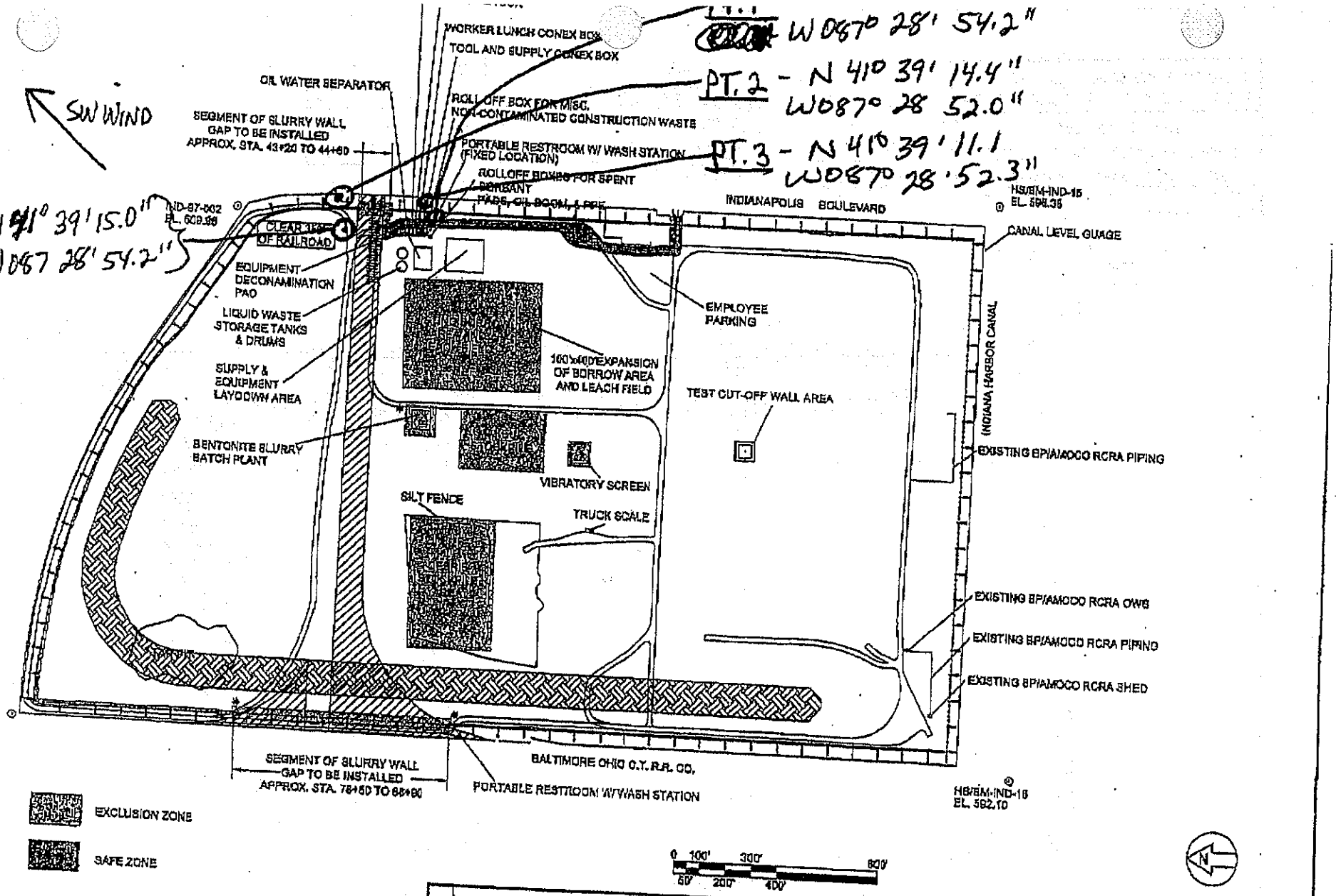
| | | | |
|---|---|---|---|
| 90 | 12-Dec | 17:16:10 | 0.176 |
| 91 | 12-Dec | 17:17:10 | 0.176 |
| 92 | 12-Dec | 17:18:10 | 0.175 |
| 93 | 12-Dec | 17:19:10 | 0.176 |
| 94 | 12-Dec | 17:20:10 | 0.175 |
| 95 | 12-Dec | 17:21:10 | 0.175 |
| 96 | 12-Dec | 17:22:10 | 0.175 |
| 97 | 12-Dec | 17:23:10 | 0.175 |
| 98 | 12-Dec | 17:24:10 | 0.175 |
| 99 | 12-Dec | 17:25:10 | 0.175 |
| 100 | 12-Dec | 17:26:10 | 0.174 |
| 101 | 12-Dec | 17:27:10 | 0.175 |

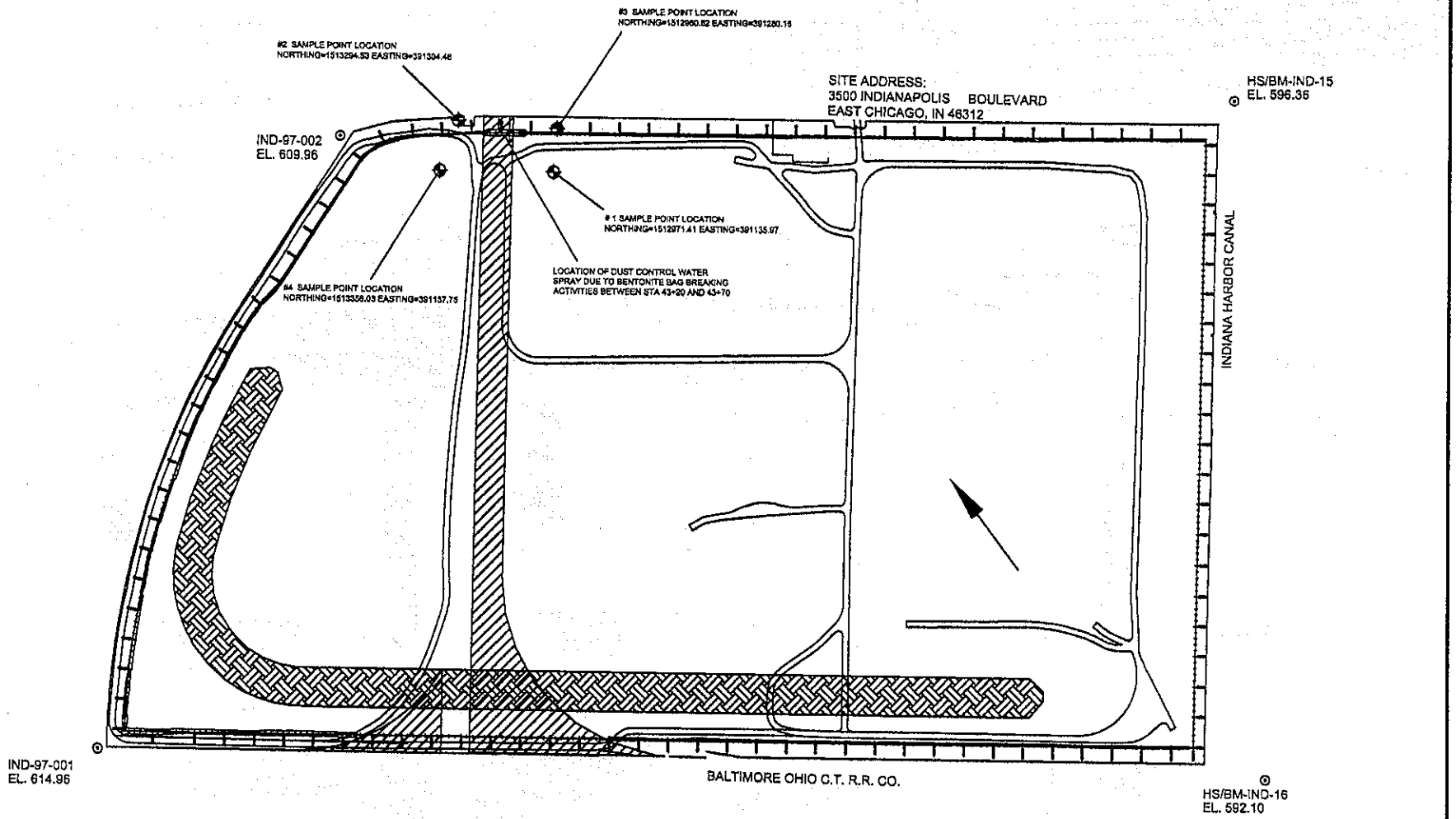
Point 2
pDR-1000 S/N: 04789
Tag Number: 08
Number of logged points: 106
Start time and date: 15:48:19 12-Dec
Elapsed time: 01:46:00
Logging period (sec): 60
Calibration Factor (%): 100
Max Display Concentration: 0.326 mg/m³
Time at maximum: 16:05:35 Dec 12
Max STEL Concentration: 0.106 mg/m³
Time at max STEL: 17:34:19 Dec 12
Overall Avg Conc: 0.071 mg/m³
Logged Data:

| Point | Date | Time | Avg.(mg/m³) |
|---|---|---|---|
| 1 | 12-Dec | 15:49:19 | 0.016 |
| 2 | 12-Dec | 15:50:19 | 0.002 |
| 3 | 12-Dec | 15:51:19 | 0.003 |
| 4 | 12-Dec | 15:52:19 | 0.004 |
| 5 | 12-Dec | 15:53:19 | 0.006 |
| 6 | 12-Dec | 15:54:19 | 0.007 |
| 7 | 12-Dec | 15:55:19 | 0.007 |
| 8 | 12-Dec | 15:56:19 | 0.008 |
| 9 | 12-Dec | 15:57:19 | 0.01 |
| 10 | 12-Dec | 15:58:19 | 0.011 |
| 11 | 12-Dec | 15:59:19 | 0.014 |
| 12 | 12-Dec | 16:00:19 | 0.017 |
| 13 | 12-Dec | 16:01:19 | 0.017 |
| 14 | 12-Dec | 16:02:19 | 0.021 |
| 15 | 12-Dec | 16:03:19 | 0.029 |
| 16 | 12-Dec | 16:04:19 | 0.041 |
| 17 | 12-Dec | 16:05:19 | 0.027 |
| 18 | 12-Dec | 16:06:19 | 0.074 |
| 19 | 12-Dec | 16:07:19 | 0.025 |
| 20 | 12-Dec | 16:08:19 | 0.027 |
| 21 | 12-Dec | 16:09:19 | 0.015 |
| 22 | 12-Dec | 16:10:19 | 0.018 |

| | | | |
|---|---|---|---|
| 23 | 12-Dec | 16:11:19 | 0.016 |
| 24 | 12-Dec | 16:12:19 | 0.02 |
| 25 | 12-Dec | 16:13:19 | 0.024 |
| 26 | 12-Dec | 16:14:19 | 0.031 |
| 27 | 12-Dec | 16:15:19 | 0.036 |
| 28 | 12-Dec | 16:16:19 | 0.041 |
| 29 | 12-Dec | 16:17:19 | 0.045 |
| 30 | 12-Dec | 16:18:19 | 0.048 |
| 31 | 12-Dec | 16:19:19 | 0.054 |
| 32 | 12-Dec | 16:20:19 | 0.056 |
| 33 | 12-Dec | 16:21:19 | 0.057 |
| 34 | 12-Dec | 16:22:19 | 0.061 |
| 35 | 12-Dec | 16:23:19 | 0.063 |
| 36 | 12-Dec | 16:24:19 | 0.064 |
| 37 | 12-Dec | 16:25:19 | 0.071 |
| 38 | 12-Dec | 16:26:19 | 0.072 |
| 39 | 12-Dec | 16:27:19 | 0.072 |
| 40 | 12-Dec | 16:28:19 | 0.072 |
| 41 | 12-Dec | 16:29:19 | 0.074 |
| 42 | 12-Dec | 16:30:19 | 0.08 |
| 43 | 12-Dec | 16:31:19 | 0.08 |
| 44 | 12-Dec | 16:32:19 | 0.08 |
| 45 | 12-Dec | 16:33:19 | 0.084 |
| 46 | 12-Dec | 16:34:19 | 0.086 |
| 47 | 12-Dec | 16:35:19 | 0.091 |
| 48 | 12-Dec | 16:36:19 | 0.088 |
| 49 | 12-Dec | 16:37:19 | 0.091 |
| 50 | 12-Dec | 16:38:19 | 0.086 |
| 51 | 12-Dec | 16:39:19 | 0.088 |
| 52 | 12-Dec | 16:40:19 | 0.089 |
| 53 | 12-Dec | 16:41:19 | 0.079 |
| 54 | 12-Dec | 16:42:19 | 0.087 |
| 55 | 12-Dec | 16:43:19 | 0.084 |
| 56 | 12-Dec | 16:44:19 | 0.088 |
| 57 | 12-Dec | 16:45:19 | 0.086 |
| 58 | 12-Dec | 16:46:19 | 0.085 |
| 59 | 12-Dec | 16:47:19 | 0.085 |
| 60 | 12-Dec | 16:48:19 | 0.086 |
| 61 | 12-Dec | 16:49:19 | 0.083 |
| 62 | 12-Dec | 16:50:19 | 0.087 |
| 63 | 12-Dec | 16:51:19 | 0.086 |
| 64 | 12-Dec | 16:52:19 | 0.088 |
| 65 | 12-Dec | 16:53:19 | 0.085 |
| 66 | 12-Dec | 16:54:19 | 0.088 |
| 67 | 12-Dec | 16:55:19 | 0.085 |
| 68 | 12-Dec | 16:56:19 | 0.09 |
| 69 | 12-Dec | 16:57:19 | 0.094 |
| 70 | 12-Dec | 16:58:19 | 0.098 |
| 71 | 12-Dec | 16:59:19 | 0.098 |
| 72 | 12-Dec | 17:00:19 | 0.101 |
| 73 | 12-Dec | 17:01:19 | 0.1 |
| 74 | 12-Dec | 17:02:19 | 0.102 |

| | | | |
|---|---|---|---|
| 75 | 12-Dec | 17:03:19 | 0.099 |
| 76 | 12-Dec | 17:04:19 | 0.107 |
| 77 | 12-Dec | 17:05:19 | 0.105 |
| 78 | 12-Dec | 17:06:19 | 0.097 |
| 79 | 12-Dec | 17:07:19 | 0.096 |
| 80 | 12-Dec | 17:08:19 | 0.095 |
| 81 | 12-Dec | 17:09:19 | 0.091 |
| 82 | 12-Dec | 17:10:19 | 0.091 |
| 83 | 12-Dec | 17:11:19 | 0.093 |
| 84 | 12-Dec | 17:12:19 | 0.097 |
| 85 | 12-Dec | 17:13:19 | 0.099 |
| 86 | 12-Dec | 17:14:19 | 0.096 |
| 87 | 12-Dec | 17:15:19 | 0.095 |
| 88 | 12-Dec | 17:16:19 | 0.1 |
| 89 | 12-Dec | 17:17:19 | 0.1 |
| 90 | 12-Dec | 17:18:19 | 0.098 |
| 91 | 12-Dec | 17:19:19 | 0.092 |
| 92 | 12-Dec | 17:20:19 | 0.09 |
| 93 | 12-Dec | 17:21:19 | 0.099 |
| 94 | 12-Dec | 17:22:19 | 0.095 |
| 95 | 12-Dec | 17:23:19 | 0.103 |
| 96 | 12-Dec | 17:24:19 | 0.105 |
| 97 | 12-Dec | 17:25:19 | 0.104 |
| 98 | 12-Dec | 17:26:19 | 0.105 |
| 99 | 12-Dec | 17:27:19 | 0.1 |
| 100 | 12-Dec | 17:28:19 | 0.105 |
| 101 | 12-Dec | 17:29:19 | 0.109 |
| 102 | 12-Dec | 17:30:19 | 0.107 |
| 103 | 12-Dec | 17:31:19 | 0.114 |
| 104 | 12-Dec | 17:32:19 | 0.115 |
| 105 | 12-Dec | 17:33:19 | 0.115 |
| 106 | 12-Dec | 17:34:19 | 0.12 |


SW WIND
WORKER LUNCH CONEX BOX
TOOL AND SUPPLY CONEX BOX
OIL WATER SEPARATOR
ROLL OFF BOX FOR MISC. NON-CONTAMINATED CONSTRUCTION WASTE
SEGMENT OF SLURRY WALL GAP TO BE INSTALLED APPROX. STA. 43+20 TO 44+60
PORTABLE RESTROOM W/ WASH STATION (FIXED LOCATION)
ROLLOFF BOXES FOR SPENT SORBANT PADS, OIL BOOM, & PPE
INDIANAPOLIS BOULEVARD
HS/EM-IND-15 EL. 598.35
CANAL LEVEL GUAGE
ND-87-002 EL. 609.98
CLEAR 100' OF RAILROAD
EQUIPMENT DECONAMINATION PAD
LIQUID WASTE STORAGE TANKS & DRUMS
SUPPLY & EQUIPMENT LAYDOWN AREA
BENTONITE SLURRY BATCH PLANT
100'x60' EXPANSION OF BORROW AREA AND LEACH FIELD
EMPLOYEE PARKING
TEST CUT-OFF WALL AREA
INDIANA HARBOR CANAL
EXISTING BP/AMOCO RCRA PIPING
VIBRATORY SCREEN
SILT FENCE
TRUCK SCALE
EXISTING BP/AMOCO RCRA OWS
EXISTING BP/AMOCO RCRA PIPING
EXISTING BP/AMOCO RCRA SHED
IND-87-001 EL. 614.08
SEGMENT OF SLURRY WALL GAP TO BE INSTALLED APPROX. STA. 78+50 TO 88+90
BALTIMORE OHIO C.T. R.R. CO.
PORTABLE RESTROOM W/WASH STATION
HS/EM-IND-16 EL. 592.10
EXCLUSION ZONE
SAFE ZONE
CONTAMINATE REDUCTION ZONE
0 100' 300' 600'
50' 200' 400'
N
W 087° 28' 54.2"
PT. 2 - N 41° 39' 14.4"
W087° 28 52.0"
PT. 3 - N 41° 39' 11.1
W087° 28' 52.3"
.4 N 41° 39' 15.0"
W087 28' 54.2"
REVISIONS
REV DESCRIPTION DATE APPROVED
ENVIRONMENTAL QUALITY MANAGEMENT, INC.
1800 CARILLON BLVD.
CINCINNATI, OHIO 45240
P (513) 825-7500
F (513) 825-7485
D.TOURO
SCALE NONE
INDIANA HARBOR SLURRY WALL GAPS
WORK ZONE
DECONAMINATION MAP
B
030249
FIGURE 1
0




| REV | DESCRIPTION | DATE | APPROVED |
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REVISIONS

ENVIRONMENTAL QUALITY MANAGEMENT, INC.
1800 CARILLON BLVD.
CINCINNATI, OHIO 45240
P (513)825-7500
F (513)825-7495

| | | |
|---|---|---|
| DRAWN | D.TOMO | 1/08/07 |
| CHECKED | J.WENTZ | |
| APPROVED | J.WENTZ | |
| SCALE | NONE | |

# INDIANA HARBOR CDF
## CONSTRUCTION AIR MOINTORING
## LOCATION 12-05-06

| ORIGINAL SIZE | PROJECT NO. | DWG NO. | REV |
|---|---|---|---|
| A | 030249 | SWGAM 12-05-06 | 0 |

SW WIND

WIND

LAB CONEX BOX
WORKER LUNCH CONEX BOX
TOOL AND SUPPLY CONEX BOX
OIL WATER SEPARATOR
ROLL OFF BOX FOR MISC. NON-CONTAMINATED CONSTRUCTION WASTE
SEGMENT OF SLURRY WALL GAP TO BE INSTALLED APPROX. STA. 43+20 TO 44+60
PORTABLE RESTROOM W/ WASH STATION (FIXED LOCATION)
ROLLOFF BOXES FOR SPENT SORBANT PADS, OIL BOOM, & PPE
INDIANAPOLIS BOULEVARD
HS/BM-IND-16 EL. 596.36
WD-97-002 EL. 609.98
CLEAR 350' OF RAILROAD
CANAL LEVEL GUAGE
EQUIPMENT DECONAMINATION PAD
LIQUID WASTE STORAGE TANKS & DRUMS
SUPPLY & EQUIPMENT LAYDOWN AREA
EMPLOYEE PARKING
100'x400' EXPANSION OF BORROW AREA AND LEACH FIELD
INDIANA HARBOR CANAL
TEST CUT-OFF WALL AREA
BENTONITE SLURRY BATCH PLANT
EXISTING BP/AMOCO RCRA PIPING
VIBRATORY SCREEN
SILT FENCE
TRUCK SCALE
PT.3 N 41°39' 08.6" W 087°29' 17.8"
EXISTING BP/AMOCO RCRA OWS
EXISTING BP/AMOCO RCRA PIPING
EXISTING BP/AMOCO RCRA SHED
WD-97-001 EL. 614.88
SEGMENT OF SLURRY WALL GAP TO BE INSTALLED APPROX. STA. 78+50 TO 88+60
BALTIMORE OHIO C.T. R.R. CO.
PORTABLE RESTROOM W/ WASH STATION
HS/BM-IND-15 EL. 592.10
PT 1 - N 41° 39' 08.6" W 087° 29' 19.6"
EXCLUSION ZONE
SAFE ZONE
CONTAMINATE REDUCTION ZONE
0 100' 300' 800'
50' 200' 400'
N

PT.4 N 41° 39' 15.7" W 087° 29' 19.4"

PT. 2 - N 41° 39' 13.9" W 087° 29' 17.6"

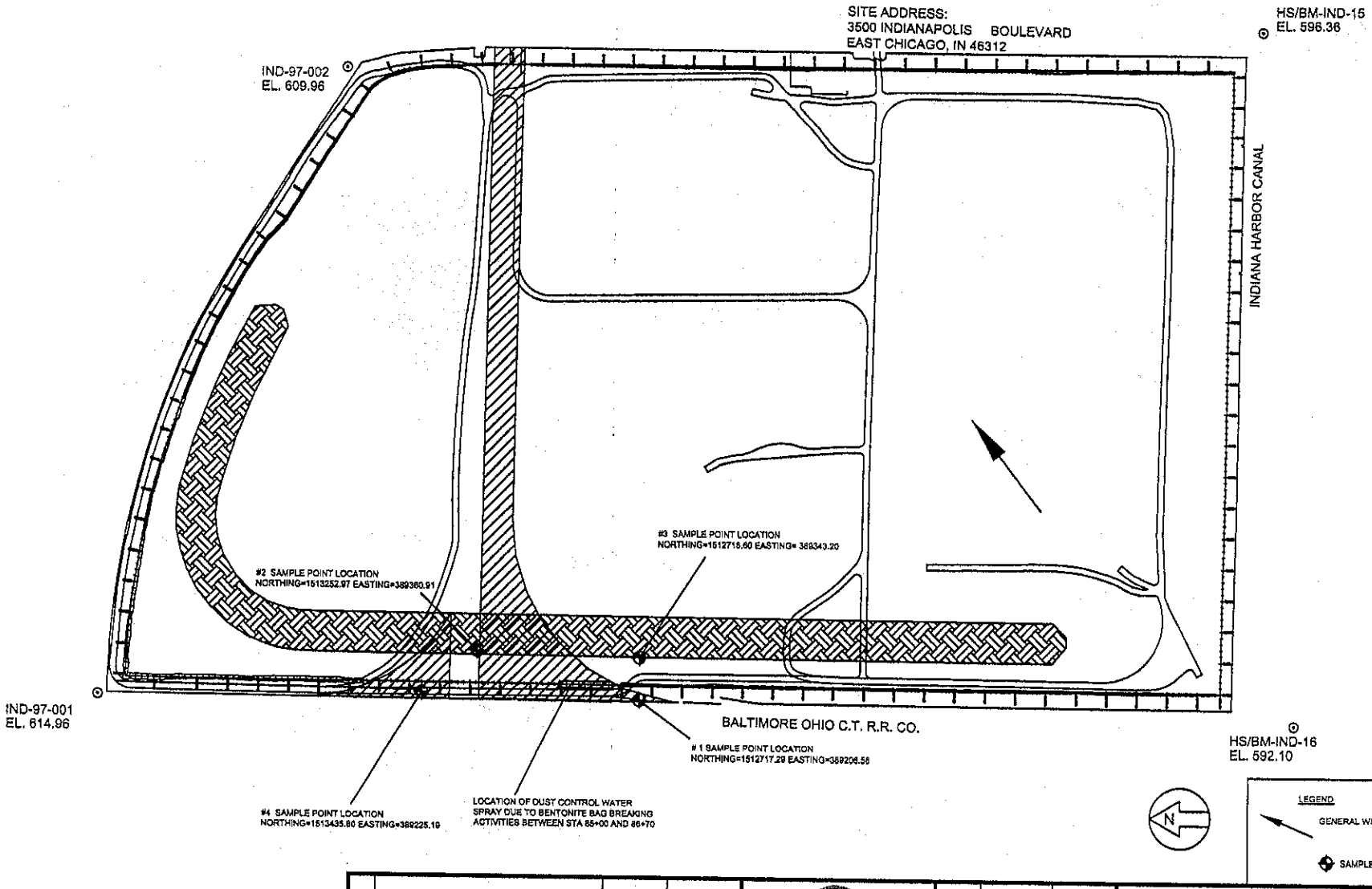
| REV | DESCRIPTION | DATE | APPROVED |
|---|---|---|---|
| | REVISIONS | | |

ENVIRONMENTAL QUALITY MANAGEMENT, INC.
5400 CARILLON POINT
CINCINNATI, OHIO 45240
P (513) 825-7100
P (513) 825-7195

| DRAWN | K.TOLMO | 1/8/07 |
|---|---|---|
| CHECKED | | |
| APPROVED | | |
| DATE | JOB NO. | |

INDIANA HARBOR SLURRY WALL GAPS
WORK ZONE DECONAMINATION MAP

| SCALE | PROJECT NO. | DWG NO. | REV |
|---|---|---|---|
| 8 | 030249 | FIGURE 1 | 0 |




| REV | DESCRIPTION | DATE | APPROVED |
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REVISIONS

ENVIRONMENTAL QUALITY MANAGEMENT, INC.
1600 CARILLON BLVD.
CINCINNATI, OHIO 45240
P (513)825-7500
F (513)825-7495

| | | |
|---|---|---|
| DRAWN | D.TOMO | 1/09/07 |
| CHECKED | J.WENTZ | |
| APPROVED | J.WENTZ | |
| SCALE: | NONE | |

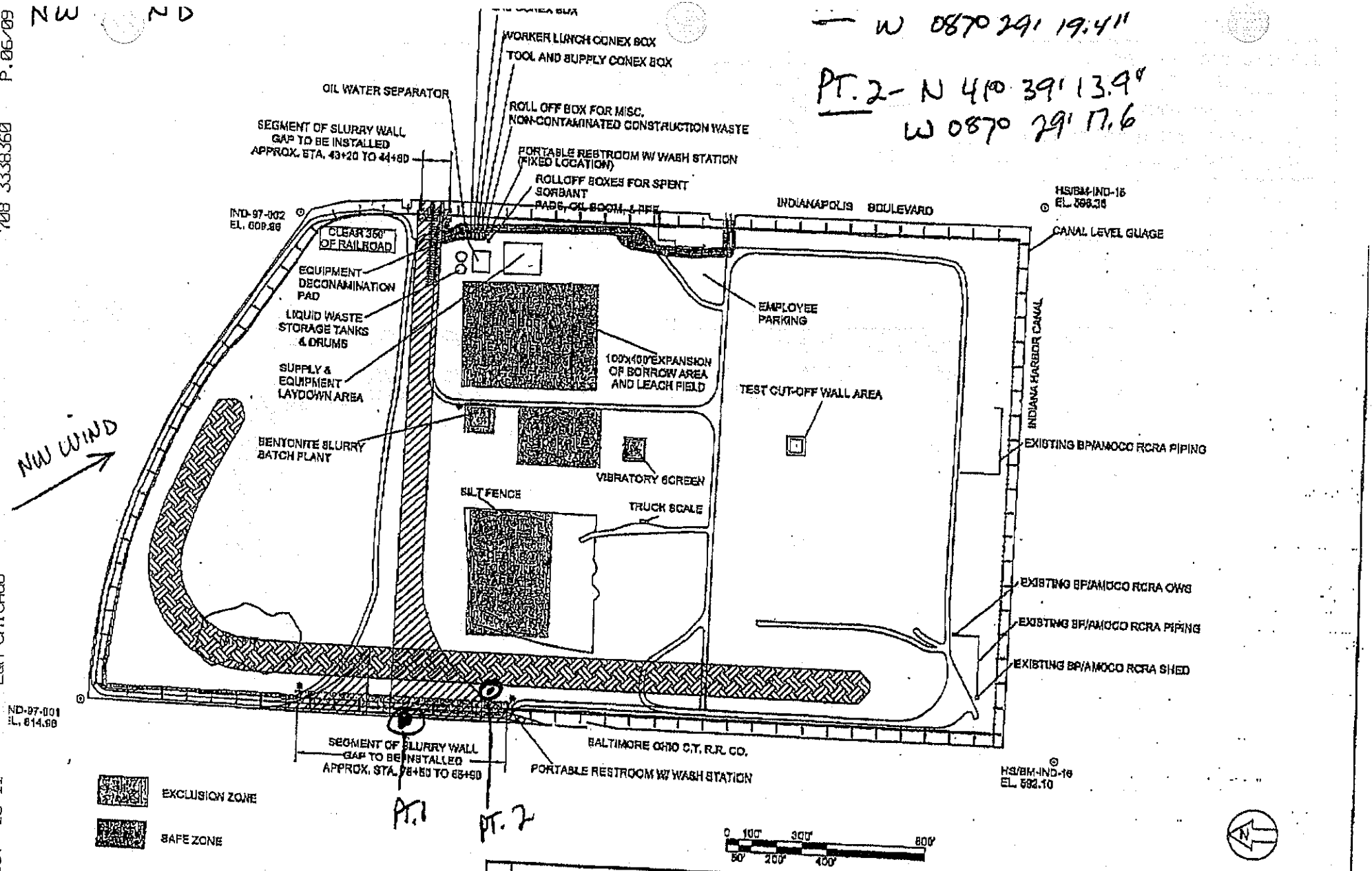
# INDIANA HARBOR CDF
## CONSTRUCTION AIR MOINTORING
## LOCATION 12-06-06

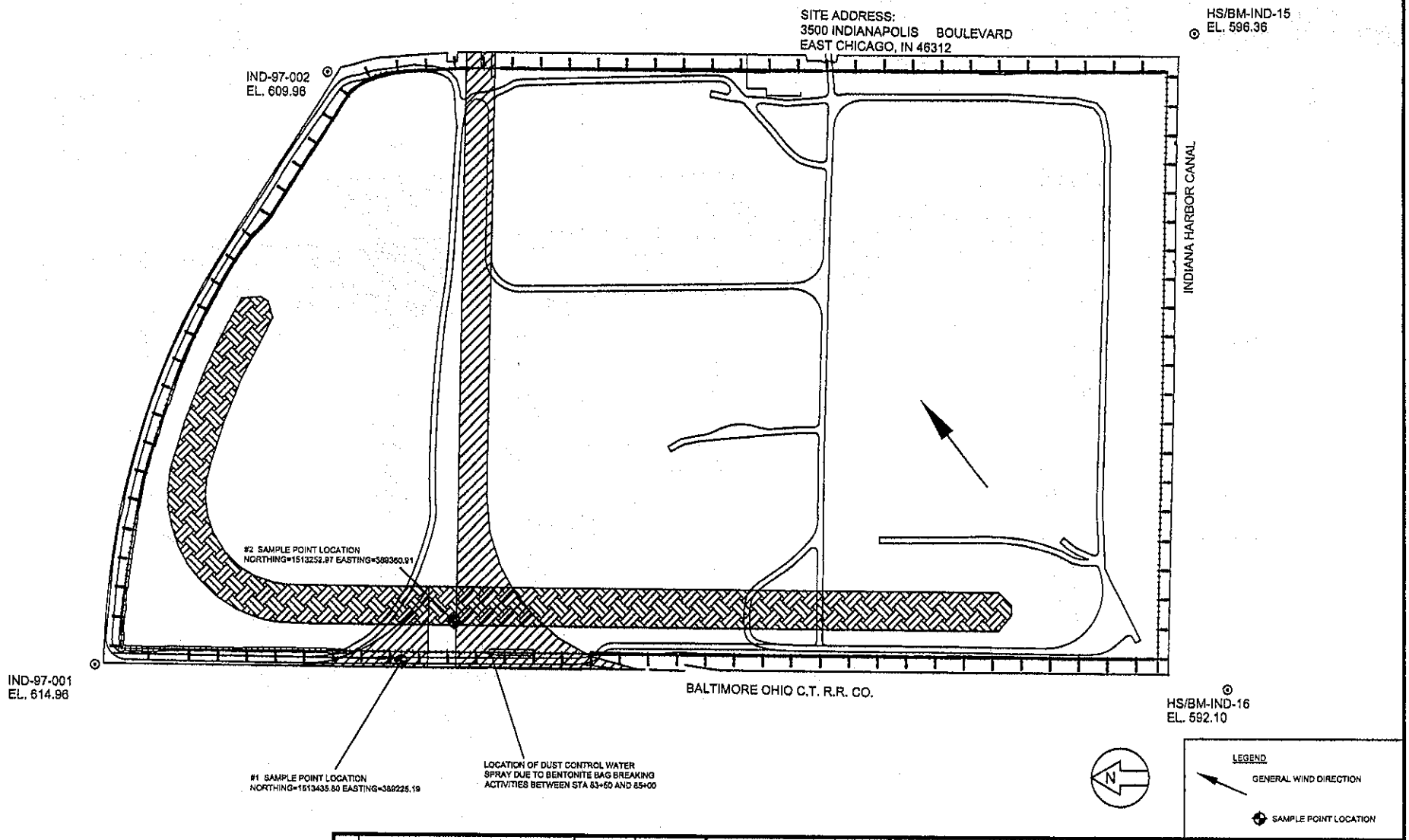
| ORIGINAL SIZE | PROJECT NO. | DWG NO. | REV |
|---|---|---|---|
| A | 030249 | SWGAM 12-06-06 | 0 |

NW ND

— W 087° 29' 19.41"

PT. 2 - N 41° 39' 13.9"
W 087° 29' 17.6






| REV | DESCRIPTION | DATE | APPROVED |
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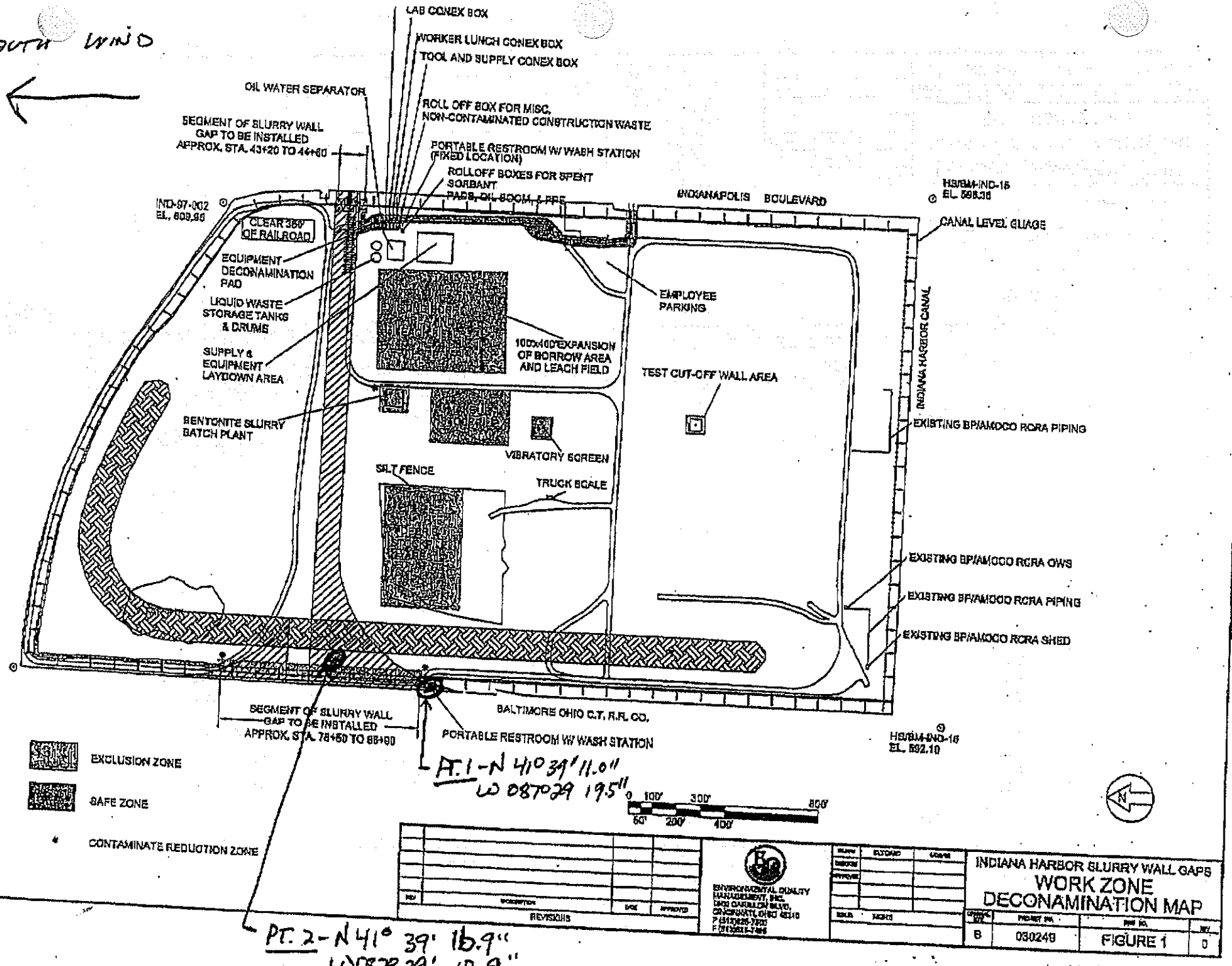
REVISIONS

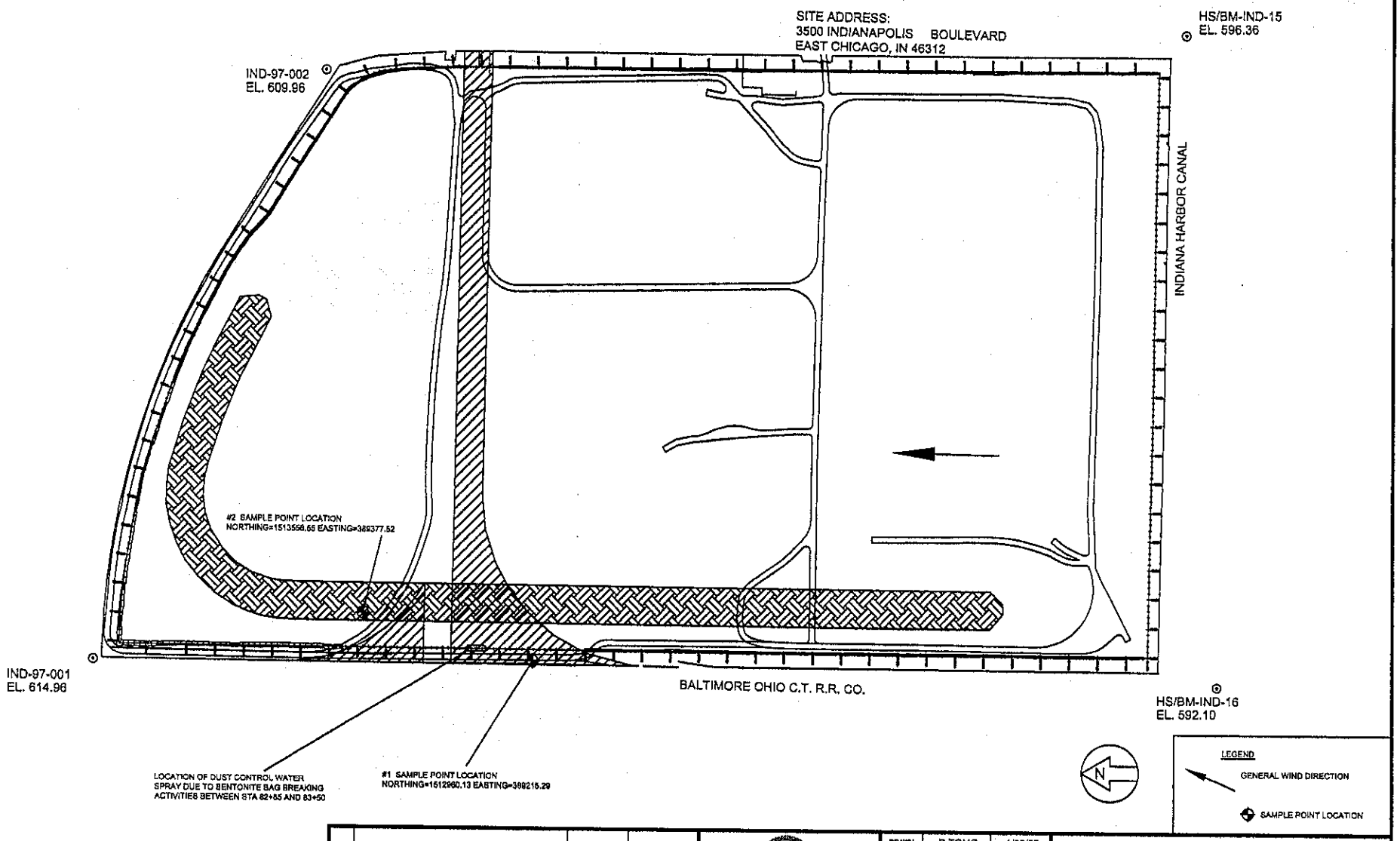
ENVIRONMENTAL QUALITY MANAGEMENT, INC.
1800 CARILLON BLVD.
CINCINNATI, OHIO 45240
P (513)825-7500
F (513)825-7495

| | | |
|---|---|---|
| DRAWN | D.TOMO | 1/08/07 |
| CHECKED | J.WENTZ | |
| APPROVED | J.WENTZ | |
| SCALE: | NONE | |

# INDIANA HARBOR CDF
## CONSTRUCTION AIR MOINTORING
## LOCATION 12-07-06

| ORIGINAL SIZE | PROJECT NO. | DWG NO. | REV |
|---|---|---|---|
| A | 030249 | SWGAM 12-07-06 | 0 |


South wind
LAB CONEX BOX
WORKER LUNCH CONEX BOX
TOOL AND SUPPLY CONEX BOX
OIL WATER SEPARATOR
ROLL OFF BOX FOR MISC. NON-CONTAMINATED CONSTRUCTION WASTE
SEGMENT OF SLURRY WALL GAP TO BE INSTALLED APPROX. STA. 43+20 TO 44+60
PORTABLE RESTROOM W/ WASH STATION (FIXED LOCATION)
ROLLOFF BOXES FOR SPENT SORBANT PADS, OIL BOOM, & PPE
IND-97-002 EL. 609.95
CLEAR 360' OF RAILROAD
EQUIPMENT DECONAMINATION PAD
LIQUID WASTE STORAGE TANKS & DRUMS
SUPPLY & EQUIPMENT LAYDOWN AREA
BENTONITE SLURRY BATCH PLANT
100'x400' EXPANSION OF BORROW AREA AND LEACH FIELD
INDIANAPOLIS BOULEVARD
HS/BM-IND-15 EL. 595.36
CANAL LEVEL GUAGE
EMPLOYEE PARKING
INDIANA HARBOR CANAL
TEST CUT-OFF WALL AREA
EXISTING BP/AMOCO RCRA PIPING
VIBRATORY SCREEN
SILT FENCE
TRUCK SCALE
EXISTING BP/AMOCO RCRA OWS
EXISTING BP/AMOCO RCRA PIPING
EXISTING BP/AMOCO RCRA SHED
IND-97-001 EL. 614.98
SEGMENT OF SLURRY WALL GAP TO BE INSTALLED APPROX. STA. 78+50 TO 85+90
BALTIMORE OHIO C.T. R.R. CO.
PORTABLE RESTROOM W/ WASH STATION
HS/BM-IND-16 EL. 592.10
EXCLUSION ZONE
SAFE ZONE
CONTAMINATE REDUCTION ZONE
0 100' 300' 600'
50' 200' 400'
N
PT. 1 - N 41° 39' 11.0"
W 087° 29' 19.5"
PT. 2 - N 41° 39' 16.9"
W 087° 29' 17.9"
REVISIONS
ENVIRONMENTAL QUALITY MANAGEMENT, INC.
INDIANA HARBOR SLURRY WALL GAPS
WORK ZONE DECONAMINATION MAP
B
030249
FIGURE 1
0




| REV | DESCRIPTION | DATE | APPROVED |
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REVISIONS

ENVIRONMENTAL QUALITY MANAGEMENT, INC.
1800 CARILLON BLVD.
CINCINNATI, OHIO 45240
P (513)825-7500
F (513)825-7495

| | | |
|---|---|---|
| DRAWN | D.TOMO | 1/08/07 |
| CHECKED | J.WENTZ | |
| APPROVED | J.WENTZ | |
| SCALE: | NONE | |

# INDIANA HARBOR CDF

## CONSTRUCTION AIR MOINTORING

## LOCATION 12-11-06

| ORIGINAL SIZE | PROJECT NO. | DWG NO. | REV |
|---|---|---|---|
| A | 030249 | SWGAM 12-11-06 | 0 |

SOU. WIND

LAB CONEX BOX
WORKER LUNCH CONEX BOX
TOOL AND SUPPLY CONEX BOX
OIL WATER SEPARATOR
ROLL OFF BOX FOR MISC. NON-CONTAMINATED CONSTRUCTION WASTE
SEGMENT OF SLURRY WALL GAP TO BE INSTALLED APPROX. STA. 43+20 TO 44+50
PORTABLE RESTROOM W/ WASH STATION (FIXED LOCATION)
ROLLOFF BOXES FOR SPENT SORBANT BAGS, OIL BOOM, & PPE
INDIANAPOLIS BOULEVARD
HS/BM-IND-15 EL. 596.36
IND-97-002 EL. 609.98
CLEAR 350' OF RAILROAD
CANAL LEVEL GUAGE
EQUIPMENT DECONAMINATION PAD
LIQUID WASTE STORAGE TANKS & DRUMS
SUPPLY & EQUIPMENT LAYDOWN AREA
EMPLOYEE PARKING
100'x400' EXPANSION OF BORROW AREA AND LEACH FIELD
TEST CUT-OFF WALL AREA
INDIANA HARBOR CANAL
BENTONITE SLURRY BATCH PLANT
EXISTING BP/AMOCO RCRA PIPING
VIBRATORY SCREEN
SILT FENCE
TRUCK SCALE
EXISTING BP/AMOCO RCRA CWS
EXISTING BP/AMOCO RCRA PIPING
EXISTING BP/AMOCO RCRA SHED
ND-97-001 EL. 614.98
SEGMENT OF SLURRY WALL GAP TO BE INSTALLED APPROX. STA. 76+50 TO 68+90
BALTIMORE OHIO C.T. R.R. CO.
PORTABLE RESTROOM W/ WASH STATION
HS/BM-IND-16 EL. 592.10

EXCLUSION ZONE
SAFE ZONE
CONTAMINATE REDUCTION ZONE

PT. 1 N 41° 39' 12.8"
W 087° 29' 19.5"

0 100' 300' 600'
50' 200' 400'

PT. 2 N 41° 39' 17.1"
W 087° 29' 17.8"

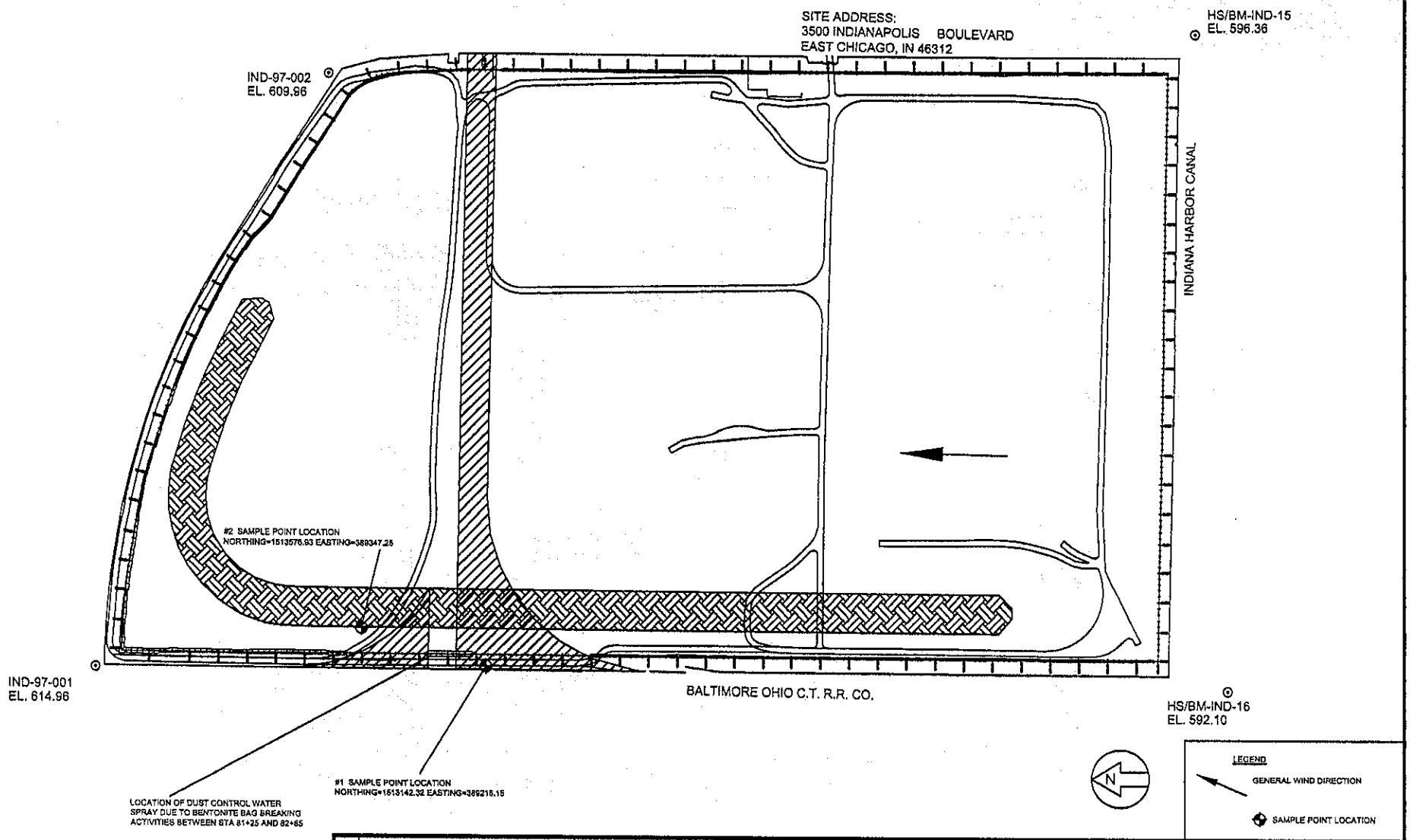
REVISIONS

ENVIRONMENTAL QUALITY MANAGEMENT, INC.
1800 CARILLON BLVD.
CINCINNATI, OHIO 45240
P (513) 825-7500
F (513) 825-7666

DRAWN | CHECKED | APPROVED
SCALE NONE

INDIANA HARBOR SLURRY WALL GAPS
WORK ZONE DECONAMINATION MAP

| SIZE | PROJECT NO. | DWG NO. | REV |
|---|---|---|---|
| B | 030249 | FIGURE 1. | 0 |




| REV | DESCRIPTION | DATE | APPROVED |
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REVISIONS

ENVIRONMENTAL QUALITY MANAGEMENT, INC.
1800 CARILLON BLVD.
CINCINNATI, OHIO 45240
P (513)825-7500
F (513)825-7495

| | | |
|---|---|---|
| DRAWN | D.TOMO | 1/08/07 |
| CHECKED | J.WENTZ | |
| APPROVED | J.WENTZ | |
| SCALE: | NONE | |

# INDIANA HARBOR CDF
## CONSTRUCTION AIR MOINTORING
## LOCATION 12-12-06

| ORIGINAL SIZE | PROJECT NO. | DWG NO. | REV |
|---|---|---|---|
| A | 030249 | SWGAM 12-12-06 | 0 |

SOUTHWEST WIND

SW WIND

LAB CONEX BOX
WORKER LUNCH CONEX BOX
TOOL AND SUPPLY CONEX BOX
OIL WATER SEPARATOR
ROLL OFF BOX FOR MISC. NON-CONTAMINATED CONSTRUCTION WASTE
SEGMENT OF SLURRY WALL GAP TO BE INSTALLED APPROX. STA. 43+20 TO 44+80
PORTABLE RESTROOM W/ WASH STATION (FIXED LOCATION)
ROLLOFF BOXES FOR SPENT SORBANT PADS, OIL BOOM, & PPE
INDIANAPOLIS BOULEVARD
HS/BM-IND-15 EL. 596.36
CANAL LEVEL GUAGE
IND-97-002 EL. 609.96
CLEAR 350' OF RAILROAD
EQUIPMENT DECONAMINATION PAD
LIQUID WASTE STORAGE TANKS & DRUMS
SUPPLY & EQUIPMENT LAYDOWN AREA
BENTONITE SLURRY BATCH PLANT
100'x400' EXPANSION OF BORROW AREA AND LEACH FIELD
EMPLOYEE PARKING
TEST CUT-OFF WALL AREA
INDIANA HARBOR CANAL
EXISTING BP/AMOCO RCRA PIPING
VIBRATORY SCREEN
SILT FENCE
TRUCK SCALE
EXISTING BP/AMOCO RCRA OWS
EXISTING BP/AMOCO RCRA PIPING
EXISTING BP/AMOCO RCRA SHED
IND-97-001 EL. 614.96
SEGMENT OF SLURRY WALL GAP TO BE INSTALLED APPROX. STA. 78+50 TO 80+60
BALTIMORE OHIO C.T. R.R. CO.
PORTABLE RESTROOM W/ WASH STATION
HS/BM-IND-16 EL. 592.10

EXCLUSION ZONE
SAFE ZONE
CONTAMINATE REDUCTION ZONE

PT.1 - N41°39' 13.1"
W087°29' 19.7"

0 100' 300' 800'
50' 200' 400'

PT.2 - N41° 39' 18.3
W087° 29' 18.0

| REV | DESCRIPTION | DATE | APPROVED |
|---|---|---|---|
| | | | |

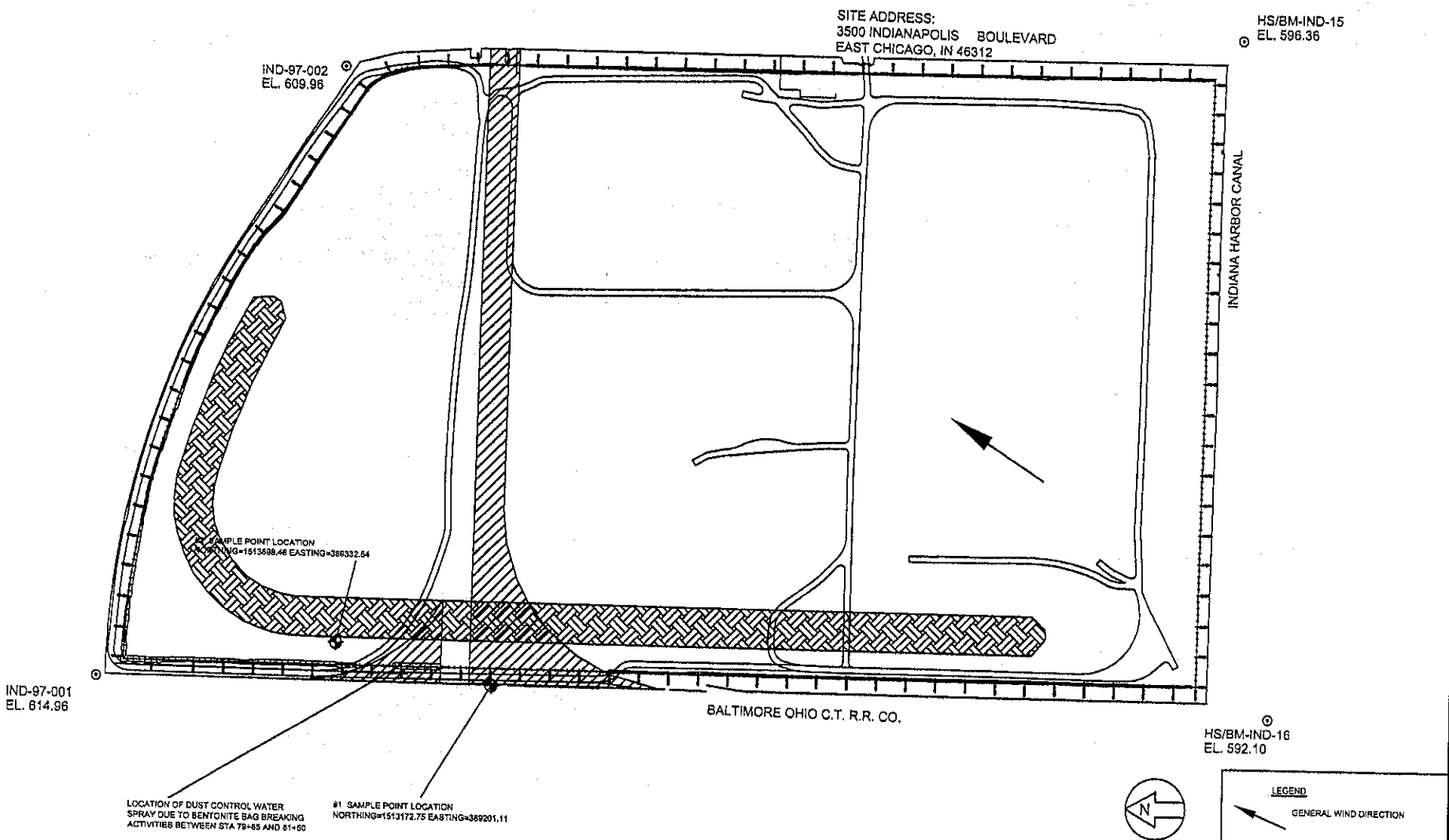
REVISIONS

ENVIRONMENTAL QUALITY MANAGEMENT, INC.
1800 CARLISLE BLVD.
CINCINNATI, OHIO 45240
P (513) 825-7660
F (513) 825-7666

| | | |
|---|---|---|
| DRAWN | DATE | |
| CHECKED | | |
| APPROVED | | |
| SCALE | | |

INDIANA HARBOR SLURRY WALL GAPS
WORK ZONE DECONAMINATION MAP

| DRAWING REV. | DRAWING NO. | SHEET NO. |
|---|---|---|
| B | 030248 | FIGURE 1 |




| REV | DESCRIPTION | DATE | APPROVED |
|---|---|---|---|
| | | | |

REVISIONS

ENVIRONMENTAL QUALITY MANAGEMENT, INC.
1800 CARILLON BLVD.
CINCINNATI, OHIO 45240
P (513)825-7500
F (513)825-7495

| | | |
|---|---|---|
| DRAWN | D.TOMO | 1/08/07 |
| CHECKED | J.WENTZ | |
| APPROVED | J.WENTZ | |
| SCALE | NONE | |

# INDIANA HARBOR CDF
## CONSTRUCTION AIR MOINTORING
## LOCATION 12-20-06

| ORIGINAL SIZE | PROJECT NO. | DWG NO. | REV |
|---|---|---|---|
| A | 030249 | SWGAM 12-20-06 | 0 |

# EQ SAMPLING EQUIPMENT CALIBRATION LOG

Site Name: Indiana Harbor - SW6 Rework  Project No.: 030249.0025

| DATE/TIME | INSTRUMENT (Mfg./Model) | CALIBRATED BY | STANDARD (concent.-units) | METER READING | COMMENTS/ AMBIENT CONDITIONS |
|---|---|---|---|---|---|
| 12/5/06 0805 | PDR-MIE 00000 | Ben Felty | Zero Cal | "Cal OK" | SW WIND |
| 12/5/06 0810 | PDR - 04789 Thermo | Ben Felty | Zero Cal | "Cal OK" | SW WIND |
| 12/6/06 1000 | PDR-MIE 00000 | Ben Felty | Zero Cal | "Cal OK" | SW WIND |
| 12/6/06 1002 | PDR - 04789 Thermo | Ben Felty | Zero Cal | "Cal OK" | SW WIND |
| 12/7/06 0930 | PDR-MIE 00000 | B. Felty | Zero Cal | "Cal OK" | NW WIND |
| 12/7/06 0945 | PDR - 04789 Thermo | B. Felty | Zero Cal | "Cal OK" | NW WIND |
| 12/11/06 1230 | PDR-MIE 00000 | B. Felty | Zero Cal | "Cal OK" | SOUTH WIND |
| 12/11/06 1235 | PDR - 04789 Thermo | B. Felty | Zero Cal | Cal OK" | SOUTH WIND |
| | | | | | |
| | | | | | |

Page 1 of 2

# EQ SAMPLING EQUIPMENT CALIBRATION LOG

Site Name: Indiana Harbor SWG Rework

Project No.: 030249.0025

| DATE/TIME | INSTRUMENT (Mfg./Model) | CALIBRATED BY | STANDARD (concent.-units) | METER READING | COMMENTS/ AMBIENT CONDITIONS |
|---|---|---|---|---|---|
| 12/12/06 1330 | PDR-MIE 00000 | B. Fitzing | Zero Cal | "Cal OK" | South Wind |
| 12/12/06 1334 | PDR-04789 Thermo | B. Fitzing | Zero Cal | "Cal OK" | South wind |
| 12/20/06 1005 | PDR-MIE 00000 | Ben Fitzing | Zero Cal | "Cal OK" | SW wind |
| 12/20/06 1010 | PDR-04789 Thermo | Ben Fitzing | Zero Cal | "Cal OK" | SW wind |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

December 2006
DAILY DUST CONTROL LOG
INDIANA HARBOR CDF
3500 Indianapolis Blvd., East Chicago, IN 46410

| DATE | SEGMENT CONTROLLED | TIME OF APPLICATION | METHOD OF APPLICATION (3) | VOLUME OF WATER (GAL) | CHEMICAL USED? | COMMENT |
|---|---|---|---|---|---|---|
| 12/01/06 | None | NA | NA | NA | NA | No dust control measures performed, negligible truck traffic or dust causing activities. |
| 12/02/06 | None | NA | NA | NA | NA | No dust control measures performed, negligible truck traffic or dust causing activities. |
| 12/03/06 | None | NA | NA | NA | NA | No dust control measures performed, negligible truck traffic or dust causing activities. |
| 12/04/06 | None | NA | NA | NA | NA | No dust control measures performed, negligible truck traffic or dust causing activities. |
| 12/05/06 | None | NA | NA | NA | NA | No dust control measures performed, negligible truck traffic or dust causing activities. |
| 12/06/06 | None | NA | NA | NA | NA | No dust control measures performed, negligible truck traffic or dust causing activities. |
| 12/07/06 | None | NA | NA | NA | NA | No dust control measures performed, negligible truck traffic or dust causing activities. |
| 12/08/06 | None | NA | NA | NA | NA | No dust control measures performed, negligible truck traffic or dust causing activities. |
| 12/09/06 | None | NA | NA | NA | NA | No dust control measures performed, negligible truck traffic or dust causing activities. |
| 12/10/06 | None | NA | NA | NA | NA | No dust control measures performed, negligible truck traffic or dust causing activities. |
| 12/11/06 | None | NA | NA | NA | NA | No dust control measures performed, negligible truck traffic or dust causing activities. |
| 12/12/06 | None | NA | NA | NA | NA | No dust control measures performed, negligible truck traffic or dust causing activities. |
| 12/13/06 | None | NA | NA | NA | NA | No dust control measures performed, negligible truck traffic or dust causing activities. |
| 12/14/06 | None | NA | NA | NA | NA | No dust control measures performed, negligible truck traffic or dust causing activities. |
| 12/15/06 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 12/16/06 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 12/17/06 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 12/18/06 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 12/19/06 | None | NA | NA | NA | NA | No dust control measures performed, negligible truck traffic or dust causing activities. |
| 12/20/06 | None | NA | NA | NA | NA | No dust control measures performed, negligible truck traffic or dust causing activities. |
| 12/21/06 | None | NA | NA | NA | NA | No dust control measures performed, negligible truck traffic or dust causing activities. |
| 12/22/06 | None | NA | NA | NA | NA | No dust control measures performed, negligible truck traffic or dust causing activities. |
| 12/23/06 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 12/24/06 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 12/25/06 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 12/26/06 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 12/27/06 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 12/28/06 | None | NA | NA | NA | NA | No dust control measures performed, negligible truck traffic or dust causing activities. |
| 12/29/06 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 12/30/06 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 12/31/06 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |

Notes:

1) If chemicals are used additional requirements are presented in the permit. Consult before use and collect the requisite data.

2) The width of the application is 8 ft unless noted in the comments column.

3) Method of application code. #1 Water Truck Spray Bar, #2 Spray Hose, #3 Other as noted in Comments

Air Monitoring Monthly Summary – January 2007

Site: Indiana Harbor & Canal Confined Disposal Facility
Location: 3500 Indianapolis Blvd., East Chicago, IN 46312
Project Name: Slurry Wall Gaps
Contract No.: WP912P6-06-C-0003

Prepared by: Ben Letany
Sampling preformed by: Ben Letany
Date: February 1, 2007

## I. Significant Findings / Site Activities

There was no slurry wall gaps construction work performed on site in January 2007. However, work was initiated for stone ballast support to the failing section of the steel sheet pile wall. On January 30th, 2007, Beemsterboer delivered 200 tons of slag and this material was used for the construction of access road.

On January 31st, 2007, Hanson Material Services delivered 1,200 tons of CA-1 Limestone to be placed in the canal. Approximately 500 tons of limestone was placed.

Extreme cold precluded the use of the PDR's for real-time particulate monitoring. Heavy truck traffic by other contractors in the vicinity of the EQ work should have had air monitoring performed.

## II. Report of / discussion of findings

No air monitoring activity took place due to low temperature.

## III. Problems encountered

No problems encountered

January 2007
DAILY DUST CONTROL LOG
INDIANA HARBOR CDF
3500 Indianapolis Blvd., East Chicago, IN 46410

| DATE | SEGMENT CONTROLLED | TIME OF APPLICATION | METHOD OF APPLICATION (3) | VOLUME OF WATER (GAL) | CHEMICAL USED? | COMMENT |
|---|---|---|---|---|---|---|
| 01/01/07 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 01/02/07 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 01/03/07 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 01/04/07 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 01/05/07 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 01/06/07 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 01/07/07 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 01/08/07 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 01/09/07 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 01/10/07 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 01/11/07 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 01/12/07 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 01/13/07 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 01/14/07 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 01/15/07 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 01/16/07 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 01/17/07 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 01/18/07 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 01/19/07 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 01/20/07 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 01/21/07 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 01/22/07 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 01/23/07 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 01/24/07 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 01/25/07 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 01/26/07 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 01/27/07 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 01/28/07 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 01/29/07 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 01/30/07 | None | NA | NA | NA | NA | No dust control measures performed, negligible dust and very cold conditions precluded |
| | | | | | | the use of the PDR real time monitoring equipment |
| 01/31/07 | None | NA | NA | NA | NA | No dust control measures performed, negligible dust and very cold conditions. |
| | | | | | | the use of the PDR real time monitoring equipment |

Notes:

1) If chemicals are used additional requirements are presented in the permit. Consult before use and collect the requisite data.

2) The width of the application is 8 ft unless noted in the comments column.

3) Method of application code. #1 Water Truck Spray Bar, #2 Spray Hose, #3 Other as noted in Comments

Air Monitoring Monthly Summary – February 2007

Site: Indiana Harbor & Canal Confined Disposal Facility
Location: 3500 Indianapolis Blvd., East Chicago, IN 46312
Project Name: Slurry Wall Gaps
Contract No.: WP912P6-06-C-0003

Prepared by: Ben Letany
Sampling preformed by: Ben Letany
Date: March 5, 2007

## I. Significant Findings / Site Activities

There was a continuation of stone delivery and installation to the failing section of the steel sheet pile wall in February 2007. Slurry wall gaps construction rework was also performed on site in the same month. On February 1st, 2nd, 3rd and 5th, 2007, Hanson Material Services delivered CA-1 Limestone to be placed in the canal. On February 6th, 2007 stone placement in the canal was completed.

The rework of slurry wall gap construction and verification boring was performed and completed on February 20th, 2007

Extreme cold precluded the use of the PDR's for real-time particulate monitoring. Heavy truck traffic by other contractors in the vicinity of the EQ work should have had air monitoring performed.

## II. Report of / discussion of findings

No air monitoring activity took place due to low temperature.

## III. Problems encountered

No problems encountered

February 2007

DAILY DUST CONTROL LOG

INDIANA HARBOR CDF

3500 Indianapolis Blvd., East Chicago, IN 46410

| DATE | SEGMENT CONTROLLED | TIME OF APPLICATION | METHOD OF APPLICATION (3) | VOLUME OF WATER (GAL) | CHEMICAL USED? | COMMENT |
|---|---|---|---|---|---|---|
| 02/01/07 | None | NA | NA | NA | NA | No dust control measures performed, negligible dust and very cold conditions precluded |
| | | | | | | the use of the PDR real time monitoring equipment |
| 02/02/07 | None | NA | NA | NA | NA | No dust control measures performed, negligible dust and very cold conditions precluded |
| | | | | | | the use of the PDR real time monitoring equipment |
| 02/03/07 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 02/04/07 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 02/05/07 | None | NA | NA | NA | NA | No dust control measures performed, negligible dust and very cold conditions precluded |
| | | | | | | the use of the PDR real time monitoring equipment |
| 02/06/07 | None | NA | NA | NA | NA | No dust control measures performed, negligible dust and very cold conditions precluded |
| | | | | | | the use of the PDR real time monitoring equipment |
| 02/07/07 | None | NA | NA | NA | NA | No dust control measures performed, negligible dust and very cold conditions precluded |
| | | | | | | the use of the PDR real time monitoring equipment |
| 02/08/07 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 02/09/07 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 02/10/07 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 02/11/07 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 02/12/07 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 02/13/07 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 02/14/07 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 02/15/07 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 02/16/07 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 02/17/07 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 02/18/07 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 02/19/07 | None | NA | NA | NA | NA | No dust control measures performed, negligible dust and very cold conditions precluded |
| | | | | | | the use of the PDR real time monitoring equipment |
| 02/20/07 | None | NA | NA | NA | NA | No dust control measures performed, negligible dust and very cold conditions precluded |
| | | | | | | the use of the PDR real time monitoring equipment |
| 02/21/07 | None | NA | NA | NA | NA | No dust control measures performed, negligible dust and very cold conditions precluded |
| | | | | | | the use of the PDR real time monitoring equipment |
| 02/22/07 | None | NA | NA | NA | NA | No dust control measures performed, negligible dust and very cold conditions precluded |
| | | | | | | the use of the PDR real time monitoring equipment |
| 02/23/07 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 02/24/07 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 02/25/07 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 02/26/07 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 02/27/07 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 02/28/07 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
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Notes:

1) If chemicals are used additional requirements are presented in the permit. Consult before use and collect the requisite data.

2) The width of the application is 8 ft unless noted in the comments column.

3) Method of application code. #1 Water Truck Spray Bar, #2 Spray Hose, #3 Other as noted in Comments

Air Monitoring Monthly Summary – March 2007

Site: Indiana Harbor & Canal Confined Disposal Facility
Location: 3500 Indianapolis Blvd., East Chicago, IN 46312
Project Name: Slurry Wall Gaps
Contract No.: WP912P6-06-C-0003

Prepared by: Ben Letany
Sampling preformed by: Ben Letany
Date: April 2, 2007

## I. Significant Findings / Site Activities

No slurry wall gaps construction work was performed on site in March 2007. The only site activity that was performed during the month of March was surveying of the ballast stone installed in February 2007 at the failing section of the steel sheet pile wall. As a result, no air monitoring was performed.

## II. Report of / discussion of findings

No air monitoring activity was performed since no dust generating activities were performed.

## III. Problems encountered

No problems encountered

March, 2007

DAILY DUST CONTROL LOG

INDIANA HARBOR CDF

3500 Indianapolis Blvd., East Chicago, IN 46410

| DATE | SEGMENT CONTROLLED | TIME OF APPLICATION | METHOD OF APPLICATION (3) | VOLUME OF WATER (GAL) | CHEMICAL USED? | COMMENT |
|---|---|---|---|---|---|---|
| 03/01/07 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 03/02/07 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 03/03/07 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 03/04/07 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 03/05/07 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 03/06/07 | None | NA | NA | NA | NA | No dust control measures performed, no dust generating activity |
| 03/07/07 | None | NA | NA | NA | NA | No dust control measures performed, no dust generating activity |
| 03/08/07 | None | NA | NA | NA | NA | No dust control measures performed, no dust generating activity |
| 03/09/07 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 03/10/07 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 03/11/07 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 03/12/07 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 03/13/07 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 03/14/07 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 03/15/07 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 03/16/07 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 03/17/07 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 03/18/07 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 03/19/07 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 03/20/07 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 03/21/07 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 03/22/07 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 03/23/07 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 03/24/07 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 03/25/07 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 03/26/07 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 03/27/07 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 03/28/07 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 03/29/07 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 03/30/07 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 03/31/07 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| | | | | | | |
| | | | | | | |

Notes:

1) If chemicals are used additional requirements are presented in the permit. Consult before use and collect the requisite data.

2) The width of the application is 8 ft unless noted in the comments column.

3) Method of application code. #1 Water Truck Spray Bar, #2 Spray Hose, #3 Other as noted in Comments

Air Monitoring Monthly Summary – April, 2007

Site: Indiana Harbor & Canal Confined Disposal Facility
Location: 3500 Indianapolis Blvd., East Chicago, IN 46312
Project Name: Slurry Wall Gaps
Contract No.: WP912P6-06-C-0003

Prepared by: Ben Letany
Sampling preformed by: Ben Letany
Date: May 3, 2007

## I. Significant Findings / Site Activities

No slurry wall gaps construction work was performed on site in April 2007. The only site activity that was performed during the month of April was the survey of the slurry wall.

## II. Report of / discussion of findings

No air monitoring activity was performed since no dust generating activities were performed.

## III. Problems encountered

No problems encountered

**April 2007**
**DAILY DUST CONTROL LOG**
**INDIANA HARBOR CDF**
**3500 Indianapolis Blvd., East Chicago, IN 46410**

| DATE | SEGMENT CONTROLLED | TIME OF APPLICATION | METHOD OF APPLICATION (3) | VOLUME OF WATER (GAL) | CHEMICAL USED? | COMMENT |
|---|---|---|---|---|---|---|
| 04/01/07 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 04/02/07 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 04/03/07 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 04/04/07 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 04/05/07 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 04/06/07 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 04/07/07 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 04/08/07 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 04/09/07 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 04/10/07 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 04/11/07 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 04/12/07 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 04/13/07 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 04/14/07 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 04/15/07 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 04/16/07 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 04/17/07 | None | NA | NA | NA | NA | Surveying only. No dust control measures performed, no heavy equipment or truck traffic. |
| 04/18/07 | None | NA | NA | NA | NA | Surveying only. No dust control measures performed, no heavy equipment or truck traffic. |
| 04/19/07 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 04/20/07 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 04/21/07 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 04/22/07 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 04/23/07 | None | NA | NA | NA | NA | Surveying only. No dust control measures performed, no heavy equipment or truck traffic. |
| 04/24/07 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 04/25/07 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 04/26/07 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 04/27/07 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 04/28/07 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 04/29/07 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| 04/30/07 | None | NA | NA | NA | NA | No dust control measures performed, non work day. |
| | | | | | | |

Notes:

1) If chemicals are used additional requirements are presented in the permit. Consult before use and collect the requisite data.

2) The width of the application is 8 ft unless noted in the comments column.

3) Method of application code. #1 Water Truck Spray Bar, #2 Spray Hose, #3 Other as noted in Comments

# Report of
# TSCA Sediment Volumes
# Indiana Harbor and Canal
# East Chicago, Indiana

PREPARED BY:

U.S. ARMY CORPS OF ENGINEERS, CHICAGO DISTRICT
111 NORTH CANAL STREET, SUITE 600
CHICAGO, ILLINOIS 60606-7206

October 1, 2007

# Report of TSCA Sediment Volumes
## Indiana Harbor and Canal
## East Chicago, Indiana

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Attachment 2: Final Report of Collection and Analysis of Sediment Samples at the Indiana Harbor Canal, East Chicago, Indiana
Attachment 3: TSCA Sediment Volume Calculations

# 1 Problem Identification

## *1.1 Indiana Harbor and Canal Site Description and Background*

Indiana Harbor and Canal (IHC) is an authorized Federal navigation project, authorized under the River and Harbor Acts of 1910. Indiana Harbor is located in East Chicago, Lake County, Indiana, as shown on Figure 1. Indiana Harbor is located on the southwest shore of Lake Michigan, 4-1/2 miles east of the Indiana-Illinois State line and 17 miles from downtown Chicago. Indiana Harbor has an outer harbor protected by breakwaters, an entrance channel, and an inner harbor (see Figure 2). The inner harbor area consists of an anchorage and maneuvering basin and a portion of the Indiana Harbor Canal extending to the E.J. & E. Railway Bridge. The Indiana Harbor Canal extends southwest of the inner harbor from the lakeward side of the E. J. & E. Railway Bridge to the Forks, a distance of 7,400 feet. Near the Forks there is a small turning basin located on the southeast side of the canal about 600 feet lakeward of Canal Street. From the Forks, the Lake George Branch extends west for a distance of 6,800 feet and the Calumet River Branch extends south for about 2 miles where it joins the Grand Calumet River (GCR).

The bottom sediments in the IHC are contaminated and not suitable for open water disposal in Lake Michigan, nor are they suitable for unconfined upland disposal or beneficial use. The sediments in the IHC system have not been dredged since the 1970s because an environmentally acceptable plan for disposal of the heavily contaminated sediment was not available. In 1975, the Chicago District began to formulate an economically feasible and environmentally acceptable plan for disposal of dredged materials from the Indiana Harbor and Canal (IHC). The Final Comprehensive Management Plan (CMP) Report was completed in January 1999. The report consists of a main Feasibility Report, a Final Environmental Impact Statement (FEIS) and supporting appendices. The recommended project consists of dredging the contaminated sediment from within and adjacent to the Federal navigation project and disposing of the dredged material in a Confined Disposal Facility (CDF) at the existing Energy Cooperative Industries (ECI) site.

Results of previous sediment sampling conducted in the IHC suggests that there are two areas in the Federal portions of the IHC that have noted elevated concentrations of PCBs in the sediment above 50 mg/kg. Disposal of sediments with total PCB concentrations greater than 50 ppm may be regulated by the Toxic Substances Control Act (TSCA) if removed as part of the Federal navigation project. The estimated volume of sediment that may be regulated for disposal under TSCA in the CMP is 70,000 cubic yards; this gross assessment assumed that all the sediment removed from the two areas of concern that had noted elevated levels of PCBs would be regulated for disposal under TSCA. For the purposes of design and permitting construction of the CDF on the ECI site, the actual volumes of TSCA regulated sediments in the Federal channel must be determined.

## *1.2 Previous Sediment Sampling*

The sediments from the Grand Calumet River and Indiana Harbor and Canal (GCR/IHC) have been sampled by a number of agencies and institutions for varying purposes. The U.S. Environmental Protection Agency (USEPA) and U.S. Army Corps of Engineers (USACE) have sampled sediments from the Federal navigation channel in order to determine the appropriate disposal methods for dredged materials. The USACE, USEPA, Indiana Department of Environmental Management (IDEM) and a number of researchers from leading universities have also sampled the sediments from the GCR/IHC. For a more detailed discussion of sediment quality, see the Final CMP, Appendix E, dated January 1999. The concentrations of Polychlorinated Biphenyls (PCBs) found in the sediments in the IHC resulting from various studies are included in Attachment 1. Below is a summary of the various sampling events and results.

### 1.2.1 USEPA 1977

In 1977, the USEPA collected 13 grab samples from the Indiana Harbor and Canal. Samples were evaluated using physical, bulk chemical, and standard elutriate analyses. Sampling was conducted to determine the presence and distribution of contamination. The sediments collected from the canal and inner harbor were dark brown or black, oily silt, sediments in the approach channel were brown or gray sand and gravel. Most of the sediments in the harbor and canal were predominantly silt and clay. The sediments from the center of the canal, the eastward end of the approach channel and near the harbor were sandier in composition. Chemically, the sediments were found to contain high levels of metals (arsenic, cadmium, copper, iron, lead, magnesium, manganese, nickel and zinc), organics, nitrogen, phosphorous, volatile solids and PCBs.

### 1.2.2 USACE 1979

The USACE collected core samples at thirteen locations in the Indiana Harbor and Canal in 1979. The sampling locations were the same used by USEPA in 1977. The purpose of this sampling program was to determine the distribution, both laterally and vertically, of sediment contamination. Three-foot sections of each core comprised sub samples used for physical, bulk chemical and standard elutriate analyses of the sediments. The results of the sediment analyses concurred with the USEPA's 1977 sampling and testing. However, two sites were found to contain PCB concentrations in excess of 50 ppm.

### 1.2.3 USACE 1983

In 1983, two sediment-sampling investigations were completed. Twenty-seven core samples were taken for PCB and EP-Toxicity analyses by an engineering consultant contracted by the USACE. Sub-samples from each core were analyzed to develop the vertical distribution of PCB contamination, in terms of above and below project depth. The results of the PCB testing corroborated the 1979 PCB analysis. Elevated levels of PCBs were limited to two specific areas of the IHC and levels exceeding 50 ppm were only found in the deeper sub-samples. In general, the PCB concentration increased with increasing depth.

### 1.2.4 USACE 1984

In 1984, the Detroit District of the USACE collected 18 cores samples for an investigation on the feasibility of deepening selected Great Lakes Harbors. Sampling was limited to the harbor and approach channel. Physical and bulk chemical analyses were performed, including a full priority pollutant analysis of a portion of the samples.

### 1.2.5 USACE 1987

In 1987, the USACE contracted the Metropolitan Water Reclamation District of Greater Chicago to conduct a sediment sampling program designed to investigate the dispersal and deposition of sediments discharged from the Grand Calumet River/IHC to Lake Michigan. Grab samples were collected from the canal, harbor, and Lake Michigan up to 5 miles lakeward from the harbor mouth. Sediments were analyzed for bulk chemical composition of selected parameters, including PCBs.

### 1.2.6 USACE 1988

In 1988, the USACE conducted two separate sediment sampling investigations. USACE contracted the Illinois History Survey and the Illinois State Geological Survey in the first investigation to collect grab samples from the IHC and adjacent Lake Michigan for bulk analysis, survey of benthos, and for a series of toxicity screening test along with a biological survey and tissue-burden testing of aquatic organisms. USACE also contracted the Indiana University – Northwest to collect core samples and one large composite sample from the IHC. A total of 31 cores samples were collected from areas of the IHC that had limited bulk chemical data. The results showed levels of metals, nutrients, and oil & grease contamination generally comparable with other areas of the IHC. However, the levels of PCBs and PAHs were considerably lower than in previous sampling events.

### 1.2.7 USEPA 1989

EPA collected seven bulk sediment grab samples from Indiana Harbor in August 1989 and thirty-seven bulk core samples from Indiana Harbor in November 1990; results of the investigations are summarized in the July 1996 Assessment and Remediation of Contaminated Sediments (ARCS) report. Organic chemicals were not analyzed as part of the November 1990 survey; however, seven surficial bulk sediment samples were collected and analyzed for total PCBS in the August 1989 survey. Concentrations of total PCBs in the sediment range from 4 mg/kg to 43 mg/kg. The highest concentration of PCBs was found in the surficial sample collected in the forks.

### 1.2.8 USACE 1993

As part of an Interagency Agreement with the U.S. Environmental Protection Agency, Region V, the U.S. Army Corps of Engineers, Chicago District performed sediment depth probing and sediment sampling in the Indiana Harbor and Canal in June of 1993. This

investigation was performed in support of the Remedial Action Plan for the Grand Calumet River, with two primary objectives, one of which was to determine the disposal options for material that would be excavated if a sediment trap were constructed in the Calumet River Branch. Sampling of sediment was completed at four locations in the Calumet River Branch. Samples were segmented in four-foot intervals from -22 lwd to till. Eighteen samples were analyzed for RCRA and TSCA parameters. Total PCB concentrations in the samples ranged from non-detectable to 99 mg/kg.

#### 1.2.9 USACE 2003

In July 2003, the USACE contracted for the collection of water and sediment samples from the Indiana Harbor and Canal (IHC). Five locations were sampled in the canal system (two in the anchorage and maneuvering basin, two in the canal, and one in the Calumet River branch) with an excavator from a barge. Sediment was placed into drums, subsampled, and analyzed for general chemistry, metals, PAHs, PCBs, and pesticides for three of five locations. An additional composite sample (from sediment obtained from the five locations) was analyzed. Results were used for air emission testing and study.

In September 2003, the USACE contracted for the collection of sediment samples in the Lake George Branch of the IHC, south of the ECI site, along the existing steel sheet pile wall. Sampling was conducted to determine the viable disposal alternatives for material being removed for installation of the Waterloo Barrier. Five sediment borings were advanced using a hollow-stem drill auger. The borings were continuous samples in 2-foot intervals. Samples were analyzed for TCLP VOCs, TCLP SVOCs, TCLP RCRA metals, TCLP pesticide/herbicides, flashpoint, reactivity, and total PCBs.

#### 1.2.10 USACE 2004

USACE collected sediment samples in the Indiana Harbor and Ship Canal (IHC) from September 13 through September 18, 2004. The collected sediment was used in a wastewater treatment treatability study conducted by Montgomery Watson Harza (MWH). The sediment was collected using a vibracorer onboard the U.S. Environmental Protection Agency (USEPA) sampling vessel, the R/V Mudpuppy. The sediment was collected from four sampling locations in the IHC (two samples within the anchorage and maneuvering basin, one sample in the canal main stem near river station 70, and one sample in the Calumet River Branch). MWH composited the sediments collected and performed one sample analysis (general chemistry, metals, PCBs, pesticides, PCBs, VOCs, SVOCs, and PAHs).

#### 1.2.11 USACE 2005

USACE and USEPA collected sediment samples in the previously defined "presumptively hazardous" area using the R/V Mudpuppy in June 2005. Sediment cores were advanced using a vibracore sampler to the navigation depth. Samples were placed in 5-gallon buckets and were composited further and analyzed by ERDC. The sediment samples are being used for the activated carbon adsorption study being conducted by the Corps Engineering Research and Development Center (ERDC).

### *1.3 TSCA Areas of Concern – Summary of Past Findings*

Review of PCB data contained in Attachment 1 suggests that sediments may contain elevated levels of total PCBs greater than 50 mg/kg in a portion of the Calumet River Branch (Reach 13) and in a portion of the Indiana Harbor Canal (Reach 6). Figures 3 and 4 indicate IHC dredging reaches. Samples collected at river stations 33, 114, and 120 indicate that PCB concentrations in sediments found in the Federal channel in these locations may exceed 50 mg/kg, see Table 1. The limits of the Federal channel are defined as the project depth plus two additional feet for allowable overdredging; USACE is authorized to remove sediments to -24 Low Water Datum (LWD) in Reaches 6, 7, and 13 (project depth = -22 LWD) and to -29 LWD in Reach 5 (project depth = -27 LWD).

*Table 1: TSCA Level PCB Exceedances in Sediment in Federal Channel*

| Event ID | Sample date | Sediment Core Number | Location | Sample ID | Concentration Total PCBs (mg/kg) | Sample depth (LWD) |
|---|---|---|---|---|---|---|
| IH-79.1 | 09-Nov-79 | 1 | Reach 13 – River Station 33 | 1-9-12<br>1-13-16 | 58.7<br>68.0 | -19.3 to -22.3<br>-22.3 to -25.3 |
| IH-83.1 | 18-Aug-83 | IH83-8 | Reach 6 – River Station 114 | IH83-8.2<br>IH83-8.3 | 69.9<br>115.0 | -21.9' to -23.9'<br>-23.9' to -25.0' |
| IH-79.1 | 13-Nov-79 | CIH-6-79 | Reach 6 – River Station 120 | 6-5-8 | 89.2 | -23.7' to -26.7' |

Review of PCB data contained in Attachment 1 suggests that there are sediments below the Federal channel that may contain elevated levels of total PCBs greater than 50 mg/kg in a portion of the Calumet River Branch (Reach 13). Samples collected at river stations 33, 36 and 41 indicate that PCB concentrations in sediments found below the Federal channel in these locations may exceed 50 mg/kg, see Table 2.

*Table 2: TSCA Level PCB Exceedances in Sediment below the Federal Channel*

| Event ID | Sample date | Sediment Core Number | River Station | Sample ID | Concentration Total PCBs (mg/kg) | Sample depth (LWD) |
|---|---|---|---|---|---|---|
| IH-79.1 | 09-Nov-79 | 1 | Reach 13 – River Station 33 | 1-17-21 | 53.9 | -25.3 to -28.8 |
| IH-93.1 | 08-Nov-93 | IHST-93-2 | Reach 13 – River Station 36 | IHST-93-2-3 | 51.2 | -28' to -32' |
| | | | | IHST-93-2-4 | 63.8 | -32' to -36' |
| IH-93.1 | 09-Nov-93 | IHST-93-3 | Reach 13 – River Station 41 | IHST-93-3-2 | 50.7 | -24' to -28' |
| | | | | IHST-93-3-3 | 99.9 | -28' to -32' |

Figures 5 and 6 note sediment sampling locations in the IHC system where PCB concentrations in sediments may exceed 50 mg/kg, as presented in Tables 1 and 2. Locations indicated are approximate and are based on assumed river stationing reported.

## 2 2006 TSCA Sediment Sampling

Matrix Environmental, Inc. (Matrix) was contracted under a USACE Indefinite Delivery Contract to perform the Collection and Analysis of Sediment at the Indiana Harbor and Canal (IHC) in East Chicago, Indiana. The field investigation was conducted from November 27, 2006 through December 14, 2006. Objectives of the investigation were:

- To determine the lateral and vertical extent of the concentrations of PCBs in the sediments within the two areas of the Federal portions of the IHC that have noted elevated levels of PCBs in past sampling events.
- To determine the volume of dredged material regulated under TSCA for consideration in the confined disposal facility design.
- To determine the chemical concentrations of PCBs in sediments that may be exposed during post-dredging in the two portions of the IHC and that have noted elevated levels of PCBs in past sampling events.

The final Sediment Sampling and Analysis Report is included as Attachment 2.

### *2.1 Sample Collection*

Sediment cores were driven using a Diedrich D-50 drill rig; drilling services were provided by Precon Drilling, Inc. located in Melrose Park, Illinois. Sediment samples were collected on a continuous basis at 2 foot intervals using an Osterberg piston sampler. Each sample had a unique identification number as follows:

"Indiana Harbor 2006 – Sample Station – Sample Location – Sampling Interval"

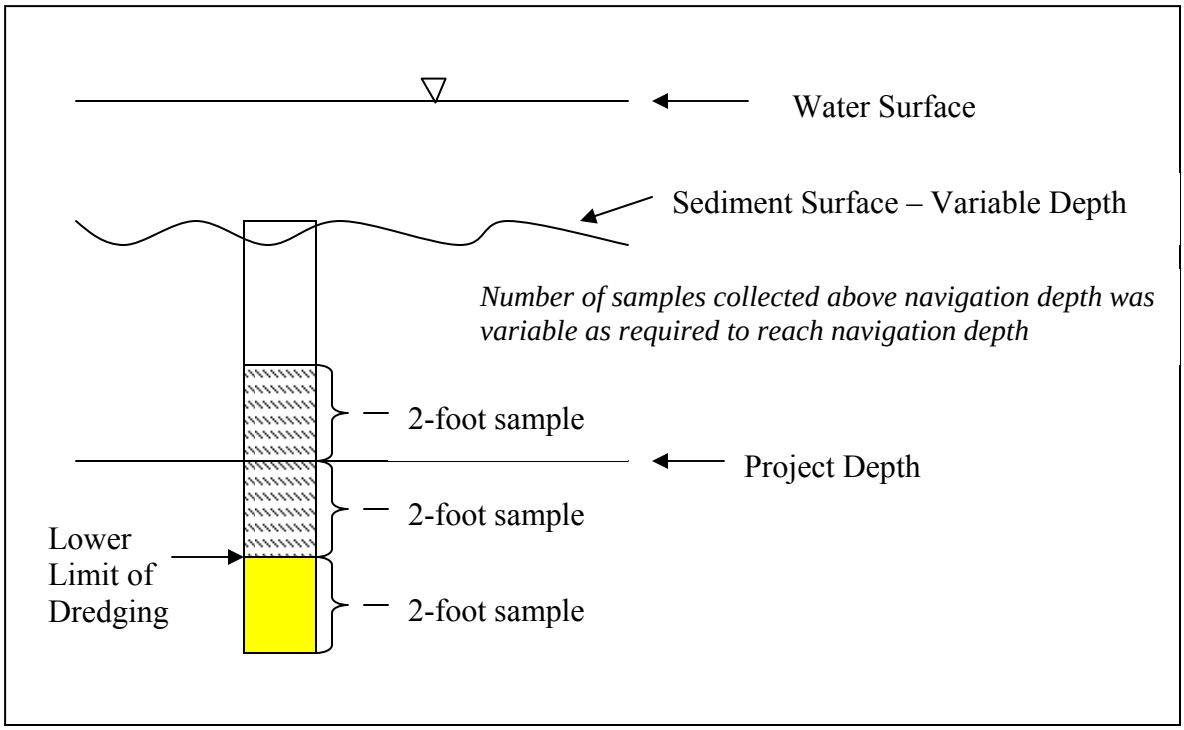
Sample stationing is given in river station, sample locations are noted as W, E and M for samples collected on the west bank, east bank, and mid channel, respectively, and sampling interval is given in LWD. For example, a sample with the designation of "IH2006-38-W-22-24" was collected at Indiana Harbor in 2006 on the west bank at river station 38 between -22 and -24 LWD. River stations are shown on Figures 7 and 8.

### 2.1.1 Management Unit One – Reach 13

Management Unit One is located in the Calumet River Branch, Reach 13, just south of the Forks. The top of the sediment surface in the Calumet River Branch varies between -4 LWD and -30 LWD; the channel is deepest near the forks. Sediment accumulation increases closer to the Columbus Avenue Bridge, with water levels approaching 3 - 4 feet in this area.

A total of thirty-three (33) borings were advanced in Management Unit One between river stations 30 and 50 (see Figure 9). The sediment was collected using an Osterberg Piston Sampler at 2-foot intervals from the top of the sediment to a depth of approximately -26 LWD. Borings were advanced to -26 LWD to characterize sediment within the Federal project depth, -22 LWD, plus two additional feet for overdredge, plus two additional feet to characterize what will remain in the channel post-dredging. See schematic 1 for boring pictorial. At locations 30-E, 42-E and 44-E split spoon samples replaced the Osterberg piston sampler due to difficulty in recovery caused by high clay content in samples and/or large debris located at the sediment surface. Borings advanced on the outer banks of the Federal channel at river station 42 were advanced to approximately -36 LWD to characterize the concentration of PCBs in sediments below the federally authorized channel.

At Management Unit One; two hundred and thirty two (232) investigative, twelve (12) duplicate, twenty-four (24) MS/MSDS, twelve (12) rinsate, and twelve (12) trip blank samples were collected.




*Schematic 1*

### 2.1.2 Management Unit Two – Reaches 5, 6, and 7

Management Unit Two is located in the Indiana Harbor Canal between the E.J. & E. Railway Bridge and the next landward bridge to the southwest, encompassing parts or all of Reaches 5, 6, and 7. The top of the sediment surface in the study area varies between -14 LWD and -37 LWD; the canal is deepest mid-channel with sediment accumulation varying along the outer edges of the Federal channel, near the canal banks.

A total of thirty-five (35) borings were drilled in Management Unit Two (see Figure 10). At boring locations situated between stations 104 to 124, sediment samples were collected on a continuous basis from the top of the sediment to a depth of approximately -26 LWD. Borings advanced on the outer banks of the Federal channel at river station 114 were advanced to approximately -33 LWD to characterize the concentration of PCBs in sediments below the federally authorized channel. At each boring location situated between stations 126 to 128 sediment samples were collected on a continuous basis from the top of the sediment to a depth of -31 LWD. At locations 106-E, 106-M, 108-W, 108-M, 110-E, 110-M, 114-M, 122-M, 124-M, and 126-M split spoon samples replaced the Osterberg piston sampler due to difficulty in recovery caused by high clay content in sample and/or large debris located at the sediment surface.

At Management Unit two ninety two (92) investigative, five (5) duplicate, twelve (12) MS/MSDS, five (5) rinsate, and five (5) trip blank samples were collected.

### *2.2 Analytical Results*

All sediment samples were analyzed for total PCBs using SW846 Method 8082 by Severn Trent Laboratories in Chicago, Illinois. All field and QA/QC data were reviewed for accuracy and completeness using the National Functional Guidelines for Organic Review as a guideline (see Attachment 2). Analytical results are included in Table 3.

*Table 3: 2006 Sediment Sampling Results*

| Sampling Location | Units | Total PCBs | |
|---|---|---|---|
| IH2006-30-E-6-8 | mg/Kg | 10.00 | |
| IH2006-30-E-8-10 | mg/Kg | 9.40 | |
| IH2006-30-E-10-12 | mg/Kg | 7.90 | |
| IH2006-30-E-12-14 | mg/Kg | 9.70 | |
| IH2006-30-E-14-16 | mg/Kg | 12.00 | |
| IH2006-30-E-16-18 | mg/Kg | 17.00 | |
| IH2006-30-E-18-20 | mg/Kg | 16.00 | |
| IH2006-30-E-20-22 | mg/Kg | 17.00 | |
| IH2006-30-E-22-24 | mg/Kg | 17.00 | |
| IH2006-30-E-24-26 | mg/Kg | 22.00 | |
| IH2006-30-M-9-12 | mg/Kg | 11.00 | J |
| IH2006-30-M-12-14 | mg/Kg | 7.20 | J |
| IH2006-30-M-14-16 | mg/Kg | 13.00 | J |
| IH2006-30-M-16-18 | mg/Kg | 12.00 | J |
| IH2006-30-M-18-20 | mg/Kg | 17.00 | J |
| IH2006-30-M-18-20 DUP | mg/Kg | 15.00 | J |
| IH2006-30-M-20-22 | mg/Kg | 11.00 | J |
| IH2006-30-M-22-24 | mg/Kg | 21.00 | J |
| IH2006-30-M-24-26 | mg/Kg | 17.00 | J |
| IH2006-30-W-4-6 | mg/Kg | 5.90 | J |
| IH2006-30-W-6-8 | mg/Kg | 8.00 | |
| IH2006-30-W-8-10 | mg/Kg | 12.00 | |
| IH2006-30-W-10-12 | mg/Kg | 16.00 | |
| IH2006-30-W-12-14 | mg/Kg | 12.00 | |
| IH2006-30-W-14-16 | mg/Kg | 14.00 | |
| IH2006-30-W-16-18 | mg/Kg | 15.00 | |
| IH2006-30-W-18-20 | mg/Kg | 17.00 | |
| IH2006-30-W-20-22 | mg/Kg | 11.00 | |
| IH2006-30-W-22-24 | mg/Kg | 19.00 | |
| IH2006-30-W-24-26 | mg/Kg | 14.00 | |
| | | | |
| IH2006-32-E-6-8 | mg/Kg | 9.40 | |
| IH2006-32-E-8-10 | mg/Kg | 9.60 | |
| IH2006-32-E-10-12 | mg/Kg | 12.00 | |
| IH2006-32-E-12-14 | mg/Kg | 14.00 | |

| | | | |
|---|---|---|---|
| IH2006-32-E-12-14-DUP | mg/Kg | 10.00 | |
| IH2006-32-E-14-16 | mg/Kg | 11.00 | |
| IH2006-32-E-16-18 | mg/Kg | 39.00 | |
| IH2006-32-E-18-20 | mg/Kg | 7.30 | |
| IH2006-32-E-20-22 | mg/Kg | 0.43 | |
| IH2006-32-E-22-24 | mg/Kg | 0.038 | |
| IH2006-32-E-24-26 | mg/Kg | 0.012 | J |
| IH2006-32-M-6-8 | mg/Kg | 7.70 | |
| IH2006-32-M-8-10 | mg/Kg | 8.40 | |
| IH2006-32-M-10-12 | mg/Kg | 9.60 | |
| IH2006-32-M-12-14 | mg/Kg | 12.00 | |
| IH2006-32-M-14-16 | mg/Kg | 14.00 | |
| IH2006-32-M-16-18 | mg/Kg | 11.00 | |
| IH2006-32-M-18-20 | mg/Kg | 16.00 | |
| IH2006-32-M-20-22 | mg/Kg | 23.00 | |
| IH2006-32-M-22-24 | mg/Kg | 23.00 | |
| IH2006-32-M-24-26 | mg/Kg | 14.00 | |
| IH2006-32-W-5-6 | mg/Kg | 8.50 | J |
| IH2006-32-W-6-8 | mg/Kg | 7.90 | J |
| IH2006-32-W-8-10 | mg/Kg | 7.80 | J |
| IH2006-32-W-10-12 | mg/Kg | 7.50 | J |
| IH2006-32-W-12-14 | mg/Kg | 14.00 | J |
| IH2006-32-W-14-16 | mg/Kg | 12.00 | J |
| IH2006-32-W-16-18 | mg/Kg | 9.50 | J |
| IH2006-32-W-18-20 | mg/Kg | 13.00 | J |
| IH2006-32-W-20-22 | mg/Kg | 15.00 | J |
| IH2006-32-W-22-24 | mg/Kg | 17.00 | J |
| IH2006-32-W-24-26 | mg/Kg | 16.00 | J |
| | | | |
| 1H2006-34-E-5-8 | mg/Kg | 8.10 | |
| 1H2006-34-E-8-10 | mg/Kg | 7.40 | |
| 1H2006-34-E-10-12 | mg/Kg | 7.20 | |
| 1H2006-34-E-12-14 | mg/Kg | 13.00 | |
| 1H2006-34-E-14-16 | mg/Kg | 12.00 | |
| 1H2006-34-E-16-18 | mg/Kg | 15.00 | |
| 1H2006-34-E-16-18DUP | mg/Kg | 16.00 | |
| 1H2006-34-E-18-20 | mg/Kg | 15.00 | |
| 1H2006-34-E-20-22 | mg/Kg | 16.00 | |
| 1H2006-34-E-22-24 | mg/Kg | 25.00 | |
| 1H2006-34-E-24-26 | mg/Kg | 8.70 | |
| 1H2006-34-M-4.5-6 | mg/Kg | 11.00 | J |
| 1H2006-34-M-6-8 | mg/Kg | 11.00 | J |
| 1H2006-34-M-8-10 | mg/Kg | 13.00 | J |
| 1H2006-34-M-10-12 | mg/Kg | 18.00 | J |

| | | | |
|---|---|---|---|
| 1H2006-34-M-12-14 | mg/Kg | 16.00 | J |
| 1H2006-34-M-14-16 | mg/Kg | 15.00 | |
| 1H2006-34-M-16-18 | mg/Kg | 22.00 | J |
| 1H2006-34-M-18-20 | mg/Kg | 19.00 | J |
| 1H2006-34-M-20-22 | mg/Kg | 34.00 | J |
| 1H2006-34-M-22-24 | mg/Kg | 57.00 | J |
| 1H2006-34-M-22-24DUP | mg/Kg | 38.00 | J |
| 1H2006-34-M-24-26 | mg/Kg | 48.00 | |
| 1H2006-34-W-5-8 | mg/Kg | 10.00 | J |
| 1H2006-34-W-8-10 | mg/Kg | 9.90 | J |
| 1H2006-34-W-10-12 | mg/Kg | 11.00 | J |
| 1H2006-34-W-12-14 | mg/Kg | 12.00 | J |
| 1H2006-34-W-14-16 | mg/Kg | 13.00 | J |
| 1H2006-34-W-16-18 | mg/Kg | 15.00 | J |
| 1H2006-34-W-18-20 | mg/Kg | 21.00 | J |
| 1H2006-34-W-20-22 | mg/Kg | 17.00 | J |
| 1H2006-34-W-22-24 | mg/Kg | 15.00 | J |
| 1H2006-34-W-24-26 | mg/Kg | 52.00 | J |
| | | | |
| IH2006-36-E-4-6 | mg/Kg | 8.30 | |
| IH2006-36-E-6-8 | mg/Kg | 10.00 | |
| IH2006-36-E-8-10 | mg/Kg | 11.00 | |
| IH2006-36-E-10-12 | mg/Kg | 15.00 | |
| IH2006-36-E-12-14 | mg/Kg | 14.00 | |
| IH2006-36-E-14-16 | mg/Kg | 13.00 | |
| IH2006-36-E-16-18 | mg/Kg | 14.00 | |
| IH2006-36-E-18-20 | mg/Kg | 16.00 | |
| IH2006-36-E-20-22 | mg/Kg | 16.00 | |
| IH2006-36-E-22-24 | mg/Kg | 51.00 | |
| IH2006-36-E-24-26 | mg/Kg | 59.00 | |
| IH2006-36-M-8-10 | mg/Kg | 7.30 | |
| IH2006-36-M-10-12 | mg/Kg | 8.10 | |
| IH2006-36-M-12-14 | mg/Kg | 16.00 | |
| IH2006-36-M-14-16 | mg/Kg | 18.00 | |
| IH2006-36-M-16-18 | mg/Kg | 11.00 | |
| IH2006-36-M-16-18DUP | mg/Kg | 11.00 | |
| IH2006-36-M-18-20 | mg/Kg | 11.00 | |
| IH2006-36-M-20-22 | mg/Kg | 13.00 | |
| IH2006-36-M-22-24 | mg/Kg | 11.00 | |
| IH2006-36-M-24-26 | mg/Kg | 24.00 | |
| IH2006-36-W-8-10 | mg/Kg | 7.50 | |
| IH2006-36-W-10-12 | mg/Kg | 8.20 | |
| IH2006-36-W-12-14 | mg/Kg | 7.20 | |
| IH2006-36-W-14-16 | mg/Kg | 12.00 | |

| | | | |
|---|---|---|---|
| IH2006-36-W-16-18 | mg/Kg | 12.00 | |
| IH2006-36-W-18-20 | mg/Kg | 11.00 | |
| IH2006-36-W-20-22 | mg/Kg | 14.00 | |
| IH2006-36-W-22-24 | mg/Kg | 13.00 | |
| IH2006-36-W-24-26 | mg/Kg | 13.00 | |
| | | | |
| IH2006-38-E-7-10 | mg/Kg | 7.90 | |
| IH2006-38-E-10-12 | mg/Kg | 8.20 | |
| IH2006-38-E-12-14 | mg/Kg | 13.00 | |
| IH2006-38-E-14-16 | mg/Kg | 12.00 | |
| IH2006-38-E-16-18 | mg/Kg | 15.00 | |
| IH2006-38-E-18-20 | mg/Kg | 9.20 | |
| IH2006-38-E-20-22 | mg/Kg | 17.00 | |
| IH2006-38-E-22-24 | mg/Kg | 19.00 | |
| IH2006-38-E-24-26 | mg/Kg | 33.00 | |
| IH2006-38-M-8-10 | mg/Kg | 7.40 | J |
| IH2006-38-M-10-12 | mg/Kg | 8.60 | |
| IH2006-38-M-12-14 | mg/Kg | 8.70 | J |
| IH2006-38-M-14-16 | mg/Kg | 12.00 | J |
| IH2006-38-M-14-16DUP | mg/Kg | 11.00 | J |
| IH2006-38-M-16-18 | mg/Kg | 9.30 | J |
| IH2006-38-M-18-20 | mg/Kg | 12.00 | J |
| IH2006-38-M-20-22 | mg/Kg | 16.00 | J |
| IH2006-38-M-22-24 | mg/Kg | 18.00 | J |
| IH2006-38-M-24-26 | mg/Kg | 54.00 | J |
| IH2006-38-W-10-12 | mg/Kg | 8.20 | J |
| IH2006-38-W-12-14 | mg/Kg | 7.90 | J |
| IH2006-38-W-12-14DUP | mg/Kg | 7.80 | J |
| IH2006-38-W-14-16 | mg/Kg | 12.00 | J |
| IH2006-38-W-16-18 | mg/Kg | 8.10 | J |
| IH2006-38-W-18-20 | mg/Kg | 9.10 | J |
| IH2006-38-W-20-22 | mg/Kg | 13.00 | J |
| IH2006-38-W-22-24 | mg/Kg | 15.00 | J |
| IH2006-38-W-24-26 | mg/Kg | 68.00 | J |
| | | | |
| IH2006-40-E-10-12 | mg/Kg | 7.90 | J |
| IH2006-40-E-12-14 | mg/Kg | 4.10 | |
| IH2006-40-E-14-16 | mg/Kg | 12.00 | |
| IH2006-40-E-16-18 | mg/Kg | 9.70 | |
| IH2006-40-E-18-20 | mg/Kg | 11.00 | |
| IH2006-40-E-20-22 | mg/Kg | 13.00 | |
| IH2006-40-E-22-24 | mg/Kg | 16.00 | |
| IH2006-40-E-24-26 | mg/Kg | 24.00 | |
| IH2006-40-M-10-12 | mg/Kg | 7.60 | |

| | | | |
|---|---|---|---|
| IH2006-40-M-12-14 | mg/Kg | 8.30 | |
| IH2006-40-M-14-16 | mg/Kg | 11.00 | |
| IH2006-40-M-16-18 | mg/Kg | 8.10 | |
| IH2006-40-M-18-20 | mg/Kg | 13.00 | |
| IH2006-40-M-20-22 | mg/Kg | 11.00 | |
| IH2006-40-M-22-24 | mg/Kg | 45.00 | |
| IH2006-40-M-24-26 | mg/Kg | 37.00 | |
| IH2006-40-M-24-26 DUP | mg/Kg | 35.00 | |
| IH2006-40-W-11-14 | mg/Kg | 9.80 | |
| IH2006-40-W-14-16 | mg/Kg | 7.70 | |
| IH2006-40-W-16-18 | mg/Kg | 7.50 | |
| IH2006-40-W-18-20 | mg/Kg | 9.50 | |
| IH2006-40-W-20-22 | mg/Kg | 10.00 | |
| IH2006-40-W-22-24 | mg/Kg | 28.00 | |
| IH2006-40-W-24-26 | mg/Kg | 14.00 | |
| | | | |
| IH2006-42-E-12-14 | mg/Kg | 8.30 | |
| IH2006-42-E-14-16 | mg/Kg | 0.41 | |
| IH2006-42-E-16-18 | mg/Kg | 11.00 | |
| IH2006-42-E-18-20 | mg/Kg | 17.00 | |
| IH2006-42-E-20-22 | mg/Kg | 19.00 | |
| IH2006-42-E-22-24 | mg/Kg | 19.00 | |
| IH2006-42-E-24-26 | mg/Kg | 29.00 | |
| IH2006-42-E-26-28 | mg/Kg | 33.00 | |
| IH2006-42-E-28-30 | mg/Kg | 51.00 | |
| IH2006-42-E-30-32 | mg/Kg | 40.00 | |
| IH2006-42-E-32-34 | mg/Kg | 1.40 | |
| IH2006-42-E-34-36 | mg/Kg | 2.40 | |
| IH2006-42-M-13-16 | mg/Kg | 9.70 | |
| IH2006-42-M-16-18 | mg/Kg | 11.00 | |
| IH2006-42-M-18-20 | mg/Kg | 10.00 | |
| IH2006-42-M-18-20DUP | mg/Kg | 12.00 | |
| IH2006-42-M-20-22 | mg/Kg | 11.00 | |
| IH2006-42-M-22-24 | mg/Kg | 19.00 | |
| IH2006-42-M-24-26 | mg/Kg | 16.00 | |
| IH2006-42-W-18-20 | mg/Kg | 9.40 | |
| IH2006-42-W-20-22 | mg/Kg | 11.00 | |
| IH2006-42-W-22-24 | mg/Kg | 11.00 | |
| IH2006-42-W-24-26 | mg/Kg | 45.00 | |
| IH2006-42-W-26-28 | mg/Kg | 49.00 | |
| IH2006-42-W-28-30 | mg/Kg | 46.00 | |
| IH2006-42-W-28-30DUP | mg/Kg | 44.00 | |
| IH2006-42-W-30-32 | mg/Kg | 66.00 | |
| IH2006-42-W-32-34 | mg/Kg | 41.00 | |

| | | | |
|---|---|---|---|
| IH2006-42-W-34-36 | mg/Kg | 50.00 | |
| | | | |
| IH2006-44-E-12-14 | mg/Kg | 13.00 | |
| IH2006-44-E-14-16 | mg/Kg | 15.00 | |
| IH2006-44-E-16-18 | mg/Kg | 15.00 | |
| IH2006-44-E-18-20 | mg/Kg | 14.00 | |
| IH2006-44-E-20-22 | mg/Kg | 9.40 | |
| IH2006-44-E-22-24 | mg/Kg | 15.00 | |
| IH2006-44-E-24-26 | mg/Kg | 21.00 | |
| IH2006-44-M-16-18 | mg/Kg | 11.00 | |
| IH2006-44-M-18-20 | mg/Kg | 12.00 | |
| IH2006-44-M-20-22 | mg/Kg | 12.00 | |
| IH2006-44-M-22-24 | mg/Kg | 10.00 | |
| IH2006-44-M-24-26 | mg/Kg | 22.00 | |
| IH2006-44-W-13-16 | mg/Kg | 8.10 | |
| IH2006-44-W-16-18 | mg/Kg | 9.00 | |
| IH2006-44-W-18-20 | mg/Kg | 9.50 | |
| IH2006-44-W-20-22 | mg/Kg | 9.80 | |
| IH2006-44-W-20-22DUP | mg/Kg | 9.10 | |
| IH2006-44-W-22-24 | mg/Kg | 10.00 | |
| IH2006-44-W-24-26 | mg/Kg | 11.00 | |
| | | | |
| IH2006-46-E-24-26 | mg/Kg | 37.00 | |
| IH2006-46-M-22-24 | mg/Kg | 9.40 | |
| IH2006-46-M-24-26 | mg/Kg | 63.00 | |
| IH2006-46-W-15-18 | mg/Kg | 7.40 | |
| IH2006-46-W-18-20 | mg/Kg | 13.00 | |
| IH2006-46-W-20-22 | mg/Kg | 11.00 | |
| IH2006-46-W-22-24 | mg/Kg | 13.00 | |
| IH2006-46-W-24-26 | mg/Kg | 13.00 | |
| | | | |
| IH2006-48-E-21-24 | mg/Kg | 19.00 | |
| IH2006-48-E-24-26 | mg/Kg | 24.00 | |
| IH2006-48-M-27-29 | mg/Kg | 48.00 | |
| IH2006-48-W-24-26 | mg/Kg | 13.00 | |
| | | | |
| IH2006-50-E-22-24 | mg/Kg | 12.00 | |
| IH2006-50-E-24-26 | mg/Kg | 39.00 | |
| IH2006-50-M-30-32 | mg/Kg | 39.00 | |
| IH2006-50-W-19-22 | mg/Kg | 24.00 | |
| IH2006-50-W-22-24 | mg/Kg | 20.00 | |
| IH2006-50-W-24-26 | mg/Kg | 18.00 | |
| | | | |
| IH2006-104-E-25-27 | mg/Kg | 14.00 | |

| | | | |
|---|---|---|---|
| IH2006-104-M-26-28 | mg/Kg | 0.34 | |
| IH2006-104-W-19-22 | mg/Kg | 8.50 | |
| IH2006-104-W-22-24 | mg/Kg | 12.00 | |
| IH2006-104-W-24-26 | mg/Kg | 7.80 | |
| | | | |
| IH2006-106-E-28-30 | mg/Kg | 0.097 | J |
| IH2006-106-M-30-32 | mg/Kg | 0.11 | |
| IH2006-106M-30-32DUP | mg/Kg | 0.77 | |
| IH2006-106-W-20-22 | mg/Kg | 36.00 | |
| IH2006-106-W-22-24 | mg/Kg | 59.00 | |
| IH2006-106-W-24-26 | mg/Kg | 36.00 | |
| | | | |
| IH2006-108-W-14-16 | mg/Kg | 23.00 | |
| IH2006-108-W-16-18 | mg/Kg | 33.00 | |
| IH2006-108-W-18-20 | mg/Kg | 8.90 | |
| IH2006-108-W-20-22 | mg/Kg | 19.00 | |
| IH2006-108-W-22-24 | mg/Kg | 0.67 | |
| IH2006-108-W-24-26 | mg/Kg | 0.052 | |
| IH2006-108-M-31-33 | mg/Kg | 0.037 | |
| IH2006-108-M-31-33DUP | mg/Kg | 0.02 | U |
| IH2006-108-E-21-24 | mg/Kg | 10.00 | |
| IH2006-108-E-24-26 | mg/Kg | 0.30 | |
| | | | |
| IH2006-110-E-14-16 | mg/Kg | 22.00 | |
| IH2006-110-E-16-18 | mg/Kg | 22.00 | |
| IH2006-110-E-18-20 | mg/Kg | 66.00 | |
| IH2006-110-E-20-22 | mg/Kg | 25.00 | |
| IH2006-110-E-22-24 | mg/Kg | 38.00 | |
| IH2006-110-E-24-26 | mg/Kg | 52.00 | |
| IH2006-110-M-28-30 | mg/Kg | 0.27 | |
| IH2006-110-W-15-18 | mg/Kg | 2.70 | |
| IH2006-110-W-18-20 | mg/Kg | 3.90 | |
| IH2006-110-W-20-22 | mg/Kg | 14.00 | |
| IH2006-110-W-22-24 | mg/Kg | 24.00 | |
| IH2006-110-W-24-26 | mg/Kg | 29.00 | |
| | | | |
| IH2006-112-E-23-26 | mg/Kg | 3.00 | |
| IH2006-112-M-36-38 | mg/Kg | 0.021 | U |
| IH2006-112-W-16-19 | mg/Kg | 2.30 | |
| IH2006-112-W-19-22 | mg/Kg | 6.60 | |
| IH2006-112-W-22-24 | mg/Kg | 4.80 | |
| IH2006-112-W-24-26 | mg/Kg | 0.91 | |
| | | | |
| IH2006-114-W-22-25 | mg/Kg | 22.00 | |

| | | | |
|---|---|---|---|
| IH2006-114-W-22-25DUP | mg/Kg | 30.00 | |
| IH2006-114-W-25-27 | mg/Kg | 17.00 | |
| IH2006-114-W-27-29 | mg/Kg | 4.10 | |
| IH2006-114-W-29-31 | mg/Kg | 0.14 | |
| IH2006-114-W-31-33 | mg/Kg | 0.025 | |
| IH2006-114-M-29-31 | mg/Kg | 0.98 | |
| IH2006-114-E-24-27 | mg/Kg | 8.40 | |
| IH2006-114-E-27-29 | mg/Kg | 15.00 | |
| IH2006-114-E-29-31 | mg/Kg | 17.00 | |
| IH2006-114-E-31-33 | mg/Kg | 0.22 | |
| | | | |
| IH2006-116-E-16-18 | mg/Kg | 1.60 | |
| IH2006-116-E-18-20 | mg/Kg | 0.80 | |
| IH2006-116-E-20-22 | mg/Kg | 0.23 | |
| IH2006-116-E-22-24 | mg/Kg | 1.70 | |
| IH2006-116-E-24-26 | mg/Kg | 2.00 | |
| IH2006-116-M-26-28 | mg/Kg | 4.70 | |
| IH2006-116-W-18-20 | mg/Kg | 18.00 | |
| IH2006-116-W-20-22 | mg/Kg | 14.00 | |
| IH2006-116-W-22-24 | mg/Kg | 21.00 | |
| IH2006-116-W-24-26 | mg/Kg | 1.10 | |
| | | | |
| IH2006-118-E-22-24 | mg/Kg | 16.00 | |
| IH2006-118-E-24-26 | mg/Kg | 16.00 | |
| IH2006-118-M-37-39 | mg/Kg | 14.00 | |
| IH2006-118-W-17-20 | mg/Kg | 11.00 | |
| IH2006-118-W-20-22 | mg/Kg | 20.00 | |
| IH2006-118-W-22-24 | mg/Kg | 15.00 | |
| IH2006-118-W-24-26 | mg/Kg | 22.00 | |
| | | | |
| IH2006-120-E-21-24 | mg/Kg | 17.00 | |
| IH2006-120-E-24-26 | mg/Kg | 15.00 | |
| IH2006-120-M-29-31 | mg/Kg | 0.019 | J |
| IH2006-120-W-14-16 | mg/Kg | 6.60 | |
| IH2006-120-W-16-18 | mg/Kg | 6.20 | |
| IH2006-120-W-18-20 | mg/Kg | 12.00 | |
| IH2006-120-W-18-20-DUP | mg/Kg | 11.00 | |
| IH2006-120-W-20-22 | mg/Kg | 12.00 | |
| IH2006-120-W-22-24 | mg/Kg | 10.00 | |
| IH2006-120-W-24-26 | mg/Kg | 26.00 | |
| | | | |
| IH2006-122-M-30-32 | mg/Kg | 0.037 | |
| | | | |
| IH2006-124-M-30-32 | mg/Kg | 1.50 | |

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|---|---|---|---|
| | | | |
| IH2006-126-E-24-27 | mg/Kg | 11.00 | |
| IH2006-126-E-27-29 | mg/Kg | 11.00 | |
| IH2006-126-E-29-31 | mg/Kg | 13.00 | |
| IH2006-126-M-32-34 | mg/Kg | 0.37 | |
| IH2006-126-W-19-21 | mg/Kg | 3.70 | |
| IH2006-126-W-21-23 | mg/Kg | 13.00 | |
| IH2006-126-W-23-25 | mg/Kg | 9.70 | |
| IH2006-126-W-25-27 | mg/Kg | 19.00 | |
| IH2006-126-W-27-29 | mg/Kg | 16.00 | |
| IH2006-126-W-29-31 | mg/Kg | 7.70 | |
| | | | |
| IH2006-128-E-24-27 | mg/Kg | 4.30 | |
| IH2006-128-E-27-29 | mg/Kg | 5.60 | |
| IH2006-128-E-29-31 | mg/Kg | 9.10 | |
| IH2006-128-M-33-35 | mg/Kg | 8.60 | |
| IH2006-128-M-33-35-DUP | mg/Kg | 11.00 | |
| IH2006-128-W-24-27 | mg/Kg | 3.40 | |
| IH2006-128-W-24-27 | mg/Kg | 3.40 | |
| IH2006-128-W-27-29 | mg/Kg | 3.60 | |
| IH2006-128-W-29-31 | mg/Kg | 6.10 | |

U = non-detect
J = estimated

### 2.2.1 Management Unit One – Reach 13

In general, total PCB concentrations in the sediment samples collected as part of the 2006 TSCA sampling range from < 0.012 to 68 mg/kg in Management Unit One. Ten samples exceeded the TSCA regulatory standard of 50 mg/kg; two exceedances occur in the Federal channel, five exceedances indicate exposure of TSCA regulated material post-dredging, and three exceedances are found in the sediment below the federally authorized channel (-28 to -36 LWD range). Previous sediment sampling conducted in 1993 suggested that TSCA regulated material would be found near river station 33 in the Federal channel; 2006 sampling results corroborate those results. TSCA level exceedances were found at 2006 sample locations 34-M and 36-E, just up and downstream of previous exceedance. See Figure 11 for current and previous TSCA exceedances found in the Federal channel system in Reach 13.

### 2.2.2 Management Unit Two – Reaches 5, 6, and 7

In general, total PCB concentrations in the sediment samples collected as part of the 2006 TSCA sampling range from <0.019 to 66 mg/kg in Management Unit Two. Three samples exceed the TSCA regulatory standard of 50 mg/kg; two exceedances occur in the Federal channel and one exceedance indicates exposure of TSCA regulated material post-dredging. Previous sediment sampling in 1979 and 1983 suggested that TSCA regulated

material would be found near river stations 114 and 120 in Reach 6; 2006 sampling did not corroborate previous results. TSCA level exceedances were found at river stations 106 (Reach 7) and 110 (Reach 6), upstream of areas where TSCA regulated material was expected. Sample and analysis of sediment that has accumulated on the banks at river station 114 and 120, and in the vicinity of those stations, does not indicate TSCA regulated material present in the canal between river stations 114 and 120. See Figure 12 for current and previous exceedances found in the Federal channel in Reach 6.

### *2.3 Sediment Variability*

It is not unreasonable that previous PCB sediment sampling results were not reproduced in the 2006 sediment sampling study in Management Unit Two. The variability in PCB results is likely due to many factors:

a. Previous sample collection activities performed in 1979 and 1983 used river stationing or land based markers for documenting sample collection locations. Due to the unreliable nature of these practices, the 1979 and 1983 sediment sample locations may not be exact, leading to variability in the reported results. To further illustrate this point, while 2006 sediment sample locations were intended to be collected on even river stations based on GPS coordinates, field conditions and equipment limitations led to variability in the actual location of the sediment borings; in the 2006 sampling event the GPS actual coordinates are available to document the location, but earlier sampling events had no such verification.

b. Past sampling was not comprehensive and analytical methods, including quality assurance/quality control practices, used in 1979 and 1983 were not as extensive or accurate as current practices. Sediment samples are subject to matrix interference during analysis and thorough QA/QC sampling can help minimize and document issues. In addition, the analytical methods have changed over time. Some of the earlier samples may not have been analyzed using optimal methods. For multiple reasons, then, there is less confidence in the older sediment results.

c. Surficial sediments move with boat traffic. Management Unit 2 encompasses areas with active docks where there is heavy deep-draft barge and other vessel traffic. It is likely that surficial sediments have continually been mixed in this area with some eventual migration of sediments to Lake Michigan. Sediment in Management Unit Two has scoured over time; the Federal channel is currently at or below the authorized project depth, mid-channel, according to recent surveys.

d. Sediment is highly variable in both horizontal and vertical directions throughout the canal. The vertical variability is likely due to the deposition of sediments over time; older deeper sediments reflect less regulated historical discharges. The horizontal variability likely reflects historical point discharges with the added complexity of river currents and boat traffic causing sediment resuspension and

deposition. Because previous sampling events were not comprehensive, any isolated point data cannot be easily interpreted.

Because the sediment is highly variable, sediment results that were reported more than 20 years prior are not considered to be reflective of present conditions in the areas of concern. 2006 sediment sampling and analysis was conducted systematically and consistently, as opposed to spot sampling performed in 1979 and 1983. The 2006 sediment sampling results are assumed more accurate and reflect present conditions in the canal. The volume of material potentially regulated under TSCA has been calculated using the 2006 sediment data only.

# 3 TSCA Dredging Volumes

## *3.1 EVS-Pro*

In order to perform accurate modeling of the PCB levels in the sediment for this project, 3-dimensional krieging was used. Environmental Visualization System (EVS) Pro version 8.54, a commercially available software developed by C Tech Development, was used to determine the volume of TSCA regulated material in the Federal channel using data generated from the 2006 sediment sampling. The software is used by both the Environmental Protection Agency (EPA) Region – 5 and the USACE Dredging Operations Technical (DOT) Support Program, and both agencies recommend use of this software for this application.

EVS-Pro software will perform 3-dimensional krieging, which takes into account the vertical and lateral extent of the PCB concentrations in the sediment. When areas between sediment samples are interpolated, the varying elevations and lateral extent of the PCB concentrations in the sediment are considered. Since environmental management, dredging, and disposal of TSCA regulated material will be an expensive process and because the design of the confined disposal facility (CDF) relies on accurate volumes of TSCA regulated material to be identified, it is important to accurately determine the volume of TSCA regulated sediment to be removed. EVS-PRO performs the analysis and computes the volumes of sediment at user defined contaminant ranges. The volumes computed are 3-dimensional and not merely the average between two different surface concentrations.

The EVS-Pro volumetrics module was used to calculate the volume of sediment within a user specified isosurface (surface of constant concentration) and set of geologic layers. The user inputs the units for the nodal properties, model coordinates, and the type of processing that has been applied to the nodal data values, specifies the iso level and soil and chemical properties to be used in the calculation; the volumetric module performs an integration of both the soil volumes and chemical masses that are within the specified isosurface. Volumetrics takes each individual discrete cell of the model and computes a total cell volume and analytical mass per cell by using the coordinates and data and integrating across the cell. The model then uses the specified user parameters to compute

all of the outputs required for the results. Once every individual discrete cell has been integrated, the results are added together to output the final, model volumetric results.

Figures 13 and 14 include the boundaries, or lateral extent, of TSCA regulated material in the Federal channel according to EVS-Pro model results. The model results are based on input of all data generated from the 2006 TSCA sediment sampling activity. All data, including the contaminant concentrations found in deeper sediment, below navigation depth, were used in the analysis. Horizontal coordinates were established using the actual GPS positioning of sampling locations; vertical distribution of PCB concentration in the sediment was established using the upper sampling limit as the input elevation.

The boundaries of the six areas where TSCA regulated material was found in the Federal channel were conservatively extended to 40 ppm, using EVS-Pro, to ensure that all the TSCA regulated material is included in the volume calculation (see Figures 15 and 16).

### *3.2 CADD*

EVS-Pro volumetric output results were exported into 3-dimensional AutoCAD files. The 3-dimsensional AutoCAD files were converted to Microstation format and then Microstation was used to create plan views of the locations where TSCA regulated sediment (PCB concentrations > 40 mg/kg) were found in the Federal channel. The boundaries of the TSCA regulated material were expanded to a reasonable dredging prism (See Figures 17 and 18) such that the entire TSCA footprint generated from EVS-Pro is included in the TSCA dredging areas. Even though EVS-Pro software can calculate the volumes of TSCA regulated sediments, the quantity generated by the software would not represent an accurate dredging quantity for several reasons: the software did not account for the method of sediment removal; the TSCA regulated sediment is founder deeper in the Federal channel making it difficult to segregate TSCA regulated material from shallow material during dredging; and there are limitations in the EVS-Pro volume calculations due to assumptions made when inputting the vertical distribution of PCBs into the model. It is assumed, for purposes of the volume calculations, that the entire column of sediment (including material above any TSCA regulated sediment) would be removed and handled as TSCA regulated material. Figures 19 and 20 show the cross-sectional view of TSCA regulated material dredging boundaries and Figures 21 through 25 show a cross-sectional view of approximate PCB concentrations in the sediment column across the defined sections.

Volume calculations (see Attachment 3) were performed using the most recent soundings collected in 2004, InRoads software, and the dredging boundaries shown in Figures 17 and 18. Where the concentration of TSCA regulated material extends below the authorized depth of the Federal channel, including allowable overdredge, -24 LWD was used to define the lower limit of dredging. Where TSCA regulated sediment does not extend to the canal steel sheet pile wall, the limits of TSCA dredging were extended further into the Federal channel using a 3:1 horizontal to vertical side slope.

Approximately 37,000 and 1,300 cubic yards of TSCA regulated sediment are found in Management Units One and Two, respectively. 37,000 cubic yards of sediment would be regulated for disposal under TSCA in Reach 13, just south of the Forks; 670 cubic yards of sediment would be regulated for disposal under TSCA in Reach 7; and 630 cubic yards of sediment would be regulated for disposal under TSCA in Reach 6.

# 4 Post-Dredging PCB Concentrations in Exposed Sediment

Results from 2006 sediment sampling suggest that there will be several locations in the two areas of concern, specifically in Reaches 13 and 6, where TSCA regulated sediment would be exposed after dredging is conducted. The extent of exposure of TSCA regulated sediment is dependent on the depth of dredging that is conducted; the lateral and vertical extent of TSCA regulated sediment varies in each reach. The values presented used in analyses described in subsequent paragraphs are established using results from the 2006 sediment sampling study.

## *4.1 Sediment Exposure - Dredging to -24 LWD*

If the maximum amount of Federally authorized dredging occurs, to -24 LWD (project depth plus two feet additional overdredge), the concentrations of PCBs in the exposed sediment range between 0.012 to 68 mg/kg in Management Unit One and < 0.019 to 52 mg/kg in Management Unit Two. There are six areas of the Federal channel where PCB containing sediment will exceed the TSCA threshold (50 mg/kg) after dredging is conducted, as indicated in Figures 26 and 27. Collection and analysis of sediment samples in the -24 to -26 LWD range indicate that the concentrations of PCBs in exposed sediments at sample locations 34-W, 36-E, 38-M, 38-W, 46-M and 110-E vary between 52 mg/kg and 68 mg/kg.

## *4.2 Sediment Exposure - Dredging to -22 LWD*

Limiting the amount of dredging reduces the amount of exposed PCB containing sediments that exceed the TSCA threshold in the Federal channel. If dredging is conducted to the project depth, or to -22 LWD, the concentrations of PCBs in the exposed sediment range from 0.038 to 57 mg/kg in Management Unit One and < 0.019 to 59 mg/kg in Management Unit Two. There are three areas in the Federal channel where PCB containing sediment will exceed the TSCA threshold (50 mg/kg) after dredging is conducted, as indicated in Figures 28 and 29. Collection and analysis of sediment samples in the -22 to -24 LWD range indicate that the concentrations of PCBs in exposed sediments at river stations 34-M, 36-E, and 106-W vary between from 51 mg/kg to 59 mg/kg.

## *4.3 Sediment Exposure - Dredging to -20 LWD*

Further limiting the amount of dredging to -20 LWD indicates that there will be no locations in the Federal channel where the concentrations of PCBs in the exposed sediment are greater than the TSCA threshold (>50 mg/kg). The concentrations of PCBs

in the exposed sediment in the canal, when dredging is conducted to -20 LWD, range between 0.43 to 48 mg/kg in Management Unit One and < 0.019 to 36 mg/kg in Management Unit Two in this scenario. Because the distribution of TSCA regulated material in the Federal channel varies horizontally and vertically, the amount of sediment overlying TSCA regulated sediment remaining in Reaches 6 and 13 varies. The highest concentration of PCB in exposed sediments is found at sample location 48-M where sediment sampling conducted suggested that the canal is already below the authorized depth (at -27 LWD) and sediment that is accumulated mid-channel (-27 to -29 LWD range) contains PCB concentrations of 48 mg/kg. This area does not require dredging as part of the Federal navigation project since the depth of the channel is below project depth.

Most of the PCB containing sediments exceeding the TSCA threshold would not be dredged under this scenario and would remain in-place. The only exception is in Reach 6, at sample location 110-E, where TSCA level material was found in the -18 to -20 LWD range. Sediments removed from the sediment surface to -20 LWD at sample location 110-E would remove some of the TSCA regulated sediment in this area.

### *4.4 Sediment Cap*

Capping requirements for PCB containing sediment left in-place and exposed post-dredging may be required under 40 CFR 761.61. This regulation was established for PCB remediation self-implementing clean-up projects and may not be applicable in freshwater environments. Guidance on in-situ subaqueous capping of contaminated sediment has been developed by USACE and USEPA (USEPA, 1998; USEPA, 2005; USACE, 1998) and this guidance may be applicable to the remaining exposed TSCA regulated sediment in the IHC Federal channel. Suitable capping alternatives must be identified and the cap composition, thickness, performance, costs, and constructability evaluated.

## 5 TSCA Sediment Remaining below Federal Channel

If the maximum amount of federally authorized dredging occurs in Reaches 6 and 13, to -24 LWD, as described in Section 4.1, the concentrations of PCBs remaining in the sediment exceed the TSCA threshold (50 mg/kg) in six areas just below the limits of the federally authorized channel, according to sediment sampling conducted in 2006. In addition, results of analysis of sediment samples collected from the four borings advanced below the federally authorized channel in Reaches 6 and 13, described in Sections 2.1.1 and 2.1.2, suggest that TSCA level material may be present below the federally authorized channel at river station 42 between -28 and -36 LWD.

Table 4 includes the locations and concentrations of PCBs in areas where TSCA level sediment will remain in the IHC system after USACE conducts navigational dredging. Results from past sampling efforts, described in Section 1.3, and 2006 sampling results are included in Table 4. Some of the sediment below the federally authorized channel from approximately river stations 32 through 46 (1400 feet of Reach 13) and at river

station 110 in Reach 6 exceed the TSCA regulatory threshold. Previous indications suggested that sediment in the channel at stations 114 and 120 may have exceeded TSCA regulatory thresholds according to sampling conducted in 1979 and 1983; however, current bathymetry suggests that these materials are no longer present in the channel. Figures 30 and 31 indicate locations in the IHC system where sediment below the Federal channel may exceed the TSCA regulatory threshold.

*Table 4: TSCA Level PCB Exceedances in Sediment below the Federal Channel*

| Event ID | Sample date | Sample location | Sample ID | Concentration Total PCBs (mg/kg) | Sample depth (LWD) |
|---|---|---|---|---|---|
| IH-79.1 | 09-Nov-79 | River Station 33 | 1-13-16 | 68.0 | -22.3 to -25.3 |
| | | | 1-17-21 | 53.9 | -25.3 to -28.8 |
| IH-2006 | 11-Nov-06 | 34-W | IH2006-34-W-24-26 | 52 | -24 to -26 |
| IH-2006 | 28-Nov-06 | 36-E | IH2006-36-E-24-26 | 59 | -24 to -26 |
| IH-93.1 | 08-Nov-93 | River Station 36 | IHST-93-2-3 | 51.2 | -28 to -32 |
| | | | IHST-93-2-4 | 63.8 | -32 to -36 |
| IH-2006 | 29-Nov-06 | 38-M | IH2006-38-M-24-26 | 54 | -24 to -26 |
| IH-2006 | 29-Nov-06 | 38-W | IH2006-38-W-24-26 | 68 | -24 to -26 |
| IH-93.1 | 09-Nov-93 | River Station 41 | IHST-93-3-2 | 50.7 | -24 to -28 |
| | | | IHST-93-3-3 | 99.9 | -28 to -32 |
| IH-2006 | 06-Dec-06 | 42-E | IH2006-42-E-28-30 | 51 | -28 to -30 |
| IH-2006 | 30-Nov-06 | 42-W | IH2006-42-W-30-32 | 66 | -30 to -32 |
| | | | IH2006-42-W-34-36 | 50 | -34 to -36 |
| IH-2006 | 06-Dec-06 | 46-M | IH2006-46-M-24-26 | 63 | -24 to -26 |
| IH-2006 | 11-Dec-06 | 110-E | IH2006-110-E-24-26 | 52 | -24 to -26 |

## 6 References

U.S. Army Corps of Engineers, January 1999. "Comprehensive Management Plan – Final Feasibility Report and Environmental Impact Statement – Indiana Harbor and Canal Maintenance Dredging and Disposal Activities".

40 CFR 761.61. Title 40--Protection of Environment. Chapter I-Environmental Protection Agency. Part 761--Polychlorinated Biphenyls (PCBs) Manufacturing,

Processing, Distribution in Commerce, and Use Prohibitions. Subpart 61-PCB Remediation Waste.

US Army Corps of Engineers Waterways Experiment Station Dredging Operations and Environmental Research Program, June 1998. “Guidance for Subaqueous Dredged Material Capping,” Technical Report DOER-1.

Palermo, M., Maynord, S., Miller, J., and Reible, D. 1998. "Guidance for In-Situ Subaqueous Capping of Contaminated Sediments," EPA 905-B96-004, Great Lakes National Program Office, Chicago, IL.

U.S. Environmental Protection Agency, “Contaminated Sediment Remediation Guidance for Hazardous Waste Sites”, EPA-540-R-05-012, OSWER 9355.0-85, December 2005.

**Figure 1: Project Location**

**Figure 2: Indiana Harbor and Canal**

Figure 3: Indiana Harbor and Canal Dredging Reaches 6 - 13

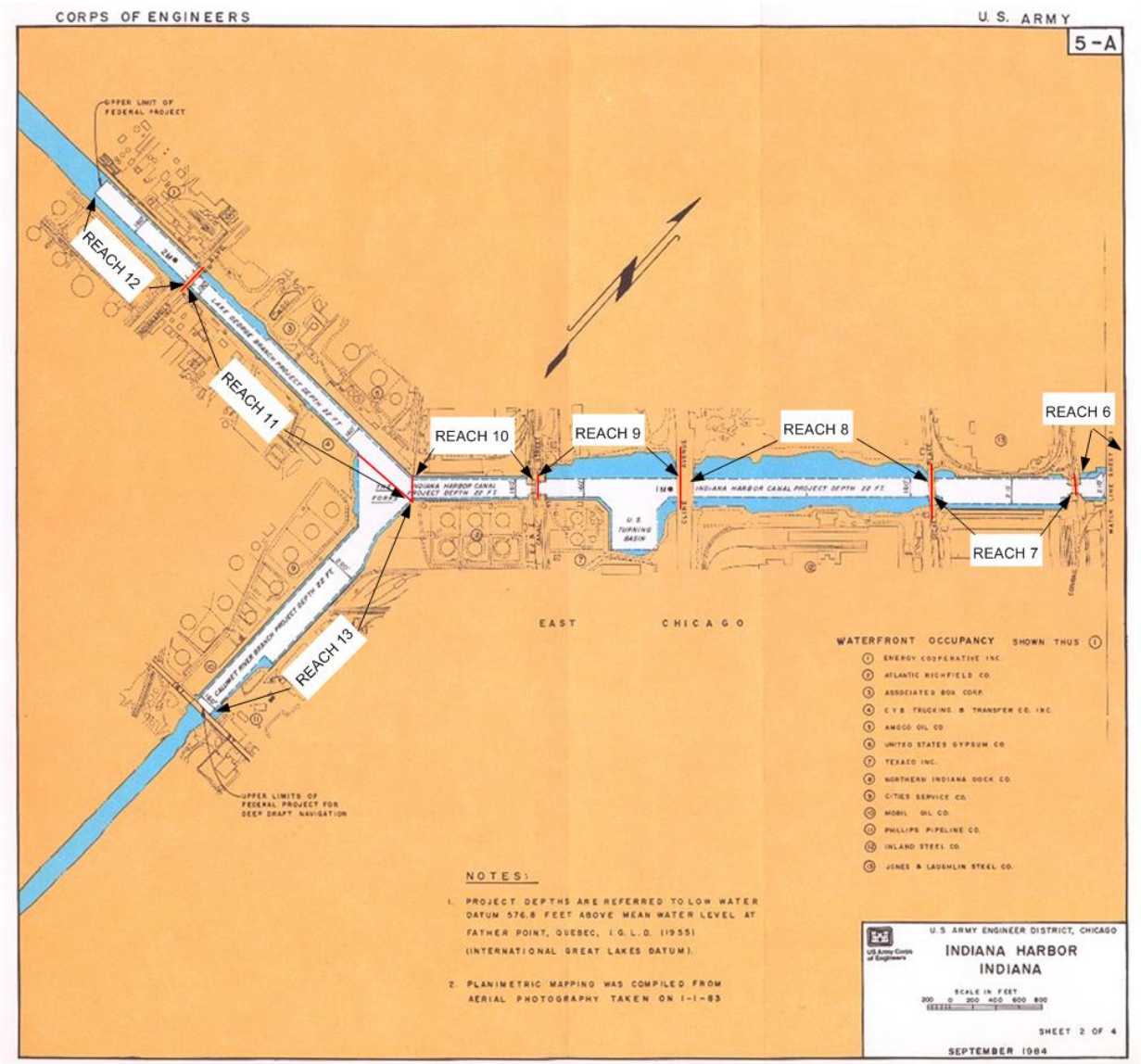


Figure 4: Indiana Harbor and Canal Dredging Reaches 1 - 6

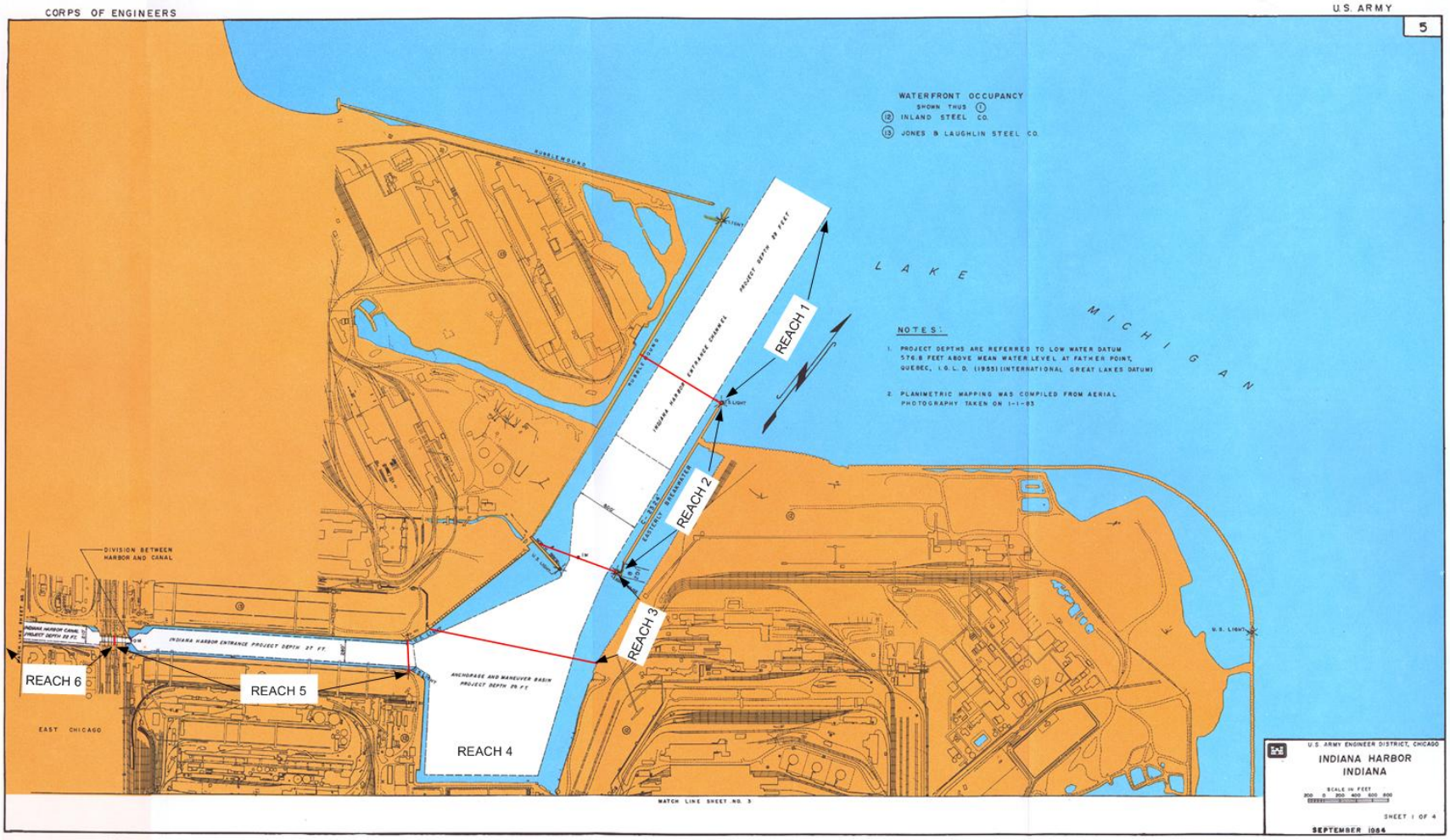
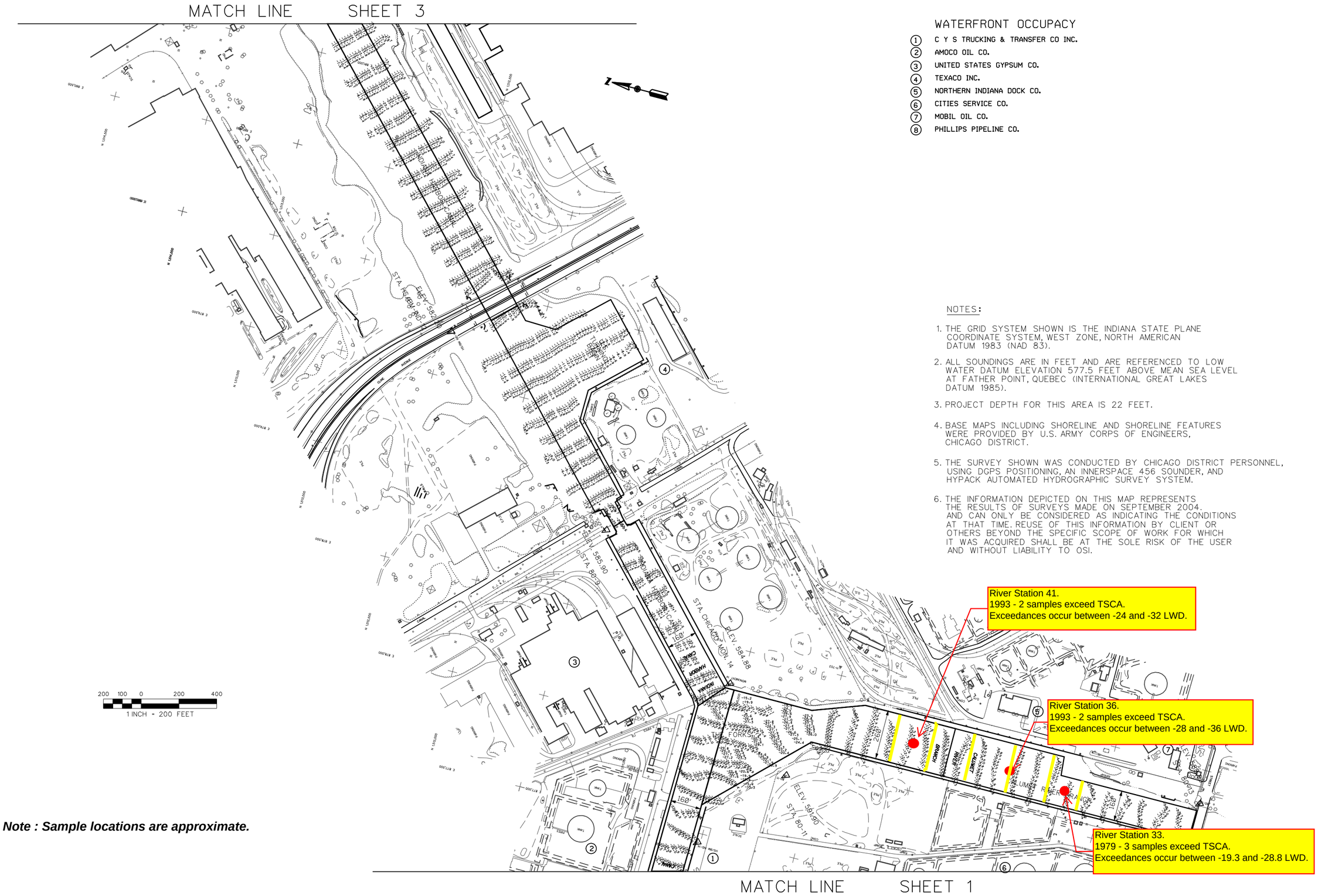


Figure 5: Reach 13 - Previous TSCA Exceedances

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***Note : Sample locations are approximate.***

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Figure 6: Reach 6 - Previous TSCA Exceedances

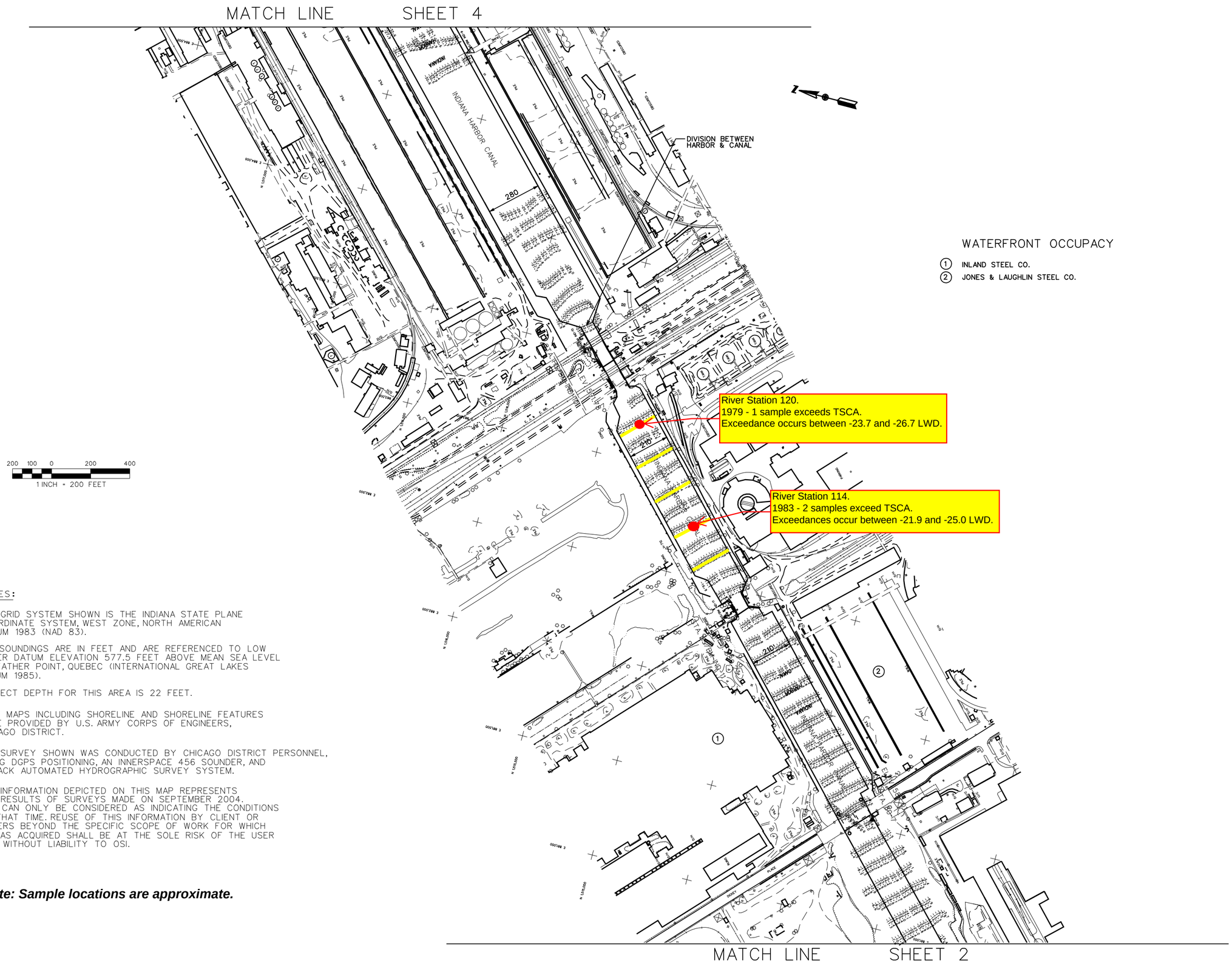


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Figure 7: Management Unit One River Stationing

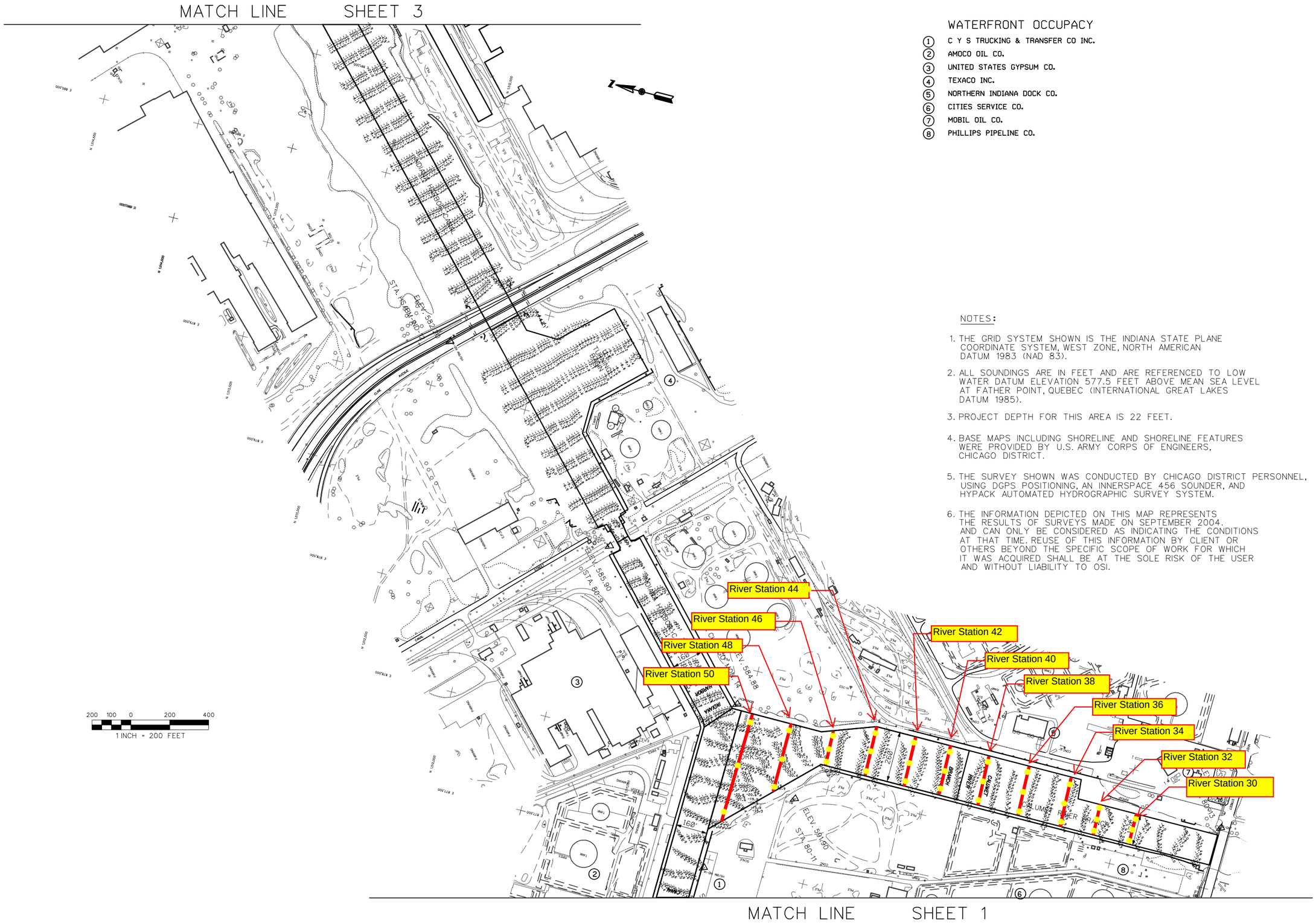


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Figure 8: Management Unit Two River Stationing

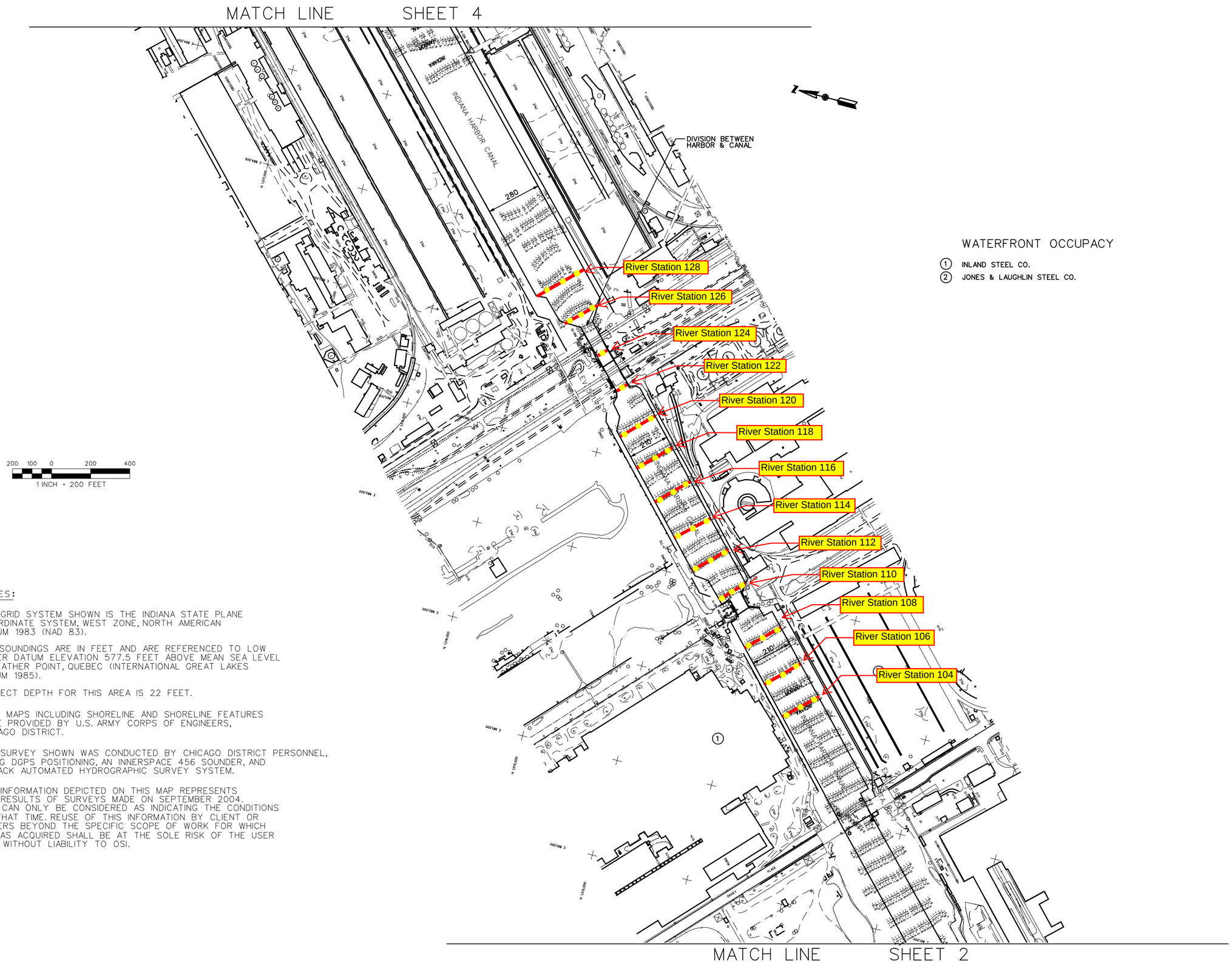


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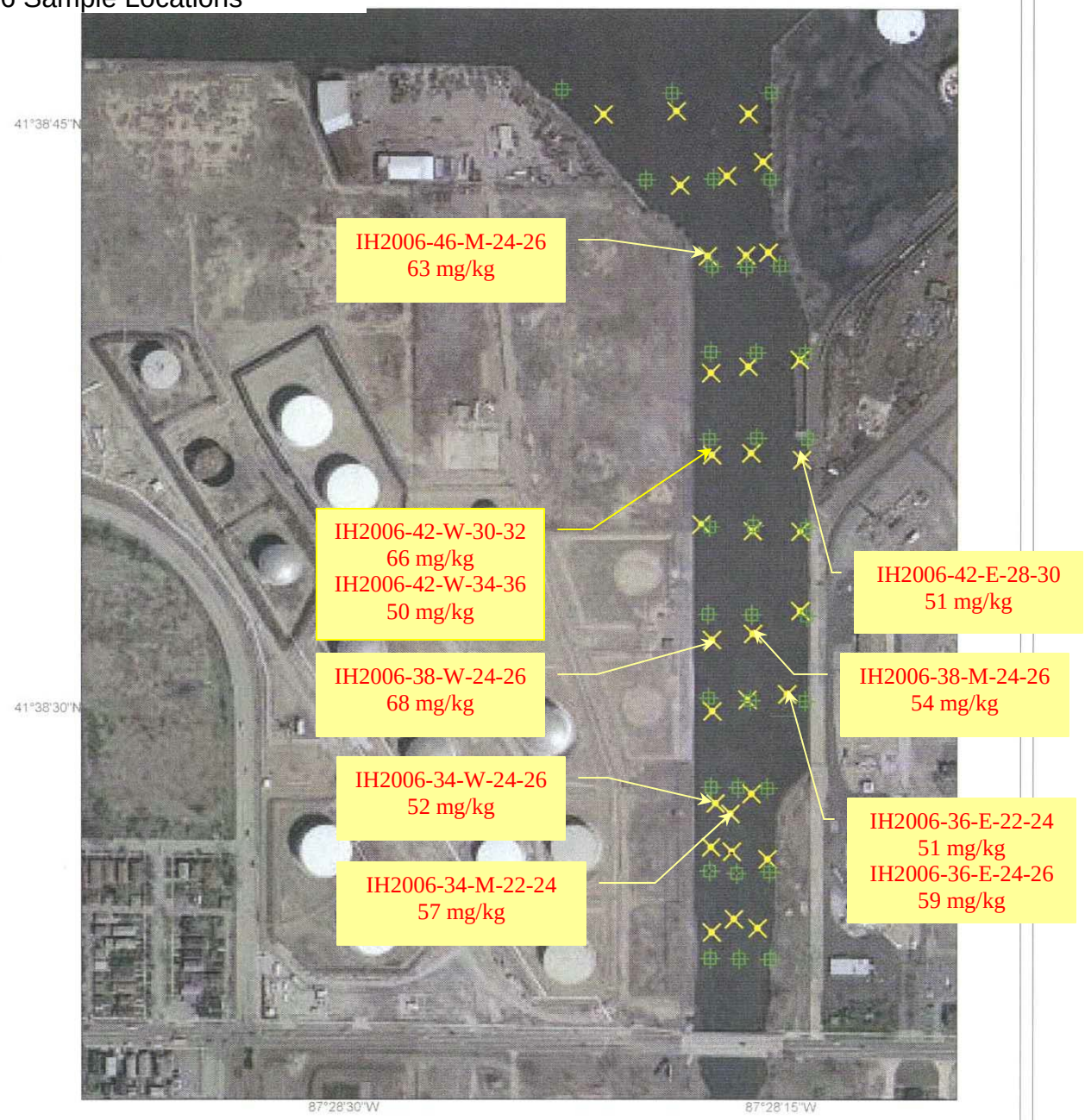
Figure 9: Management Unit One
2006 Sample Locations




Management Unit 1

PROPOSED BORING

X ACTUAL BORING

UTM
16 North
NAD 1983 (Conus)

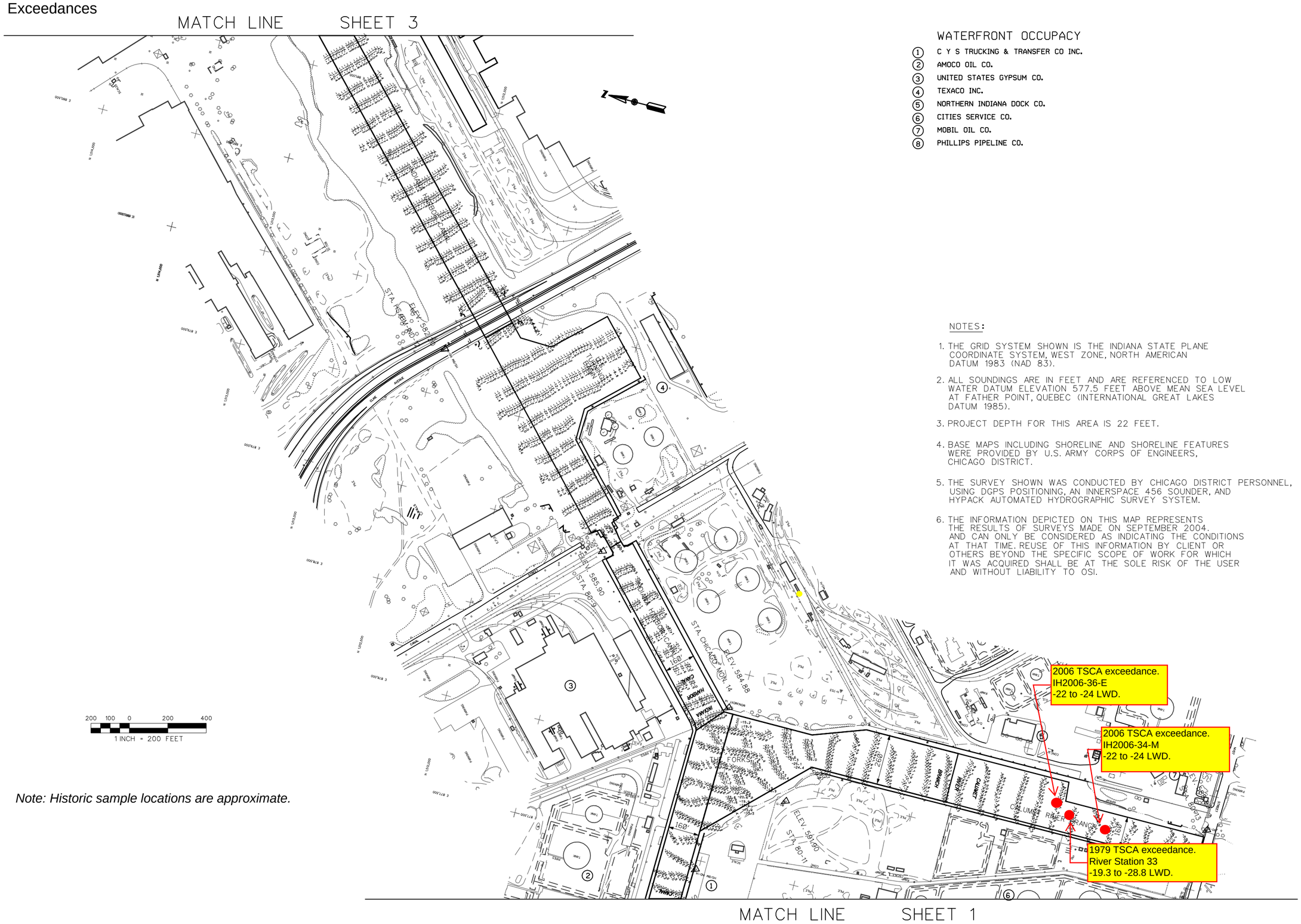
N

0 600.0
Feet

12/28/2006

Figure 10: Management Unit Two
2006 Sample Locations

Figure 11: Management Unit One Federal Channel Exceedances




*Note: Historic sample locations are approximate.*

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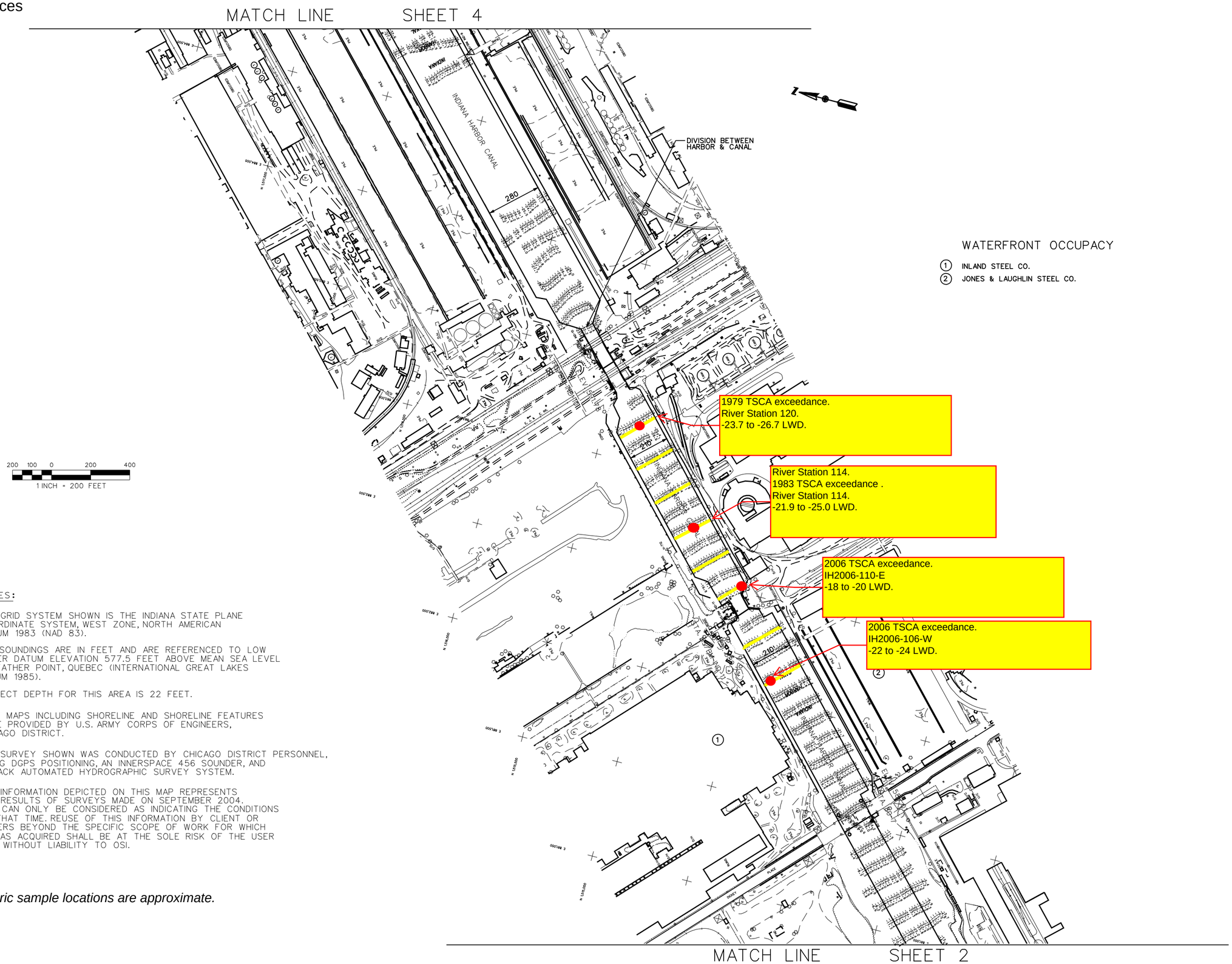
Figure 12: Management Unit Two Federal Channel Exceedances

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Chicago District

| SYMBOL | AMENDMENT DESCRIPTION | DATE APPROVED | SYMBOL | DESCRIPTION | DATE APPROVED |
|---|---|---|---|---|---|

DESIGNED BY: WK
DATE: NOVEMBER 2004
DRAWN BY: WK
SCALE: AS SHOWN
CHECKED BY: -
SOLICITATION NUMBER: DACW23-97-C-XXXX
SUBMITTED BY:
DATE:

U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
CHICAGO, ILLINOIS

**INDIANA HARBOR & CANAL**

UPDATED SOUNDINGS

SHEET REFERENCE NUMBER:
**C-03**
SHEET 03 OF 05

PLOT DATE: 19-NOV-2004
FILENAME: P:\PWP\dmn06237\Nwx_Soundings_C-03.DGN

Figure 13: Management Unit One - EVS-Pro Results (≥ 50 mg/kg PCB extent)

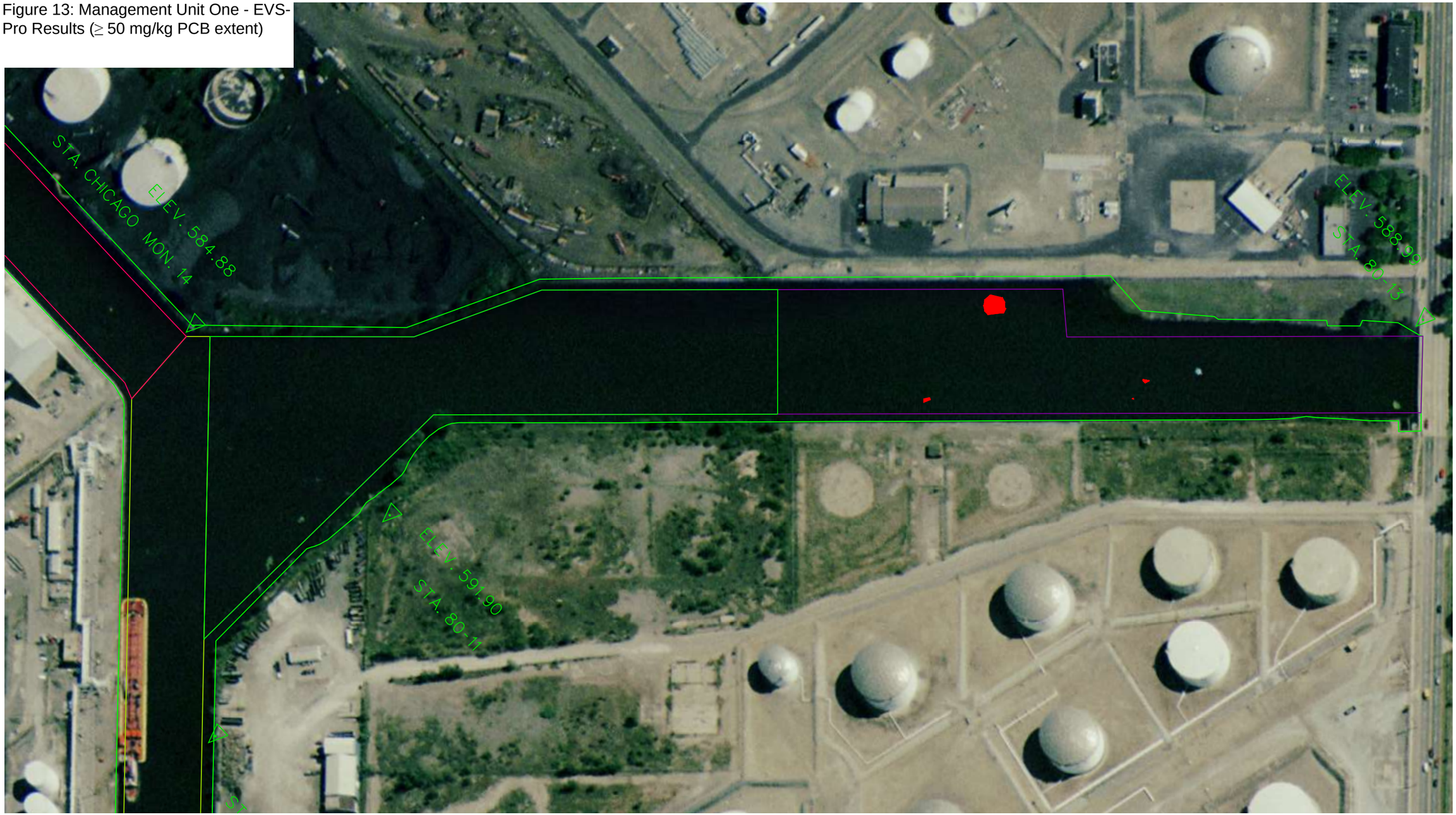


Figure 14: Management Unit Two - EVS-Pro Results
(≥ 50 mg/kg PCB extent)

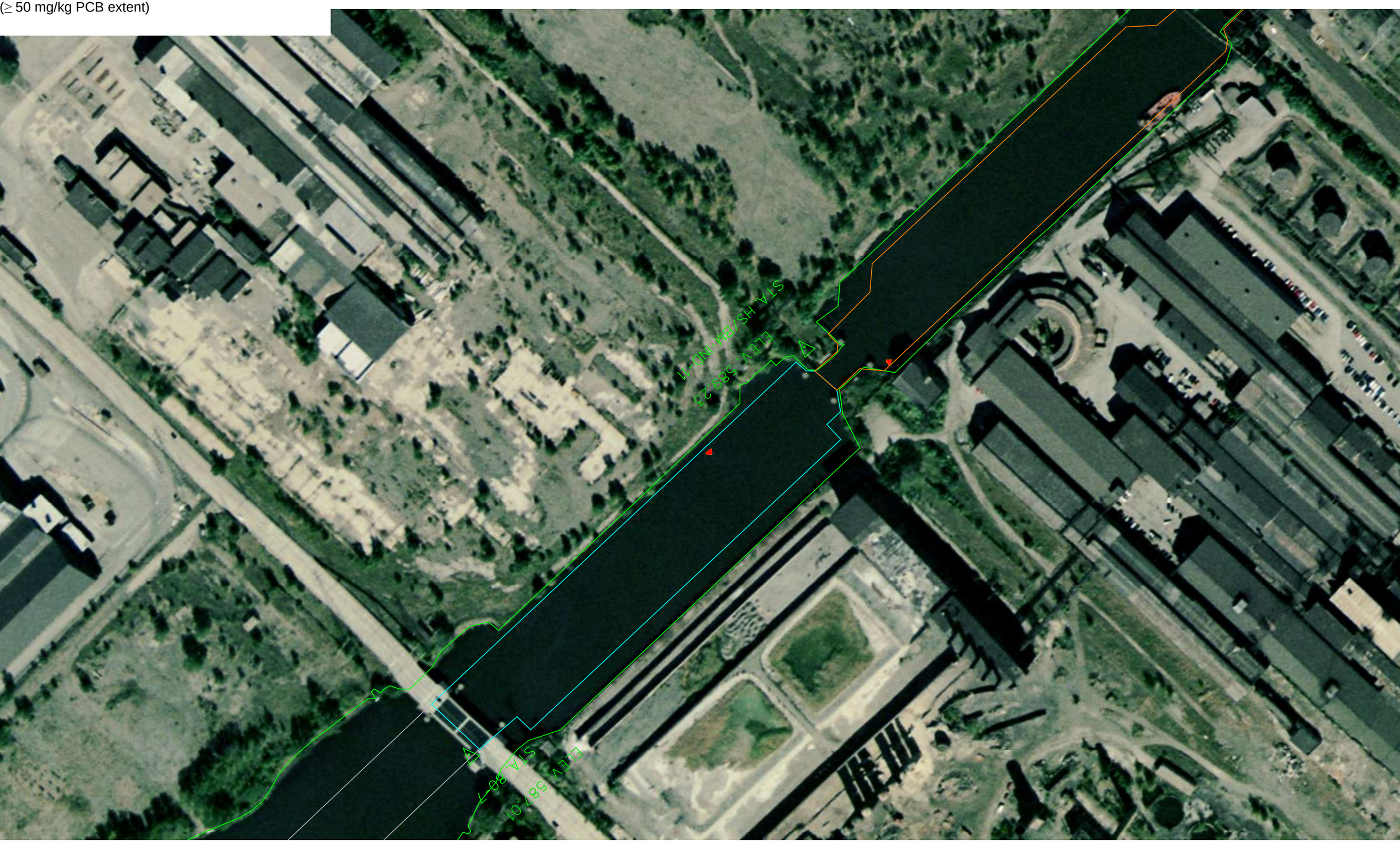


Figure 15: Management Unit One - EVS-Pro Results
(≥ 40 mg/kg PCB extent)

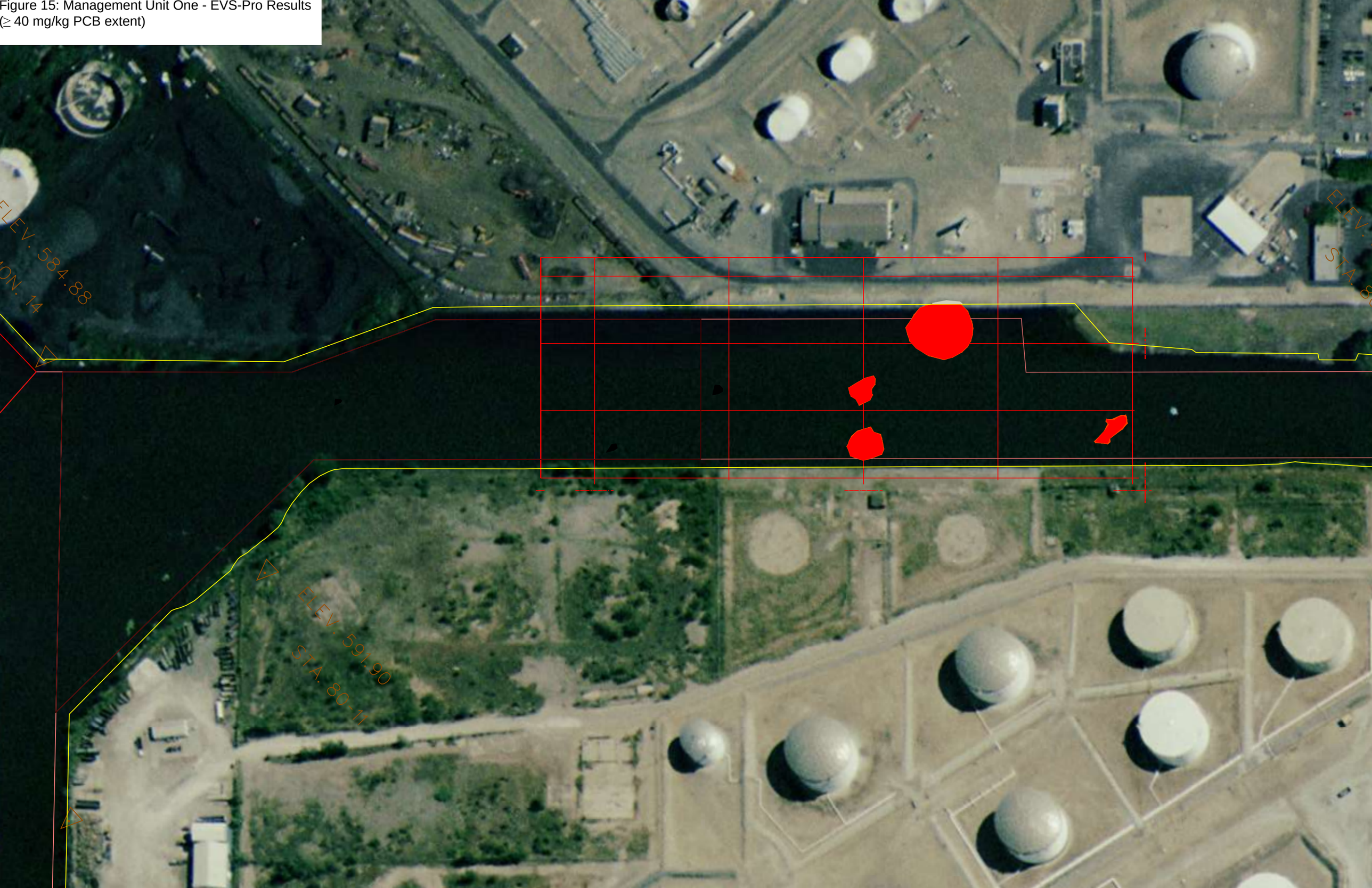


Figure 16: Management Unit Two - EVS-Pro Results
(≥ 40 mg/kg PCB extent)

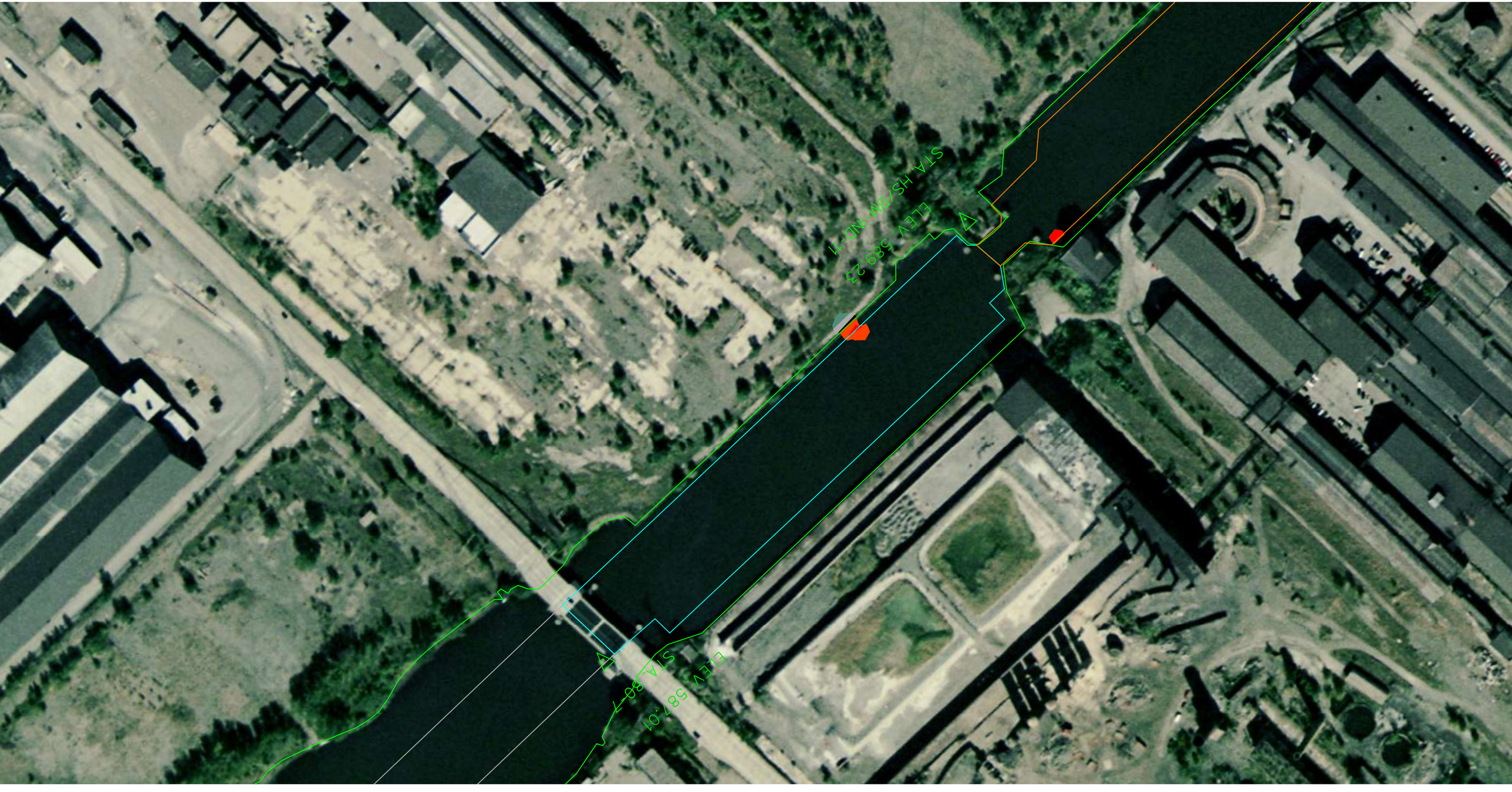
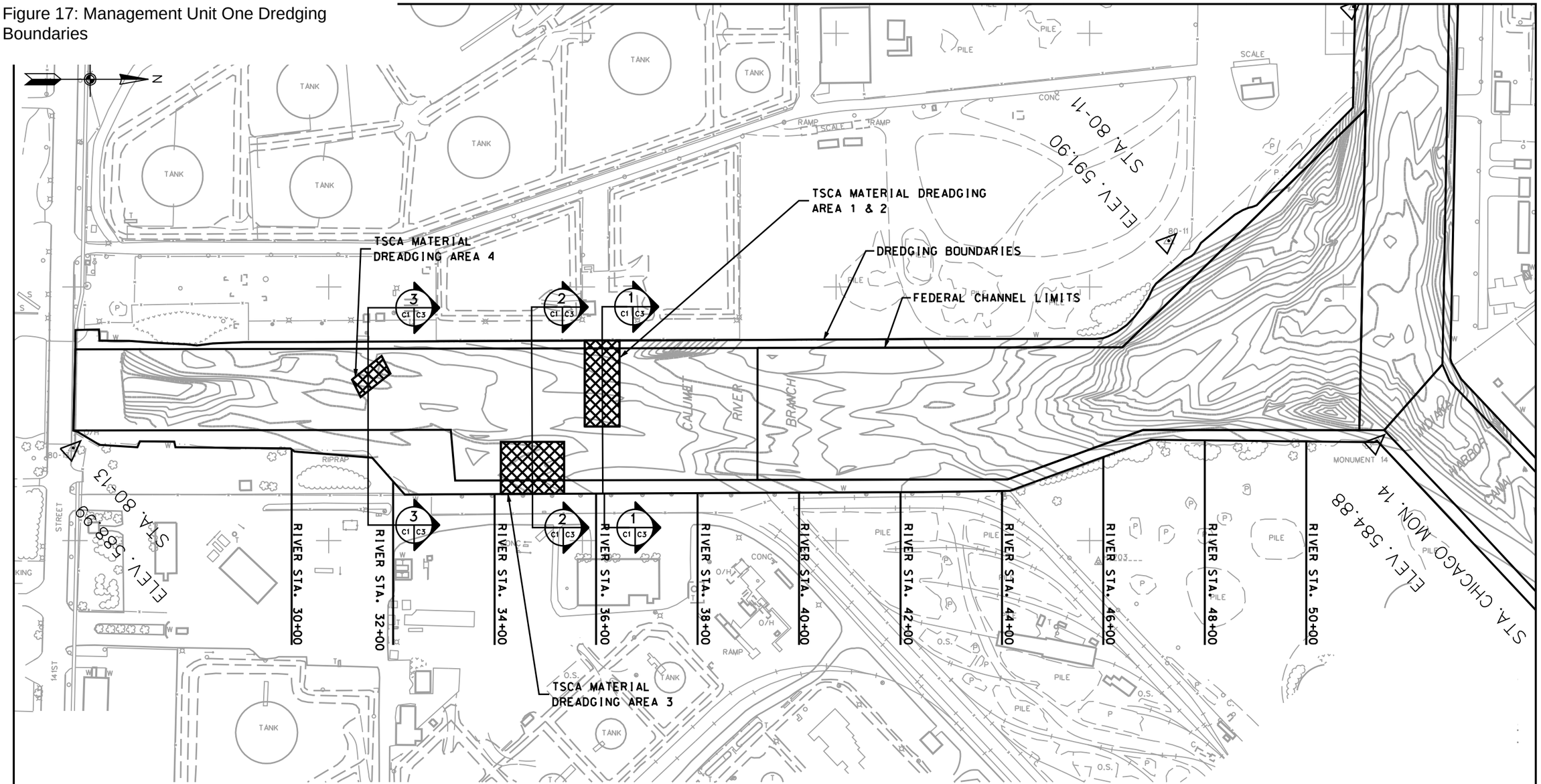


Figure 17: Management Unit One Dredging Boundaries




NOTES:

1. DUE TO THE IRREGULAR SHAPE OF THE TSCA SEDIMENT AREAS. BOXES WERE PLACED AROUND THE AREAS TO CALCULATE THE SEDIMENT VOLUMES FOR REMOVAL.
2. ALL THE TSCA SEDIMENT AREAS GO TO A DEPTH OF -24.0 LWD.
3. THE DREDGING BOUNDARIES REPRESENT THE SHEET PILE WALLS WHERE THE CANAL ENDS.
4. THE RIVER STATIONING SHOWN ON THE PLANS IS APPROXIMATE.

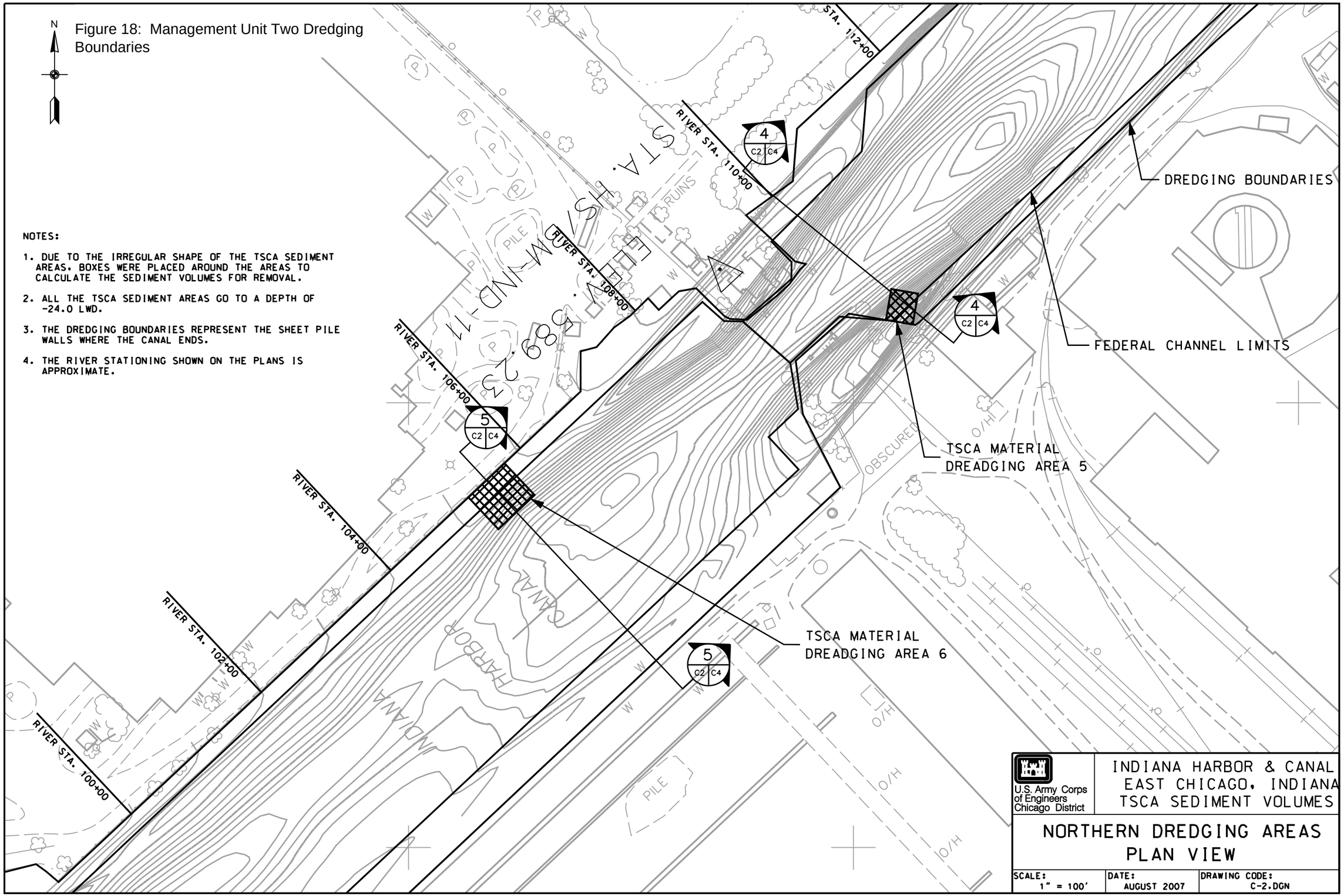
U.S. Army Corps of Engineers
Chicago District

INDIANA HARBOR & CANAL
EAST CHICAGO, INDIANA
TSCA SEDIMENT VOLUMES

SOUTHERN DREDGING AREAS
PLAN VIEW

| SCALE: | DATE: | DRAWING CODE: |
|---|---|---|
| 1" = 200' | AUGUST 2007 | C-1.DGN |

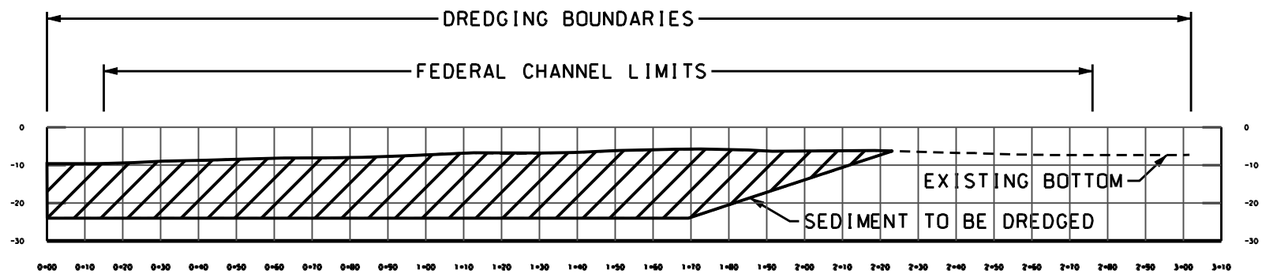
Figure 18: Management Unit Two Dredging Boundaries



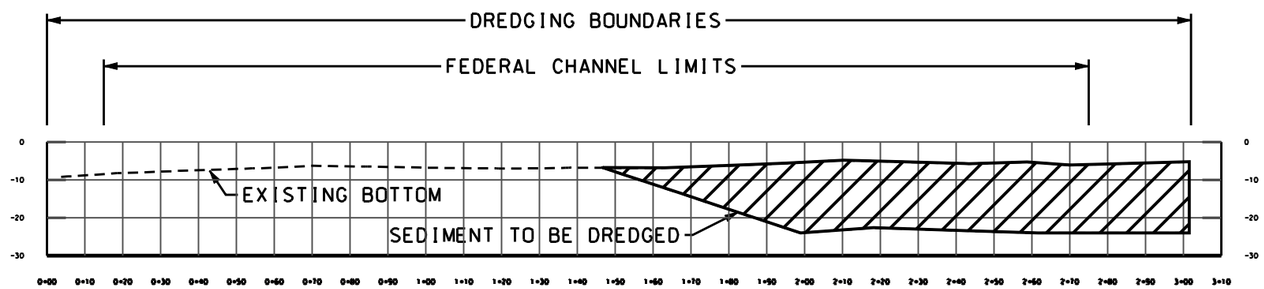

NOTES:

1. DUE TO THE IRREGULAR SHAPE OF THE TSCA SEDIMENT AREAS, BOXES WERE PLACED AROUND THE AREAS TO CALCULATE THE SEDIMENT VOLUMES FOR REMOVAL.
2. ALL THE TSCA SEDIMENT AREAS GO TO A DEPTH OF -24.0 LWD.
3. THE DREDGING BOUNDARIES REPRESENT THE SHEET PILE WALLS WHERE THE CANAL ENDS.
4. THE RIVER STATIONING SHOWN ON THE PLANS IS APPROXIMATE.

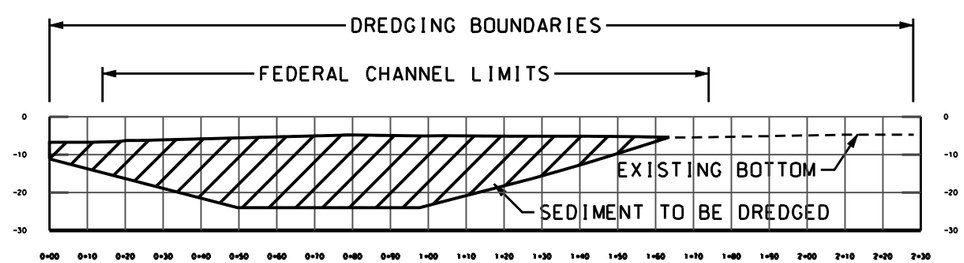
Figure 19: Dredging Cross-Sections




CROSS SECTION 1-1




CROSS SECTION 2-2




CROSS SECTION 3-3

NOTES:

1. ALL THE DREDGING WILL BE TO A DEPTH OF -24.0 LWD.
2. THE SIDE SLOPES FOR THE DREDGING ARE 3 H TO 1 V.
3. THE DREDGING BOUNDARIES REPRESENT THE SHEET PILE WALLS WHERE THE CANAL ENDS.

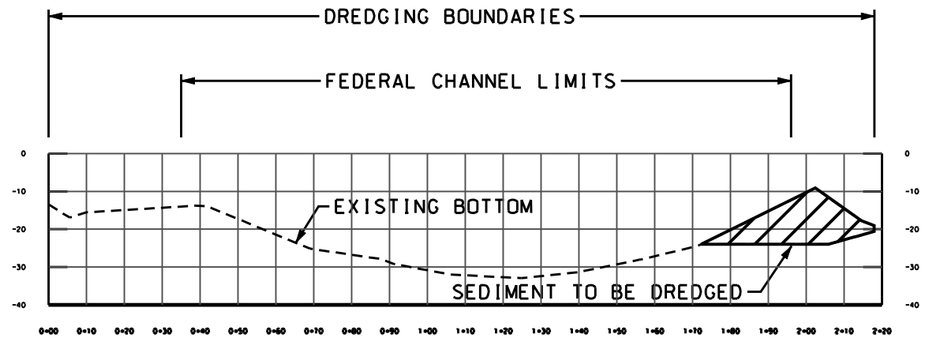
U.S. Army Corps of Engineers
Chicago District

INDIANA HARBOR & CANAL
EAST CHICAGO, INDIANA
TSCA SEDIMENT VOLUMES

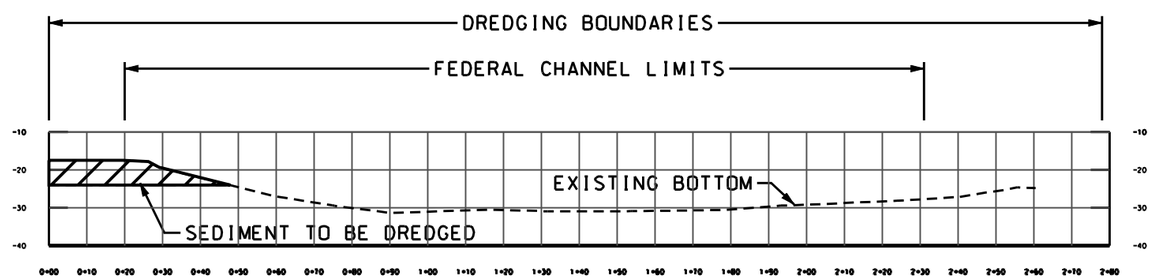
SOUTHERN DREDING AREAS
CROSS SECTIONS

| SCALE: | DATE: | DRAWING CODE: |
|---|---|---|
| 1" = 40' | AUGUST 2007 | C-3.DGN |

Figure 20: Dredging Cross-Sections




CROSS SECTION 4-4




CROSS SECTION 5-5

NOTES:

1. ALL THE DREDGING WILL BE TO A DEPTH OF -24.0 LWD.
2. THE SIDE SLOPES FOR THE DREDGING ARE 3 H TO 1 V.
3. THE DREDGING BOUNDARIES REPRESENT THE SHEET PILE WALLS WHERE THE CANAL ENDS.

| | | |
|---|---|---|
| U.S. Army Corps of Engineers Chicago District | INDIANA HARBOR & CANAL<br>EAST CHICAGO, INDIANA<br>TSCA SEDIMENT VOLUMES | |
| NORTHERN DREDGING AREAS<br>CROSS SECTIONS | | |
| SCALE:<br>1" = 40' | DATE:<br>AUGUST 2007 | DRAWING CODE:<br>C-4.DGN |

Figure 21: Cross-sectional view of PCB Concentrations in Sediment at Section 1

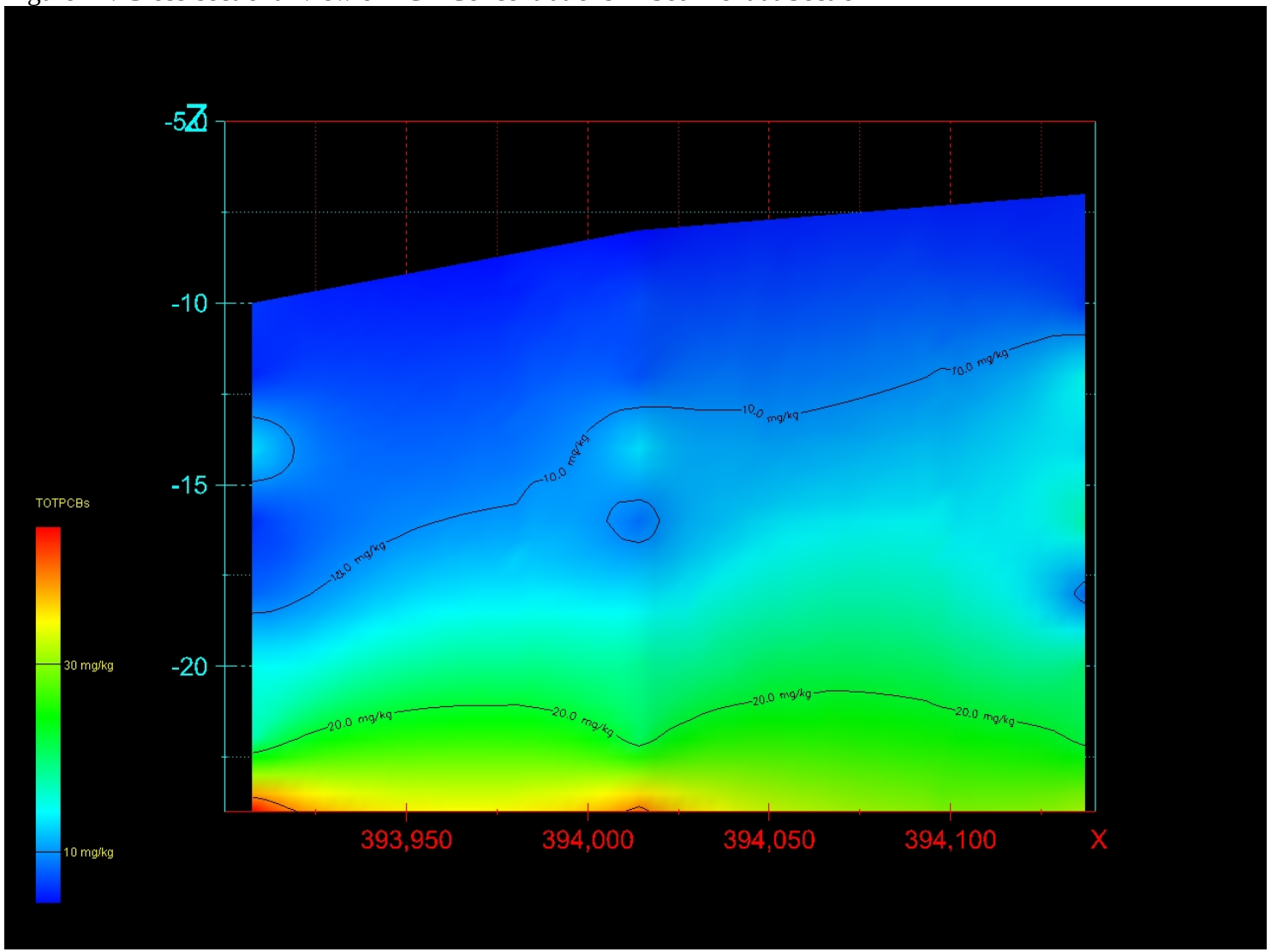


Figure 22: Cross-sectional view of PCB Concentrations in Sediment at Section 2

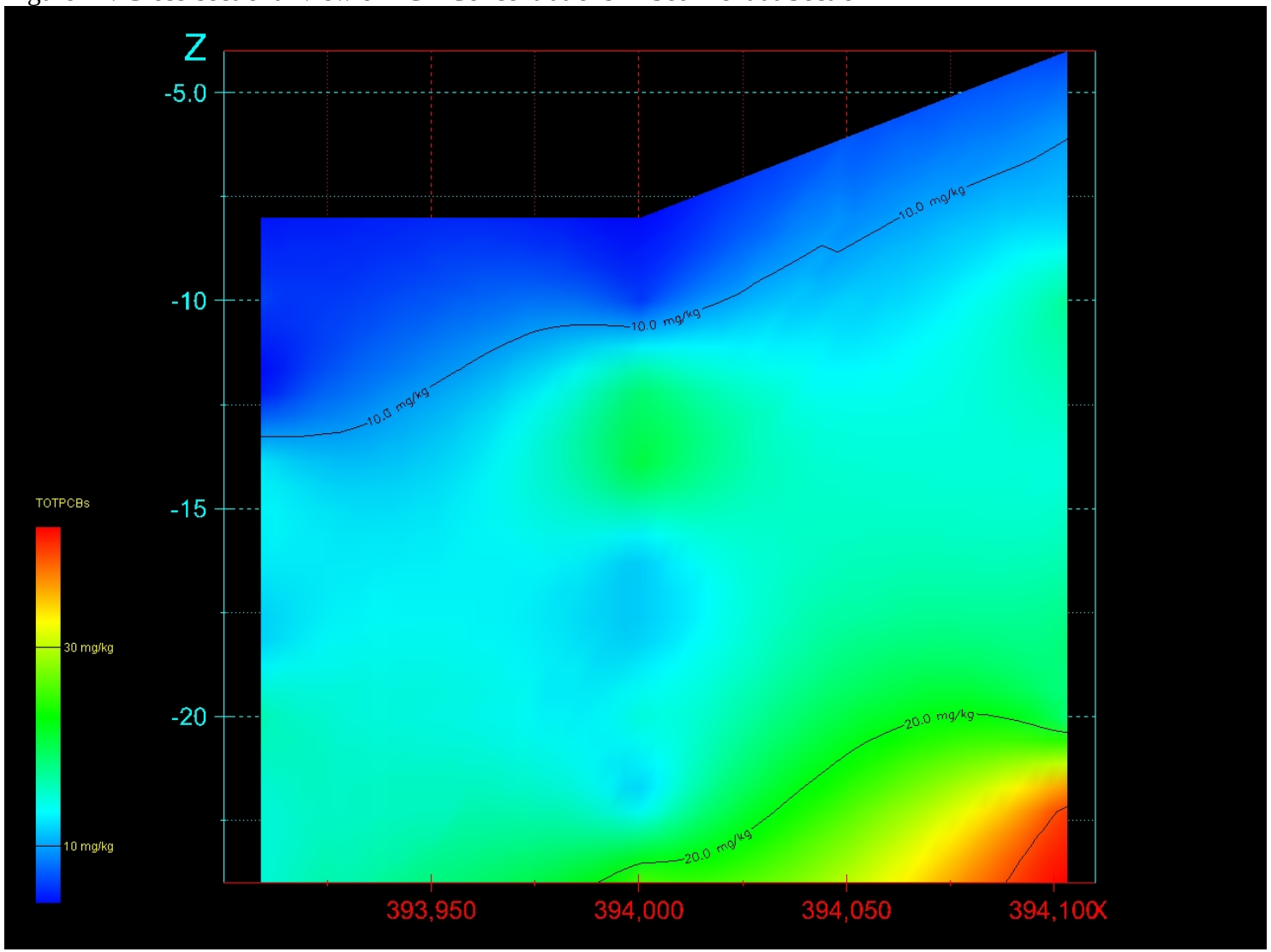


Figure 23: Cross-sectional view of PCB Concentrations in Sediment at Section 3

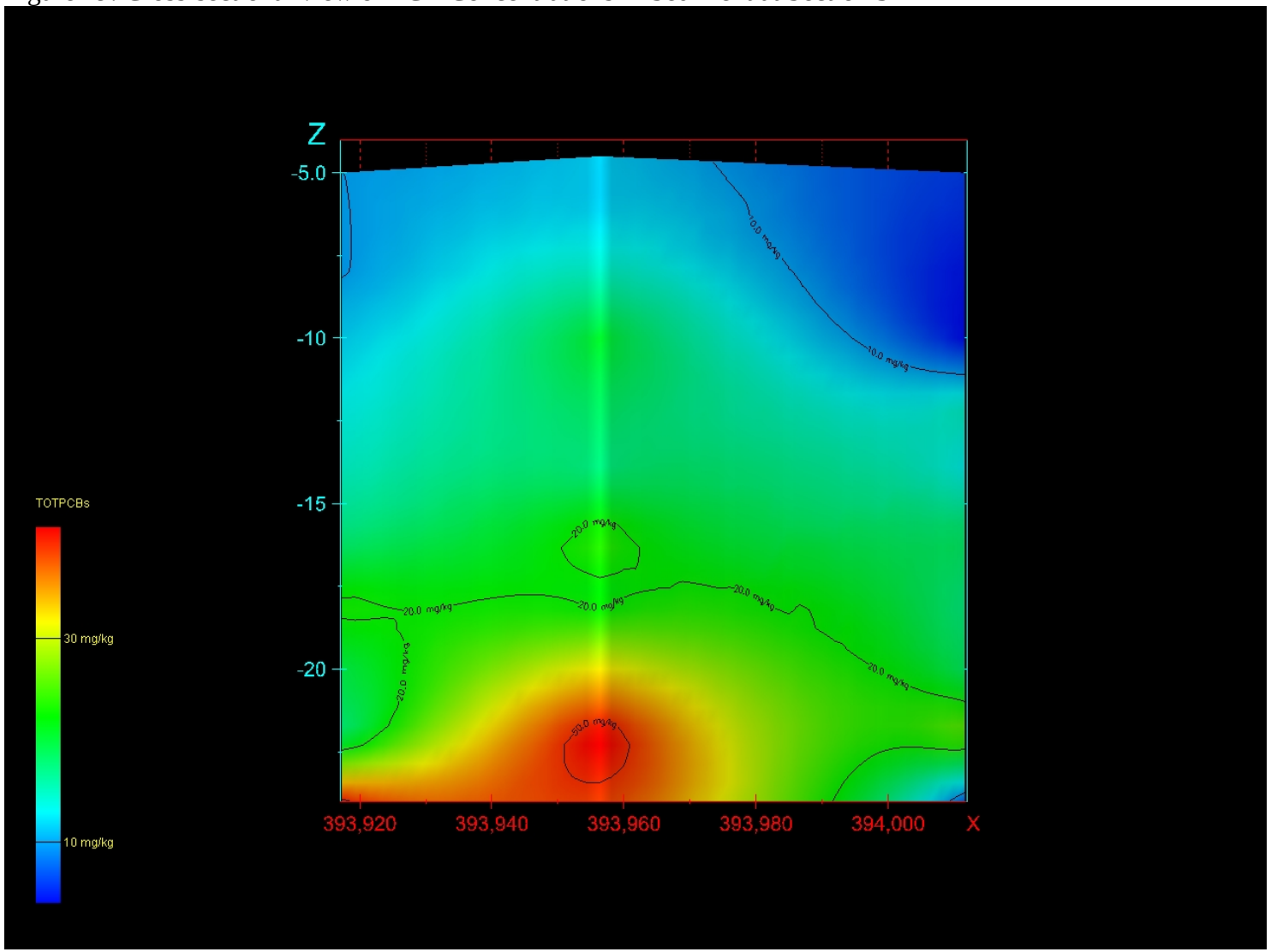


Figure 24: Cross-sectional view of PCB Concentrations in Sediment at Section 4

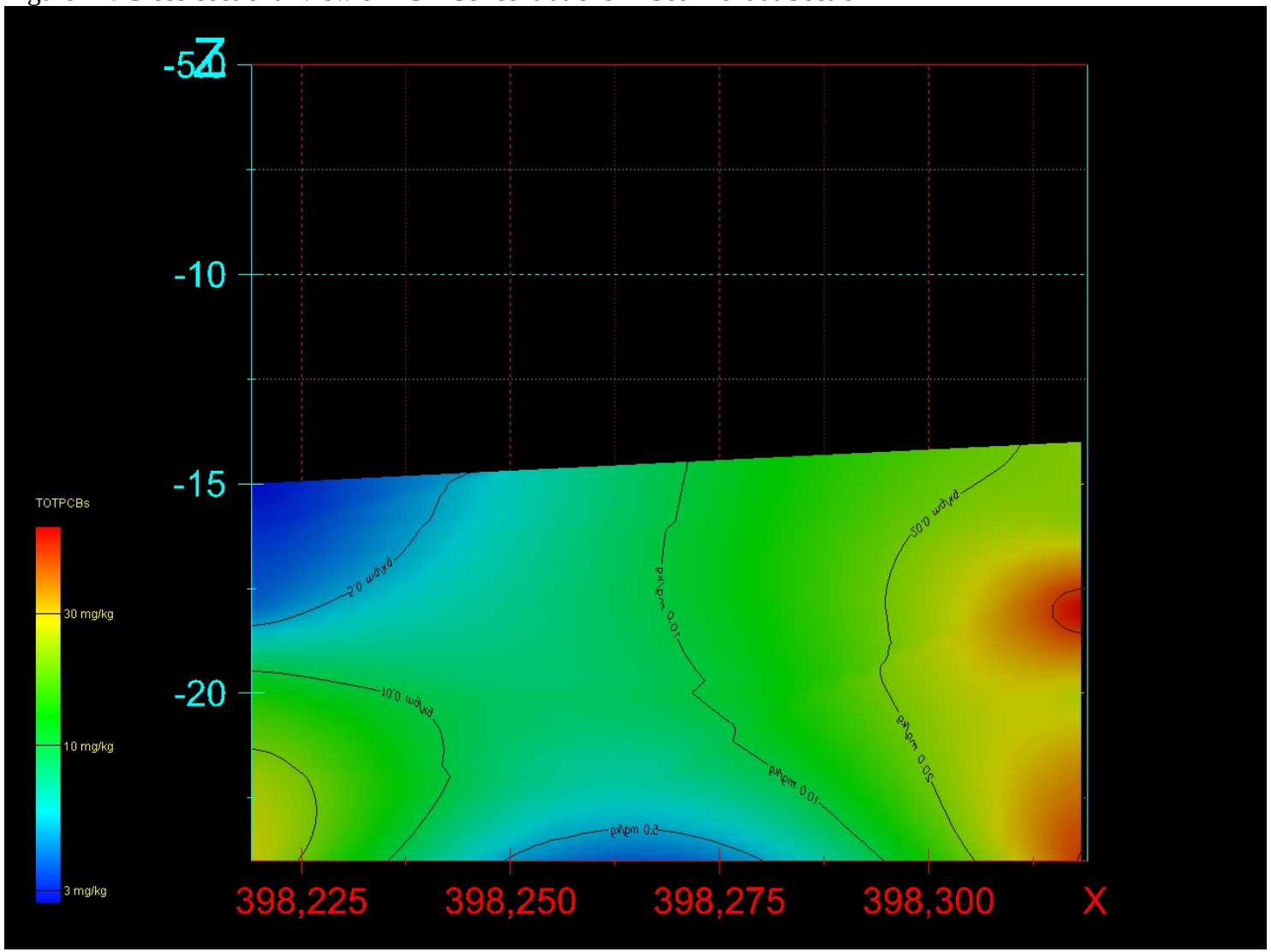


Figure 25: Cross-sectional view of PCB Concentrations in Sediment at Section 5

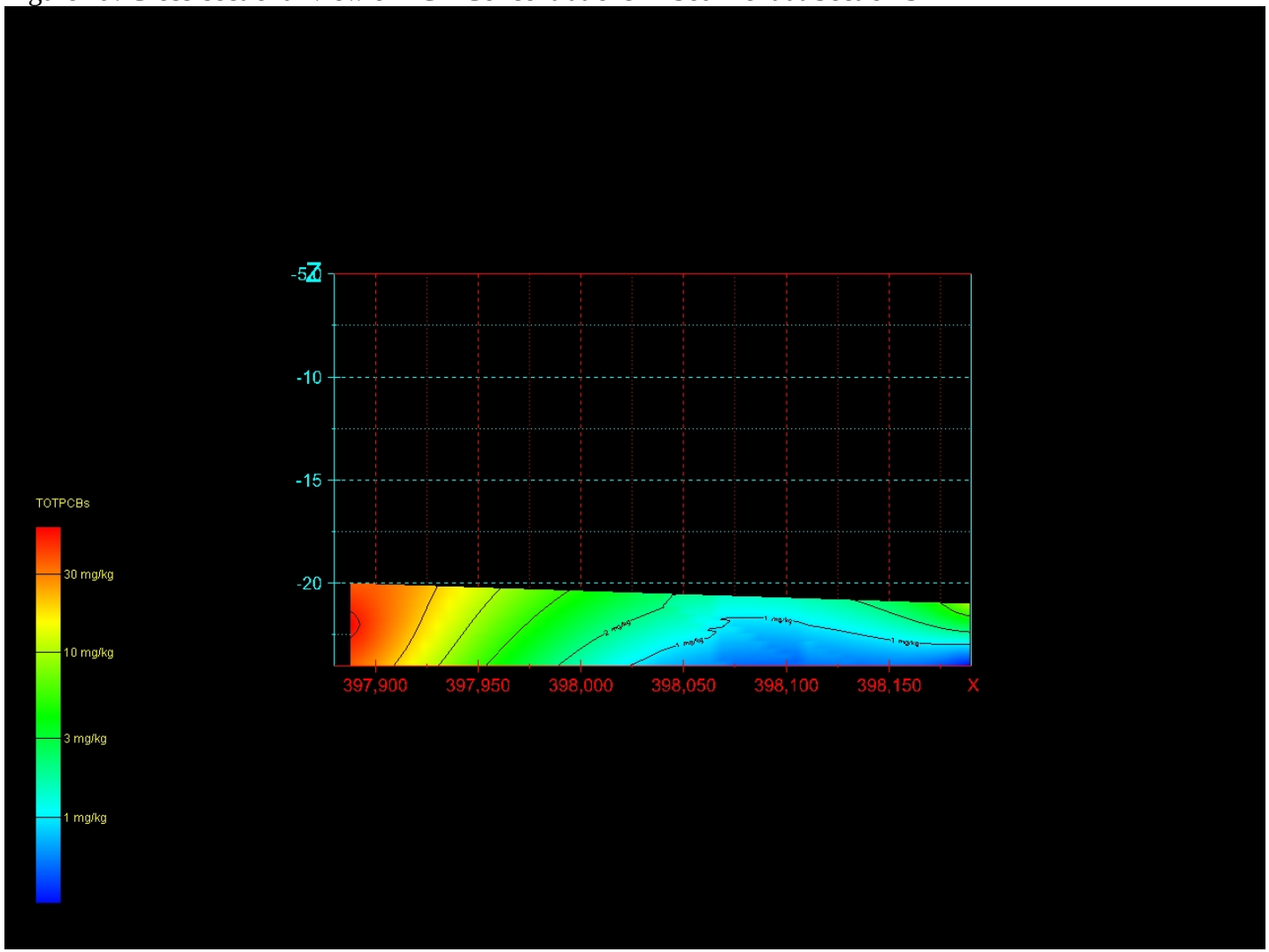
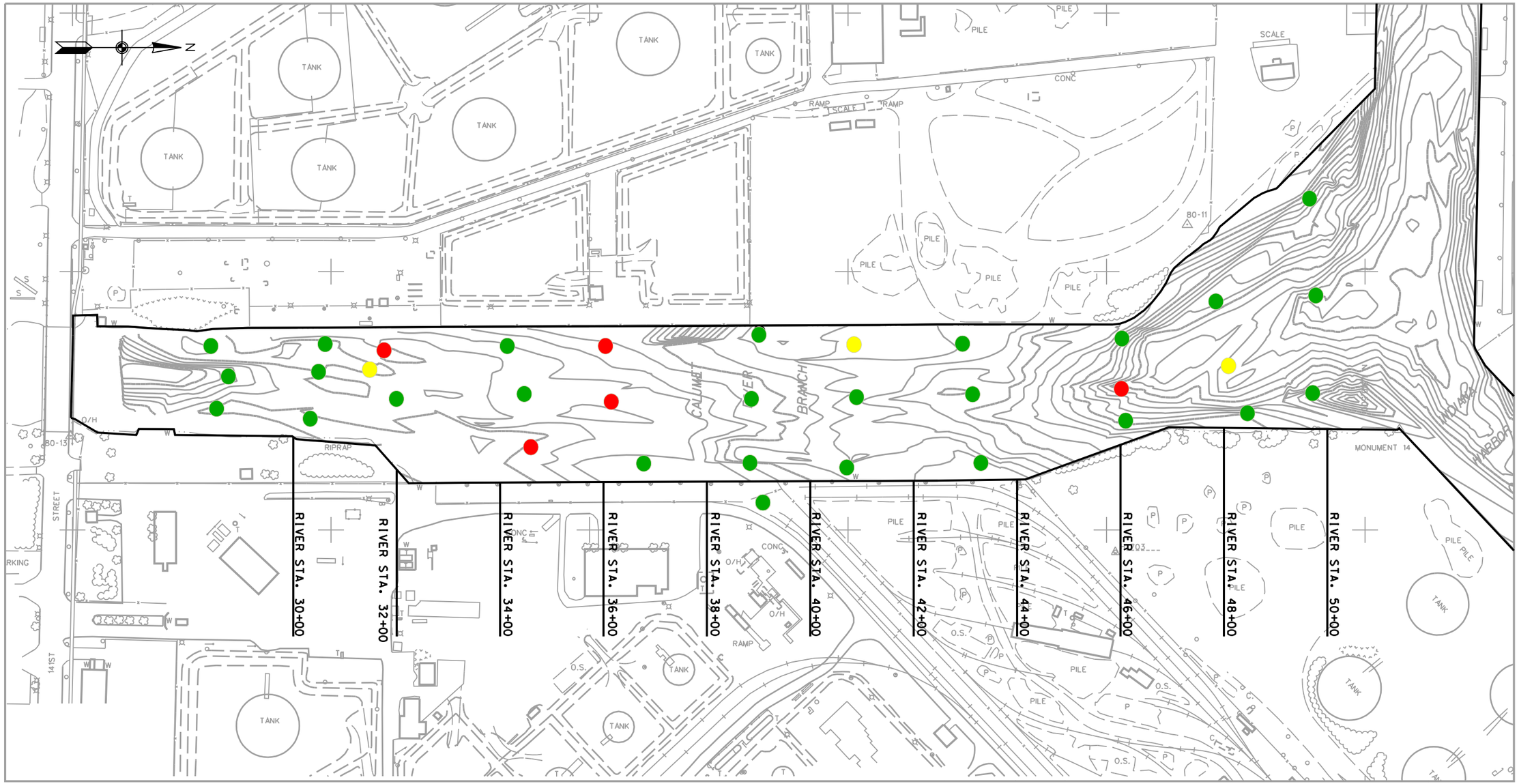


Figure 26: Management Unit One Post Dredge PCB Concentrations in Exposed Sediment (-24 lwd)




Notes:

Sample Stations noted in green indicate sample locations where PCB concentrations in the exposed sediment (post-dredge) are <40 ppm.

Sample stations noted in yellow indicate sample locations where PCB concentrations in the exposed sediment (post-dredge) are >40 ppm but < 50 ppm.

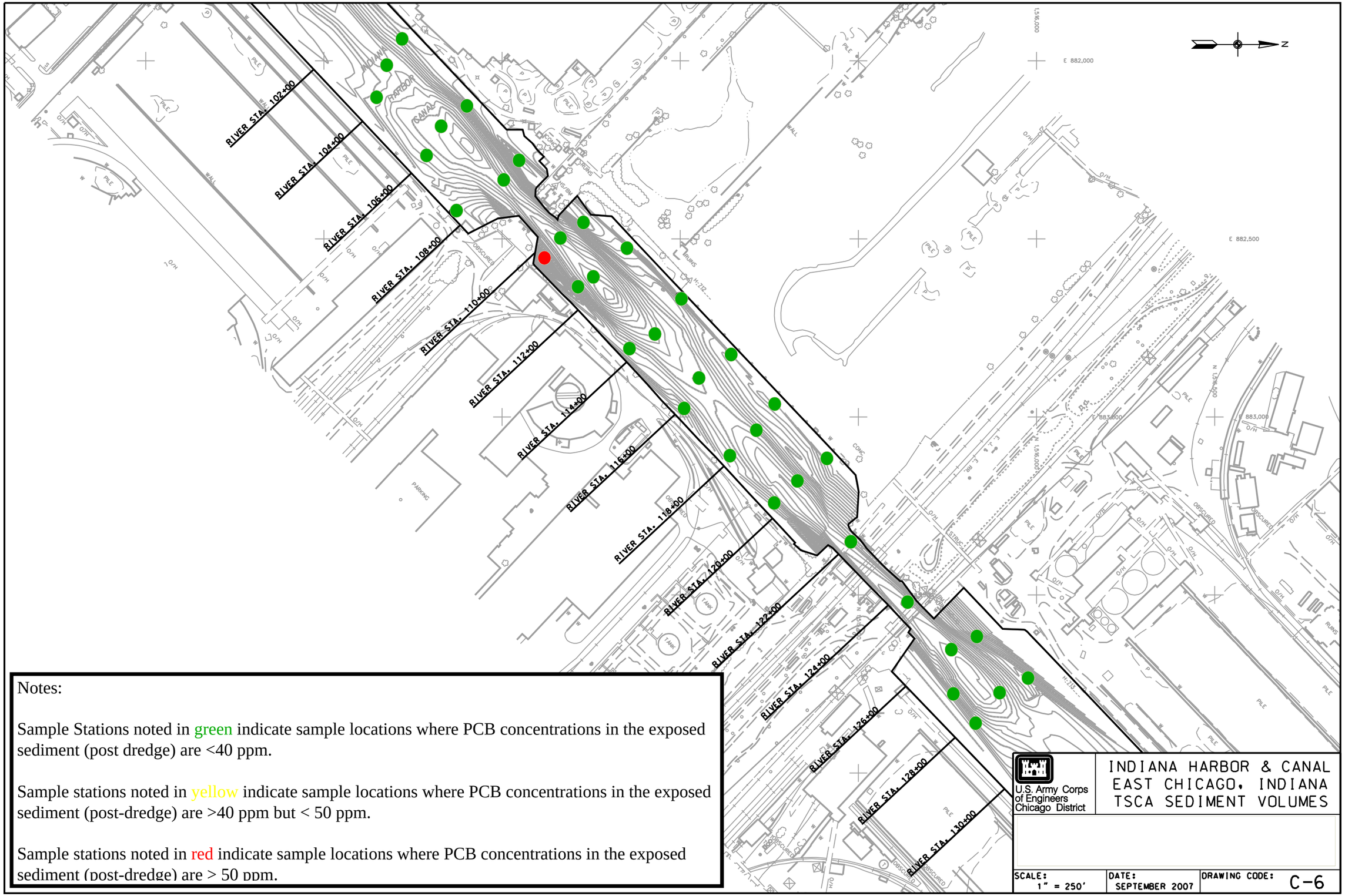
Sample stations noted in red indicate sample locations where PCB concentrations in the exposed sediment (post-dredge) are > 50 ppm.

U.S. Army Corps of Engineers
Chicago District

INDIANA HARBOR & CANAL
EAST CHICAGO, INDIANA
TSCA SEDIMENT VOLUMES

| SCALE: | DATE: | DRAWING CODE: |
|---|---|---|
| 1" = 200' | SEPTEMBER 2007 | C-5 |

Figure 27: Management Unit Two Post Dredge PCB Concentrations in Exposed Sediment (-24 lwd)



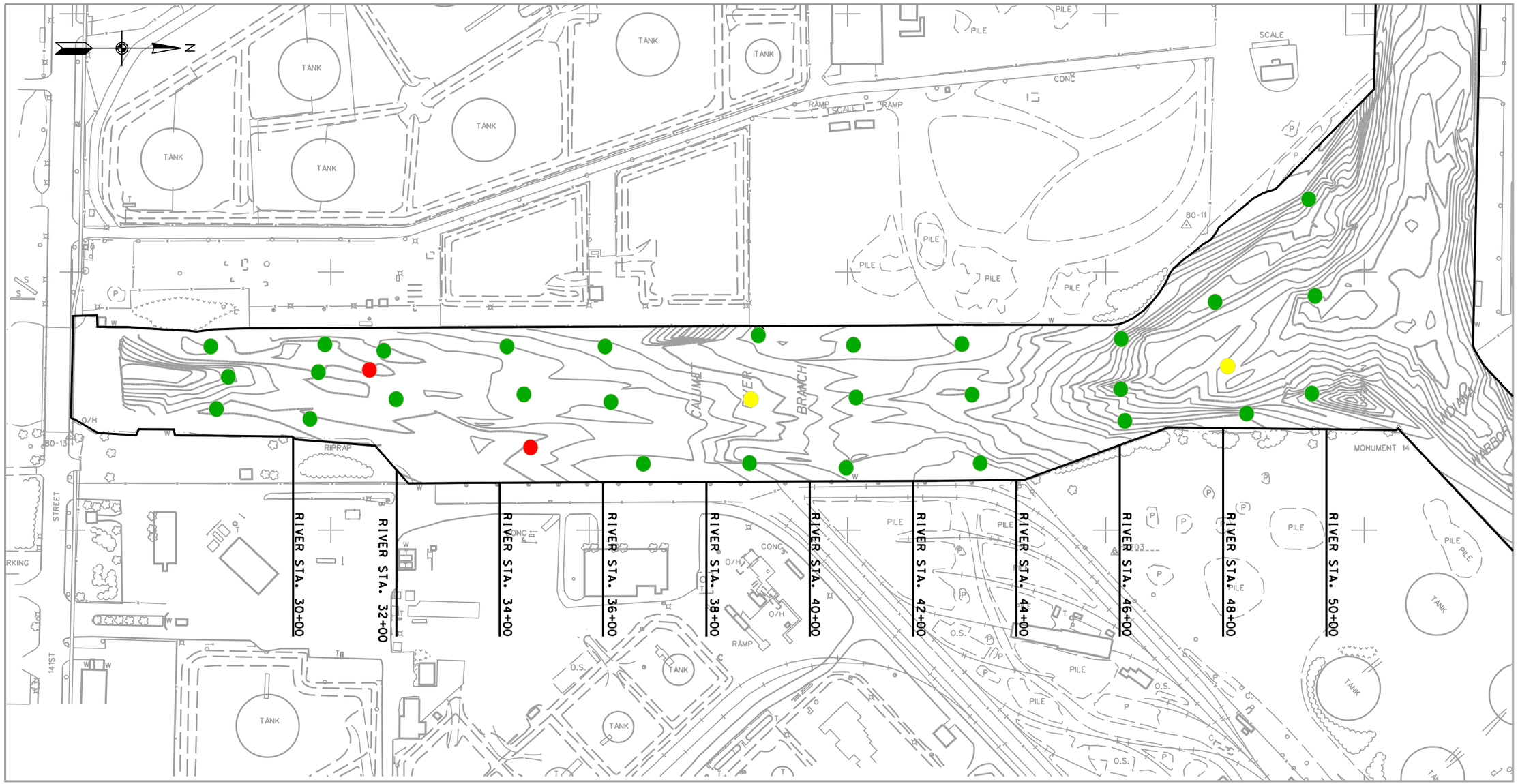

Notes:

Sample Stations noted in green indicate sample locations where PCB concentrations in the exposed sediment (post dredge) are <40 ppm.

Sample stations noted in yellow indicate sample locations where PCB concentrations in the exposed sediment (post-dredge) are >40 ppm but < 50 ppm.

Sample stations noted in red indicate sample locations where PCB concentrations in the exposed sediment (post-dredge) are > 50 ppm.

Figure 28: Management Unit One Post Dredge PCB Concentrations in Exposed Sediment (-22 lwd)




Notes:

Sample Stations noted in green indicate sample locations where PCB concentrations in the exposed sediment (post-dredge) are <40 ppm.

Sample stations noted in yellow indicate sample locations where PCB concentrations in the exposed sediment (post-dredge) are >40 ppm but < 50 ppm.

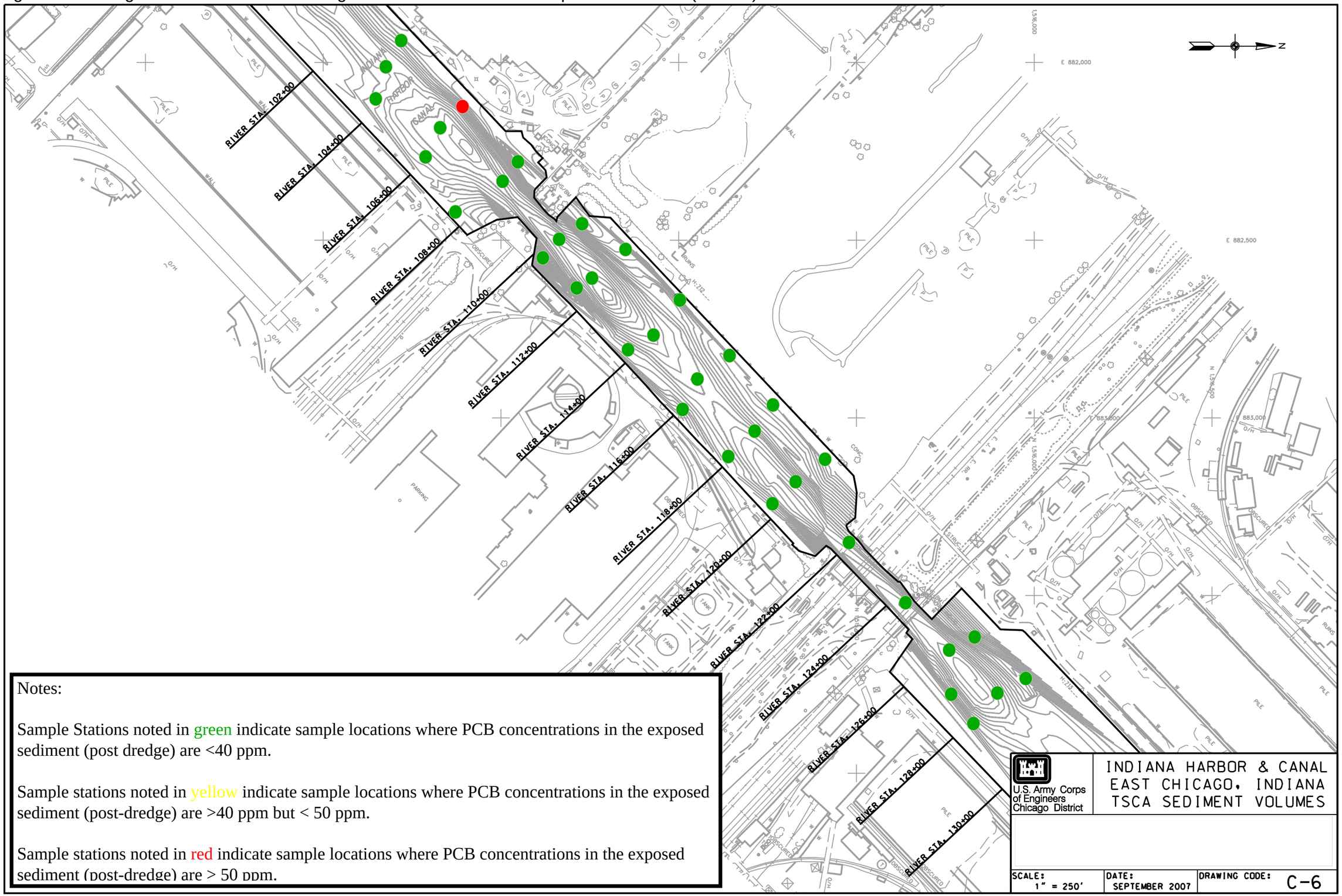
Sample stations noted in red indicate sample locations where PCB concentrations in the exposed sediment (post-dredge) are > 50 ppm.

U.S. Army Corps of Engineers
Chicago District

INDIANA HARBOR & CANAL
EAST CHICAGO, INDIANA
TSCA SEDIMENT VOLUMES

| SCALE: | DATE: | DRAWING CODE: |
|---|---|---|
| 1" = 200' | SEPTEMBER 2007 | C-5 |

Figure 29: Management Unit Two Post Dredge PCB Concentrations in Exposed Sediment (-22 lwd)



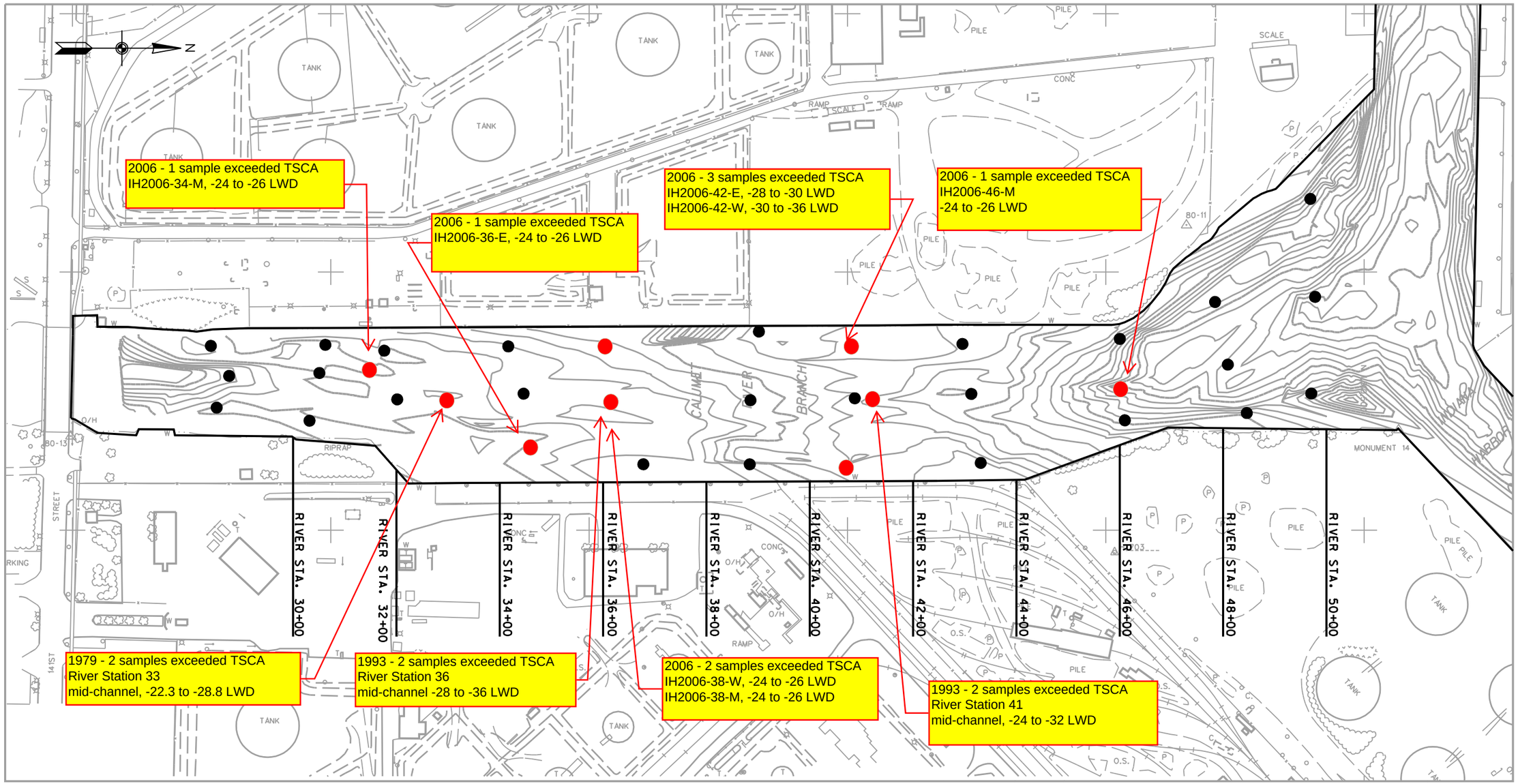

Notes:

Sample Stations noted in green indicate sample locations where PCB concentrations in the exposed sediment (post dredge) are <40 ppm.

Sample stations noted in yellow indicate sample locations where PCB concentrations in the exposed sediment (post-dredge) are >40 ppm but < 50 ppm.

Sample stations noted in red indicate sample locations where PCB concentrations in the exposed sediment (post-dredge) are > 50 ppm.

Figure 30: Reach 13 - TSCA Sediment below Federal Channel




*Note: Historic sample locations are approximate.*

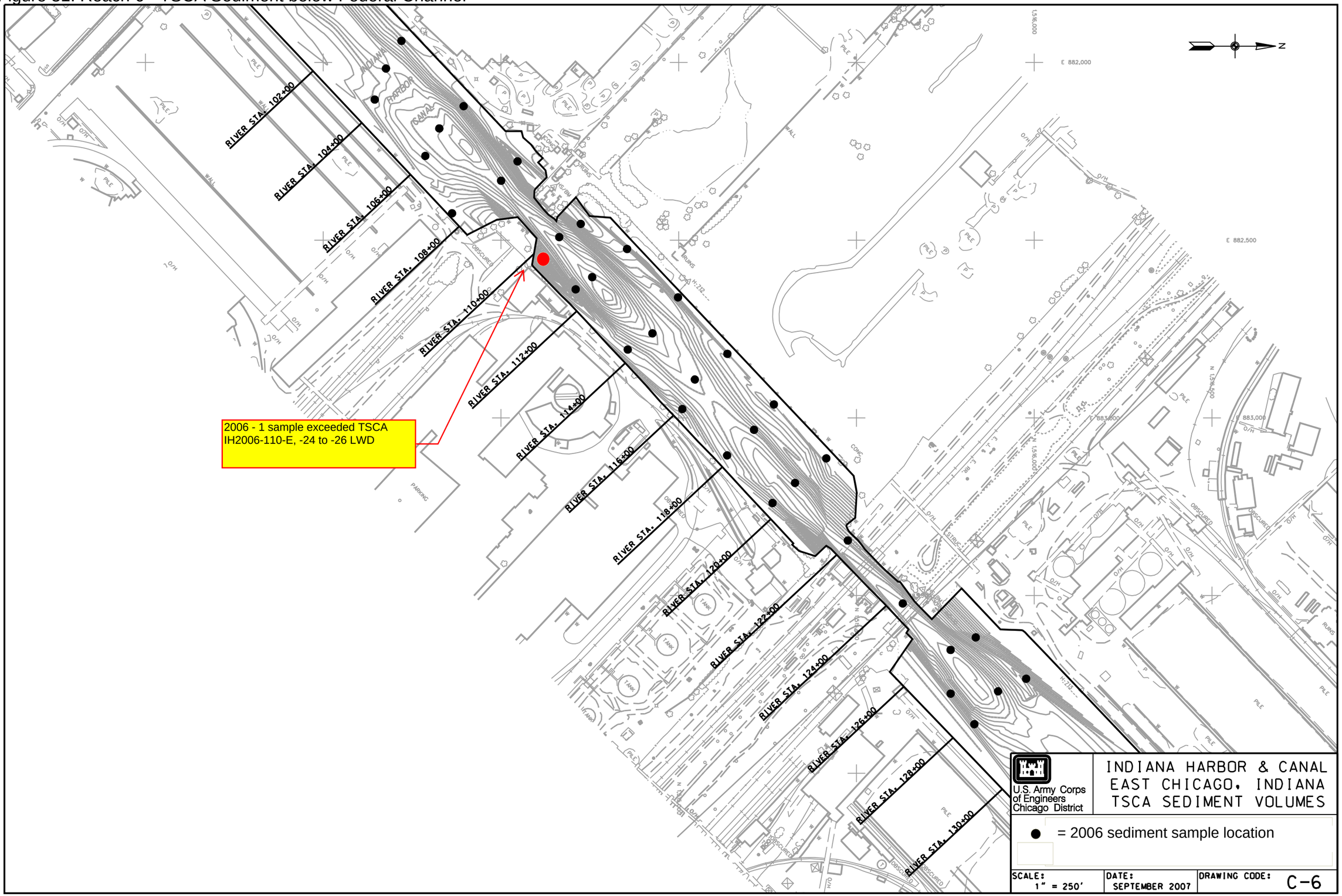
U.S. Army Corps of Engineers
Chicago District

INDIANA HARBOR & CANAL
EAST CHICAGO, INDIANA
TSCA SEDIMENT VOLUMES

● = 2006 sediment sample location

| SCALE: | DATE: | DRAWING CODE: |
|---|---|---|
| 1" = 200' | SEPTEMBER 2007 | C-5 |

Figure 31: Reach 6 - TSCA Sediment below Federal Channel



# Attachment 1

| Event ID | Sample date | Sample ID | Parameter | Concentration | Unit | River Station | Sample depth (LWD) | Sample Type | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **Lake George Branch** | | | | | | | | | |
| IH-03.2 | 9/17/2003 | IHC03-C1 | Aroclor-1016 | < 20 | ug/kg | 16.1 | | core | E 2842183.347 N 2331012.325 NAD 1983 |
| IH-03.2 | 9/17/2003 | IHC03-C1 | Aroclor-1221 | < 20 | ug/kg | 16.1 | | core | E 2842183.347 N 2331012.325 NAD 1983 |
| IH-03.2 | 9/17/2003 | IHC03-C1 | Aroclor-1232 | < 20 | ug/kg | 16.1 | | core | E 2842183.347 N 2331012.325 NAD 1983 |
| IH-03.2 | 9/17/2003 | IHC03-C1 | Aroclor-1242 | < 20 | ug/kg | 16.1 | | core | E 2842183.347 N 2331012.325 NAD 1983 |
| IH-03.2 | 9/17/2003 | IHC03-C1 | Aroclor-1248 | < 20 | ug/kg | 16.1 | | core | E 2842183.347 N 2331012.325 NAD 1983 |
| IH-03.2 | 9/17/2003 | IHC03-C1 | Aroclor-1254 | < 20 | ug/kg | 16.1 | | core | E 2842183.347 N 2331012.325 NAD 1983 |
| IH-03.2 | 9/17/2003 | IHC03-C1 | Aroclor-1260 | < 20 | ug/kg | 16.1 | | core | E 2842183.347 N 2331012.325 NAD 1983 |
| IH-03.2 | 9/17/2003 | IHC03-C1-D | Aroclor-1016 | < 20 | ug/kg | 16.1 | | core | E 2842183.347 N 2331012.325 NAD 1983 |
| IH-03.2 | 9/17/2003 | IHC03-C1-D | Aroclor-1221 | < 20 | ug/kg | 16.1 | | core | E 2842183.347 N 2331012.325 NAD 1983 |
| IH-03.2 | 9/17/2003 | IHC03-C1-D | Aroclor-1232 | < 20 | ug/kg | 16.1 | | core | E 2842183.347 N 2331012.325 NAD 1983 |
| IH-03.2 | 9/17/2003 | IHC03-C1-D | Aroclor-1242 | < 20 | ug/kg | 16.1 | | core | E 2842183.347 N 2331012.325 NAD 1983 |
| IH-03.2 | 9/17/2003 | IHC03-C1-D | Aroclor-1248 | 80 | ug/kg | 16.1 | | core | E 2842183.347 N 2331012.325 NAD 1983 |
| IH-03.2 | 9/17/2003 | IHC03-C1-D | Aroclor-1254 | < 20 | ug/kg | 16.1 | | core | E 2842183.347 N 2331012.325 NAD 1983 |
| IH-03.2 | 9/17/2003 | IHC03-C1-D | Aroclor-1260 | < 20 | ug/kg | 16.1 | | core | E 2842183.347 N 2331012.325 NAD 1983 |
| IH-03.2 | 9/16/2003 | IHC03-C2 | Aroclor-1016 | < 21 | ug/kg | 16.5 | | core | E 2842389.851 N 2331011.95 NAD 1983 |
| IH-03.2 | 9/16/2003 | IHC03-C2 | Aroclor-1221 | < 21 | ug/kg | 16.5 | | core | E 2842389.851 N 2331011.95 NAD 1983 |
| IH-03.2 | 9/16/2003 | IHC03-C2 | Aroclor-1232 | < 21 | ug/kg | 16.5 | | core | E 2842389.851 N 2331011.95 NAD 1983 |
| IH-03.2 | 9/16/2003 | IHC03-C2 | Aroclor-1242 | < 21 | ug/kg | 16.5 | | core | E 2842389.851 N 2331011.95 NAD 1983 |
| IH-03.2 | 9/16/2003 | IHC03-C2 | Aroclor-1248 | 640 | ug/kg | 16.5 | | core | E 2842389.851 N 2331011.95 NAD 1983 |
| IH-03.2 | 9/16/2003 | IHC03-C2 | Aroclor-1254 | < 21 | ug/kg | 16.5 | | core | E 2842389.851 N 2331011.95 NAD 1983 |
| IH-03.2 | 9/16/2003 | IHC03-C2 | Aroclor-1260 | 140 | ug/kg | 16.5 | | core | E 2842389.851 N 2331011.95 NAD 1983 |
| IH-03.2 | 9/16/2003 | IHC03-C3 | Aroclor-1016 | < 22 | ug/kg | 17.3 | | core | E 2842673.639 N 2331003.829 NAD 1983 |
| IH-03.2 | 9/16/2003 | IHC03-C3 | Aroclor-1221 | < 22 | ug/kg | 17.3 | | core | E 2842673.639 N 2331003.829 NAD 1983 |
| IH-03.2 | 9/16/2003 | IHC03-C3 | Aroclor-1232 | < 22 | ug/kg | 17.3 | | core | E 2842673.639 N 2331003.829 NAD 1983 |
| IH-03.2 | 9/16/2003 | IHC03-C3 | Aroclor-1242 | < 22 | ug/kg | 17.3 | | core | E 2842673.639 N 2331003.829 NAD 1983 |
| IH-03.2 | 9/16/2003 | IHC03-C3 | Aroclor-1248 | 140 | ug/kg | 17.3 | | core | E 2842673.639 N 2331003.829 NAD 1983 |
| IH-03.2 | 9/16/2003 | IHC03-C3 | Aroclor-1254 | < 22 | ug/kg | 17.3 | | core | E 2842673.639 N 2331003.829 NAD 1983 |
| IH-03.2 | 9/16/2003 | IHC03-C3 | Aroclor-1260 | 26 | ug/kg | 17.3 | | core | E 2842673.639 N 2331003.829 NAD 1983 |
| IH-03.2 | 9/15/2003 | IHC03-C4 | Aroclor-1016 | < 21 | ug/kg | 18 | | core | E 2842996.554 N 2330999.686 NAD 1983 |
| IH-03.2 | 9/15/2003 | IHC03-C4 | Aroclor-1221 | < 21 | ug/kg | 18 | | core | E 2842996.554 N 2330999.686 NAD 1983 |
| IH-03.2 | 9/15/2003 | IHC03-C4 | Aroclor-1232 | < 21 | ug/kg | 18 | | core | E 2842996.554 N 2330999.686 NAD 1983 |
| IH-03.2 | 9/15/2003 | IHC03-C4 | Aroclor-1242 | < 21 | ug/kg | 18 | | core | E 2842996.554 N 2330999.686 NAD 1983 |
| IH-03.2 | 9/15/2003 | IHC03-C4 | Aroclor-1248 | 370 | ug/kg | 18 | | core | E 2842996.554 N 2330999.686 NAD 1983 |
| IH-03.2 | 9/15/2003 | IHC03-C4 | Aroclor-1254 | < 21 | ug/kg | 18 | | core | E 2842996.554 N 2330999.686 NAD 1983 |
| IH-03.2 | 9/15/2003 | IHC03-C4 | Aroclor-1260 | 59 | ug/kg | 18 | | core | E 2842996.554 N 2330999.686 NAD 1983 |
| IH-03.2 | 9/15/2003 | IHC03-C5 | Aroclor-1016 | < 23 | ug/kg | 19 | | core | E 2843384.625 N 2330992.533 NAD 1983 |
| IH-03.2 | 9/15/2003 | IHC03-C5 | Aroclor-1221 | < 23 | ug/kg | 19 | | core | E 2843384.625 N 2330992.533 NAD 1983 |
| IH-03.2 | 9/15/2003 | IHC03-C5 | Aroclor-1232 | < 23 | ug/kg | 19 | | core | E 2843384.625 N 2330992.533 NAD 1983 |
| IH-03.2 | 9/15/2003 | IHC03-C5 | Aroclor-1242 | < 23 | ug/kg | 19 | | core | E 2843384.625 N 2330992.533 NAD 1983 |
| IH-03.2 | 9/15/2003 | IHC03-C5 | Aroclor-1248 | 180 | ug/kg | 19 | | core | E 2843384.625 N 2330992.533 NAD 1983 |
| IH-03.2 | 9/15/2003 | IHC03-C5 | Aroclor-1254 | < 23 | ug/kg | 19 | | core | E 2843384.625 N 2330992.533 NAD 1983 |
| IH-03.2 | 9/15/2003 | IHC03-C5 | Aroclor-1260 | 41 | ug/kg | 19 | | core | E 2843384.625 N 2330992.533 NAD 1983 |

| Event ID | Sample date | Sample ID | Parameter | Concentration | Unit | River Station | Sample depth (LWD) | Sample Type | Notes |
|---|---|---|---|---|---|---|---|---|---|
| IH-88.2 | 30-Sep-88 | IH88-S1 | Total PCB | 0.0715 | mg/kg | 20 | | grab | |
| IH-79.1 | 09-Nov-79 | 2-1-4 | Total PCB | 7.93 | mg/kg | 25 | -14.8 | core | Boring CIH-2-79, depth -13.3' to -16.3' |
| IH-79.1 | 09-Nov-79 | 2-5-8 | Total PCB | 1.02 | mg/kg | 25 | -17.8 | core | Boring CIH-2-79, depth -16.3' to -19.3' |
| IH-79.1 | 09-Nov-79 | 2-9-12 | Total PCB | 0.02 | mg/kg | 25 | -21.3 | core | Boring CIH-2-79, depth -19.3' to -23.3' |
| IH-89.1 | 01-Aug-89 | IH 08 | Total PCB | 18 | mg/kg | 25 | | grab | |
| IH-77.1 | 30-Aug-77 | IH77-2 | Total PCB | 21.3 | mg/kg | 26 | -14 | grab | |
| IH-87.1 | 15-Sep-87 | E(5.4) | Total PCB | 17.3 | mg/kg | 32 | -16 | grab | |

**Calumet River Branch**

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| IH-88.2 | 30-Sep-88 | IH88-S2B | Total PCB | < 0.0028 | mg/kg | 0 | | grab | |
| IH-89.1 | 01-Aug-89 | IH 10 | Total PCB | 10.1 | mg/kg | 25 | | grab | |
| IH-88.2 | 30-Sep-88 | IH88-S2 | Total PCB | 0.1025 | mg/kg | 26 | | grab | |
| IH-87.1 | 15-Sep-87 | E(3.8) | Total PCB | 8.06 | mg/kg | 28 | -8 | grab | |
| IH-93.1 | 08-Nov-93 | IHST-93-1-1 | Total PCB | 16.424 | mg/kg | 30 | -22 | core | depth -20' to -24' |
| IH-93.1 | 08-Nov-93 | IHST-93-1-2 | Total PCB | 41.259 | mg/kg | 30 | -26 | core | depth -24' to -28' |
| IH-93.1 | 08-Nov-93 | IHST-93-1-3 | Total PCB | 47.047 | mg/kg | 30 | -30 | core | depth -28' to -32' |
| IH-93.1 | 08-Nov-93 | IHST-93-1-4 | Total PCB | 46.129 | mg/kg | 30 | -34 | core | depth -32' to -36' |
| IH-93.1 | 08-Nov-93 | IHST-93-1-5 | Total PCB | 3.8579 | mg/kg | 30 | -38 | core | depth -36' to -40' |
| IH-79.1 | 09-Nov-79 | 1-1-4 | Total PCB | 15.19 | mg/kg | 33 | -14.8 | core | Boring CIH-1-79, depth -13.3' to -16.3' |
| IH-79.1 | 09-Nov-79 | 1-5-8 | Total PCB | 10.75 | mg/kg | 33 | -17.8 | core | Boring CIH-1-79, depth -16.3' to -19.3' |
| IH-79.1 | 09-Nov-79 | 1-9-12 | Total PCB | 58.74 | mg/kg | 33 | -20.8 | core | Boring CIH-1-79, depth -19.3' to -22.3' |
| IH-79.1 | 09-Nov-79 | 1-13-16 | Total PCB | 67.96 | mg/kg | 33 | -23.8 | core | Boring CIH-1-79, depth -22.3' to -25.3' |
| IH-79.1 | 09-Nov-79 | 1-17-21 | Total PCB | 53.91 | mg/kg | 33 | -26.8 | core | Boring CIH-1-79, depth -25.3' to -28.8' |
| IH-93.1 | 08-Nov-93 | IHST-93-2-1 | Total PCB | 15.342 | mg/kg | 36 | -22 | core | depth -20' to -24' |
| IH-93.1 | 08-Nov-93 | IHST-93-2-2 | Total PCB | 30.823 | mg/kg | 36 | -26 | core | depth -24' to -28' |
| IH-93.1 | 08-Nov-93 | IHST-93-2-3 | Total PCB | 51.15 | mg/kg | 36 | -30 | core | depth -28' to -32' |
| IH-93.1 | 08-Nov-93 | IHST-93-2-4 | Total PCB | 63.825 | mg/kg | 36 | -34 | core | depth -32' to -36' |
| IH-93.1 | 08-Nov-93 | IHST-93-2-5 | Total PCB | 1.8133 | mg/kg | 36 | -37 | core | depth -36' to -38' |
| IH-77.1 | 30-Aug-77 | IH77-1 | Total PCB | 5.6 | mg/kg | 37 | -13 | grab | River Mile 3.83 |
| IH-03.1 | 28-Jul-03 | IHC0603-005 | Arochlor 1016 | < 0.4 | mg/kg | 40 | 6.5' thick | Drum grab | N 41.64414 W 87.47103 |
| IH-03.1 | 28-Jul-03 | IHC0603-005 | Arochlor 1221 | < 0.4 | mg/kg | 40 | 6.5' thick | Drum grab | N 41.64414 W 87.47103 |
| IH-03.1 | 28-Jul-03 | IHC0603-005 | Arochlor 1232 | < 0.4 | mg/kg | 40 | 6.5' thick | Drum grab | N 41.64414 W 87.47103 |
| IH-03.1 | 28-Jul-03 | IHC0603-005 | Arochlor 1242 | < 0.4 | mg/kg | 40 | 6.5' thick | Drum grab | N 41.64414 W 87.47103 |
| IH-03.1 | 28-Jul-03 | IHC0603-005 | Arochlor 1248 | 2.4 | mg/kg | 40 | 6.5' thick | Drum grab | N 41.64414 W 87.47103 |
| IH-03.1 | 28-Jul-03 | IHC0603-005 | Arochlor 1254 | < 0.37 | mg/kg | 40 | 6.5' thick | Drum grab | N 41.64414 W 87.47103 |
| IH-03.1 | 28-Jul-03 | IHC0603-005 | Arochlor 1260 | 0.41 | mg/kg | 40 | 6.5' thick | Drum grab | N 41.64414 W 87.47103 |
| IH-93.1 | 09-Nov-93 | IHST-93-3-1 | Total PCB | 20.558 | mg/kg | 41 | -22 | core | depth -20' to -24' |
| IH-93.1 | 09-Nov-93 | IHST-93-3-2 | Total PCB | 50.656 | mg/kg | 41 | -26 | core | depth -24' to -28' |
| IH-93.1 | 09-Nov-93 | IHST-93-3-3 | Total PCB | 99.875 | mg/kg | 41 | -30 | core | depth -28' to -32' |
| IH-93.1 | 09-Nov-93 | IHST-93-3-4 | Total PCB | 8.9829 | mg/kg | 41 | -34 | core | depth -32' to -36' |
| IH-83.1 | 18-Aug-83 | IH83-1.1 | Total PCB | 14.9 | mg/kg | 46 | -18.9 | core | core depth -17.9' TO -19.9' |
| IH-83.1 | 18-Aug-83 | IH83-1.2 | Total PCB | 17.5 | mg/kg | 46 | -20.9 | core | core depth -19.9' TO -21.9' |
| IH-83.1 | 18-Aug-83 | IH83-1.3 | Total PCB | 23.6 | mg/kg | 46 | -22.9 | core | core depth -21.9' TO -23.9' |

| Event ID | Sample date | Sample ID | Parameter | Concentration | Unit | River Station | Sample depth (LWD) | Sample Type | Notes |
|---|---|---|---|---|---|---|---|---|---|
| IH-83.1 | 18-Aug-83 | IH83-1.4 | Total PCB | 35.1 | mg/kg | 46 | -24.65 | core | core depth -23.9' TO -25.4' |
| IH-79.1 | 09-Nov-79 | 3-3-6 | Total PCB | 29.4 | mg/kg | 50 | -21.8 | core | Boring CIH-3-79, depth -20.3' to -23.3' |
| IH-79.1 | 09-Nov-79 | 3-7-10 | Total PCB | 14.35 | mg/kg | 50 | -24.8 | core | Boring CIH-3-79, depth -23.3' to -26.3' |
| IH-79.1 | 09-Nov-79 | 3-11-14 | Total PCB | 42.15 | mg/kg | 50 | -27.8 | core | Boring CIH-3-79, depth -26.3' to -29.3' |
| IH-79.1 | 09-Nov-79 | 3-15-18 | Total PCB | 21.71 | mg/kg | 50 | -30.8 | core | Boring CIH-3-79, depth -29.3' to -32.3' |
| IH-77.1 | 30-Aug-77 | IH77-3 | Total PCB | 25.7 | mg/kg | 50 | -27 | grab | |
| IH-89.1 | 01-Aug-89 | IH 07 | Total PCB | 43 | mg/kg | 50 | | grab | |
| IH-93.1 | 09-Nov-93 | IHST-93-4-1 | Total PCB | 42.442 | mg/kg | 50 | -26 | core | depth -24' to -28' |
| IH-93.1 | 09-Nov-93 | IHST-93-4-2 | Total PCB | 29.711 | mg/kg | 50 | -30 | core | depth -28' to -32' |

**Indiana Harbor Canal**

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| IH-83.1 | 18-Aug-83 | IH83-2.1 | Total PCB | 11.7 | mg/kg | 57 | -18.9 | core | core depth -17.9' TO -19.9' |
| IH-83.1 | 18-Aug-83 | IH83-2.2 | Total PCB | 22.2 | mg/kg | 57 | -20.9 | core | core depth -19.9' TO -21.9' |
| IH-83.1 | 18-Aug-83 | IH83-2.3 | Total PCB | 19.4 | mg/kg | 57 | -23 | core | core depth -21.9' TO -24.1' |
| IH-83.1 | 18-Aug-83 | IH83-3.1 | Total PCB | 16 | mg/kg | 57 | -19.8 | core | core depth -18.8' TO -20.8' |
| IH-83.1 | 18-Aug-83 | IH83-3.2 | Total PCB | 26.2 | mg/kg | 57 | -21.8 | core | core depth -20.8' TO -22.8' |
| IH-83.1 | 18-Aug-83 | IH83-3.3 | Total PCB | 30.6 | mg/kg | 57 | -23.05 | core | core depth -22.8' TO -23.3' |
| IH-83.1 | 18-Aug-83 | IH83-3A.1 | Total PCB | 14 | mg/kg | 57 | -19.8 | core | core depth -18.8' TO -20.8' |
| IH-83.1 | 18-Aug-83 | IH83-3A.2 | Total PCB | 24.7 | mg/kg | 57 | -21.8 | core | core depth -20.8' TO -22.8' |
| IH-83.1 | 18-Aug-83 | IH83-3A.3 | Total PCB | 24.3 | mg/kg | 57 | -23.9 | core | core depth -22.8' TO -25.0' |
| IH-77.1 | 30-Aug-77 | IH77-4 | Total PCB | 20.9 | mg/kg | 67 | -22 | grab | River Mile 3.13 |
| IH-83.1 | 18-Aug-83 | IH83-4.1 | Total PCB | 14.3 | mg/kg | 68 | -13.8 | core | core depth -12.8' TO -14.8' |
| IH-83.1 | 18-Aug-83 | IH83-4.2 | Total PCB | 15.4 | mg/kg | 68 | -15.8 | core | core depth -14.8' TO -16.8' |
| IH-83.1 | 18-Aug-83 | IH83-4.3 | Total PCB | 26.9 | mg/kg | 68 | -17.3 | core | core depth -16.8' TO -17.8' |
| IH-83.1 | 18-Aug-83 | IH83-4.4 | Total PCB | < 0.3 | mg/kg | 68 | -18.3 | core | core depth -17.8' TO -18.8' |
| IH-03.1 | 28-Jul-03 | IHC0603-004 | Arochlor 1016 | < 0.76 | mg/kg | 68 | 10.5' thick | Drum grab | N 41.64997 W 87.46722 |
| IH-03.1 | 28-Jul-03 | IHC0603-004 | Arochlor 1221 | < 0.76 | mg/kg | 68 | 10.5' thick | Drum grab | N 41.64997 W 87.46722 |
| IH-03.1 | 28-Jul-03 | IHC0603-004 | Arochlor 1232 | < 0.76 | mg/kg | 68 | 10.5' thick | Drum grab | N 41.64997 W 87.46722 |
| IH-03.1 | 28-Jul-03 | IHC0603-004 | Arochlor 1242 | < 0.76 | mg/kg | 68 | 10.5' thick | Drum grab | N 41.64997 W 87.46722 |
| IH-03.1 | 28-Jul-03 | IHC0603-004 | Arochlor 1248 | 4.8 | mg/kg | 68 | 10.5' thick | Drum grab | N 41.64997 W 87.46722 |
| IH-03.1 | 28-Jul-03 | IHC0603-004 | Arochlor 1254 | < 0.72 | mg/kg | 68 | 10.5' thick | Drum grab | N 41.64997 W 87.46722 |
| IH-03.1 | 28-Jul-03 | IHC0603-004 | Arochlor 1260 | 0.62 | mg/kg | 68 | 10.5' thick | Drum grab | N 41.64997 W 87.46722 |
| IH-03.1 | 28-Jul-03 | IHC0603-004Dup | Arochlor 1016 | < 0.65 | mg/kg | 68 | 10.5' thick | Drum grab | N 41.64997 W 87.46722 |
| IH-03.1 | 28-Jul-03 | IHC0603-004Dup | Arochlor 1221 | < 0.65 | mg/kg | 68 | 10.5' thick | Drum grab | N 41.64997 W 87.46722 |
| IH-03.1 | 28-Jul-03 | IHC0603-004Dup | Arochlor 1232 | < 0.65 | mg/kg | 68 | 10.5' thick | Drum grab | N 41.64997 W 87.46722 |
| IH-03.1 | 28-Jul-03 | IHC0603-004Dup | Arochlor 1242 | < 0.65 | mg/kg | 68 | 10.5' thick | Drum grab | N 41.64997 W 87.46722 |
| IH-03.1 | 28-Jul-03 | IHC0603-004Dup | Arochlor 1248 | 4.3 | mg/kg | 68 | 10.5' thick | Drum grab | N 41.64997 W 87.46722 |
| IH-03.1 | 28-Jul-03 | IHC0603-004Dup | Arochlor 1254 | < 0.38 | mg/kg | 68 | 10.5' thick | Drum grab | N 41.64997 W 87.46722 |
| IH-03.1 | 28-Jul-03 | IHC0603-004Dup | Arochlor 1260 | 0.53 | mg/kg | 68 | 10.5' thick | Drum grab | N 41.64997 W 87.46722 |
| IH-79.1 | 08-Nov-79 | 4-5-8 | Total PCB | 11.71 | mg/kg | 70 | -24.5 | core | Boring CIH-4-79, depth -23.0' to -26.0' |
| IH-79.1 | 08-Nov-79 | 4-9-12 | Total PCB | 0.08 | mg/kg | 70 | -27.5 | core | Boring CIH-4-79, depth -26.0' to -29.0' |
| IH-79.1 | 08-Nov-79 | 4-13-16 | Total PCB | 0.12 | mg/kg | 70 | -30 | core | Boring CIH-4-79, depth -29.0' to -31.0' |
| IH-03.1 | 28-Jul-03 | IHC0603-003 | Arochlor 1016 | < 1 | mg/kg | 85 | 6.5' thick | Drum grab | N 41.65319 W 87.46161 |

| Event ID | Sample date | Sample ID | Parameter | Concentration | Unit | River Station | Sample depth (LWD) | Sample Type | Notes |
|---|---|---|---|---|---|---|---|---|---|
| IH-03.1 | 28-Jul-03 | IHC0603-003 | Arochlor 1221 | < 1 | mg/kg | 85 | 6.5' thick | Drum grab | N 41.65319 W 87.46161 |
| IH-03.1 | 28-Jul-03 | IHC0603-003 | Arochlor 1232 | < 1 | mg/kg | 85 | 6.5' thick | Drum grab | N 41.65319 W 87.46161 |
| IH-03.1 | 28-Jul-03 | IHC0603-003 | Arochlor 1242 | < 1 | mg/kg | 85 | 6.5' thick | Drum grab | N 41.65319 W 87.46161 |
| IH-03.1 | 28-Jul-03 | IHC0603-003 | Arochlor 1248 | 6 | mg/kg | 85 | 6.5' thick | Drum grab | N 41.65319 W 87.46161 |
| IH-03.1 | 28-Jul-03 | IHC0603-003 | Arochlor 1254 | < 0.79 | mg/kg | 85 | 6.5' thick | Drum grab | N 41.65319 W 87.46161 |
| IH-03.1 | 28-Jul-03 | IHC0603-003 | Arochlor 1260 | 0.83 | mg/kg | 85 | 6.5' thick | Drum grab | N 41.65319 W 87.46161 |
| IH-87.1 | 15-Sep-87 | E(2.7) | Total PCB | 10.14 | mg/kg | 91 | -18 | grab | |
| IH-89.1 | 01-Aug-89 | IH 06 | Total PCB | 24 | mg/kg | 96 | | grab | |
| IH-77.1 | 30-Aug-77 | IH77-5 | Total PCB | 23.1 | mg/kg | 98 | -22 | grab | River Mile 2.56 |
| IH-79.1 | 10-Nov-79 | 5-3-6 | Total PCB | 33.56 | mg/kg | 100 | -27.2 | core | Boring CIH-5-79, depth -25.7' to -28.7' |
| IH-79.1 | 10-Nov-79 | 5-7-10 | Total PCB | < 0.02 | mg/kg | 100 | -30.45 | core | Boring CIH-5-79, depth -28.7' to -32.2' |
| IH-83.1 | 18-Aug-83 | IH83-5.1 | Total PCB | 18.1 | mg/kg | 103 | -21.7 | core | core depth -20.7' TO -22.7' |
| IH-83.1 | 18-Aug-83 | IH83-5.2 | Total PCB | 22.5 | mg/kg | 103 | -23.3 | core | core depth -22.7' TO -23.9' |
| IH-83.1 | 18-Aug-83 | IH83-6.1 | Total PCB | < 0.3 | mg/kg | 103 | -22.1 | core | core depth -21.1' TO -23.1' |
| IH-83.1 | 18-Aug-83 | IH83-6.2 | Total PCB | < 0.3 | mg/kg | 103 | -23.75 | core | core depth -23.1' TO -24.4' |
| IH-88.2 | 30-Sep-88 | IH88-S3 | Total PCB | 0.0583 | mg/kg | 110 | | grab | |
| IH-83.1 | 18-Aug-83 | IH83-7.1 | Total PCB | < 0.3 | mg/kg | 114 | -19.9 | core | core depth -18.9' TO -20.9' |
| IH-83.1 | 18-Aug-83 | IH83-7.2 | Total PCB | 6.4 | mg/kg | 114 | -21.9 | core | core depth -20.9' TO -22.9' |
| IH-83.1 | 18-Aug-83 | IH83-7.3 | Total PCB | 9.3 | mg/kg | 114 | -23.5 | core | core depth -22.9' TO -24.1' |
| IH-83.1 | 18-Aug-83 | IH83-8.1 | Total PCB | 23.1 | mg/kg | 114 | -20.9 | core | core depth -19.9' TO -21.9' |
| IH-83.1 | 18-Aug-83 | IH83-8.2 | Total PCB | 69.9 | mg/kg | 114 | -22.9 | core | core depth -21.9' TO -23.9' |
| IH-83.1 | 18-Aug-83 | IH83-8.3 | Total PCB | 115 | mg/kg | 114 | -24.45 | core | core depth -23.9' TO -25.0' |
| IH-79.1 | 10-Nov-79 | 6-1-4 | Total PCB | 23.67 | mg/kg | 120 | -22.2 | core | Boring CIH-6-79, depth -20.7' to -23.7' |
| IH-79.1 | 10-Nov-79 | 6-5-8 | Total PCB | 89.22 | mg/kg | 120 | -25.2 | core | Boring CIH-6-79, depth -23.7' to -26.7' |
| IH-77.1 | 30-Aug-77 | IH77-6 | Total PCB | 6.5 | mg/kg | 121 | -19 | grab | |

**Harbor Entrance**

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|---|---|---|---|---|---|---|---|---|---|
| IH-79.1 | 13-Nov-79 | 7-3-4 | Total PCB | 8.12 | mg/kg | 128 | -33.2 | core | Boring CIH-7-79, depth -31.7' to -34.7' |
| IH-79.1 | 13-Nov-79 | 7-5-6 | Total PCB | 2.82 | mg/kg | 128 | -36.2 | core | Boring CIH-7-79, depth -34.7' to -37.7' |
| IH-89.1 | 01-Aug-89 | IH 05 | Total PCB | 16.4 | mg/kg | 128 | | grab | |
| IH-77.1 | 30-Aug-77 | IH77-7 | Total PCB | 9.5 | mg/kg | 129 | -24 | grab | |
| IH-88.2 | 30-Sep-88 | IH88-S12 | Total PCB | 0.0046 | mg/kg | 130 | | grab | |
| IH-84.1 | 23-Jul-84 | IH84-6-1 | Total PCB | 19 | mg/kg | 133 | -26.3 | core | depth -25.3' to -27.3' |
| IH-84.1 | 23-Jul-84 | IH84-6-3 | Total PCB | 26 | mg/kg | 133 | -30.3 | core | depth -29.3' to -31.3' |
| IH-84.1 | 23-Jul-84 | IH84-6-5 | Total PCB | 46 | mg/kg | 133 | -34.3 | core | depth -33.3' to -35.3' |
| IH-84.1 | 23-Jul-84 | IH84-6-7 | Total PCB | < 0.2 | mg/kg | 133 | -38.3 | core | depth -37.3' to -39.3' |
| IH-84.1 | 23-Jul-84 | IH84-6-9 | Total PCB | < 0.2 | mg/kg | 133 | -42.3 | core | depth -41.3' to -43.3' |
| IH-88.2 | 30-Sep-88 | IH88-S4 | Total PCB | < 0.0028 | mg/kg | 150 | | grab | |
| IH-79.1 | 07-Nov-79 | 8-1-2 | Total PCB | 1.31 | mg/kg | 160 | -30.8 | core | Boring CIH-8-79, depth -29.3' to -32.3' |
| IH-79.1 | 07-Nov-79 | 8-3-4 | Total PCB | 0.89 | mg/kg | 160 | -33.8 | core | Boring CIH-8-79, depth -32.3' to -35.3' |
| IH-77.1 | 30-Aug-77 | IH77-8 | Total PCB | 3.4 | mg/kg | 160 | -25 | grab | |

**Harbor**

| Event ID | Sample date | Sample ID | Parameter | Concentration | Unit | River Station | Sample depth (LWD) | Sample Type | Notes |
|---|---|---|---|---|---|---|---|---|---|
| IH-87.1 | 15-Sep-87 | E(1.3) | Total PCB | 2.23 | mg/kg | 161 | -19 | grab | |
| IH-79.1 | 08-Nov-79 | 9-1-2 | Total PCB | 3.58 | mg/kg | 163 | -22 | core | Boring CIH-9-79, depth -20.5' to -23.5' |
| IH-79.1 | 08-Nov-79 | 9-3-4 | Total PCB | 6.47 | mg/kg | 163 | -25 | core | Boring CIH-9-79, depth -23.5' to -26.5' |
| IH-79.1 | 08-Nov-79 | 9-5 | Total PCB | 11.96 | mg/kg | 163 | -27.5 | core | Boring CIH-9-79, depth -26.5' to -28.5' |
| IH-77.1 | 30-Aug-77 | IH77-9 | Total PCB | 4.4 | mg/kg | 163 | -20 | grab | |
| IH-84.1 | 23-Jul-84 | IH84-5-1 | Total PCB | 4.17 | mg/kg | 169 | -23.3 | core | depth -22.3' to -24.3' |
| IH-84.1 | 23-Jul-84 | IH84-5-3 | Total PCB | 6.6 | mg/kg | 169 | -27.3 | core | depth -26.3' to -28.3' |
| IH-84.1 | 23-Jul-84 | IH84-5-5 | Total PCB | 17 | mg/kg | 169 | -31.3 | core | depth -30.3' to -32.3' |
| IH-84.1 | 23-Jul-84 | IH84-5-7 | Total PCB | 0.44 | mg/kg | 169 | -35.3 | core | depth -34.3' to -36.3' |
| IH-84.1 | 23-Jul-84 | IH84-5-9 | Total PCB | < 0.02 | mg/kg | 169 | -39.3 | core | depth -38.3' to -40.3' |
| IH-89.1 | 01-Aug-89 | IH 04 | Total PCB | 4 | mg/kg | 170 | | grab | |
| IH-79.1 | 08-Nov-79 | 10-5-6 | Total PCB | 2.95 | mg/kg | 171 | -31.25 | core | Boring CIH-10-79, depth -30.0' to -32.5' |
| IH-79.1 | 08-Nov-79 | 10-7-8 | Total PCB | 8.79 | mg/kg | 171 | -34 | core | Boring CIH-10-79, depth -32.5' to -35.5' |
| IH-79.1 | 07-Nov-79 | 11-1-2 | Total PCB | < 0.02 | mg/kg | 182 | -33.8 | core | Boring CIH-11-79, depth -32.3' to -35.3' |
| IH-79.1 | 07-Nov-79 | 11-3-4 | Total PCB | 0.03 | mg/kg | 182 | -36.8 | core | Boring CIH-11-79, depth -35.3' to -38.3' |
| IH-89.1 | 01-Aug-89 | IH 03 | Total PCB | 10 | mg/kg | 183 | | grab | |
| IH-77.1 | 30-Aug-77 | IH77-10 | Total PCB | 1.5 | mg/kg | 185 | -22 | grab | |
| IH-84.1 | 23-Jul-84 | IH84-4-1 | Total PCB | 8.7 | mg/kg | 188 | -24.3 | core | depth -23.3' to -25.3' |
| IH-84.1 | 23-Jul-84 | IH84-4-8 | Total PCB | 0.31 | mg/kg | 188 | -38.3 | core | depth -37.3' to -39.3' |
| IH-87.1 | 17-Sep-87 | E(0.6) | Total PCB | 1.45 | mg/kg | 190 | -20 | grab | |
| IH-88.2 | 30-Sep-88 | IH88-S5 | Total PCB | < 0.0028 | mg/kg | 190 | | grab | |
| IH-79.1 | 13-Nov-79 | 12-1-2 | Total PCB | 0.66 | mg/kg | 196 | -27.7 | core | Boring CIH-12-79, depth -26.2' to -29.2' |
| IH-79.1 | 13-Nov-79 | 12-3-5 | Total PCB | 2.35 | mg/kg | 196 | -31.45 | core | Boring CIH-12-79, depth -29.2' to -33.7' |
| IH-77.1 | 30-Aug-77 | IH77-11 | Total PCB | 1.4 | mg/kg | 199 | -26 | grab | |

**Entrance Channel**

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| IH-84.1 | 23-Jul-84 | IH84-3-1 | Total PCB | < 0.02 | mg/kg | 210 | -30.8 | core | depth -29.8' to -31.8' |
| IH-84.1 | 23-Jul-84 | IH84-3-5 | Total PCB | < 0.02 | mg/kg | 210 | -38.55 | core | depth -37.8' to -39.3' |
| IH-84.1 | 23-Jul-84 | IH84-2-1 | Total PCB | < 0.02 | mg/kg | 225 | -31.3 | core | depth -30.3' to -32.3' |
| IH-84.1 | 23-Jul-84 | IH84-2-4 | Total PCB | < 0.02 | mg/kg | 225 | -37.3 | core | depth -36.3' to -38.3' |
| IH-88.2 | 30-Sep-88 | IH88-S6 | Total PCB | 0.0556 | mg/kg | 229 | | grab | |
| IH-77.1 | 30-Aug-77 | IH77-12 | Total PCB | 0.043 | mg/kg | 230 | -28 | grab | |
| IH-79.1 | 13-Nov-79 | 13-1-2 | Total PCB | < 0.02 | mg/kg | 231 | -32.7 | core | Boring CIH-13-79, depth -31.2' to -34.2' |
| IH-79.1 | 13-Nov-79 | 13-3-4 | Total PCB | < 0.02 | mg/kg | 231 | -35.7 | core | Boring CIH-13-79, depth -34.2' to -37.2' |
| IH-84.1 | 23-Jul-84 | IH84-1-1 | Total PCB | < 0.02 | mg/kg | 235 | -30.8 | core | depth -29.8' to -31.8' |
| IH-84.1 | 23-Jul-84 | IH84-1-4 | Total PCB | < 0.02 | mg/kg | 235 | -36.8 | core | depth -35.8' to -37.8' |

**Lake Michigan**

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| IH-77.1 | 30-Aug-77 | IH77-13 | Total PCB | 0.098 | mg/kg | | -30 | grab | Just outside the federa l channel |
| IH-87.1 | 17-Sep-87 | A(0.2) | Total PCB | 0.04 | mg/kg | | -21 | grab | Collected along Transect A (0.2mi from IH) |
| IH-87.1 | 17-Sep-87 | A(0.5) | Total PCB | 0.05 | mg/kg | | -25 | grab | Collected along Transect A (0.5mi from IH) |
| IH-87.1 | 17-Sep-87 | A(1.0) | Total PCB | 0.03 | mg/kg | | -25 | grab | Collected along Transect A (1.0mi from IH) |
| IH-87.1 | 17-Sep-87 | A(1.5) | Total PCB | 0.03 | mg/kg | | -25 | grab | Collected along Transect A (1.5mi from IH) |

| Event ID | Sample date | Sample ID | Parameter | Concentration | Unit | River Station | Sample depth (LWD) | Sample Type | Notes |
|---|---|---|---|---|---|---|---|---|---|
| IH-87.1 | 17-Sep-87 | A(2.0) | Total PCB | 0.09 | mg/kg | | -23 | grab | Collected along Transect A (2.0mi from IH) |
| IH-87.1 | 17-Sep-87 | A(3.0) | Total PCB | 0.01 | mg/kg | | -21 | grab | Collected along Transect A (3.0mi from IH) |
| IH-87.1 | 17-Sep-87 | B(0.2) | Total PCB | 0.02 | mg/kg | | -22 | grab | Collected along Transect B (0.2 mi from IH) |
| IH-87.1 | 17-Sep-87 | B(0.5) | Total PCB | 0.06 | mg/kg | | -25 | grab | Collected along Transect B (0.5 mi from IH) |
| IH-87.1 | 17-Sep-87 | B(1.0) | Total PCB | 0.09 | mg/kg | | -26 | grab | Collected along Transect B (1.0 mi from IH) |
| IH-87.1 | 17-Sep-87 | B(1.5) | Total PCB | < 0.1 | mg/kg | | -25 | grab | Collected along Transect B (1.5 mi from IH) |
| IH-87.1 | 17-Sep-87 | B(2.0) | Total PCB | 0.04 | mg/kg | | -28 | grab | Collected along Transect B (2.0 mi from IH) |
| IH-87.1 | 17-Sep-87 | B(3.0) | Total PCB | 0.02 | mg/kg | | -32 | grab | Collected along Transect B (3.0 mi from IH) |
| IH-87.1 | 17-Sep-87 | B(5.0) | Total PCB | 0.06 | mg/kg | | -44 | grab | Collected along Transect B (5.0 mi from IH) |
| IH-87.1 | 21-Sep-87 | C(1.5) | Total PCB | 0.05 | mg/kg | | -24 | grab | Collected along Transect C (1.5 mi from IH) |
| IH-87.1 | 21-Sep-87 | C(2.0) | Total PCB | < 0.01 | mg/kg | | -24 | grab | Collected along Transect C (2.0 mi from IH) |
| IH-87.1 | 21-Sep-87 | C(3.0) | Total PCB | 0.02 | mg/kg | | -28 | grab | Collected along Transect C (3.0 mi from IH) |
| IH-87.1 | 21-Sep-87 | C(5.0) | Total PCB | < 0.01 | mg/kg | | -31 | grab | Collected along Transect C (5.0 mi from IH) |
| IH-87.1 | 29-Sep-87 | C(0.5) | Total PCB | 0.06 | mg/kg | | -25 | grab | Collected along Transect C (0.5 mi from IH) |
| IH-87.1 | 29-Sep-87 | C(1.0) | Total PCB | 0.02 | mg/kg | | -23 | grab | Collected along Transect C (1.0 mi from IH) |
| IH-87.1 | 29-Sep-87 | D(0.3) | Total PCB | 0.02 | mg/kg | | -17 | grab | Collected along Transect D (0.3 mi from IH) |
| IH-87.1 | 29-Sep-87 | D(2A) | Total PCB | 0.01 | mg/kg | | -24 | grab | Collected along Transect D (2 mi from IH) |
| IH-87.1 | 29-Sep-87 | D(2B) | Total PCB | 0.02 | mg/kg | | -23 | grab | Collected along Transect D (2 mi from IH) |
| IH-87.1 | 29-Sep-87 | D(3.0) | Total PCB | 0.01 | mg/kg | | -35 | grab | Collected along Transect D (3.0 mi from IH) |
| IH-87.1 | 29-Sep-87 | D(5.0) | Total PCB | 0.08 | mg/kg | | -38 | grab | Collected along Transect D (5.0 mi from IH) |
| IH-88.2 | 30-Sep-88 | IH88-S10 | Total PCB | 0.0685 | mg/kg | | | grab | 1.5 mile from Harbor |
| IH-88.2 | 30-Sep-88 | IH88-S11 | Total PCB | 0.4946 | mg/kg | | | grab | 2.25 mile from Harbor |
| IH-88.2 | 30-Sep-88 | IH88-S7 | Total PCB | 0.0177 | mg/kg | | | grab | 1 mile from Harbor |
| IH-88.2 | 30-Sep-88 | IH88-S8A | Total PCB | 0 | mg/kg | | | grab | 0.5 mile from Harbor |
| IH-88.2 | 30-Sep-88 | IH88-S9A | Total PCB | 0.019 | mg/kg | | | grab | 1.75 mile from Harbor |

**Composite Samples (see notes a, b, and c)**

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| IH-03.1 | Jul-Sep 2003 | IHC0603-Comp | PCB 101 | 104 | ug/kg | | | WES Composite | IHC0603-001, 002, 003, 004, and 005 |
| IH-03.1 | Jul-Sep 2003 | IHC0603-Comp | PCB 103 | < 12.6 | ug/kg | | | WES Composite | IHC0603-001, 002, 003, 004, and 005 |
| IH-03.1 | Jul-Sep 2003 | IHC0603-Comp | PCB 105 | 52.4 | ug/kg | | | WES Composite | IHC0603-001, 002, 003, 004, and 005 |
| IH-03.1 | Jul-Sep 2003 | IHC0603-Comp | PCB 114 | 5.76 | ug/kg | | | WES Composite | IHC0603-001, 002, 003, 004, and 005 |
| IH-03.1 | Jul-Sep 2003 | IHC0603-Comp | PCB 118 | 96.5 | ug/kg | | | WES Composite | IHC0603-001, 002, 003, 004, and 005 |
| IH-03.1 | Jul-Sep 2003 | IHC0603-Comp | PCB 121 | < 12.6 | ug/kg | | | WES Composite | IHC0603-001, 002, 003, 004, and 005 |
| IH-03.1 | Jul-Sep 2003 | IHC0603-Comp | PCB 128 | 9.91 | ug/kg | | | WES Composite | IHC0603-001, 002, 003, 004, and 005 |
| IH-03.1 | Jul-Sep 2003 | IHC0603-Comp | PCB 129 | < 12.6 | ug/kg | | | WES Composite | IHC0603-001, 002, 003, 004, and 005 |
| IH-03.1 | Jul-Sep 2003 | IHC0603-Comp | PCB 138 | 47.4 | ug/kg | | | WES Composite | IHC0603-001, 002, 003, 004, and 005 |
| IH-03.1 | Jul-Sep 2003 | IHC0603-Comp | PCB 141 | 19.6 | ug/kg | | | WES Composite | IHC0603-001, 002, 003, 004, and 005 |
| IH-03.1 | Jul-Sep 2003 | IHC0603-Comp | PCB 143 | < 12.6 | ug/kg | | | WES Composite | IHC0603-001, 002, 003, 004, and 005 |
| IH-03.1 | Jul-Sep 2003 | IHC0603-Comp | PCB 151 | 15.9 | ug/kg | | | WES Composite | IHC0603-001, 002, 003, 004, and 005 |
| IH-03.1 | Jul-Sep 2003 | IHC0603-Comp | PCB 154 | < 12.6 | ug/kg | | | WES Composite | IHC0603-001, 002, 003, 004, and 005 |
| IH-03.1 | Jul-Sep 2003 | IHC0603-Comp | PCB 155 | < 12.6 | ug/kg | | | WES Composite | IHC0603-001, 002, 003, 004, and 005 |
| IH-03.1 | Jul-Sep 2003 | IHC0603-Comp | PCB 170 | 16.9 | ug/kg | | | WES Composite | IHC0603-001, 002, 003, 004, and 005 |
| IH-03.1 | Jul-Sep 2003 | IHC0603-Comp | PCB 173 | < 12.6 | ug/kg | | | WES Composite | IHC0603-001, 002, 003, 004, and 005 |

| Event ID | Sample date | Sample ID | Parameter | Concentration | Unit | River Station | Sample depth (LWD) | Sample Type | Notes |
|---|---|---|---|---|---|---|---|---|---|
| IH-03.1 | Jul-Sep 2003 | IHC0603-Comp | PCB 18 | 193 | ug/kg | | | WES Composite | IHC0603-001, 002, 003, 004, and 005 |
| IH-03.1 | Jul-Sep 2003 | IHC0603-Comp | PCB 180 | 40.8 | ug/kg | | | WES Composite | IHC0603-001, 002, 003, 004, and 005 |
| IH-03.1 | Jul-Sep 2003 | IHC0603-Comp | PCB 182 | < 12.6 | ug/kg | | | WES Composite | IHC0603-001, 002, 003, 004, and 005 |
| IH-03.1 | Jul-Sep 2003 | IHC0603-Comp | PCB 183 | 9.09 | ug/kg | | | WES Composite | IHC0603-001, 002, 003, 004, and 005 |
| IH-03.1 | Jul-Sep 2003 | IHC0603-Comp | PCB 184 | < 12.6 | ug/kg | | | WES Composite | IHC0603-001, 002, 003, 004, and 005 |
| IH-03.1 | Jul-Sep 2003 | IHC0603-Comp | PCB 185 | 5.75 | ug/kg | | | WES Composite | IHC0603-001, 002, 003, 004, and 005 |
| IH-03.1 | Jul-Sep 2003 | IHC0603-Comp | PCB 189 | < 12.6 | ug/kg | | | WES Composite | IHC0603-001, 002, 003, 004, and 005 |
| IH-03.1 | Jul-Sep 2003 | IHC0603-Comp | PCB 190 | 9.33 | ug/kg | | | WES Composite | IHC0603-001, 002, 003, 004, and 005 |
| IH-03.1 | Jul-Sep 2003 | IHC0603-Comp | PCB 191 | < 12.6 | ug/kg | | | WES Composite | IHC0603-001, 002, 003, 004, and 005 |
| IH-03.1 | Jul-Sep 2003 | IHC0603-Comp | PCB 194 | 10.3 | ug/kg | | | WES Composite | IHC0603-001, 002, 003, 004, and 005 |
| IH-03.1 | Jul-Sep 2003 | IHC0603-Comp | PCB 195 | 4.25 | ug/kg | | | WES Composite | IHC0603-001, 002, 003, 004, and 005 |
| IH-03.1 | Jul-Sep 2003 | IHC0603-Comp | PCB 196 | 9.23 | ug/kg | | | WES Composite | IHC0603-001, 002, 003, 004, and 005 |
| IH-03.1 | Jul-Sep 2003 | IHC0603-Comp | PCB 198 | < 12.6 | ug/kg | | | WES Composite | IHC0603-001, 002, 003, 004, and 005 |
| IH-03.1 | Jul-Sep 2003 | IHC0603-Comp | PCB 199 | < 12.6 | ug/kg | | | WES Composite | IHC0603-001, 002, 003, 004, and 005 |
| IH-03.1 | Jul-Sep 2003 | IHC0603-Comp | PCB 200 | < 12.6 | ug/kg | | | WES Composite | IHC0603-001, 002, 003, 004, and 005 |
| IH-03.1 | Jul-Sep 2003 | IHC0603-Comp | PCB 201 | 10.3 | ug/kg | | | WES Composite | IHC0603-001, 002, 003, 004, and 005 |
| IH-03.1 | Jul-Sep 2003 | IHC0603-Comp | PCB 202 | < 12.6 | ug/kg | | | WES Composite | IHC0603-001, 002, 003, 004, and 005 |
| IH-03.1 | Jul-Sep 2003 | IHC0603-Comp | PCB 203 | 10.2 | ug/kg | | | WES Composite | IHC0603-001, 002, 003, 004, and 005 |
| IH-03.1 | Jul-Sep 2003 | IHC0603-Comp | PCB 205 | < 12.6 | ug/kg | | | WES Composite | IHC0603-001, 002, 003, 004, and 005 |
| IH-03.1 | Jul-Sep 2003 | IHC0603-Comp | PCB 206 | 13.2 | ug/kg | | | WES Composite | IHC0603-001, 002, 003, 004, and 005 |
| IH-03.1 | Jul-Sep 2003 | IHC0603-Comp | PCB 207 | 7.48 | ug/kg | | | WES Composite | IHC0603-001, 002, 003, 004, and 005 |
| IH-03.1 | Jul-Sep 2003 | IHC0603-Comp | PCB 208 | < 12.6 | ug/kg | | | WES Composite | IHC0603-001, 002, 003, 004, and 005 |
| IH-03.1 | Jul-Sep 2003 | IHC0603-Comp | PCB 28 | 213 | ug/kg | | | WES Composite | IHC0603-001, 002, 003, 004, and 005 |
| IH-03.1 | Jul-Sep 2003 | IHC0603-Comp | PCB 31 | 209 | ug/kg | | | WES Composite | IHC0603-001, 002, 003, 004, and 005 |
| IH-03.1 | Jul-Sep 2003 | IHC0603-Comp | PCB 40 | 45.3 | ug/kg | | | WES Composite | IHC0603-001, 002, 003, 004, and 005 |
| IH-03.1 | Jul-Sep 2003 | IHC0603-Comp | PCB 44 | 224 | ug/kg | | | WES Composite | IHC0603-001, 002, 003, 004, and 005 |
| IH-03.1 | Jul-Sep 2003 | IHC0603-Comp | PCB 49 | 181 | ug/kg | | | WES Composite | IHC0603-001, 002, 003, 004, and 005 |
| IH-03.1 | Jul-Sep 2003 | IHC0603-Comp | PCB 50 | 94.7 | ug/kg | | | WES Composite | IHC0603-001, 002, 003, 004, and 005 |
| IH-03.1 | Jul-Sep 2003 | IHC0603-Comp | PCB 52 | 197 | ug/kg | | | WES Composite | IHC0603-001, 002, 003, 004, and 005 |
| IH-03.1 | Jul-Sep 2003 | IHC0603-Comp | PCB 54 | < 12.6 | ug/kg | | | WES Composite | IHC0603-001, 002, 003, 004, and 005 |
| IH-03.1 | Jul-Sep 2003 | IHC0603-Comp | PCB 60 | 601 | ug/kg | | | WES Composite | IHC0603-001, 002, 003, 004, and 005 |
| IH-03.1 | Jul-Sep 2003 | IHC0603-Comp | PCB 66 | 222 | ug/kg | | | WES Composite | IHC0603-001, 002, 003, 004, and 005 |
| IH-03.1 | Jul-Sep 2003 | IHC0603-Comp | PCB 7 | < 12.6 | ug/kg | | | WES Composite | IHC0603-001, 002, 003, 004, and 005 |
| IH-03.1 | Jul-Sep 2003 | IHC0603-Comp | PCB 70 | 200 | ug/kg | | | WES Composite | IHC0603-001, 002, 003, 004, and 005 |
| IH-03.1 | Jul-Sep 2003 | IHC0603-Comp | PCB 77 | 25.7 | ug/kg | | | WES Composite | IHC0603-001, 002, 003, 004, and 005 |
| IH-03.1 | Jul-Sep 2003 | IHC0603-Comp | PCB 8 | 55 | ug/kg | | | WES Composite | IHC0603-001, 002, 003, 004, and 005 |
| IH-03.1 | Jul-Sep 2003 | IHC0603-Comp | PCB 82 | 34.9 | ug/kg | | | WES Composite | IHC0603-001, 002, 003, 004, and 005 |
| IH-03.1 | Jul-Sep 2003 | IHC0603-Comp | PCB 87 | 76.9 | ug/kg | | | WES Composite | IHC0603-001, 002, 003, 004, and 005 |
| IH-03.1 | Jul-Sep 2003 | IHC0603-Comp | PCB 97 | 41.6 | ug/kg | | | WES Composite | IHC0603-001, 002, 003, 004, and 005 |
| IH-03.1 | Jul-Sep 2003 | IHC0603-Comp | PCB-1016 | < 15.7 | ug/kg | | | WES Composite | IHC0603-001, 002, 003, 004, and 005 |
| IH-03.1 | Jul-Sep 2003 | IHC0603-Comp | PCB-1221 | < 15.7 | ug/kg | | | WES Composite | IHC0603-001, 002, 003, 004, and 005 |
| IH-03.1 | Jul-Sep 2003 | IHC0603-Comp | PCB-1232 | < 15.7 | ug/kg | | | WES Composite | IHC0603-001, 002, 003, 004, and 005 |
| IH-03.1 | Jul-Sep 2003 | IHC0603-Comp | PCB-1242 | < 15.7 | ug/kg | | | WES Composite | IHC0603-001, 002, 003, 004, and 005 |

| Event ID | Sample date | Sample ID | Parameter | Concentration | Unit | River Station | Sample depth (LWD) | Sample Type | Notes |
|---|---|---|---|---|---|---|---|---|---|
| IH-03.1 | Jul-Sep 2003 | IHC0603-Comp | PCB-1248 | 5103 | ug/kg | | | WES Composite | IHC0603-001, 002, 003, 004, and 005 |
| IH-03.1 | Jul-Sep 2003 | IHC0603-Comp | PCB-1254 | < 15.7 | ug/kg | | | WES Composite | IHC0603-001, 002, 003, 004, and 005 |
| IH-03.1 | Jul-Sep 2003 | IHC0603-Comp | PCB-1260 | 500 | ug/kg | | | WES Composite | IHC0603-001, 002, 003, 004, and 005 |
| IH-04.1 | Sep-04 | Comp | Arochlor 1016 | < 0.13 | mg/kg | | | MWH Composite | IHC-0904-001, 002, 003, 004 |
| IH-04.1 | Sep-04 | Comp | Arochlor 1221 | < 0.13 | mg/kg | | | MWH Composite | IHC-0904-001, 002, 003, 004 |
| IH-04.1 | Sep-04 | Comp | Arochlor 1232 | < 0.13 | mg/kg | | | MWH Composite | IHC-0904-001, 002, 003, 004 |
| IH-04.1 | Sep-04 | Comp | Arochlor 1242 | 1.1 | mg/kg | | | MWH Composite | IHC-0904-001, 002, 003, 004 |
| IH-04.1 | Sep-04 | Comp | Arochlor 1248 | < 0.13 | mg/kg | | | MWH Composite | IHC-0904-001, 002, 003, 004 |
| IH-04.1 | Sep-04 | Comp | Arochlor 1254 | < 0.62 | mg/kg | | | MWH Composite | IHC-0904-001, 002, 003, 004 |
| IH-04.1 | Sep-04 | Comp | Arochlor 1260 | 0.22 | mg/kg | | | MWH Composite | IHC-0904-001, 002, 003, 004 |
| IH-05.1 | Jun-05 | IHC-2005-1 | Arochlor 1248 | 19.5 | mg/kg | | | ERDC composite | presumptively hazardous area |
| IH-05.1 | Jun-05 | IHC-2005-1 | Arochlor 1016 | < 160 | ug/kg | | | ERDC composite | presumptively hazardous area |
| IH-05.1 | Jun-05 | IHC-2005-1 | Arochlor 1232 | < 160 | ug/kg | | | ERDC composite | presumptively hazardous area |
| IH-05.1 | Jun-05 | IHC-2005-1 | Arochlor 1242 | < 160 | ug/kg | | | ERDC composite | presumptively hazardous area |
| IH-05.1 | Jun-05 | IHC-2005-1 | Arochlor 1221 | < 160 | ug/kg | | | ERDC composite | presumptively hazardous area |
| IH-05.1 | Jun-05 | IHC-2005-1 | Arochlor 1254 | < 160 | ug/kg | | | ERDC composite | presumptively hazardous area |
| IH-05.1 | Jun-05 | IHC-2005-1 | Arochlor 1260 | < 160 | ug/kg | | | ERDC composite | presumptively hazardous area |
| IH-05.1 | Jun-05 | IHC-2005-2 | Arochlor 1248 | 19.6 | mg/kg | | | ERDC composite | presumptively hazardous area |
| IH-05.1 | Jun-05 | IHC-2005-2 | Arochlor 1016 | < 160 | ug/kg | | | ERDC composite | presumptively hazardous area |
| IH-05.1 | Jun-05 | IHC-2005-2 | Arochlor 1232 | < 160 | ug/kg | | | ERDC composite | presumptively hazardous area |
| IH-05.1 | Jun-05 | IHC-2005-2 | Arochlor 1242 | < 160 | ug/kg | | | ERDC composite | presumptively hazardous area |
| IH-05.1 | Jun-05 | IHC-2005-2 | Arochlor 1221 | < 160 | ug/kg | | | ERDC composite | presumptively hazardous area |
| IH-05.1 | Jun-05 | IHC-2005-2 | Arochlor 1254 | < 160 | ug/kg | | | ERDC composite | presumptively hazardous area |
| IH-05.1 | Jun-05 | IHC-2005-2 | Arochlor 1260 | < 160 | ug/kg | | | ERDC composite | presumptively hazardous area |
| IH-05.1 | Jun-05 | IHC-2005-3 | Arochlor 1248 | 18.1 | mg/kg | | | ERDC composite | presumptively hazardous area |
| IH-05.1 | Jun-05 | IHC-2005-3 | Arochlor 1016 | < 160 | ug/kg | | | ERDC composite | presumptively hazardous area |
| IH-05.1 | Jun-05 | IHC-2005-3 | Arochlor 1232 | < 160 | ug/kg | | | ERDC composite | presumptively hazardous area |
| IH-05.1 | Jun-05 | IHC-2005-3 | Arochlor 1242 | < 160 | ug/kg | | | ERDC composite | presumptively hazardous area |
| IH-05.1 | Jun-05 | IHC-2005-3 | Arochlor 1221 | < 160 | ug/kg | | | ERDC composite | presumptively hazardous area |
| IH-05.1 | Jun-05 | IHC-2005-3 | Arochlor 1254 | < 160 | ug/kg | | | ERDC composite | presumptively hazardous area |
| IH-05.1 | Jun-05 | IHC-2005-3 | Arochlor 1260 | < 160 | ug/kg | | | ERDC composite | presumptively hazardous area |

Note (a) Sediment for composite results reported for event ID# IH-03.1 were collected using a large bucket (deep grab sample).
Note (b) Sediment for composite results reported for event ID# IH-04.1 were collected using a vibracore.
Note (c) Sediment for composite results reported for event ID# IH-05.1 were collected using a vibracore.

**Attachment 2:**
**Final Report of Collection and Analysis of Sediment Samples at the Indiana Harbor Canal, East Chicago, Indiana**

**Available in Projectwise:**
pwdesc://LRC-Chicago/Documents/Projects/Indiana Harbor and Canal CDF/Caps and Dikes - 1 Interior Layout / Phase 2/Environmental/Environmental Studies/Sampling/TSCA Sediment Sampling

| US Army Corps of Engineers. Chicago District | PROJECT TITLE: IHC | COMPUTED BY: MC | DATE: 8/20/07 | SHEET: 1 of 2 |
|---|---|---|---|---|
| | COMPUTATION TITLE: TSCA Sediment Volumes | CHECKED BY: | DATE: | |

① First I looked at what depths the TSCA areas went to.

Northern Area of Canal:

→ TSCA AREA 5 on sheet C-2 is actually 2 areas at different depths. The first area is from -17.2 LWD to -19.0 LWD. The second area below it is from -22.8 LWD to -24.0 LWD. I assumed this as one area to be dredged.

→ TSCA Area 6 on sheet C-2 starts at elevation -19.3 LWD and goes to -23.4 LWD.

SOUTHERN AREA OF CANAL:

→ TSCA AREA 1 & 2 on sheet C-1 starts at elevation -23.4 LWD to -24.0 LWD.

→ TSCA AREA 3 starts at el. -21.7 LWD and ends at el. -24.0 LWD.

→ TSCA AREA 4 starts at el. -20.8 LWD to el. -24.0 LWD.

② Next I looked at calculating the volumes by dredging.

- I used the latest (2004) soundings to create the surface bottom of the canal.
- I assumed a dredging depth of -24.0 LWD to assure all TSCA sediment was removed.
- I assumed 3H to 1V side slopes after a discussion with Jeff Zuercher.

| US Army Corps of Engineers, Chicago District | PROJECT TITLE: IHC | COMPUTED BY: MC | DATE: 8/20/07 | SHEET: 2 of 2 |
|---|---|---|---|---|
| | COMPUTATION TITLE: TSCA Sediment Volumes | CHECKED BY: | DATE: | |

(2) Dredging Volumes:

Southern Area

Area 1 & 2 : 13,498 CYD

Area 3 : 15,242 CYD

Area 4 : 8,222 CYD

Northern Area

Area 5 : 611 CYD

Area 6 : 653 CYD

Grand Total : 38,226 CYD

Reference 31
Ponded Decision

CELRC-TS-DH 13 November 2008

MEMORANDUM FOR RECORD, THRU

TS-DC
TS-DG
TS-DH
TS-DT
TS-C-T

SUBJECT: Decision Document on Operating the IHC CDF as a Ponded Facility

**SUMMARY OF DECISION**

**The Indiana Harbor and Canal Confined Disposal Facility should operate as a two cell ponded facility, without complete dewatering of the dredged material between dredging seasons. The facility will have two cells separated by a center dike. This change will result in construction and operating cost savings, will simplify the CDF operation, and will greatly reduce particulate and volatile emissions. The proposed handling of the TSCA regulated sediment will not be affected by this change.**

DISCUSSION

1. The Indiana Harbor and Canal Confined Disposal Facility (IHC CDF) currently operates under an air registration status issued by the Indiana Department of Environmental Management (IDEM). The air registration limits the volatile emissions from the CDF to a total of 25 tons per year, with a limit of 10 tons per year for any individual hazardous air pollutant. Particulate emissions are also limited to a total of 25 tons per year.

2. Over the last several years, various research and modeling projects have been conducted by researches at several agencies to address the question of what would be emitted from the CDF, and under what conditions. Research results are included in the following reports:

   a. Hagen, L.J. 2005. Estimates of Particulate Emissions by Wind Erosion from the Indiana Harbor CDF. Wind Erosion Research Unit, U.S. Department of Agriculture, Agricultural Research Service (ARS), Grain Marketing and Production Research Center (GMPRC), Manhattan, KS.

   b. Thibodeaux, L.J., K.T. Valsaraj, R. Ravikrishna, K. Fountain, C. Price, "Investigations on the Controlling Factors for Air Emissions Associated with Dredging of the Indiana Harbor Canal and CDF Operations" Report (ERDC/EL TR-08-17), U.S. Army Engineer Research and Development Center, Vicksburg, MS, 2008.

   c. Schroeder, Paul R., 2007, Memorandum for Ms. Le Thai, CELRC-TS-DH, Subject: Prediction of Volatile Losses from Ponded Indiana Harbor CDF, prepared under DOTS request, December 5, 2007.

d. United Stated Environmental Protection Agency (USEPA), 2006, "Supplemental Risk Assessment of Potential Air Emissions from the Confined Disposal Facility for the Indiana Harbor and Shipping Canal Sediment Dredging and Disposal Project," Prepared by Region V, December 2006.

3. Based on the information provided by research and modeling, it appears that the CDF will exceed the 25 tons per year limit for particulate emissions unless controls are used. Although a number of controls of various types are options, only one control method addresses both volatile and particulate emissions: keeping the CDF entirely ponded. The purpose of this memorandum is to document the decision to operate the CDF as a two cell ponded facility, to minimize both particulate and volatile emissions.

4. The decision to operate the CDF as a ponded facility raised a number of other design and operational questions. These questions include:

   Would we need an equalization basin?
   Would we need two storage cells?
   What impacts would it have on operations?
   Water availability?
   Volume of sediment that could be slurried with recirculated water?
   Treatment volume?
   Water quality for treatment?
   Dredged material distribution?
      Sand recovery for raising interior dike?
      Effects on decant structures?
      Need for wildlife control?
      Need for mosquito control?
   What are the impacts on storage needs?
   What are the impacts on dike height requirements?

These questions are addressed individually, below.

5. <u>Need for an Equalization Basin</u>: No need for an equalization basin in a ponded CDF operation could be envisioned. The only potential impact was on the synchronization of the initial groundwater drawdown and groundwater treatment, which can be addressed in other manners and will be documented elsewhere. The potential benefits of eliminating the equalization basin is the increased area and volume for storage (which would be needed due to greater storage needs if the dredged material remains ponded), reduced costs for dike construction, elimination of the costs for an additional decant structure and associated pumps and operations, elimination of the costs to line the equalization basin, reduced pumping and operational costs for runoff pumping, reduced operational costs for trenching (dewatering), and reduced volatile losses from open groundwater storage during initial drawdown.

6. The reduction in volatile losses will depend on how the drawdown is accomplished. If the groundwater is stored in an enclosed container or if groundwater is pumped directly to a treatment facility with no storage in open tanks or ponds, then the reduction in volatile losses

from open groundwater storage would be realized. If an open tank of some type is still used to hold the water temporarily, then volatile losses from open groundwater storage will remain the same.

7. Need for Two Storage Cells: Two storage cells are still needed for efficient CDF operation under the ponded scenario. Having two separate cells allows flexibility to deal with future dredging scenarios, including the potential to dry out the material in future years. A strong potential exists that future dredge materials (15-20+ years out) from the IHC will be significantly less contaminated than those that will be dredged during the backlog and early maintenance periods. Analysis of the ponded scenario indicates that future desiccation of a cell will "buy back" a significant amount of the potentially lost storage volume. Hence, when the material is cleaner, one cell can be dried out to increase consolidation, while also planning for particulate management. In order to dry out one cell, a second cell in which to place the dredge water and precipitation would be needed, since there would no longer be an equalization basin.

8. Additionally, the flexibility of having two cells is an advantage for potential maintenance issues. Although failures are not considered likely, it is prudent to be prepared for contingencies. If, for example, there are future dike erosion problems, dike seepage, etc, the availability of a second cell in which to place the majority (or all) of the pond will help enhance the safety of the design, and ease of perimeter dike maintenance.

9. Splitting the CDF into two cells also increases the ease of managing the sediments within the facility. In the ponded scenario, one alternative is that the dredge pipe outlet would originate from the center dike, directed either east or west, allowing for an initial flow of material perpendicular to the grade of the site. Periodically moving the dredge pipe outlet south along the center dike will ease the management of the larger-sized sediments (i.e. sands) because the sediment mound found at the outlet of the pipe would be kept closer to the center dike. Subsequent use of a long-arm excavator to reach out and pile up the sediments onto the center dike will enhance operations because it will 1) reduce the amount of mounding, 2) reduce the amount of water necessary to keep a pond, 3) and provide beneficial use of the sediments to continually raise the center dike. Additionally, the maximum difference in height of equipment used to manage the sediments from the surface of the sediment will be about 10 feet (for the first lift) from the center dike, as opposed to a reach of 18 ft from the top of the existing perimeter dike. This will allow a longer reach into the CDF, without actually having to traverse the dredged materials. In order to construct the center dike in this manner, it is proposed to have the center dike initially wider at the base, as shown in Attachment 4.

10. Finally, the ability to segregate materials placed into the CDF may provide regulatory benefits. Designating one cell as a "TSCA" cell is a similar tactic to what US Steel used for the construction of their CAMU, and could help gain regulatory acceptance of the TSCA material management. The management of TSCA regulated sediment will be discussed in a separate decision memo, and will be consistent with the summary presented in Attachment 5.

11. In summary, two cells provide flexibility, permit future drying operations to increase storage capacity or material recovery for raising the interior dikes, provide a backup decant and pumping structure, and allow for drawdown of ponded water (transfer to the other cell) in the event of a structural or seepage problem. The use of an interior dike also will allow one or both cells to be dewatered at some time in the future, if sediment quality improves and air emissions are low or can be controlled. Dewatering the CDF completely in the future would be beneficial since the sediment would consolidate and additional capacity would be regained (see storage calculations in Attachment 2).

12. Impacts on Operations and Design, Water Availability: Due to the elimination of the equalization basin and depending on how drawdown is accomplished, limited water may be available from the groundwater drawdown for slurrying the first lift of dredged material for each cell. If needed, water would be drawn from the canal for slurrying, which would increase the overall volume of water that would require treatment. Ponded conditions will also affect the total evaporation from the CDF. Based on historical measurements of pan evaporation (provided in the EM on Confined Disposal of Dredged Material), increased evaporation is expected to reduce the normal net accumulation of precipitation (less evaporation and seepage) onto the dredged material and inner face of the dikes from the previous prediction of 55 million gallons per year to about 28 million gallons per year without an equalization basin.

13. Sediment Volume Dredged with Recirculated Water: 28 million gallons per year is sufficient to slurry 130,000 cy of sediment with recirculation. In addition to precipitation, 25 million gallons of water will be available from the expulsion of pore water from the previously placed dredged material, sufficient for an additional 170,000 cy of sediment with recirculation (more than proportional additional sediment volume can be slurried for an additional volume of water because the dredged material settles more during larger disposal projects, releasing additional water to be used from the dredged material being placed). Additional water will be available from the groundwater pumping; its volume will be a function of the seepage through the slurry wall. Therefore, sufficient water should be available most years without drawing additional water from the canal after the initial two lifts are placed in the CDF. Disposal of more than 300,000 cy of sediment per year in the short term could require supplemental water from the canal and increase the total volume of water to be treated.

14. Water Treatment Volume: In the short term under normal conditions for 200,000 cy lifts, the volume of water to be treated is about 13 million gallons per year. Likewise, in the short term under normal conditions for 230,000 cy lifts, the volume of water to be treated is about 12 million gallons per year. In the short term, water will be going into storage or bulking within the sediment, so that the larger dredge volume results in larger bulking losses and thus less volume to be treated. Over the long term, additional consolidation of earlier lifts will occur, yielding on average an additional 17 million gallons per year of water to be treated. As such, the treatment volume is expected to be about 30 million gallons per year plus the volume of seepage through the slurry wall, representing a decrease of about 25 million gallons per year due to the increased evaporation from maintaining a permanent pond.

15. Water Quality: The water quality for treatment is expected to change due to the holding time in the CDF before treatment is conducted. It is anticipated that the holding will cause differences in the concentrations of volatile constituents, ammonia, and BOD/TOC; little to no change is expected in the dissolved concentrations of metals. These changes can be estimated from the volatilization predictions and previous treatability testing results. The concentration of the dominant volatile components would be very near zero, the concentration of ammonia would be reduced by more than 90% and would be expected to be less than 10 mg/L, and the BOD/TOC would be reduced by more than 80% and would be expected to be less than 15 mg/L, providing that oil is skimmed/absorbed in the CDF. The impact of the change in water quality on wastewater treatment will be the subject of a separate decision memo.

16. Dredged Material Distribution: To facilitate ponding with a practical minimal ponded depth of 2 ft, attention must be provided to the uniform distribution of fine-grained dredged material in the CDF cells. The dredged material should be pumped into the CDF at multiple points throughout the length of the CDF at a spacing of about 600 ft to limit differences in the dredged material height to about 1 ft along the length of the cells.

17. Sand Recovery for Raising Interior Dike: To facilitate sand recovery, the dredged material discharge into the CDF should be along the interior dike. Discharging at the water surface, as opposed to using a submerged discharge, would facilitate sand mounding and recovery. Surface discharge would increase the local release of volatiles at the point of discharge, but would not measurably increase the volatile losses from the facility.

18. Decant Structures: The design of the decant structures would be unchanged by the maintenance of a ponded CDF or the elimination of the equalization basin. One less decant structure would be needed if the equalization basin is eliminated from the design. The decant structures should be located in the corners closest to the canal and treatment facility.

19. Wildlife Control: Wildlife control will change somewhat if the CDF is kept ponded; wildlife will be restricted primarily to waterfowl, including migratory species. The need for control should be limited if the pond is maintained and the formation of exposed mud flats are avoided. The wildlife exclusion plan for the project will need to take the ponded operation into account; the wildlife exclusion plan is under development by US Fish and Wildlife.

20. Mosquito Control: Mosquito control should be investigated since the facility will remain ponded year round. The need for mosquito control is mitigated by the size and openness of the CDF that will limit stagnation.

21. Impacts on Storage Needs and Dike Height: Dr. Paul Schroeder, ERDC, calculated the storage needs and dike heights for various scenarios. The complete calculations are given in Attachment 2. Operating the CDF under a ponded scenario, the final height of the dredged material would be approximately 20.2', verses a height of 20.5' for a more conventional dewatered operation. This reduction in dredged material height is mainly due to the elimination of the equalization basin in the ponded scenario. With a dewatered operation, the equalization basin is still needed, and storage space is lost. However, a ponded operation

does require a greater dike height, to allow for freeboard and precipitation storage. The dike height difference is 26.7' for ponded operation verses 24.5' for the dewatered scenario. The interior dikes would need to be raised sooner for ponded operation than for dewatered operation.

22. Considering all the impacts, including changes to the design and operation of the CDF, a number of conclusions can be drawn regarding the ponded operation. The pros and cons of switching to a ponded operation are given below.

| **Pros** | **Cons** |
|---|---|
| Allow elimination of the equalization basin which will maximize the available sediment storage area. | Need to redesign "Dikes III" plans and specifications. |
| Cost less to construct the remaining dike facilities, due to a simpler layout, one less decant structure, and one less pump. A separate dike and liner construction will not be needed for the equalization basin since there will not be an equalization basin. | Regulatory acceptance of the ponded CDF idea is unknown, particularly with respect to the handling of the TSCA regulated sediment. This is more of an unknown issue than a negative, since other aspects of the TSCA sediment handling are also undetermined at this time. Regulatory coordination is needed regardless of whether the CDF is operated ponded or drained. A separate decision document addressing the TSCA regulated sediment handling will be prepared. |
| Improve the water quality going to the treatment plant, notably by reducing the ammonia and degradable organic matter. Better water quality has impacts on the water treatment plant design and operation, with possible savings (this topic requires more in depth investigation.) | Wastewater Treatment Plant design needs to be re-evaluated and possibly redone. This will be a separate decision memo. |
| Reduce volatile emissions by about 50% | Interior dikes will need to be raised sooner, and possibly also the exterior dikes. |
| Eliminate particulate emissions completely except for potential sand mounds around discharge points, and thus reduce operation/maintenance costs because no particulate controls will be needed. | |
| Reduce volume of water to treat by about 40% because additional evaporation will occur (the ponded water will be held in a shallow, comparatively large surface area basin and more evaporation will occur). The reduction in water volume translates to a reduction in treatment costs. | |

| Pros | Cons |
|---|---|
| Reduce pumping and water management for the CDF, since stormwater will simply remain in the cell. No dewatering will be needed. No trenching will be needed to encourage water run-off. No run-off transfer will be needed. This translates to fewer operations activities, and a simpler CDF operation. | |

23. Operating the CDF as a ponded facility will change in storage and dike height requirements. About 2 ft increase in dike height is required to accommodate the depth of ponding between disposal and storage of excess precipitation water. This will require the interior dikes to be raised sooner. However, operating the CDF in a ponded manner may facilitate the dike construction. The discharge piping for the sediment can be laid along the interior dike, with multiple discharge points to distribute the sediment in a fairly even layer. Sand will tend to settle out first, and will tend to be piled along the interior dike. This makes sand retrieval for dike construction easier. The placement of slurried sediment into the CDF will be a separate decision memo topic.

24. The cost savings were estimated for the ponded CDF operation. Cost savings are assumed to come from two basic changes: the dikes and equalization basin layout will be changed (the equalization basin will be eliminated), and the amount of water to be treated will be less. Cost impacts on operation and maintenance of the CDF (for example, for dewatering sediment and for particulate control) were not estimated. Only the two main costs described above were estimated.

25. Attachment 3 contains the estimated cost savings for the wastewater treatment plan. The costs were estimated based on the Indiana Harbor and Canal Wastewater Treatment Plant Final Design. The operating costs were prorated based on a treatment volume of 30 Mgal instead of 55 Mgal. The treatment season (4 months) and unit processes were assumed to be the same. Labor was assumed to be a fixed cost since a minimum level of staff would be on-site regardless of the treatment volume. The prorating was mainly on materials, supplies, and utilities. Based on this estimate, changing from a dewatered to a ponded CDF operation will result in an estimate <u>annual</u> wastewater treatment plant operating <u>cost savings of $142,894</u>. This represents approximately 17% reduction in treatment costs. Additional savings may also be realized, because the ponded CDF will have somewhat improved water quality as well as less water. The impact of the ponded CDF operation on the wastewater treatment needs is being addressed in a separate decision memo.

26. Operating the CDF as a ponded facility would allow the equalization basin and one decant structure to be eliminated from the design. In addition, the clay dikes, including the center dike, would be realigned somewhat. Attachment 4 contains the calculations for the construction cost savings for the equalization basin elimination and the dike realignment. The costs were estimated based on the government estimate for the 100% "Dikes III" design, completed in November 2007. Costs were not adjusted for inflation for this calculation.

Based on the November 2007 design and costs, the proposed changes in dikes and the elimination of the equalization basin would result in a construction cost savings of approximately $4.15 M.

27. In summary, the conservatively estimated cost savings for operating the CDF as a ponded facility would be over $4 M in construction costs, with an annual operating cost savings of approximately $140,000. It is likely that other cost savings would also be realized, due to lower operating and maintenance costs of the facility (no particulate control, for example). A separate decision document will investigate whether additional wastewater treatment plant savings could be realized also, since the quality of the water to be treated in a ponded scenario will also be better.

28. Considering all issues, it is our decision that the Indiana Harbor and Canal Confined Disposal Facility should be operated in a two cell, ponded manner. The benefits of this change will be positive for the adjacent community (lower emissions of all types), for the government (lower capital and operating costs), and for the CDF operator (less dewatering, no material trenching, simplified CDF operation).

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Attachment 1

## IHC CDF VOLATILE EMISSION MODELING (November 21, 2008)

### *Selection of Chemicals of Concern for Volatile Emissions Modeling*

The first step in the volatile emissions modeling was to identify the chemicals of concern. The chemicals of concern were selected based on potential for volatilization and relative toxicity. Chemical concentration in IHC sediment was also taken into consideration in the selection of COCs. The potential for volatilization was determined by low octanol-water coefficients (Kow) and high Henry's law constants (H) relative to other chemicals in IHC sediment. Relative toxicity was determined by multiplying the chemical concentration in sediment with the cancer slope factor (normalized to Benzo(a)pyrene).

The list of COCs is presented on Table 1. The basis for COC selection is presented next to each COC.

Attachment 1

## Table 1. Chemicals of Concern

| Chemical | Criteria for selection (see Notes) | Sediment Conc., waD (mg/kg) | Henry's Const., H dimensionless | Kow (mg/kg) | Slope Factor (mg/kg-day)$^{-1}$ | Slope Factor Normalized to BaP dimensionless | Normalized Slope Factor * Sediment Conc. (mg/kg) |
|---|---|---|---|---|---|---|---|
| ***PAHs*** | | | | | | | |
| Acenaphthene | Low Kow | 21.7 | 0.0066 | 8318 | NA | NA | NA |
| Acenaphthylene | Low Kow | 27 | 0.0049 | 10000 | NA | NA | NA |
| Anthracene | Low Kow | 26 | 0.0018 | 31623 | NA | NA | NA |
| Benzo(a)anthracene | Relative Toxicity | 39.6 | 0.0002 | 501187 | 3.9E-01 | 0.1 | 4.0 |
| Benzo(b)fluoranthene | Relative Toxicity | 39.6 | 0.0000822 | 1584893 | 3.9E-01 | 0.1 | 4.0 |
| Benzo(k)fluoranthene | Relative Toxicity | 12.8 | 0.0000822 | 1584893 | 3.9E-01 | 0.1 | 1.3 |
| Benzo(a)pyrene | Relative Toxicity | 26.6 | 0.000085 | 1096478 | 3.9E+00 | 1 | 26.6 |
| Benzo(ghi)perylene | | 11.2 | 0.0000582 | 3162278 | NA | NA | NA |
| Chrysene | Relative Toxicity, High Sediment | 62.1 | 0.0003 | 501187 | 3.9E-02 | 0.01 | 0.62 |
| Dibenzo(a,h)anthracene | Relative Toxicity | | | 2 | 4.1E+00 | 1.05 | 12.4 |
| Fluoranthene | **High Sediment** Concentration | | | ) | NA | NA | NA |
| Fluorene | Low Kow | 36.9 | 0.0026 | 15849 | NA | NA | NA |
| Indeno(1,2,3-c,d)pyrene | Relative Toxicity, High Sediment Conc. | 53.9 | 0.0000654 | 4466836 | 3.9E-01 | 0.1 | 5.4 |
| Naphthalene | Low Kow, Relative Toxicity, High Sediment Conc. | 478.4 | 0.011 | 2188 | 1.2E-01 | 0.031 | 14.7 |
| Phenanthrene | Low Kow, High Sediment Conc. | 192.4 | 0.0029 | 28840 | NA | NA | NA |
| Pyrene | High Sediment Concentration | 91 | 0.00092 | 125893 | NA | NA | NA |
| ***BTEX*** | | | | | | | |
| Benzene | Low Kow, High H | 3.09 | 0.224 | 135 | 1.0E-01 | 0.026 | 0.079 |
| Ethylbenzene | Low Kow, High H | 0.739 | 0.316 | 1413 | NA | NA | NA |
| Toluene | Low Kow, High H | 4.94 | 0.251 | 537 | NA | NA | NA |
| Xylenes, Total | Low Kow, High H | 0.782 | 0.275 | 1318 | NA | NA | NA |
| ***PCBs*** | | | | | | | |
| PCB(Aroclor-1248) | Relative Toxicity | 10.98 | 0.009 | 575440 | 2.0E+00 | 0.51 | 5.6 |
| PCB Total | Relative Toxicity | 35.6 | 0.0090 | 1096478 | 2.0E+00 | 0.51 | 18.3 |
| ***Other Organic Compounds*** | | | | | | | |
| Dibenzofuran | Low Kow | 8.7 | 0.0043 | 20417 | NA | NA | NA |
| Vinyl Chloride | Low Kow, High H, High Relative Toxicity | **2.9** | **1.1** | **24** | 2.7E-01 | 0.07 | 0.2 |

**NOTES**

Low Kow <50.000 mg/kg
High H >0.1
High Bulk Sediment Concentration >50 mg/kg
High Relative Toxicity, Slope Factor Normalized to BaP x Sed Conc > 0.1
Unit Risks and Slope Factors from "Air Toxics Hot Spots Program Risk Assessment Guidelines - Part II, Technical Support Document for Describing Available Cancer Potency Factors", California Environmental Protection Agency, Office of Environmental Health Hazard Assessment, Air Toxicology and Epidemiology Section, May 2005.

### *Volatile Emissions Modeling*

The chemical emissions from dredging operations at IHC are comprised of the following primary source "locales": the dredging operable unit (DOU), the barges transporting the dredged material from the dredging area to the CDF, the disposal point, and the final disposal CDF site. Volatile emissions modeling to estimate emissions from these source "locales" are discussed below.

### *Dredge Operations Emission Modeling*

The Dredging Operable Unit Emission model developed by LSU was used to estimate volatile emissions flux rates during dredging. A discussion of the model development as well as a detailed description of the model can be found in the "Investigations on the Controlling Factors for Air Emissions Associated with Dredging of the Indiana Harbor Canal and CDF Operations" report (ERDC/EL TR-08-17), L.J. Thibodeaux, K.T. Valsaraj, R. Ravikrishna, K. Fountain, C. Price, U.S. Army Engineer Research and Development Center, Vicksburg, MS, 2008.

The DOU Emission model calculates emissions from three types of dredging areas: two with flowing rivers or streams and one in non-flowing waters such as an embayment, lake or harbor. The two types of dredging areas in flowing rivers/streams are: a dredging area enclosed within a silt curtain or other semi-permeable membrane device, and dredging area without enclosure.

Input to the DOU Emission model can be grouped into five main categories: 1) sediment properties such as sediment chemical concentration, 2) dredging operational parameters such as dredging rate and resuspension factor, 3) dredging area characteristics such as flow rate through the DOU, 4) external characteristics such as wind speed and chemical concentration in air above the CDF, and 5) chemical parameters such as Henry's Law Constant, sediment to water partitioning coefficient, and solubility of the chemical in water.

Sediment concentration and chemical parameters such as Henry's Law Constant, sediment to water partitioning coefficient, and other characteristics used in all emission modeling for the COCs are presented in Table 2. Chemical concentrations in the sediment used in the modeling were averages from the USEPA sediment sampling conducted at IHC in 1992-1993. For chemicals that were not analyzed in the 1992-1993 USEPA sediment sampling, average concentrations from the entire USEPA database (which includes data from sediment sampling conducted from 1977 to 1996) were used.

Henry's law constants and sediment to water partitioning coefficients were measured for some PAHs and PCBs in experiments using IHC sediments (Chapter 1 of ERDC/EL TR-08-17). The report also presented Henry's constants (H) and partitioning coefficients for other PAHs and PCBs which were not directly measured but were estimated using correlations based on experimental data. Aroclor 1248 chemical characteristics were used to represent Total PCBs as Aroclor 1248 concentration was highest of all Aroclors. Henry's constants and partitioning

coefficients for BTEX, which are VOCs, are well established and the values reported in literature are used in the modeling. H and partitioning coefficients values for other organic compounds used in the model are also from literature because concentrations of these compounds in the IHC sediments used in the experiments were very low or non-detect, making site-specific H and partitioning coefficient measurements unreliable. Solubility values, diffusivity in air, and diffusivity in water were obtained from literature for all chemicals.

**Table 2. Sediment Concentration and Chemical Characteristics Used in Emission Modeling.**

| Chemical | Sediment Conc., waD (mg/kg) | Sand Mound Conc. (mg/kg) | Henry's Const., H dimensionless | Solubility, ρ'a1 (mg/L) | Diffusivity in Air, $DA_1$ ($cm^2/s$) | Diffusivity in Water, $DA_2$ ($cm^2/s$) | Partitioning Coefficient, $K_{a32}$ (L/kg) |
|---|---|---|---|---|---|---|---|
| ***PAHs*** | | | | | | | |
| Acenaphthene | 21.7 | 1.1 | 0.0066 | 3.8 | 0.0421 | 7.70E-06 | 1030 |
| Acenaphthylene | 27 | 1.4 | 0.0049 | 3.93 | 0.0440 | 7.50E-06 | 1826 |
| Anthracene | 26 | 1.3 | 0.0018 | 0.075 | 0.0324 | 7.74E-06 | 29691 |
| Benzo(a)anthracene | 39.6 | 2.0 | 0.0002 | 0.0128 | 0.0510 | 9.00E-06 | 17226 |
| Benzo(b)fluoranthene | 39.6 | 2.0 | 0.0000822 | 0.0015 | 0.0226 | 5.60E-06 | 560982 |
| Benzo(k)fluoranthene | 12.8 | 0.6 | 0.0000822 | 0.0008 | 0.0226 | 5.60E-06 | 2011866 |
| Benzo(a)pyrene | 26.6 | 1.3 | 0.000085 | 0.0038 | 0.0430 | 9.00E-06 | 600776 |
| Benzo(ghi)perylene | 11.2 | 0.6 | 0.0000582 | 0.0026 | 0.049 | 4.90E-06 | 3189180 |
| Chrysene | 62.1 | 3.1 | 0.0003 | 0.0019 | 0.0248 | 6.21E-06 | 235953 |
| Dibenzo(a,h)anthracene | 11.8 | 0.6 | 0.0000219 | 0.00067 | 0.0202 | 5.20E-06 | 1009413 |
| Fluoranthene | 69.8 | 3.5 | 0.00075 | 0.26 | 0.0302 | 6.40E-06 | 33612 |
| Fluorene | 36.9 | 1.8 | 0.0026 | 1.9 | 0.0360 | 7.88E-06 | 3367 |
| Indeno(1,2,3-c,d)pyrene | 53.9 | 2.7 | 0.0000654 | 0.00053 | 0.0190 | 5.60E-06 | 1140825 |
| Naphthalene | 478.4 | 23.9 | 0.011 | 31.0 | 0.0590 | 5.13E-06 | 298 |
| Phenanthrene | 192.4 | 9.6 | 0.0029 | 1.10 | 0.0330 | 7.47E-06 | 13344 |
| Pyrene | 91 | 4.6 | 0.00092 | 0.132 | 0.0272 | 7.24E-06 | 77706 |
| ***BTEX*** | | | | | | | |
| Benzene | 3.09 | 0.2 | 0.224 | 1780 | 0.088 | 1.02E-05 | 9.8 |
| Ethylbenzene | 0.739 | 0.04 | 0.316 | 152 | 0.075 | 7.80E-06 | 88.2 |
| Toluene | 4.94 | 0.2 | 0.251 | 515 | 0.087 | 8.60E-06 | 35.6 |
| Xylenes, Total | 0.782 | 0.04 | 0.275 | 200 | 0.071 | 9.30E-06 | 82.7 |
| ***PCBs*** | | | | | | | |
| PCB Total (Aroclor 1248) | 35.6 | 1.8 | 0.0090 | 0.041 | 0.018 | 8.00E-06 | 8700 |
| ***Other Organic Compounds*** | | | | | | | |
| Dibenzofuran | 8.7 | 0.4 | 0.00436 | 4.75 | 0.0267 | 6.00E-06 | 1078 |
| Vinyl Chloride | 2.9 | 0.15 | 1.1 | 2763 | 0.106 | 1.23E-06 | 1.9 |

Sediment physical characteristics such as total organic carbon content and sediment bulk density used in all emission modeling are presented in Table 3. Values used are typical for IHC sediments.

**Table 3. Sediment Physical Characteristics Used in Emission Modeling.**

| Sediment Properties | Symbol | Units | Value Used in Model |
|---|---|---|---|
| Bulk Sediment Total Organic Carbon Content | $TOC_{Bulk}$ | % | 10 |
| Sand Mound Total Organic Carbon Content | $TOC_{Sand}$ | % | 0.5 |
| Bulk Sediment Silt & Clay Fraction | $SCF_{Bulk}$ | % | 67 |
| Sand Mound Silt & Clay Fraction | $SCF_{Sand}$ | % | 3.35 |
| Bulk Sediment Clay Fraction | $CF_{Bulk}$ | % | 5 |
| Sand Mound Clay Fraction | $CF_{Sand}$ | % | 0.2 |
| Specific Gravity of Sediment | SG | | 2.71 |
| In situ Sediment Water Content | w | % | 88 |
| Particle bulk density | ρ3 | gm/ml | 2.71 |
| In situ Sediment Porosity | e2 | unitless | 0.70 |

The inputs to the DOU model are presented on Table 4 below. Notes on how the DOU model input values were selected are presented in the last column on the table.

**Table 4. Inputs to Dredging Operable Unit Emission Model**

| Parameters | Symbol | Units | Value Used in Model | Notes on Value Used |
|---|---|---|---|---|
| **Dredging Operational Parameters** | | | | |
| Dredging rate | Qds | cy/hr | 125 | Anticipated dredging rate |
| Resuspension factor | R | dimensionless | 0.01 | Mass of solids suspended in water by the dredge per unit of solids extracted |
| Chemical loading ratio | f | dimensionless | 0.5 | Surficial bed sediment-to-DM average, downstream of the dredge site. Typically this factor is less than unity and is quantified using bed sediment concentration profile data. A value of 0.5 is used. |
| **Dredging Area Characteristics** | | | | |
| Flow rate through DOU | QDOU | m3/sec | 0.5 | Water volumetric rate moving through the DOU |
| Water depth in DOU | h | m | 6 | Assumed average water depth in canal and harbor |
| **External Parameters** | | | | |
| Wind speed | Vw | mi/hr | 10 | Average wind speed |
| Chemical concentration in air above DOU | ρa1 | kg/l | 0 | Conservative assumption for highest emissions |
| Chemical conc. in water approaching DOU | ρAS | ng/cm3 | 0 | Conservative assumption for highest emissions |

Emissions of COCs from three types of dredging areas (confined DOU, unconfined DOU, and embayment DOU) were estimated using the DOU emission model and are presented on Table 5. Dredging seasons of 75 days were assumed to estimate emissions from dredging areas in a

typical year. (The 75-day dredging season was obtained using an average production rate of approximately 3000 cubic yards of sediment per day and a total dredging volume of 230,000 cubic yards per dredging season. This assumption is discussed in further details below.) Estimated emissions associated with dredging and dredged material transport and placement operations are shown in Figure 1.

**Table 5. Results of the Dredging Operable Unit Model**

| | *Confined DOU Emissions* | | *Unconfined DOU Emissions* | | *Embayment DOU Emissions* | |
|---|---|---|---|---|---|---|
| **Chemical** | **kg/day** | **tons/yr (75 day dredging season)** | **kg/day** | **tons/yr (75 day dredging season)** | **kg/day** | **tons/yr (75 day dredging season)** |
| ***PAHs*** | | | | | | |
| Acenaphthene | 0.04 | 0.0033 | 0.024 | 0.0020 | 0.022 | 0.0018 |
| Acenaphthylene | 0.042 | 0.003 | 0.022 | 0.0018 | 0.015 | 0.0012 |
| Anthracene | 0.028 | 0.0023 | 0.002 | 0.0002 | 0.0013 | 0.0001 |
| Benzo(a)anthracene | 0.0107 | 0.00088 | 0.0015 | 0.00012 | 0.00075 | 0.00006 |
| Benzo(b)fluoranthene | 6.50E-04 | 0.000054 | 2.60E-05 | 0.000002 | 8.90E-05 | 0.000007 |
| Benzo(k)fluoranthene | 3.54E-04 | 0.000029 | 2.37E-06 | 0.000000 | 2.90E-05 | 0.000002 |
| Benzo(a)pyrene | 1.70E-02 | 0.00140 | 1.70E-05 | 0.00000 | 6.60E-05 | 0.00001 |
| Benzo(ghi)perylene | 8.46E-04 | 0.0000698 | 9.63E-07 | 0.0000001 | 1.80E-05 | 0.0000015 |
| Chrysene | 2.20E-03 | 0.00018 | 2.60E-04 | 0.00002 | 3.90E-04 | 0.00003 |
| Dibenzo(a,h)anthracene | 8.60E-05 | 0.0000071 | 1.26E-06 | 0.0000001 | 7.73E-06 | 0.0000006 |
| Fluoranthene | 0.0537 | 0.004 | 0.0033 | 0.000 | 0.0021 | 0.00017 |
| Fluorene | 0.047 | 0.004 | 0.018 | 0.001 | 0.01 | 0.0008 |
| Indeno(1,2,3-c,d)pyrene | 1.90E-04 | 0.000016 | 1.40E-05 | 0.000001 | 2.70E-05 | 0.0000022 |
| Naphthalene | 1.369 | 0.11 | 0.977 | 0.08 | 1.761 | 0.15 |
| Phenanthrene | 0.24 | 0.020 | 0.034 | 0.003 | 0.018 | 0.001 |
| Pyrene | 0.078 | 0.006 | 0.0021 | 0.0002 | 0.0022 | 0.0002 |
| ***BTEX*** | | | | | | |
| Benzene | 0.152 | 0.013 | 0.094 | 0.008 | 0.4 | 0.033 |
| Ethylbenzene | 0.0051 | 0.00042 | 0.0034 | 0.00028 | 0.0107 | 0.00088 |
| Toluene | 0.072 | 0.0059 | 0.046 | 0.0038 | 0.176 | 0.0145 |
| Xylenes, Total | 0.0057 | 0.00047 | 0.0038 | 0.00031 | 0.0121 | 0.00100 |
| ***PCBs*** | | | | | | |
| PCBs | 0.055 | 0.005 | 0.011 | 0.0009 | 0.006 | 0.0005 |
| ***Other Organic Compounds*** | | | | | | |
| Dibenzofuran | 0.014 | 0.0012 | 0.009 | 0.0007 | 0.0077 | 0.0006 |
| Vinyl Chloride | 0.64 | 0.053 | 0.39 | 0.032 | 1.9 | 0.16 |
| **Total** | **2.9** | **0.24** | **1.6** | **0.14** | **4.4** | **0.36** |

Attachment 1

***Barge Transfer Volatile Emission Modeling***

To estimate the volatile emissions from the barges transporting dredged material from the dredge site to the CDF, it is assumed that there are two barges present at IHC at any time during the dredging season. One of the barges will be loading dredged material at the dredge site, and the second barge will be unloading in the vicinity of the CDF. The barges are assumed to be 30 feet wide by 150 feet long by 10 feet deep. The barges are assumed to be full of dredged material and also to be uncovered during the loading and transport. The dredged material is assumed to be covered by a layer of water in the barge, similar to the ponded conditions in the CDF as described below. Therefore, volatile emissions from the barges are estimated using the ponded CDF emissions equations discussed below. In addition, because the time period when the barges are present at IHC is approximately the same time period when the dredged material is discharged into the CDF, the calculation of volatile emissions from the CDF pond can incorporate volatile emissions from the barges by simply increasing the ponded area of the CDF by an area equivalent to two barges. It should be noted, however, that if volatile emissions from the barges are estimated together with emissions from the CDF pond by summing the areas, there may be some overestimation of emissions, as chemical loss from the dredged material in the barges is not taken into account as chemicals that would be unavailable to be emitted in the CDF. Alternately, the sediment chemical concentrations can be recalculated due to emissions in the barges, and the new sediment concentrations can be entered as the starting sediment concentration in the CDF. Because the chemical loss from the barges is estimated to be relatively small, in this initial estimate of emissions, sediment concentrations will not be recalculated due to loss from the barges. Volatile emissions from the barges are presented in Table 6. (All inputs to the barge volatile emission estimates are the same as for the CDF pond and are discussed below.) Dredging seasons of 75 days were assumed to estimate emissions from dredging barges in a typical year. Estimated emissions associated with dredging and dredged material transport and placement operations are shown in Figure 1.

**Table 6. Volatile Emissions during Barge Transfer**

| | kg/day | tons/yr (75 day dredging season) |
|---|---|---|
| ***PAHs*** | | |
| Acenaphthene | 6.2E-03 | 5.2E-04 |
| Acenaphthylene | 4.1E-03 | 3.5E-04 |
| Anthracene | 1.8E-04 | 1.5E-05 |
| Benzo(a)anthracene | 1.4E-04 | 1.2E-05 |
| Benzo(b)fluoranthene | 1.3E-06 | 1.1E-07 |
| Benzo(k)fluoranthene | 1.2E-07 | 9.9E-09 |
| Benzo(a)pyrene | 1.2E-06 | 9.7E-08 |
| Benzo(ghi)perylene | 6.7E-08 | 5.6E-09 |
| Chrysene | 1.6E-05 | 1.3E-06 |
| Dibenzo(a,h)anthracene | 5.7E-08 | 4.8E-09 |
| Fluoranthene | 2.6E-04 | 2.2E-05 |
| Fluorene | 2.6E-03 | 2.2E-04 |
| Indeno(1,2,3-c,d)pyrene | 6.5E-07 | 5.4E-08 |
| Naphthalene | 4.2E-01 | 3.5E-02 |
| Phenanthrene | 3.4E-03 | 2.9E-04 |
| Pyrene | 1.6E-04 | 1.4E-05 |
| ***BTEX*** | | |
| Benzene | 1.1E-01 | 9.2E-03 |
| Ethylbenzene | 2.8E-03 | 2.4E-04 |
| Toluene | 4.8E-02 | 4.0E-03 |
| Xylenes, Total | 3.5E-03 | 2.9E-04 |
| ***PCBs*** | | |
| PCB Total | 1.2E-03 | 1.0E-04 |
| ***Other Organic Compounds*** | | |
| Dibenzofuran | 1.9E-03 | 1.6E-04 |
| Vinyl Chloride | 1.4E-01 | 1.2E-02 |
| **Total** | **0.74** | **0.06** |

### *Emissions from Disposal Pipe*

The dredged material will be pumped from the transfer barge into the CDF using either water stored in the CDF cells or water from the canal. It is assumed that the slurry of dredged material and carrier water is discharged into the sediment cells above the sediment surface in the receiving cells. The discharge of slurry from the pipe will result in emissions of volatiles into the air. The discharge point can be submerged, and this would reduce emissions, but for this emission calculation, it is assumed conservatively that the discharge is above the sediment surface.

Attachment 1

The equations for estimating volatile losses during disposal into the CDF were developed by Dr. L.J. Thibodeaux and are presented in "Theoretical Models for Evaluation of Volatile Emissions to Air during Dredged Material Disposal with Applications to New Bedford Harbor, Massachusetts" (Misc. Paper EL-89-3, USACE, May 1989).

The inputs to the dredge disposal pipe emission calculations are presented on Table 7 below. Notes on how the input values were selected are presented in the last column on the table. Estimated emissions associated with dredging and dredged material transport and placement operations are shown in Figure 1

**Table 7. Inputs to Dredge Disposal Pipe Model.**

| Parameters | Symbol | Units | Value Used in Model | Notes on Value Used |
|---|---|---|---|---|
| **Dredging Operational Parameters** | | | | |
| Volumetric rate of water (solids-free) flow in pipeline | Q | m^3/hr | 625 | Average flow in 8-inch pipe |
| Sediment Slurry Concentration | Cps | Kg/L | 0.170 | 170 g/L: typical pumpable slurry concentration |
| Water Temperature | Tw | Degree Celsius | 20 | |
| Height through which water falls | Hd | feet | 5 | Assumed ¼ distance of dike height |

For the emission analysis, it is assumed that disposal into the CDF will occur 24 hours a day during the dredging season. Dredging seasons of 75 days were assumed to estimate emissions from the disposal pipe in a typical year. Volatile emissions from the discharge pipe are presented in Table 8.

Attachment 1

**Table 8. Volatile Emissions from Discharge Pipe**

| | kg/day | tons/yr (75 day dredging season) |
|---|---|---|
| ***PAHs*** | | |
| Acenaphthene | 0.092 | 0.008 |
| Acenapthylene | 0.064 | 0.0053 |
| Anthracene | 0.0039 | 0.00032 |
| Benzo(a)anthracene | 0.0107 | 0.0009 |
| Benzo(b)fluoranthene | 0.00028 | 2.28E-05 |
| Benzo(k)fluoranthene | 0.000025 | 2.06E-06 |
| Benzo(a)pyrene | 0.00021 | 1.70E-05 |
| Benzo(ghi)perylene | 0.000013 | 1.08E-06 |
| Chrysene | 0.00107 | 0.00009 |
| Dibenzo(a,h)anthracene | 0.00004 | 3.67E-06 |
| Fluoranthene | 0.009 | 0.0007 |
| Fluorene | 0.048 | 0.0040 |
| Indeno(1,2,3-c,d)pyrene | 0.00019 | 1.53E-05 |
| Naphthalene | 6.0 | 0.49 |
| Phenanthrene | 0.063 | 0.0052 |
| Pyrene | 0.0050 | 0.00042 |
| ***BTEX*** | | |
| Benzene | 0.94 | 0.08 |
| Ethylbenzene | 0.038 | 0.0031 |
| Toluene | 0.54 | 0.044 |
| Xylene | 0.041 | 0.0034 |
| ***PCBs*** | | |
| Total PCBs (Aroclor 1254) | 0.018 | 0.0015 |
| ***Other Organic Compounds*** | | |
| Dibenzofurans | 0.032 | 0.0027 |
| Vinyl Chloride | 0.23 | 0.019 |
| **Total** | **8.1** | **0.67** |

### *IHC CDF Volatile Emission Modeling*

Volatile emissions from two operational scenarios were estimated for the CDF: a ponded CDF and a drained CDF. Both operation scenarios assumed that approximately 230,000 cubic yards of sediment would be dredged every year and hydraulically placed in the CDF. The placement of the dredged material would alternate between two 45-acre storage cells every other year. It was assumed that the dredging and placement would take about 75 days (2.5 months) using an average production rate of approximately 3000 cubic yards of sediment per day.

To estimate the volatile emissions from both the ponded CDF and the drained CDF, a two-year dredging cycle was assumed, with dredging and disposing into alternating CDF sediment cells in alternating years. This two-year dredging cycle resulted in CDF conditions that were approximately presented in Figure 2 for a ponded CDF and Figure 3 for a drained CDF. Two calendar years are presented in the figures with May being the first month, with the assumption that dredging would start in May in a typical year. The dredging, disposal, decant, and dewatering time periods presented in the CDF condition figures assume an average dredging volume per year of approximately 230,000 cubic yards. Actual dredging volumes may vary from year to year, but the two-year cycle presented in Figures 2 and 3 is expected to represent most dredging scenarios at IHC.

The difference between the two operational scenarios will be the management of water in the sediment cell after each sediment placement/disposal. In Scenario 1 (Ponded CDF Scenario), the water released from the sediment after disposal is not removed from the CDF cell. The dredged material is allowed to consolidate for the next 21.5 months with an overlying pond of water until the next disposal operation occurs in the cell. In Scenario 2 (Drained CDF Scenario), free water is drained off the dredged material after disposal is completed and the sediment is allowed to consolidate and desiccate for the next 21.5 months until the next disposal operation into the same cell.

## *Emissions from Ponded CDF*

A CDF that is kept ponded between dredging operations can be represented by two conditions that have quantifiable volatile emissions: the ponded portions and the drained portions. Emissions from the ponded CDF can be further characterized by two regimes: emission during disposal into the CDF and emission from the pond after the disposal period. Volatile emissions from these sources are discussed below.

### Ponded Portions of CDF – Emissions during Disposal

Volatile emissions from a ponded CDF are composed of emissions during disposal and emissions from the pond after the disposal period. Volatile emissions from the CDF cell during disposal were predicted using Dr. Thibodeaux's formulation for a ponded CDF cell. A discussion of the model development as well as a detailed description of the model can be found in ERDC/EL TR-08-17.

Input to the Ponded CDF Emission model can be grouped into five main categories: 1) sediment properties such as sediment chemical concentration, 2) dredging operational parameters such as influent slurry solids concentration and dredging rate, 3) CDF characteristics such as water depth and CDF cell dimensions, 4) external characteristics such as wind speed and chemical concentration in air above the CDF, and 5) chemical parameters such as Henry's Law Constant, sediment to water partitioning coefficient (Kd), and solubility of the chemical in water.

The volatile emission losses for the 75 days of disposal were computed using the PCDF Excel spreadsheet. Sediment chemical concentrations and sediment physical characteristics used in the

PCDF spreadsheet were presented previously on Tables 2 and 3, respectively. Other inputs specific to the PCDF model are presented on Table 9. Notes on how the PCDF model input values were selected are presented in the last column on the table. Volatile emission losses during disposal are presented on Table 11.

**Table 9. Inputs to Ponded CDF Emission Model.**

| Parameters | Symbol | Units | Value Used in Model | Notes on Value Used |
|---|---|---|---|---|
| **Dredging Operational Parameters** | | | | |
| Influent Slurry Solids Concentration | $TSS_{sl}$ | gm/L | 170 | 170 g/L: typical pumpable slurry concentration |
| Dredging rate | $Q_{ds}$ | $yd^3/hr$ | 125 | Anticipated dredging rate |
| **CDF Parameters** | | | | |
| Water Depth | Z | m | 1 | Typical CDF ponding condition |
| Length of CDF Cell | L | m | 622 | CDF design dimensions |
| Width of CDF Cell | W | m | 293 | CDF design dimensions |
| CDF Total surface area | $A_{.stot}$ | acre | 45.0 | CDF design dimensions |
| **External Parameters** | | | | |
| Wind Speed | $v'_1$ | mph | 10 | Average wind speed |
| Chemical Concentration in air above CDF | $\rho_{a1}$ | mg/l | 0 | Conservative assumption for highest emissions |

Ponded Portions of CDF – Emissions after Disposal

Volatile emissions from a ponded CDF after sediment disposal arise from four principal sources. The first source is the organic constituents remaining in the ponded water from the disposal operation. The second source is the dredged material pore water expelled by consolidation of the dredged material. The third source is diffusion from the settled dredged material, and the fourth source is the suspended solids that are in equilibrium with the mixed layer of the settled dredged material that undergo resuspension and settling continuously under the influence of erosion forces.

Estimates of the volatile emissions for the 9.5 month (1 year) and 21.5 month (2 years) post-disposal periods were predicted using the PSDDF and RECOVERY models. PSDDF was used to estimate the rates of consolidation (sediment lift settlement rate and water discharge rate) which were then used to calculate the contaminant mass loadings to the ponded water along with pore water concentrations using partitioning coefficients. RECOVERY models diffusion from

the dredged material layer, mixing in a 2-cm surficial material layer, settling of solids from the ponded water, and resuspension of solids from the mixed layer to maintain a TSS concentration of 10 mg/L, equilibrium partitioning of contaminants between the solid and liquid phases as a function of organic carbon concentration in the phases, and volatilization from the ponded water.

Volatile emissions during disposal and during the post-disposal period from the ponded CDF were estimated by Dr. Paul Schroeder and presented in a memo from 5 December 2007. The emission estimates are presented in Table 11 for Cell 1 and Cell 2. For a bi-annual disposal schedule, it is assumed that dredged material is placed into Cell 1 in Year 1, into Cell 2 in Year 2, into Cell 1 again in Year 3, and so forth. Therefore, it is estimated that loss in Year 1 for Cell 2 is equivalent to loss in Year 2 for Cell 1 (see Figure 2 for clarification) or the losses from one cell over the two-year cycle is equal to the losses from both cells in a one-year period.

Exposed Portions of CDF

Even if the CDF sediment cells are kept ponded between dredging and disposal operations, it is likely that a portion of the cells will be exposed (not ponded) during a significant portion of the time due to natural sloping of the dredged material surface created during sediment disposal. The planned hydraulic placement method into the CDF is expected to create a mound composed primarily of sand size particles in the vicinity of the discharge points (expected to be on the north side of the CDF). The sand mounds, which are estimated to be approximately 10 to 15% of the entire cell area, will be higher in elevation than the rest of the sediment cells as well as be composed of material that is more easily drained than the rest of the cells. For purpose of the emission prediction, it is assumed that the sand mound areas will be 15% of the sediment cell area and that this area will be exposed during the entire post-disposal period. (The ponded portions were modeled assuming that the area undergoing consolidation with contaminant mass loading due to release of pore water was 85% of the CDF area.) Emissions from the sand mound will likely be lower than from the rest of the CDF, primarily due to two reasons: 1) the chemical concentrations of the sand mound should be significantly lower than in the bulk sediment, and 2) surface enrichment which results in a thin soil layer containing elevated chemical concentrations (i.e., higher than the bulk sediment concentrations) being deposited on the dredged material surface in the rest of the CDF would not occur in the sand mound. For purpose of the emission prediction, it is assumed that the chemical concentrations in sand mound areas are approximately 5% of the bulk sediment. The surface enrichment, which is discussed in further detail below, is represented by a flux calibration factor ($C_f$), which is greater than 1 when surface enrichment is present. In addition, the sediment properties (such as porosity and moisture fractions) of the material in the sand mounds would likely be different from the sediment properties of the bulk material. For this emission calculation, it is assumed that the flux calibration factor ($C_f$) for the sand mound is 1, i.e., which is equivalent to no surface enrichment for the sand mound.

Volatile emissions during the post-disposal period from the sand mound areas were estimated using the Exposed Sediment Emissions spreadsheet based on Dr. Thibodeaux's formulation. The exposed sediment model was developed and calibrated to fit measured fluxes obtained from a series of wind tunnel experiments conducted by ERDC-WES on IHC sediments. Details of the experiments, a discussion of the model development as well as a detailed description of the model can be found in ERDC/EL TR-08-17.

Attachment 1

The exposed sediment condition covers the time periods: 1) when the dry areas start to appear until the surface is completely dry, then 2) the air-filled pore spaces are created at depth, surface cracks form and widen, chemicals at the surface are depleted, chemicals at depth move to the surface, until finally a crust forms and emissions are significantly lower than the initial drying period. These two time periods are represented in the model as Regime I and Regime II.

Input to the Exposed Sediment Emission model can be grouped into four main categories: 1) sediment properties such as sediment solid particle density sediment and chemical concentration, 2) CDF characteristics such as fetch of emission area and CDF cell dimensions, 3) external characteristics such as wind speed and chemical concentration in air above the CDF, and 4) chemical parameters such as Henry's Law Constant, sediment to water partitioning coefficient ($K_d$), and molecular diffusivity in air.

Sediment chemical concentrations and parameters were presented previously on Table 2. Sediment physical characteristics were presented on Table 3. The inputs specific to the Exposed Sediment Emission model are presented on Table 10. Notes on how the Exposed Sediment Emission model input values were selected are presented in the last column on the table.

Attachment 1

**Table 10. Inputs to Exposed Sediment Emission Model.**

| Parameters | Symbol | Units | Value Used in Model for Bulk Sediment | Value Used in Model for Sand Mound | Notes on Value Used |
|---|---|---|---|---|---|
| **Sediment Properties** | | | | | |
| Moisture fraction at start of Regime I | $moisture_1$ | | 1.08 | 0.37 | Initially saturated and equals 1.8 times Liquid Limit = 60% |
| Moisture fraction at end of Regime I | $moisture_2$ | | 0.887 | 0.091 | Based on 1.9 inches of crust at desiccation limits |
| Moisture fraction at start of Regime II | $moisture_3$ | - | 0.81 | 0.075 | Based on 2.8 inches of crust at desiccation limits |
| Water porosity at start of Regime I | $e_1$ | - | 0.745 | 0.5 | Initially saturated and equal to porosity computed from moisture fraction |
| Water porosity at end of Regime I | $e_2$ | - | 0.658 | 0.13 | Based on 1.9 inches of crust at desiccation limits |
| Water porosity at start of Regime II | $e_3$ | - | 0.619 | 0.11 | Based on 2.8 inches of crust at desiccation limits |
| **CDF Parameters** | | | | | |
| Length of CDF Cell (fetch) | L | m | varies | varies | |
| Width of CDF Cell | W | m | varies | varies | |
| CDF Total surface area | $A_{stot}$ | acre | varies | varies | |
| **External Parameters** | | | | | |
| Wind Speed | $v'_1$ | mph | 10 | 10 | Average wind speed |
| Chemical Concentration in air above CDF | $\rho_{a1}$ | mg/l | 0 | 0 | Conservative assumption for highest emissions |

A few of the model inputs require some discussion and are included in the following paragraphs. The surface water evaporation time ($t_d$) is defined as the time when the entire sediment surface layer is dry (i.e., covered with dry soil patches.) The $t_d$ value is an empirical parameter controlled by the combined consolidation and evaporation processes that drive liquid from the surface layer, and is one of the parameters obtained from the wind tunnel experimental observations. The $t_d$ value is significant as it indicates when maximum fluxes are observed from the drying sediment surface. Based on the wind tunnel experiments observations, the $t_d$ value used in the model was 425 hours.

The exposed sediment emissions period ($t_{tol}$) is defined as the total time when chemical fluxes from a drying sediment surface are quantified. As such, the $t_{tol}$ value is the total time the exposed sediment emissions model is run. To estimate emissions after one year, the $t_{tol}$ value used in the model was 290 days (365 days minus 75 days) or 6960 hours. To estimate emissions after two years, the $t_{tol}$ value used in the model was 655 days (365 days * 2 years minus 75 days ) or 15,720 hrs. This is based on the assumption that the sand mound areas are exposed immediately after the dredged material is disposed into the CDF.

Attachment 1

A flux calibration factor ($C_f$) was used in the exposed sediment model to enhance model and experimental data congruence, as the model was consistently underestimating the measured fluxes. This fitting coefficient is based on the premise that during sediment pumping and placement, a thin soil layer containing elevated chemical concentrations (i.e., higher than the bulk sediment concentrations) is likely deposited on the dredged material surface. This is due to the solids-water mixing process that produces a supernatant rich in fine particles in suspension since the sand and silt fractions of the sediment will settle relatively quickly. The fine particles, which include clays and organic colloids and typically contain higher chemical concentrations, are deposited on the surface on top of the coarser fraction during evaporation creating a thin layer that is "enriched" with elevated chemical concentrations. The enrichment factors observed in the wind tunnel experiments generally ranged from 3 to 20. The $C_f$ value is presented in the model as the inverse of the fines fraction (defined as the clay fraction and 10% of the silt fraction) in the sediment. The $C_f$ value used in the model was 9 for all chemicals. As discussed previously, the sand mound likely has a value of $C_f$ less than 17, as enrichment should be minimal. A $C_f$ value of 1 was used for the sand mound.

It should be noted that the sediment chemical concentrations were calculated and reset in the model for the exposed sediment post-disposal estimates as there was significant loss of some chemicals during disposal. For vinyl chloride, the entire mass (i.e., entire mass of the chemicals in 230,000 cubic yards assumed to be dredged each year), was calculated to be emitted after disposal into the CDF. Therefore, all post-disposal emission estimates assumed that the sediment concentration of vinyl chloride is zero.

The emission estimates from the sand mound areas of a ponded CDF are presented in Table 11 for Cell 1 and Cell 2. Also presented on Table 11 are the sums of the emissions from the disposal period and the post-disposal periods or the total annual losses from the two ponded 45-acre CDF sediment storage cells.

Attachment 1

## Table 11. Annual Emissions from Ponded Sediment Cells, Bi-Annual Disposal – in Tons.

| | Cell 1 | | | | Cell 2 | | | Cells 1 and 2 |
|---|---|---|---|---|---|---|---|---|
| | During Disposal | Post-Disposal - Ponded Portions of Cell | Post-Disposal - Exposed Portion of Cell (Sand Mound) | Total Emission - Cell 1 | Yr 2 Post-Disposal - Ponded Portions of Cell | Yr 2 Post-Disposal - Exposed Portion of Cell (Sand Mound) | Total Emission - Cell 2 | Total Annual Loss from Both Cells |
| ***PAHs*** | | | | | | | | |
| Acenaphthene | 0.020 | 0.0050 | 0.00044 | 0.026 | 0.0050 | 0.00027 | 0.0053 | 0.031 |
| Acenaphthylene | 0.014 | 0.0028 | 0.00034 | 0.017 | 0.0028 | 0.00021 | 0.0030 | 0.020 |
| Anthracene | 0.0008 | 0.00026 | 0.000035 | 0.0011 | 0.00027 | 0.000022 | 0.00029 | 0.0014 |
| Benzo(a)anthracene | 0.0012 | 0.00058 | 0.000017 | 0.0018 | 0.00060 | 0.000010 | 0.00061 | 0.0025 |
| Benzo(b)fluoranthene | 0.000015 | 0.00014 | 0.00000037 | 0.000158 | 0.00017 | 0.00000023 | 0.00017 | 0.00033 |
| Benzo(k)fluoranthene | 0.000001 | 0.0000033 | 0.000000035 | 0.000005 | 0.0000066 | 0.000000022 | 0.0000066 | 0.0000113 |
| Benzo(a)pyrene | 0.000013 | 0.0000011 | 0.00000024 | 0.000014 | 0.000023 | 0.00000015 | 0.000023 | 0.000038 |
| Benzo(ghi)perylene | 0.000001 | NA | 0.000000014 | 0.0000008 | NA | 0.0000000087 | 0.0000000087 | 0.00000082 |
| Chrysene | 0.0001 | 0.00026 | 0.0000042 | 0.0004 | 0.00031 | 0.0000026 | 0.00032 | 0.00073 |
| Dibenzo(a,h)anthracene | 0.000001 | 0.00000011 | 0.000000018 | 0.0000009 | 0.0000021 | 0.000000011 | 0.0000021 | 0.00000297 |
| Fluoranthene | 0.0016 | 0.00066 | 0.000047 | 0.0023 | 0.00069 | 0.000030 | 0.00072 | 0.0030 |
| Fluorene | 0.0102 | 0.0022 | 0.00024 | 0.0126 | 0.0022 | 0.00015 | 0.0024 | 0.015 |
| Indeno(1,2,3-c,d)pyrene | 0.000008 | 0.000041 | 0.00000021 | 0.000049 | 0.000059 | 0.00000013 | 0.000060 | 0.000108 |
| Naphthalene | 1.52 | 0.27 | 0.02 | 1.82 | 0.24 | 0.015 | 0.25 | 2.07 |
| Phenanthrene | 0.013 | 0.0034 | 0.00059 | 0.017 | 0.0035 | 0.00037 | 0.0039 | 0.021 |
| Pyrene | 0.0009 | 0.00053 | 0.000039 | 0.0015 | 0.00058 | 0.000024 | 0.00060 | 0.0021 |
| ***BTEX*** | | | | | | | | |
| Benzene | 0.2429 | 0.00 | 0.014 | 0.261 | 0.00 | 0.00087 | 0.0023 | 0.26 |
| Ethylbenzene | 0.0080 | 0.0011 | 0.002 | 0.011 | 0.00085 | 0.0010 | 0.0018 | 0.013 |
| Toluene | 0.1268 | 0.012 | 0.016 | 0.156 | 0.0082 | 0.0077 | 0.016 | 0.17 |
| Xylenes, Total | 0.0091 | 0.0012 | 0.002 | 0.012 | 0.00092 | 0.0010 | 0.0019 | 0.014 |
| ***PCBs*** | | | | | | | | |
| PCB Total | 0.0038 | 0.00087 | 0.00027 | 0.0050 | 0.00093 | 0.00017 | 0.0011 | 0.0061 |
| ***Other Organic Compounds*** | | | | | | | | |
| Dibenzofuran | 0.0075 | NA | 0.00064 | 0.0081 | NA | 0.00040 | 0.00040 | 0.0085 |
| Vinyl Chloride | 0.4490 | 0.00 | 0.00 | 0.4490 | 0.00 | 0.00 | 0.00 | 0.45 |
| **Total** | **2.43** | **0.30** | **0.06** | **2.80** | **0.27** | **0.03** | **0.29** | **3.09** |

**Notes:**

Emissions during Disposal and Post-Disposal (ponded) from Paul Schroeder's Analysis 5 Dec 2007

Emissions during Post-Disposal (exposed) estimated using "exposed_ponded12_425new_sqrt_td.xls" at 6960 hours (=365-75*24) for year 1 and at 15,720 hrs (=2*365-75*24) for year 2

Each cell is approximately 45 acres; assume area that is exposed (not ponded) in each cell is approx. 15% of total area or 6.7 acres

Dredging and disposing of 230,000 cy sediments in each cell every other year

Dredging and placement would take about 75 days or 2.5 months

Cell 1 = Disposal Cell in Year 1; Cell 2 = Non-Disposal Cell in Year 1

Ponded Scenario: The dredged material allowed to consolidate under ponded water for the next 21.5 months until the next disposal operation in the cell

### *Emissions from Drained CDF*

Volatile emissions from a drained CDF are composed of emissions during disposal and emissions after water is drained from the sediment during the drying period and afterwards from the exposed sediment. The estimate of volatile emissions from the CDF cell during disposal was discussed previously in the Ponded CDF section.

Losses from the CDF cells after water is drained from the sediment were estimated using the Exposed Sediment Emissions spreadsheet based on Dr. Thibodeaux's formulation discussed in the Exposed Portions of CDF section above. Separate emissions were calculated for the sand mound and the rest of the exposed areas of the CDF, as the sand mounds are assumed to have significantly lower chemical concentrations and no surface enrichment. Inputs were discussed previously in the exposed sediment section.

As discussed previously, the sediment chemical concentrations were calculated and reset in the model for the exposed sediment post-disposal estimates as there was significant loss of some chemicals during disposal. For vinyl chloride, the entire mass (i.e., entire mass of the chemicals in 230,000 cubic yards assumed to be dredged each year), was calculated to be emitted after disposal into the CDF. Therefore, all post-disposal emission estimates assumed that the sediment concentration of vinyl chloride is zero. In addition, benzene was all lost after the first year in the CDF cell, therefore, Year 2 post-disposal emission estimates assumed that sediment concentrations of benzene is zero.

Emissions from a drained CDF are presented in Table 12. The emissions from the disposal period and the post-disposal periods are summed to obtain the total annual losses from the two drained 45-acre CDF sediment storage cells.

Attachment 1

## Table 12. Annual Emissions from Drained Sediment Cells, Bi-Annual Disposal.

| | Cell 1 | | | | Cell 2 | | | Cells 1 and 2 |
|---|---|---|---|---|---|---|---|---|
| | During Disposal | Post-Disposal - Exposed Portion of Cell | Post-Disposal - Exposed Portion of Cell (Sand Mound) | Total Emission - Cell 1 | Yr 2 Post-Disposal - Exposed Portions of Cell | Yr 2 Post-Disposal - Exposed Portion of Cell (Sand Mound) | Total Emission - Cell 2 | Total Annual Loss from Both Cells |
| ***PAHs*** | | | | | | | | |
| Acenaphthene | 0.020 | 0.026 | 0.00044 | 0.046 | 0.016 | 0.00027 | 0.017 | 0.063 |
| Acenaphthylene | 0.014 | 0.021 | 0.00034 | 0.035 | 0.013 | 0.00021 | 0.013 | 0.048 |
| Anthracene | 0.0008 | 0.0029 | 0.000035 | 0.0037 | 0.0018 | 0.000022 | 0.0019 | 0.0055 |
| Benzo(a)anthracene | 0.0012 | 0.0018 | 0.000017 | 0.0031 | 0.0012 | 0.000010 | 0.0012 | 0.0042 |
| Benzo(b)fluoranthene | 0.000015 | 0.00012 | 0.00000037 | 0.00014 | 0.000079 | 0.00000023 | 0.000079 | 0.00022 |
| Benzo(k)fluoranthene | 0.000001 | 0.000015 | 0.000000035 | 0.000016 | 0.000010 | 0.000000022 | 0.000010 | 0.000026 |
| Benzo(a)pyrene | 0.000013 | 0.000080 | 0.00000024 | 0.000093 | 0.000051 | 0.00000015 | 0.000052 | 0.00014 |
| Benzo(ghi)perylene | 0.000001 | 0.0000069 | 0.000000014 | 0.0000076 | 0.0000044 | 0.0000000087 | 0.0000044 | 0.000012 |
| Chrysene | 0.0001 | 0.00080 | 0.0000042 | 0.00095 | 0.00051 | 0.0000026 | 0.00052 | 0.0015 |
| Dibenzo(a,h)anthracene | 0.000001 | 0.0000083 | 0.000000018 | 0.0000091 | 0.0000053 | 0.000000011 | 0.0000053 | 0.000014 |
| Fluoranthene | 0.0016 | 0.0045 | 0.000047 | 0.0062 | 0.0029 | 0.000030 | 0.0029 | 0.0091 |
| Fluorene | 0.0102 | 0.015 | 0.00024 | 0.025 | 0.010 | 0.00015 | 0.0097 | 0.035 |
| Indeno(1,2,3-c,d)pyrene | 0.000008 | 0.000083 | 0.00000021 | 0.000091 | 0.000053 | 0.00000013 | 0.000053 | 0.00014 |
| Naphthalene | 1.52 | 1.43 | 0.02 | 2.95 | 0.85 | 0.015 | 0.87 | 3.82 |
| Phenanthrene | 0.013 | 0.041 | 0.00059 | 0.054 | 0.026 | 0.00037 | 0.027 | 0.081 |
| Pyrene | 0.0009 | 0.0042 | 0.000039 | 0.0052 | 0.0027 | 0.000024 | 0.0027 | 0.0079 |
| ***BTEX*** | | | | | | | | |
| Benzene | 0.2429 | 0.30 | 0.014 | 0.55 | 0.0023 | 0.00087 | 0.0031 | 0.55 |
| Ethylbenzene | 0.0080 | 0.034 | 0.002 | 0.042 | 0.012 | 0.0010 | 0.013 | 0.055 |
| Toluene | 0.1268 | 0.30 | 0.016 | 0.43 | 0.10 | 0.0077 | 0.10 | 0.53 |
| Xylenes, Total | 0.0091 | 0.033 | 0.002 | 0.043 | 0.012 | 0.0010 | 0.013 | 0.056 |
| ***PCBs*** | | | | | | | | |
| PCB Total | 0.0038 | 0.017 | 0.00027 | 0.021 | 0.011 | 0.00017 | 0.011 | 0.032 |
| ***Other Organic Compounds*** | | | | | | | | |
| Dibenzofuran | 0.0075 | 0.0082 | 0.00064 | 0.016 | 0.0051 | 0.00040 | 0.0055 | 0.021 |
| Vinyl Chloride | 0.4490 | 0.00 | 0.00 | 0.45 | 0.00 | 0.00 | 0.00 | 0.45 |
| **Total** | **2.43** | **2.24** | **0.06** | **4.67** | **1.07** | **0.03** | **1.09** | **5.77** |

**Notes:**

Emissions during Disposal from Paul Schroeder's Analysis 5 Dec 2007

Emissions during Post-Disposal (exposed) estimated using "exposed_ponded12_425new_sqrt_td.xls" at 6960 hours (=365-75*24) for year 1 and at 15,720 hrs (=2*365-75*24) for year 2

Each cell is approximately 45 acres

Dredging and disposing of 230,000 cy sediments in each cell every other year

Dredging and placement would take about 75 days or 2.5 months

Drained Scenario: Free water is drained off the dredged material after disposal is completed and the sediment is allowed to consolidate for the next 21.5 months until the next disposal operation in the cell

Attachment 1

## SUMMARY

Volatile emission losses during dredging and CDF operation activities are summarized for the two dredged material storage scenarios in Tables 13 and 14. For losses around the dredge, it is assumed that the dredge site will be unconfined and only emissions from this case are presented.

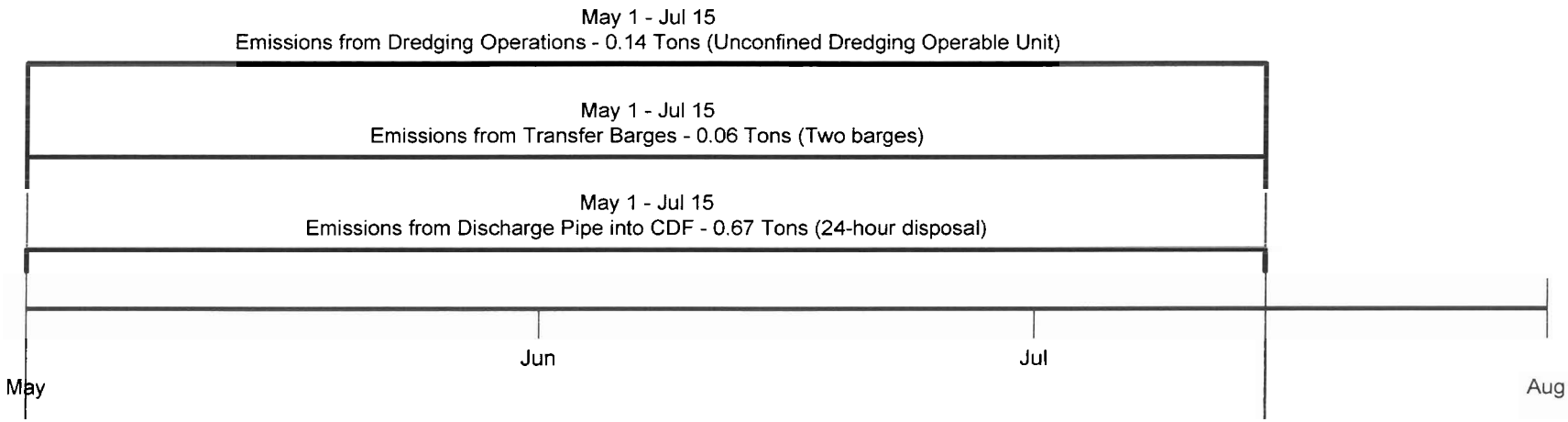
**Table 13. Annual Emissions during Dredging and CDF Operation – Ponded Sediment Cells, Annual Dredging, Bi-Annual Disposal into Individual CDF Sediment Cells (Emissions in Tons)**

| | Unconfined DOU | Barge Transfer | Discharge Pipe | Ponded CDF During Disposal into CDF | Post-Disposal - Ponded Portions of Cell 1 (Sand Mound) | Post-Disposal - Exposed Portion of Cell 1 | Post-Disposal - Ponded Portions of Cell 2 | Post-Disposal - Exposed Portion of Cell 2 (Sand Mound) | Total Annual Emissions |
|---|---|---|---|---|---|---|---|---|---|
| Acenaphthene | 0.0020 | 0.00052 | 0.0076 | 0.020 | 0.0050 | 0.00044 | 0.0050 | 0.00027 | 0.041 |
| Acenaphthylene | 0.0018 | 0.00035 | 0.0053 | 0.014 | 0.0028 | 0.00034 | 0.0028 | 0.00021 | 0.028 |
| Anthracene | 0.00017 | 0.000015 | 0.00032 | 0.0008 | 0.00026 | 0.000035 | 0.00027 | 0.000022 | 0.0019 |
| Benzo(a)anthracene | 0.00012 | 0.000012 | 0.00088 | 0.0012 | 0.00058 | 0.000017 | 0.00060 | 0.000010 | 0.0035 |
| Benzo(b)fluoranthene | 0.000002 | 0.00000011 | 0.000023 | 0.000015 | 0.00014 | 0.00000037 | 0.00017 | 0.00000023 | 0.00036 |
| Benzo(k)fluoranthene | 0.0000002 | 0.000000010 | 0.0000021 | 0.0000014 | 0.0000033 | 0.000000035 | 0.0000066 | 0.000000022 | 0.000014 |
| Benzo(a)pyrene | 0.000001 | 0.000000097 | 0.000017 | 0.000013 | 0.0000011 | 0.00000024 | 0.000023 | 0.00000015 | 0.00006 |
| Benzo(ghi)perylene | 0.00000008 | 0.0000000056 | 0.0000011 | 0.0000008 | NA | 0.000000014 | NA | 0.000000008 | 0.0000020 |
| Chrysene | 0.000021 | 0.0000013 | 0.000088 | 0.00014 | 0.00026 | 0.0000042 | 0.00031 | 0.0000026 | 0.0008 |
| Dibenzo(a,h)anthracene | 0.00000010 | 0.0000000048 | 0.0000037 | 0.0000007 | 0.00000011 | 0.000000018 | 0.0000021 | 0.000000011 | 0.000007 |
| Fluoranthene | 0.00027 | 0.000022 | 0.00070 | 0.0016 | 0.00066 | 0.000047 | 0.00069 | 0.000030 | 0.0040 |
| Fluorene | 0.0015 | 0.00022 | 0.0040 | 0.010 | 0.0022 | 0.00024 | 0.0022 | 0.00015 | 0.021 |
| Indeno(1,2,3-c,d)pyrene | 0.0000012 | 0.000000054 | 0.000015 | 0.000008 | 0.000041 | 0.00000021 | 0.000059 | 0.00000013 | 0.00012 |
| Naphthalene | 0.08 | 0.035 | 0.49 | 1.52 | 0.27 | 0.024 | 0.24 | 0.015 | 2.7 |
| Phenanthrene | 0.0028 | 0.00029 | 0.0052 | 0.013 | 0.0034 | 0.00059 | 0.0035 | 0.00037 | 0.029 |
| Pyrene | 0.00017 | 0.000014 | 0.00042 | 0.0009 | 0.00053 | 0.000039 | 0.00058 | 0.000024 | 0.0027 |
| | | | | | | | | | |
| Benzene | 0.008 | 0.0092 | 0.078 | 0.24 | 0.0034 | 0.014 | 0.0014 | 0.00087 | 0.36 |
| Ethylbenzene | 0.00028 | 0.00024 | 0.0031 | 0.008 | 0.0011 | 0.0020 | 0.00085 | 0.0010 | 0.017 |
| Toluene | 0.0038 | 0.0040 | 0.044 | 0.13 | 0.012 | 0.016 | 0.0082 | 0.0077 | 0.22 |
| Xylenes, Total | 0.00031 | 0.00029 | 0.0034 | 0.009 | 0.0012 | 0.0020 | 0.00092 | 0.0010 | 0.018 |
| | | | | | | | | | |
| PCB Total | 0.0009 | 0.00010 | 0.0015 | 0.0038 | 0.00087 | 0.00027 | 0.00093 | 0.00017 | 0.009 |
| | | | | | | | | | |
| Dibenzofuran | 0.0007 | 0.00016 | 0.0027 | 0.007 | NA | 0.00064 | NA | 0.00040 | 0.012 |
| Vinyl Chloride | 0.032 | 0.012 | 0.019 | 0.45 | 0.00 | 0.00 | 0.00 | 0.00 | 0.51 |
| **TOTAL** | **0.14** | **0.06** | **0.67** | **2.43** | **0.31** | **0.06** | **0.27** | **0.03** | **4.0** |

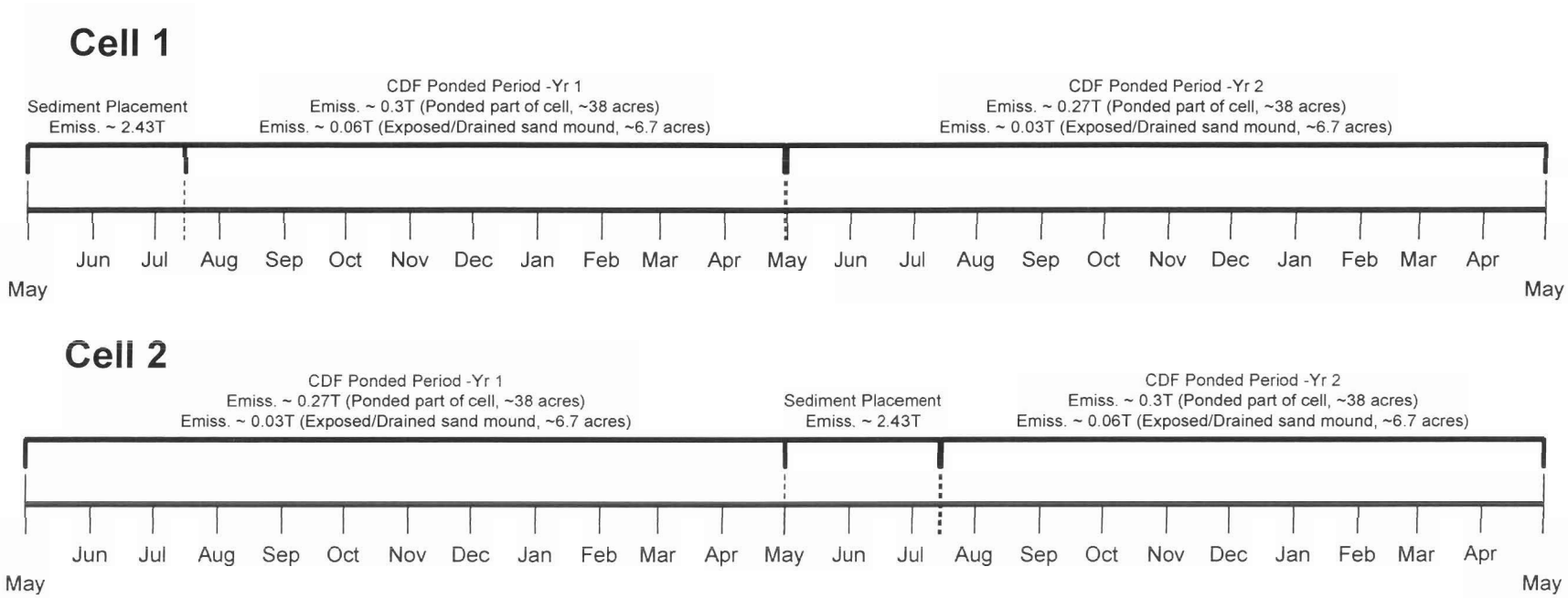
## Table 14. Annual Emissions during Dredging and CDF Operation – Drained Sediment Cells, Annual Dredging, Bi-Annual Disposal into Individual CDF Sediment Cells (Emissions in Tons)

| | Unconfined DOU | Barge Transfer | Discharge Pipe | Ponded CDF During Disposal into CDF | Post-Disposal - Exposed Portions of Cell 1 | Post-Disposal - Exposed Portion of Cell 1 (Sand Mound) | Post-Disposal - Exposed Portions of Cell 2 | Post-Disposal - Exposed Portion of Cell 2 (Sand Mound) | Total Annual Emissions |
|---|---|---|---|---|---|---|---|---|---|
| Acenaphthene | 0.0020 | 0.00052 | 0.0076 | 0.020 | 0.026 | 0.00044 | 0.016 | 0.00027 | 0.073 |
| Acenaphthylene | 0.0018 | 0.00035 | 0.0053 | 0.014 | 0.021 | 0.00034 | 0.013 | 0.00021 | 0.056 |
| Anthracene | 0.00017 | 0.000015 | 0.00032 | 0.0008 | 0.0029 | 0.000035 | 0.0018 | 0.000022 | 0.0060 |
| Benzo(a)anthracene | 0.00012 | 0.000012 | 0.00088 | 0.0012 | 0.0018 | 0.000017 | 0.0012 | 0.000010 | 0.0053 |
| Benzo(b)fluoranthene | 0.000002 | 0.00000011 | 0.000023 | 0.000015 | 0.00012 | 0.000000037 | 0.000079 | 0.00000023 | 0.00024 |
| Benzo(k)fluoranthene | 0.0000002 | 0.000000010 | 0.0000021 | 0.0000014 | 0.000015 | 0.000000035 | 0.000010 | 0.000000022 | 0.000028 |
| Benzo(a)pyrene | 0.000001 | 0.000000097 | 0.000017 | 0.000013 | 0.000080 | 0.000000024 | 0.000051 | 0.00000015 | 0.00016 |
| Benzo(ghi)perylene | 0.00000008 | 0.0000000056 | 0.0000011 | 0.0000008 | 0.0000069 | 0.000000014 | 0.0000044 | 0.000000008 | 0.000013 |
| Chrysene | 0.000021 | 0.0000013 | 0.000088 | 0.00014 | 0.00080 | 0.0000042 | 0.00051 | 0.0000026 | 0.0016 |
| Dibenzo(a,h)anthracene | 0.00000010 | 0.0000000048 | 0.0000037 | 0.0000007 | 0.0000083 | 0.000000018 | 0.0000053 | 0.000000011 | 0.000018 |
| Fluoranthene | 0.00027 | 0.000022 | 0.00070 | 0.0016 | 0.0045 | 0.000047 | 0.0029 | 0.000030 | 0.010 |
| Fluorene | 0.0015 | 0.00022 | 0.0040 | 0.010 | 0.015 | 0.00024 | 0.010 | 0.00015 | 0.041 |
| Indeno(1,2,3-c,d)pyrene | 0.0000012 | 0.000000054 | 0.000015 | 0.000008 | 0.000083 | 0.000000021 | 0.000053 | 0.00000013 | 0.00016 |
| Naphthalene | 0.08 | 0.035 | 0.49 | 1.52 | 1.43 | 0.024 | 0.85 | 0.015 | 4.5 |
| Phenanthrene | 0.0028 | 0.00029 | 0.0052 | 0.013 | 0.041 | 0.00059 | 0.026 | 0.00037 | 0.090 |
| Pyrene | 0.00017 | 0.000014 | 0.00042 | 0.0009 | 0.0042 | 0.000039 | 0.0027 | 0.000024 | 0.0085 |
| | | | | | | | | | |
| Benzene | 0.008 | 0.0092 | 0.078 | 0.24 | 0.30 | 0.014 | 0.0023 | 0.00087 | 0.66 |
| Ethylbenzene | 0.00028 | 0.00024 | 0.0031 | 0.008 | 0.034 | 0.0020 | 0.012 | 0.0010 | 0.060 |
| Toluene | 0.0038 | 0.0040 | 0.044 | 0.13 | 0.30 | 0.016 | 0.10 | 0.0077 | 0.60 |
| Xylenes, Total | 0.00031 | 0.00029 | 0.0034 | 0.009 | 0.033 | 0.0020 | 0.012 | 0.0010 | 0.062 |
| | | | | | | | | | |
| PCB Total | 0.0009 | 0.00010 | 0.0015 | 0.0038 | 0.017 | 0.00027 | 0.011 | 0.00017 | 0.034 |
| | | | | | | | | | |
| Dibenzofuran | 0.0007 | 0.00016 | 0.0027 | 0.007 | 0.0082 | 0.00064 | 0.0051 | 0.00040 | 0.025 |
| Vinyl Chloride | 0.032 | 0.012 | 0.019 | 0.45 | 0.00 | 0.00 | 0.00 | 0.00 | 0.51 |
| **TOTAL** | **0.14** | **0.06** | **0.67** | **2.43** | **2.24** | **0.06** | **1.07** | **0.03** | **6.7** |

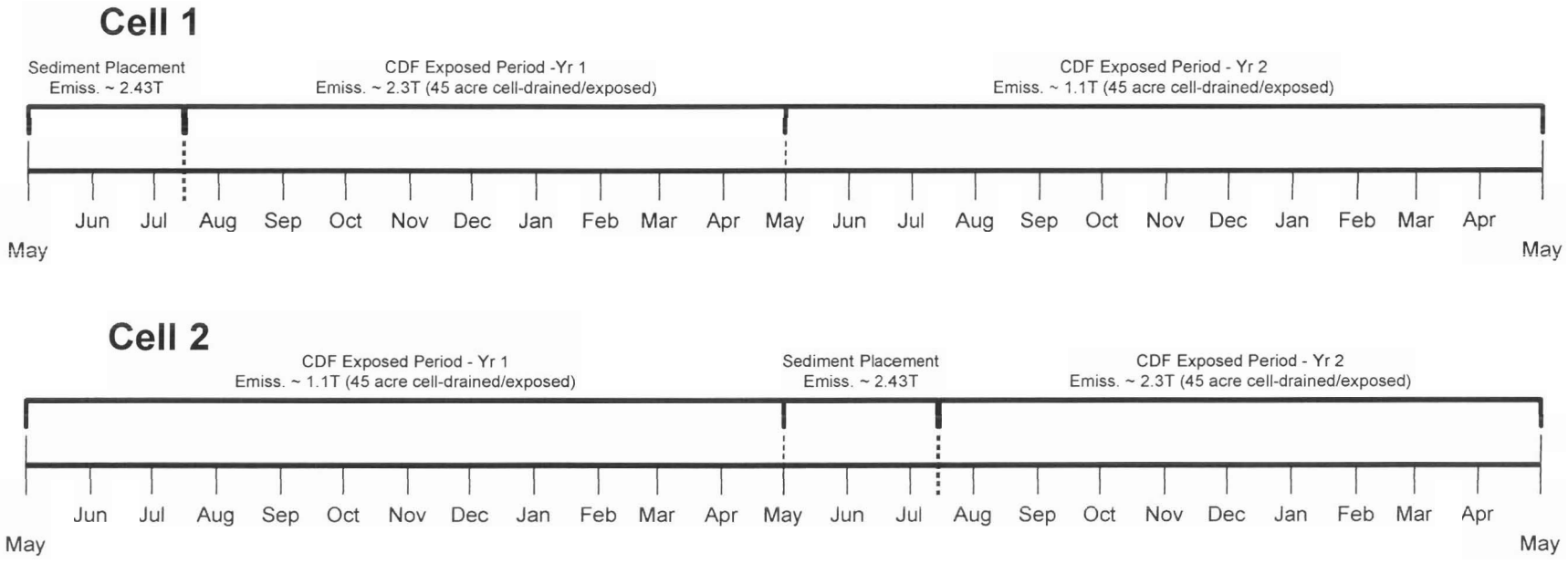
# Figure 1. Estimated Emissions Associated with Dredging Operation during Annual Dredging and Sediment Placement in CDF



# Figure 2. Estimated Emissions from Ponded Sediment Cells, Annual Dredging, Bi-Annual Disposal into Individual CDF Sediment Cells



# Figure 3. Estimated Emissions from Drained Sediment Cells, Annual Dredging, Bi-Annual Disposal into Individual CDF Sediment Cells



Attachment 2

15 September 2008

# Storage and Dike Height Calculations for Indiana Harbor CDF

## Consolidation Analysis for 200-KCY Lifts

**Full Project:** For 2 MCY in the first 10 years (200 KCY placed during year 0, 2, 4, 6 and 8 in Cell 1 and 200 KCY placed during year 1, 3, 5, 7 and 9 in Cell 2) and another 2 MCY in the following 20 years (200 KCY placed during year 11, 15, 19, 23 and 27 in Cell 1 and 200 KCY placed during year 12, 16, 20, 24 and 28 in Cell 2), the predicted stored dredged material heights are:

*Permanently Ponded for 30 years without an equalization basin (two 51-acre storage cells)*

Maximum Dredged Material Height (following last disposal in Year 27): **20.2 ft**

Dredged Material Height after 30 years (3 years after last lift): **18.2 ft** for 4 MCY

Dike Height Needed for 4.5 MCY: 22.5 ft Storage* + 2.0 ft Ponding** + 1.5 ft Precipitation + 3 ft Freeboard = **29.0 ft**

*Ponded for only first 11 years (backlog) without an equalization basin (two 51-acre storage cells)*

Maximum Dredged Material Height: Height (following last disposal): **18.4 ft**

Dredged Material Height after 30 years (3 years after last lift): **16.1 ft** for 4 MCY

Dike Height Needed for 4.5 MCY: 20.5 ft Storage* + 1.0 ft Ponding + 1.5 ft Precipitation + 3 ft Freeboard = **26.0 ft**

*Moderately dewatered (perimeter trenching along all dikes as needed and runoff regularly transferred to equalization basin) with an equalization basin (two 45-acre storage cells)*

Maximum Dredged Material Height: Height (following last disposal): **20.5 ft**

Dredged Material Height after 30 years (3 years after last lift): **18.0 ft** for 4 MCY

Dike Height Needed for 4.5 MCY: 23 ft Storage* + 1.0 ft Ponding + 0 ft Precipitation + 3 ft Freeboard = **27.0 ft**

* Storage for 4.5 MCY estimated from the storage for 4 MCY

** Minimum of 2 ft of ponding assumed to maintain ponding across the entire area considering variable bottom height due to non-uniform spreading and wind impacts; only 1 ft of ponding assumed for final pond depth if it will be dewatered. 1 ft of ponding is assumed to be needed to facilitate recirculation (provide settling and free water for decanting).

Attachment 2

**Stage 1 of Project (Backlog):** For 2 MCY in the first 10 years (200 KCY placed during year 0, 2, 4, 6 and 8 in Cell 1 and 200 KCY placed during year 1, 3, 5, 7 and 9 in Cell 2), the predicted stored dredged material heights are:

*Permanently Ponded for 10 years without an equalization basin (two 51-acre storage cells)*

Maximum Dredged Material Height: Height (following last disposal): **12.2 ft**

Dredged Material Height after 10 years (2 years after last lift): **10.3 ft**

Dike Height Needed for 2 MCY: 12.2 ft Storage + 2.0 ft Ponding + 1.5 ft Precipitation + 3 ft Freeboard = **18.7 ft**

*Moderately Dewatered (perimeter trenching along all dikes as needed and runoff regularly transferred to equalization basin) for 10 years with an equalization basin (two 45-acre storage cells)*

Maximum Dredged Material Height: Height (following last disposal): **12.3 ft**

After 10 years (2 years of consolidation after last lift): **9.8 ft**

Dike Height Needed for 2 MCY: 12.3 ft Storage + 1.0 ft Ponding + 0 ft Precipitation + 3 ft Freeboard = **16.3 ft**

**Rapid Removal of Backlog Sediments on Full Project Storage:** For 2 MCY in the first 5 years (400 KCY placed in Cell 1during year 0 and 2 and 200 KCY placed during year 4, and 400 KCY placed in Cell 2 during year 1 and 3 and 200 KCY placed during year 4) and another 2.0 MCY in the following 22 years (200 KCY placed during year 6, 10, 14, 18, and 22 in Cell 1 and 200 KCY placed during year 8, 12, 16, 20, 24 and 28 in Cell 2), the predicted stored dredged material heights are:

*Permanently Ponded for 30 years without an equalization basin (two 51-acre storage cells)*

Maximum Height: 20.3 ft following last disposal in Year 22

After 25 years (3 years of consolidation after last lift): **18.1 ft**

Dike height needed for 4.5 MCY: 22.8 ft Storage* + 2.0 ft Ponding** + 1.5 ft Precipitation + 3 ft Freeboard = **29.3 ft**

*Ponded for only first 6 years without an equalization basin (two 51-acre storage cells)*

Maximum Height: 18.4 ft following last disposal

After 25 years (3 years of consolidation after last lift): **16.1 ft**

Dike height needed for 4.5 MCY: 20.7 ft Storage* + 1.0 ft Ponding + 1.5 ft Precipitation + 3 ft Freeboard = **26.2 ft**

Attachment 2

*Moderately dewatered (perimeter trenching along all dikes as needed and runoff regularly transferred to equalization basin) with an equalization basin (two 45-acre storage cells)*

Maximum Height: **20.7 ft** following last disposal

After 25 years (3 years of consolidation after last lift): **18.2 ft**

Dike height needed for 4.5 MCY: 23.3 ft Storage* + 1.0 ft Ponding + 0 ft Precipitation + 3 ft Freeboard = **27.3 ft**

* Storage for 4.5 MCY estimated from the storage for 4 MCY.

** Minimum of 2 ft of ponding assumed to maintain ponding across the entire area considering variable bottom height due to non-uniform spreading and wind impacts; only 1 ft of ponding assumed for final pond depth if it will be dewatered. 1 ft of ponding is assumed to be needed to facilitate recirculation (provide settling and free water for decanting).

## Required Interior Dike Heights

The required interior dike heights as a function of the number of 200-KCY lifts placed in a cell are shown in the tables below. If a 400-KCY lift were placed in a cell, it is shown as two lifts in the same row of the table. The results are shown for the anticipated dredging schedule and an accelerated dredging schedule for the backlog dredging. The results also provide an indication of the effects of disposal of additional projects such as the Grand Calumet dredging in the same facility while disposing Indiana Harbor sediments.

Attachment 2

**For 200-KCY Lifts:**

| Lift | Scenarios | | | | | |
|---|---|---|---|---|---|---|
| | Permanently Ponded | | Ponded for Backlog | | Dewatered | |
| | Maximum Dredged Material Height, ft | Interior Dike Height Needed[1], ft | Maximum Dredged Material Height, ft | Interior Dike Height Needed[2], ft | Maximum Dredged Material Height, ft | Interior Dike Height Needed[3], ft |
| 1 | 3.8 | 10.3 | 3.8 | 10.3 | 4.3 | 8.3 |
| 2 | 6.2 | 12.7 | 6.2 | 12.7 | 6.5 | 10.5 |
| 3 | 8.2 | 14.7 | 8.2 | 14.7 | 8.6 | 12.6 |
| 4 | 10.2 | 16.7 | 10.2 | 16.7 | 10.5 | 14.5 |
| 5 | 12.1 | 18.6 | 12.1 | 18.6 | 12.3 | 16.3 |
| 6 | 13.8 | 20.3 | 13.7 | 17.7 | 13.8 | 17.8 |
| 7 | 15.3 | 21.8 | 14.7 | 18.7 | 15.4 | 19.4 |
| 8 | 16.9 | 23.4 | 15.7 | 19.7 | 17.1 | 21.1 |
| 9 | 18.5 | 25.0 | 17.0 | 21.0 | 18.8 | 22.8 |
| 10 | 20.2 | 26.7 | 18.4 | 22.4 | 20.5 | 24.5 |

[1] Storage + 2.0 ft Ponding + 1.5 ft Precipitation + 3 ft Freeboard
[2] Storage + 2.0 ft Ponding + 1.5 ft Precipitation + 3 ft Freeboard during backlog;
Storage + 1.0 ft Ponding + 0 ft Precipitation + 3 ft Freeboard during maintenance
[3] Storage + 1.0 ft Ponding + 0 ft Precipitation + 3 ft Freeboard

**For Rapid Removal of Backlog (400-KCY Lifts in Years 0 to 4):**

| Lift | Scenarios | | | | | |
|---|---|---|---|---|---|---|
| | Permanently Ponded | | Ponded for Backlog | | Dewatered | |
| | Maximum Dredged Material Height, ft | Interior Dike Height Needed[1], ft | Maximum Dredged Material Height, ft | Interior Dike Height Needed[2], ft | Maximum Dredged Material Height, ft | Interior Dike Height Needed[3], ft |
| 1-2 | 7.6 | 14.1 | 7.6 | 14.1 | 8.6 | 12.6 |
| 3-4 | 12.3 | 18.8 | 12.3 | 18.8 | 13.6 | 17.6 |
| 5 | 14.1 | 20.6 | 14.1 | 20.6 | 15.8 | 19.8 |
| 6 | 14.6 | 21.1 | 14.3 | 18.3 | 16.1 | 20.1 |
| 7 | 15.7 | 22.2 | 15.1 | 19.1 | 16.6 | 20.6 |
| 8 | 17.2 | 23.7 | 15.9 | 19.9 | 17.6 | 21.6 |
| 9 | 18.7 | 25.2 | 17.0 | 21.0 | 19.1 | 23.1 |
| 10 | 20.3 | 26.8 | 18.4 | 22.4 | 20.7 | 24.7 |

[1] Storage + 2.0 ft Ponding + 1.5 ft Precipitation + 3 ft Freeboard
[2] Storage + 2.0 ft Ponding + 1.5 ft Precipitation + 3 ft Freeboard during backlog;
Storage + 1.0 ft Ponding + 0 ft Precipitation + 3 ft Freeboard during maintenance
[3] Storage + 1.0 ft Ponding + 0 ft Precipitation + 3 ft Freeboard

Attachment 2

Rapid backlog removal increases storage needs by 0 to 0.2 ft over the life of the project (4.5 MCY) and 2.0 to 3.5 ft over the backlog period (2.0 MCY).

Prepared for Indiana Harbor CDF PDT by:

Paul R. Schroeder, PhD, PE
Research Civil Engineer
Environmental Engineering Branch
Environmental Laboratory
US Army Engineer Research and Development Center

Attachment 3

**Estimated Savings in Wastewater Treatment Costs for Ponded CDF Operation**
Estimated based on costs provided in the IHC Wastewater Treatment Plan Final Design

| | Volume treated in Mgal | Volume treated in Mgal | |
|---|---|---|---|
| **O&M Cost for Season:** | **54** | **30** | **NOTE: IF CDF IS OPERATED PONDED, THE VOLUME OF WATER TO BE TREATED DECREASES FROM 55 Mgal to Mgal** |
| | | 44% | Reduction in treatment volume |
| Season Duration (wk): | 23.0 | 23.0 | Cost estimate for 30 Mgal assumes same treatment season as 55 Mgal (4 months) |

**Weekly O&M Per Process:**

| | | | |
|---|---|---|---|
| SiteWork | $1,688 | $1,688 | Fixed cost |
| Inlet Surge Tank | $2,118 | $1,763 | Prorated by materials, supplies, & power but NOT labor |
| Flash Mix & Clarification | $6,589 | $5,576 | Prorated by materials, supplies, & power but NOT labor |
| SBR | $7,953 | $7,143 | Prorated by materials, supplies, & power but NOT labor |
| Sand Filtration | $2,347 | $2,226 | Prorated by materials, supplies, & power but NOT labor |
| Backwash Holding Tank | $1,109 | $1,058 | Prorated by materials, supplies, & power but NOT labor |
| GAC Filtration | $10,222 | $6,735 | Prorated by materials, supplies, & power but NOT labor |
| Effluent Holding Tank | $2,369 | $2,009 | Prorated by materials, supplies, & power but NOT labor |
| Emergency Overflow Sump | $838 | $823 | Prorated by materials, supplies, & power but NOT labor |
| General WWTP Operation | $953 | $953 | Fixed cost |
| Non-Operating Labor | $279 | $279 | Fixed cost |
| Subtotal Weekly O&M: | $36,466 | $30,253 | Total Weekly Operating Cost for 30 Mgal |
| | $838,713 | **$695,819** | **Annual Operating Cost** |
| | | 17% | Reduction in treatment cost |

Assumptions:

1. Volume of water is reduced from 55 Mgal to 30 Mgal.
2. Duration of treatment season is the same (4 months)
3. Unit processes are the same.
4. Labor is fixed since the same personnel will be on site.

Attachment 4

**Estimated Cost Reduction for Elimination of Equalization Basin, Realignment of Dikes**

As of the 100% design milestone (November 2007), the cost estimate for Dikes III was $12.7 M. A specific line item for the EQ basin was called out in the estimate (including the liner, etc) at a cost of $3.5 M. The entire cost of the equalization basin would be eliminated because the entire equalization basin would be eliminated under a ponded CDF operation scenario.

The 100% Dikes III design also included decant structure costs. Individual decant structures (3 of them) were called out in the estimate, a single one was approximated at $650K. With a ponded CDF, one decant structure would be eliminated.

Finally, a total of 199,000 cy of clay dike material was called out in the Dikes III estimate, for a total cost of approximately $4.3 M. The volume of clay material that could be removed by eliminating the northern/western "elbow" formed by the EQ basin was estimated to be approximately 98,600 cyd. However, additional material would be needed for the realigned center dike and the wider width based, as shown in the figure below. Conservatively then, it was assumed that there would be no cost savings in clay dike material. Some cost savings may be realized if the center dike is constructed with steeper slopes or from material collected from on-site; this decision is independent of the decision to operate the CDF as a ponded facility and will be made and documented separately.

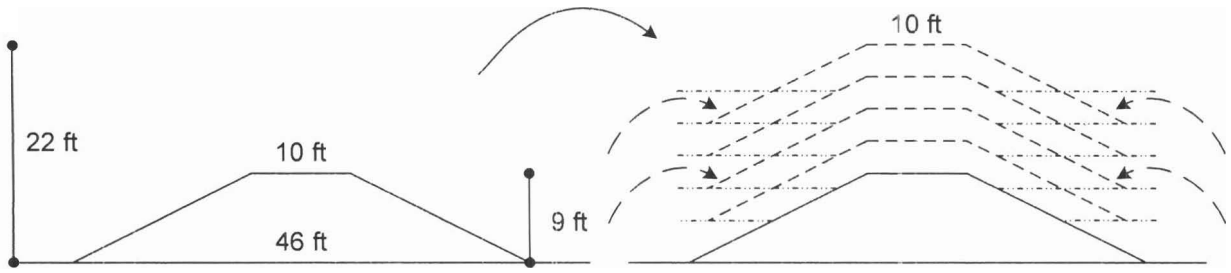
The summary cost savings for eliminating the equalization basin and decant structure would be:

$ 3.5 M - EQ Basin Line Item
$ 0.65 M - Decant Structure
---
$ 4.15 M Cost Reduction

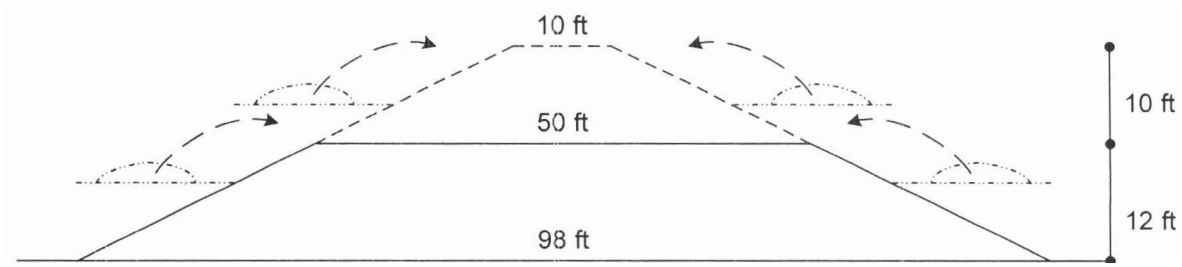
This would be a one time capital cost savings for the CDF construction.

Attachment 4

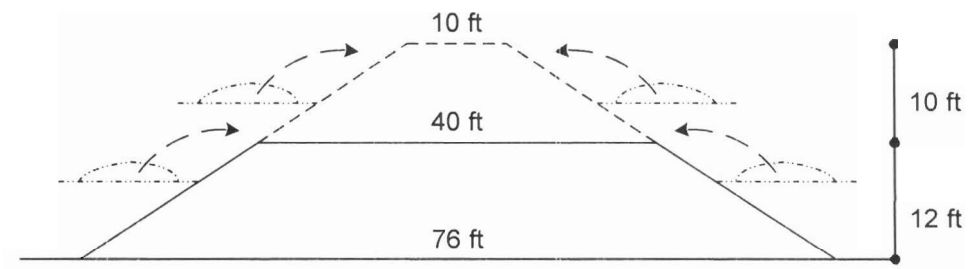
A) Existing Design - Desiccated Scenario
Volume of Material to Construct Base of Center Dike: **27,100 yd³**

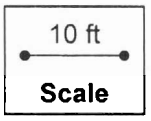



B) Proposed Design - Ponded Scenario (2:1)
Volume of Material to Construct Base of Center Dike: **95,400 yd³**




C) Proposed Design - Ponded Scenario (1.5:1)
Volume of Material to Construct Base of Center Dike: **74,800 yd³**



Attachment 5

## Miller, Jennifer LRC

**From:** Wethington, David M LRC
**Sent:** Friday, February 01, 2008 9:02 AM
**To:** Deda, Roy J LRC; Sorn, Linda M LRC; Abou-El-Seoud, Shamel LRC; Schmidt, Joseph J LRC; Wethington, David M LRC
**Subject:** IHC CDF Path Forward, 31-Jan-2008 (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

All,

In the interest of capturing a conversation which was held on January 31, 2008, this E-mail documents several key operational points, establishing a "path forward" for the Indiana Harbor and Canal Federal Navigation Project.

1) The CDF is being designed to contain approximately 4.8 million cubic yards of sediment, dredged from the Federal and non-Federal portions of the Indiana Harbor Ship Canal.

2) In order to achieve this capacity, it is anticipated that the CDF will be constructed in two lifts.

2) The operational life of the CDF is designed to be 30 years

3) It is the Chicago District's intent to permit the CDF as a TSCA facility. Further investigation as to the benefits/disadvantages to limiting disposal of TSCA materials to a single cell (as opposed to utilizing both cells) is being conducted by the Hydraulics and Environmental Engineering Section (TS-DH). Results of that investigation will be documented by TS-DH, and an operational decision will be made in consultation with the Construction-Operations Branch, as well as the Indiana Harbor PDT.

Parties present to this conversation are copied on the distribution list of this E-mail, as well as listed below:

Roy Deda, Deputy for Project Management
Linda Sorn, Chief Technical Services Division Shamel Abou-el-Seoud, Chief Construction-Operations Branch Joseph Schmidt, Chief Design Branch Dave Wethington, Project Manager

In addition, the IHC PDT has been briefed (during a team meeting of the same date) on this path forward.

If anyone has any questions, concerns, or modifications, please contact me by noon, 04-Feb-2008, otherwise I will pass this along to the IHC Team as an FYI.

Regards,
Dave

Dave Wethington PE
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Classification: UNCLASSIFIED
Caveats: NONE

CELRC-TS-DH

MEMORANDUM FOR RECORD, THRU

JAN 3 0 2010

TS-DC 1/19/10
TS-DG 1/4/10
TS-DH 1/14/10
TS-DT
TS-C-T 1/19/10

SUBJECT: TSCA Sediment Placement in the IHC CDF and Capping TSCA Areas in the Canal after Dredging

SUMMARY OF DESIGN: TSCA regulated sediment dredged from within the Federal navigational channel of the Indiana Harbor and Canal should be placed in the East Cell of the IHC CDF. Non-TSCA regulated sediment should be placed on top of the TSCA layer during the same dredging season in order to encapsulate it. The TSCA hot-spots in the canal should be overdredged and then capped for physical isolation. The estimated total cost for dredging and capping the identified hot-spots is $3.7 million.

1. **Introduction and Background**. PCBs are chlorinated hydrocarbons that have a high boiling point, high degree of chemical stability, low flammability, and low electric conductivity. Because of these characteristics, they were used in electrical transformers and capacitors, as well as many other products. PCBs are no longer produced in the United States, but they do not break down easily and so they persist in the environment. Materials containing a concentration of PCBs higher than 50 mg/kg are regulated under the Toxic Substances Control Act (TSCA). TSCA became law in 1976. It prohibits the manufacture of PCBs, controls the phase-out of their existing uses, and sees to their safe disposal. PCBs are the only chemical class specifically named in the Act.

The Indiana Harbor and Canal dredging project is a Federal navigational maintenance project. The Indiana Harbor and Canal (IHC) were constructed and authorized as a Federal harbor and channel during the early twentieth century. Over the last 20 years, IHC project activities have included the planning, design, and construction of a confined disposal facility for the long term storage of contaminated, dredged sediment. During the Indiana Harbor and Canal project planning phase, an analysis of sediment data indicated the presence of sediment containing greater than 50 mg/kg Total PCBs in the Federal channel. The *Indiana Harbor and Canal Maintenance Dredging and Disposal Activities Comprehensive Management Plan Final Feasibility Report and Environmental Impact Statement* (CMP), January 1999, notes that sediments with the highest concentrations of PCBs occur in two discrete locations: the most upstream portion of the Calumet River Branch, and along the north bank of the main canal between the Indiana Harbor Belt Railroad and the Pennsylvania Railroad bridges. These areas are designated as Management Unit 1 (MU1) and Management Unit 2 (MU2), and can be found in Enclosure 8. At the time of the CMP, it was estimated that approximately 70,000 cubic yards of the sediment in these two locations would be regulated for disposal under TSCA. In the CMP, the proposed confined disposal facility (CDF) would be designed as a permitted disposal facility

for this material. The exact horizontal and vertical extent of the TSCA regulated material within these discrete areas in the canal was not known.

2. **Problem Description**. This memorandum addresses two issues related to the dredging of TSCA sediment. The first issue is where and how sediment will be placed in the CDF. The second issue is how to address TSCA regulated sediment that would be exposed after dredging but is below the Federally-authorized depth and cannot be completely removed under the existing Federal navigational maintenance authority.

3. **Prior Studies.** The following summary of prior studies of the IHC CDF touches on design and operation details related to TSCA sediment. Much of this information is also summarized in tabular form in Enclosure 1.

a. *Comprehensive Management Plan (1999)*. TSCA regulated sediment would be dredged separately and would be placed in a separate "TSCA cell" within the CDF. The TSCA cell was located in the southwest corner of the site (p. 115). The CDF layout described in the CMP is attached as Enclosure 2 (112, Figure 24). The interior dikes that complete the TSCA cell would be constructed from dredged material. The canal sediment would be dredged and placed mechanically. The concept of TSCA disposal was to construct a "bowl" out of non-TSCA dredged material, fill the bowl with TSCA sediment, and then cover it with non-TSCA sediment (F-48). After placement, the TSCA sediment would be exposed in the CDF for about two months before encapsulation (F-113).

b. *Design Documentation Report (2000)*. More detailed information was provided about the construction of the TSCA cell and about dredging the TSCA sediment in this report than the CMP. The TSCA cell was still located in the southwest corner of the site (5). The TSCA Cell would be constructed first (A-12). Dredging of TSCA sediment would occur in Year 8, and it would be encapsulated in Year 10 (E-1).

c. *Dredging and Disposal Alternative Analysis (2003)*. This investigation produced two reports, one in 2003 and another in 2004. The TSCA Cell was moved to the north side of the CDF "to allay concerns regarding nearby land uses" (8), including Central High School on the other side of Lake George Canal. Dredging of TSCA sediment would occur in Year 7, and it would be encapsulated in Year 9 (14). The analysis showed that mechanical dredging had the lowest cost of the alternatives investigated and it also was a favorable alternative with respect to volatile emissions and wastewater treatment plant size requirements (49).

d. *DDAA (2004)*. The analysis in this report showed that mechanical dredging and hydraulic placement with recirculation of water within the CDF had the lowest operating costs compared to other placement alternatives. Decreased particulate emissions offset the increase in volatile emissions associated with this alternative (63). The volume of TSCA sediment was assumed to be 140,000 $yd^3$. TSCA regulated sediment was to be placed in a separate cell, but no

specific design of the subcell was presented. The revised CDF configuration is attached as Enclosure 3 (11, Figure 4).

e. *Collection and Analysis of Sediment Samples at the IHC (2007).* This report details sediment sampling in the IHC that identified hot spots of TSCA-regulated sediment. As a result of this investigation, five small areas with PCB levels above the 50 mg/kg level were delineated. These areas are designated as TSCA Material Dredging Areas 1-5 and are shown in Enclosure 8. The highest detection within these areas was 68 mg/kg with a volume weighted average of 22 mg/kg. The report can be found at the following location in ProjectWise: LRC-Chicago\Documents\Projects\Indiana Harbor and Canal CDF\Caps and Dikes - 1 Interior Layout / Phase 2\Environmental\ Environmental Studies\Sampling\TSCA Sediment Sampling\IHC Final TSCA Sampling Report.

f. *IHC Dredge Volume Calculations (2008).* The proposed dredging method is mechanical dredging with hydraulic sediment placement in the CDF. Based on the locations of the TSCA hotspots identified in the 2007 sampling study, the volume of sediment to be dredged was computed by TS-DC. These calculations are included as Enclosure 4. The calculations assumed that the sediments would be dredged mechanically, and that the hotspot areas would be overdredged to accommodate an in-situ cover. The volumes include sideslopes and sloughage volumes. Because of these factors, the computed volume of TSCA sediment also includes material with less than 50 mg/kg PCBs adjacent to the TSCA hotspots but within the dredge cut that would be removed by mechanical equipment. Given a cap thickness of about 1.5 ft, the volume of "TSCA sediment" is approximately 60,000 $yd^3$. The cap design is documented in a separate memorandum.

g. *Air and Water Quality Monitoring Guidance Document (2008).* This report includes short-term action levels for naphthalene and particulate matter for the CDF during operation. The guidance document recommends that air should also be monitored for PCBs, which would then be compared with present air monitoring, modeled values, and EPA risk-based concentrations. The guidance includes suggestions about monitoring locations, equipment, and frequency.

h. *Ponded Decision Memorandum (2008).* This memorandum documented the rationale behind keeping the CDF ponded during its operation. A ponded CDF would produce lower volatile and particulate emissions than one that is dewatered regularly; the reduction in particulate emissions is particularly significant The ponded operation would also reduce costs through the elimination of the equalization basin and the reduction in wastewater requiring treatment due to increased evaporation. Less reworking of the sediment would be required, an operational improvement. The placement of the TSCA regulated sediment was not discussed in the ponded decision memo.

4. **TSCA Sediment Placement in CDF.** The current dredging, placement and CDF operation plan includes mechanical dredging, hydraulic placement with water recirculation, and ponded

sediment to minimize emissions. Based on this general plan for all sediment, the TSCA sediment will also be hydraulically placed in the East Cell of the CDF. No TSCA Subcell will be constructed. The sediment will be placed in the same manner as non-TSCA sediment: that is, the cell will remain ponded and the dredged material will be evenly distributed in the cell to maintain the minimum ponding depth throughout. Before the end of the dredging season, non-TSCA sediment will be placed on top of the TSCA sediment layer. The density current of dredged material will encapsulate the TSCA sediment. Aspects of the placement methodology are discussed in the following subparagraphs. A tabular summary of the changes proposed in this decision memorandum is included in Enclosure 1.

a. *Elimination of TSCA Subcell.* The TSCA Subcell was eliminated from the CDF design because the configuration would not be feasible given ponded operating conditions. An interior dike would hinder the even distribution of dredged material. TSCA sediment would not be fully isolated in a subcell in a ponded CDF; because of the continuous ponding, a subcell would still be hydraulically connected to the rest of the disposal cell. In a small subcell, water containing high concentrations of suspended solids would flow over the subcell dike and into the rest of the cell. To have a "subcell" that contains the water and suspended solids without washing into the larger cell, it is calculated that the subcell size would essentially be the same as the entire east cell. Thus, a subcell serves no isolation purposes, and in fact would prevent the TSCA sediment from being placed in a thin layer. Eliminating the subcell could lower construction and operational costs because it eliminates an interior dike and simplifies placement operations.

b. *Encapsulation of TSCA Sediment.* Dr. Paul Schroeder of ERDC prepared a memorandum titled "Isolation of TSCA Materials in the West Cell of the Indiana Harbor CDF" on 12 February 2009 for the Chicago District. This memorandum describes how the TSCA sediment will be encapsulated in the CDF and it addresses the potential for resuspension and mixing. It is important to note that since the date of the memorandum, it has been determined that the TSCA material should be placed in the East Cell of the CDF, rather than the West Cell. The East Cell was chosen due to the presence of debris in the West Cell; the debris would potentially interfere with the encapsulation of the TSCA material. This minor change does not impact the calculations and conclusions of Dr. Schroeder, since both cells are the same size. This paragraph is a summary of that memo's findings. Approximately 100,000 $yd^3$ of non-TSCA material will be placed following TSCA sediment disposal. Each day of dredging will add about one inch of dredged material over the entire area of the East Cell. The influent slurry sinks through the ponded water and forms a fluid mud layer at the bottom of the pond. The density of the dredged material increases once it has been placed; after three days the sediment is almost twice as dense as the influent slurry. This density difference prevents displacement of denser settled material by newly-placed, less dense material. The potential for scour and mixing within the storage cell is very low, even at the inlet. Mixing will likely be limited to the first three inches of non-TSCA sediment placed to encapsulate the TSCA sediment. To ensure that the TSCA sediment is well settled and to minimize scour, a minimum three day delay will be required after the end of TSCA sediment dredging and disposal operation and before the start of

non-TSCA sediment dredging and placement. The thickness of the non-TSCA material layer placed directly on the TSCA sediment during the same dredging season will be about one foot after consolidation. The high concentration of Total PCBs in the TSCA sediment is 68 mg/Kg (and this concentration is used for all emissions calculations), while the conservative (high) estimate of the average PCB concentration in the non-TSCA sediment is approximately 35 mg/Kg. Encapsulating the TSCA sediment with non-TSCA sediment will reduce the concentration at the sediment surface in the CDF and will minimize PCB emissions.

c. *Volatile Emissions.* The volatile emission analysis is attached as Enclosure 5. The volatile emissions of all other chemicals of concern, other than PCBs, were estimated previously and are presented in the Ponded CDF Decision memo; this TSCA Design memo only presents emissions of PCBs from the TSCA sediment. Compared to the TSCA sediment disposal method proposed in the CMP and DDR, the current method is estimated to produce lower volatile emissions of PCBs. This is due to two factors: the ponded conditions in the CDF and the quick encapsulation of the TSCA sediment within the disposal cell. Constructing the TSCA Subcell is expected to have no impact on volatile emissions in a ponded CDF. The primary source of the volatile emissions (for PCBs with low volatility) is the carrier water which is recirculated in the CDF during dredging. In a ponded CDF, water and suspended sediment would flow over the interior dike from the subcell to the remainder of the cell. This would cause the entire cell to be a source of volatile emissions, and the subcell would not act as a containment area for the TSCA sediment. To successfully contain the TSCA sediment and water, a subcell the size of the entire east cell would be needed, so that essentially there is no subcell. Based on using the entire east cell as the TSCA sediment placement area, the PCB emissions were estimated and then atmospheric dispersion modeling was used to predict off-site concentrations of PCBs in the air. The atmospheric dispersion modeling produced results comparable to the USEPA's Supplemental Risk Assessment.

d. *Particulate Emissions.* Operating the CDF under ponded conditions will virtually eliminate particulate emissions. Since the ponded conditions will be maintained during the placement of TSCA sediments, particulate emissions would be insignificant. The significant reduction of particulate emissions is a justification for the ponded CDF operation, and this benefit extends to the placement of the TSCA sediment.

e. *Other Impacts to CDF Design or Operation.* An interior dike separates the east and west cells for sediment and water management purposes. If dredged material is to be used to raise the interior dike, it should be removed from the West Cell to avoid disturbing the TSCA sediment. If dredged material from the East Cell must be used, the excavation should stop at least 3 ft above the top of the TSCA sediment so that it remains fully encapsulated.

f. *Regulatory Impacts.* It is not anticipated that the configuration of the TSCA disposal area, subcell or entire cell, would impact regulatory requirements. The volume of TSCA sediment is not affected by the placement location within the CDF. Additionally, TSCA sediment placement should not make a difference in monitoring requirements for the CDF. The

proposed sediment placement and CDF operation reduces the possibility that PCBs will be released to the environment by significantly reducing emissions. The proposed encapsulation method ensures that the TSCA sediment is exposed for a minimum time period, and for less time than the two years conceived in the Design Documentation Report. The ponded CDF operation will minimize sediment rehandling and worker contact with the sediment, since there will not be any need for entering the CDF.

g. *Post Closure Uses of CDF site.* In a letter dated 31 October 2008, the US EPA addressed issues relating to post-closure use of the CDF site considering TSCA disposal. This letter is attached as Enclosure 6. The letter cites specific Federal regulations that list requirements of caps to contain PCBs. It must be shown that future uses of the site will not disturb the cap or any other parts of the containment system. Because the TSCA material will be covered with multiple layers of non-TSCA sediment and the entire facility will be capped per RCRA standards, it could be possible to meet this requirement and allow future recreational use of the property with the proposed TSCA material placement. Details of the RCRA cap design and future use of the site will be determined at a later time.

5. **Capping TSCA Hot-spots in the IHC**. The current sediment condition includes generally lower concentrations of PCBs in the surficial sediment, with higher PCB concentrations in the deeper sediment. Dredging to the authorized navigational depth will result in higher concentrations of PCBs at the newly dredged surface. USACE cannot dredge below the authorized navigational depth plus overdredge for the purpose of "remediating" the TSCA hotspots, and cannot dredge to remove "all" the TSCA regulated sediment. However, USACE can perform actions to lower the PCB concentration at the surface as well as to allow future navigational maintenance in the hotspot areas. The solution would be to install a physical isolation cap over the hot spot areas; the top surface of the cap would be below the future maintained dredging depth. The objective of the cap is the physical isolation of remnant high PCB concentration sediment below the authorized Federal navigational depth; the cap does not address remediation of the TSCA areas since navigational maintenance authority does not allow the USACE to conduct remediation activities. The cap will consist of a geotextile topped with armor stone, for the purpose of preventing erosion or washing of the TSCA hot spot areas and to ensure that any remaining TSCA regulated sediment does not wash from the area or spread further. The stone size was determined considering flow velocities induced by boat propellers, which would be the main erosive force in the canal. The cap design is documented in a separate memorandum.

6. **Estimated Cost of Dredging and Capping TSCA Hot-spots**. A cost estimate was done for dredging and capping the TSCA hot-spot areas in the manner described above. The estimated total cost for dredging, placing the dredged material in the IHC CDF, and capping with stone is approximately $3,700,000. Details for the cost estimate are included in enclosure 9.

7. **Procedure if Additional TSCA Sediment Encountered.** Although not anticipated based on current information, additional TSCA sediment could be discovered during the sediment

sampling to be completed in a reach the year before dredging. These areas would be treated the same as the known hotspots. The areas would be dredged, and the sediment would be placed in the West Cell. The dredged material should be encapsulated with non-TSCA sediment by the end of the dredging season. A physical isolation cap would be installed at the new hotspot in the canal, and the cap design would be as proposed for the known hotspots.

Recommended by:

SUSANNE DAVIS, P.E.
Chief, Planning Branch

JOSEPH SCHMIDT, P.E.
Chief, Design Branch

SHERRIE BARHAM
Chief, Project Management

SHAMEL ABOU-EL-SEOUD, P.E.
Construction Operations Branch

Approved by:

ROY DEDA, P.E.
Deputy for Project Management

for LINDA SORN, P.E.
Chief, Technical Services Division

9 Enclosures:
1. TSCA-Related Design History
2. CDF Layout from CMP (1999)
3. CDF Layout from DDAA (2004)
4. TSCA Volume Calculations
5. Volatile Emissions Analysis
6. Future Use Letter from EPA
7. Proposed CDF Layout
8. Map of TSCA Hotspots
9. Cost estimate and documentation

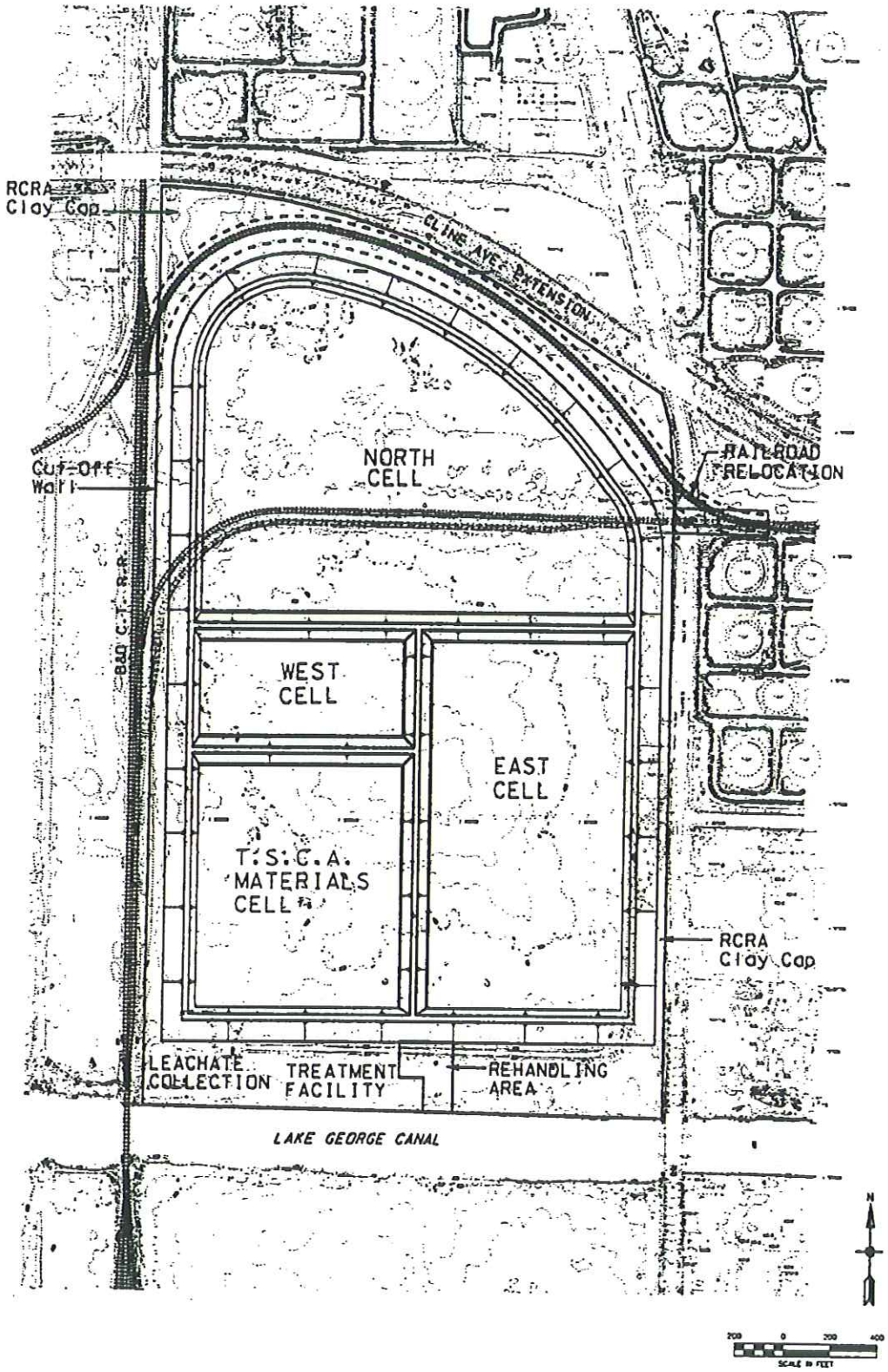
**Enclosure 1**

Enclosure 1: CDF TSCA Design History

| YEAR | REPORT | DESIGN DETAIL | CHANGE | REASON |
|---|---|---|---|---|
| 1999 | CMP | * TSCA cell in SW corner<br>* Mechanical dredging & placement<br>* Canal sediment left as-is after dredging (short-term water-quality impact) | | |
| 2000 | DDR | TSCA dredging in Year 8, encapsulate TSCA in Year 10 | | |
| 2003 | DDAA | | TSCA Cell in NW Corner | Nearby land use – schools S of site |
| | | | TSCA dredging in Year 7, encapsulate TSCA in Year 9 | |
| 2004 | DDAA | | Hydraulic placement with recirculation | * Lower operating costs<br>* Lower particulate emissions (but higher volatile emissions) |
| 2008 | Ponded Decision Memo | | Operate CDF under ponded conditions | Lower volatile emissions |
| | | | Eliminate equalization basin | No need: water stored in entire CDF |
| *2009* | *TSCA Decision Memo (this doc)* | | *Eliminate TSCA subcell* | *Incompatible with ponded operations* |
| | | | *Dredge & encapsulate in same dredging season* | ** Water quality in CDF*<br>** Lower volatile emissions* |
| | | | *Overdredge and cap TSCA hotspots* | *Reduce WQ impacts in canal* |

**Enclosure 2**

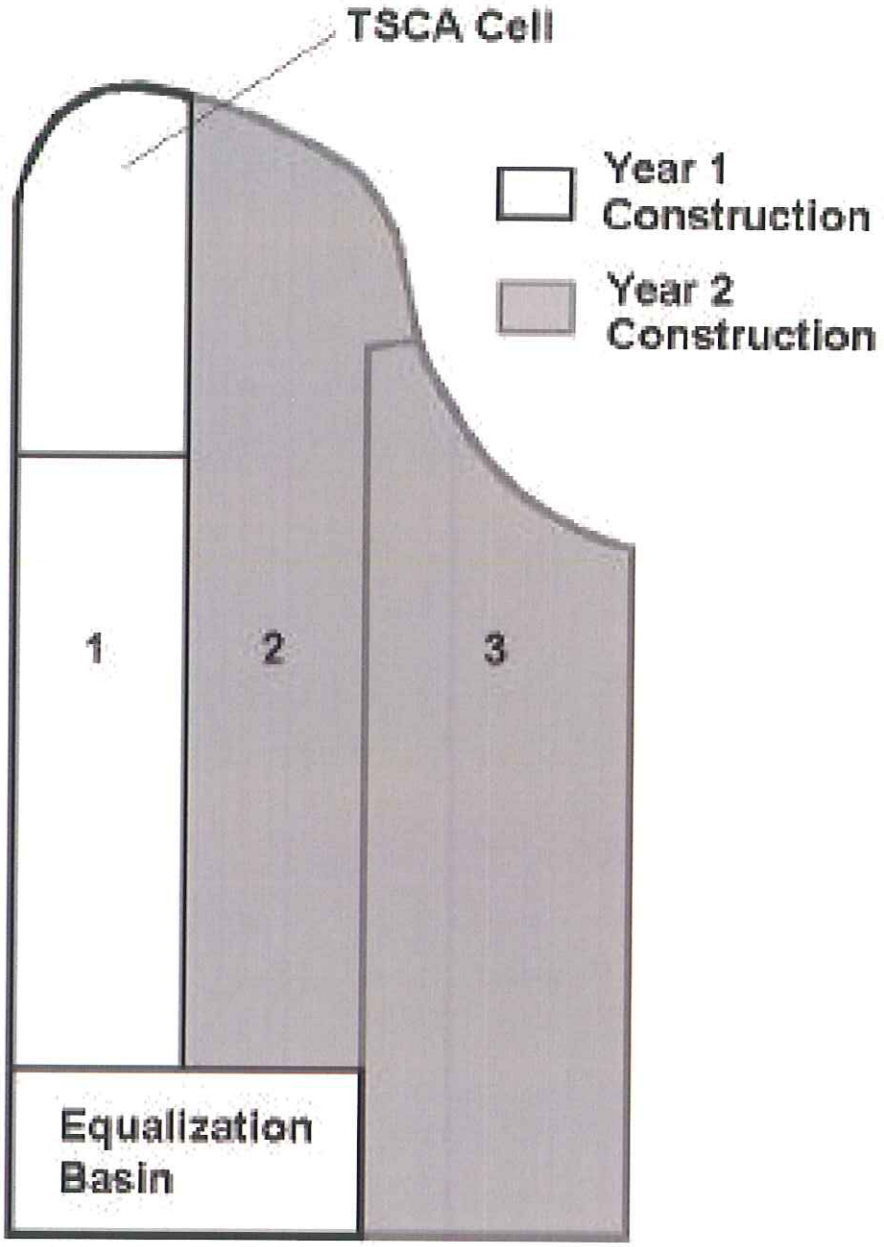
CMP CDF Layout (1999)




INDIANA HARBOR
CONFINED DISPOSAL FACILITY
ECI SITE CDF

SELECTED/RECOMMENDED PLAN
PLAN VIEW
Chicago District
U.S. Army Corps of Engineers
JULY 1997

**Enclosure 3**




2004 CDF Layout

**Enclosure 4**

# TSCA VOLUME CALCULATIONS

**PROJECT:** Indian Harbor CDF
**DATE:** 07/10/09
**PREPARED BY:** dga
**CHECKED BY:**

**DREDGE VOLUME TO -22.0 LWD**

| AREA | DREDGE CROSS-SECTION AREA (square-feet) | DREDGE WIDTH (feet) | DREDGE VOLUME (cubic-feet) | SIDE SLOPE TRANSITION CROSS-SECTION AREA (square-feet) | SIDE SLOPE TRANSITION LENGTH (feet) | SIDE SLOPE TRANSITION DREDGE VOLUME (cubic-feet) | CUMULATIVE VOLUME (cubic-feet) | CUMULATIVE VOLUME (cubic-yard) |
|---|---|---|---|---|---|---|---|---|
| 1 | 2792.5 | 68.7 | 191844.8 | 768.0 | 225.0 | 172800.0 | 364644.8 | 13505.4 |
| 2 | 1923.5 | 124.5 | 239475.8 | 768.0 | 158.0 | 121344.0 | 360819.8 | 13363.7 |
| 3 | 1432.5 | 74.6 | 106864.5 | 867.0 | 160.0 | 138720.0 | 245584.5 | 9095.7 |
| 4 | 212.0 | 47.6 | 10091.2 | 432.0 | 50.0 | 21600.0 | 31691.2 | 1173.7 |
| 5 | 142.8 | 55.9 | 7982.5 | 48.0 | 50.0 | 2400.0 | 10382.5 | 384.5 |
| | | | | | | | Subtotal: | 37523.1 |

**OVERDREDGE VOLUME TO -24.0 LWD**

| AREA | OVERDREDGE CROSS-SECTION AREA (square-feet) | OVERDREDGE WIDTH (feet) | OVERDREDGE VOLUME (cubic-feet) | SIDE SLOPE TRANSITION CROSS-SECTION AREA (square-feet) | SIDE SLOPE TRANSITION LENGTH (feet) | SIDE SLOPE TRANSITION OVERDREDGE VOLUME (cubic-feet) | CUMULATIVE VOLUME (cubic-feet) | CUMULATIVE VOLUME (cubic-yard) |
|---|---|---|---|---|---|---|---|---|
| 1 | 426.5 | 68.7 | 29300.6 | 204.0 | 225.0 | 45900.0 | 75200.6 | 2785.2 |
| 2 | 289.2 | 124.5 | 36005.4 | 204.0 | 158.0 | 32232.0 | 68237.4 | 2527.3 |
| 3 | 288.8 | 74.6 | 21544.5 | 216.0 | 160.0 | 34560.0 | 56104.5 | 2077.9 |
| 4 | 80.3 | 47.6 | 3822.3 | 156.0 | 50.0 | 7800.0 | 11622.3 | 430.5 |
| 5 | 88.0 | 55.9 | 4919.2 | 60.0 | 50.0 | 3000.0 | 7919.2 | 293.3 |
| | | | | | | | Subtotal: | 8114.2 |

**CAP VOLUME TO -25.5 LWD**

| AREA | CAP CROSS-SECTION AREA (square-feet) | CAP WIDTH (feet) | CAP VOLUME (cubic-feet) | SIDE SLOPE TRANSITION CROSS-SECTION AREA (square-feet) | SIDE SLOPE TRANSITION LENGTH (feet) | SIDE SLOPE TRANSITION CAP VOLUME (cubic-feet) | CUMULATIVE VOLUME (cubic-feet) | CUMULATIVE VOLUME (cubic-yard) |
|---|---|---|---|---|---|---|---|---|
| 1 | 328.8 | 68.7 | 22588.6 | 168.8 | 225.0 | 37980.0 | 60568.6 | 2243.3 |
| 2 | 225.8 | 124.5 | 28112.1 | 168.8 | 158.0 | 26670.4 | 54782.5 | 2029.0 |
| 3 | 233.6 | 74.6 | 17426.6 | 177.8 | 160.0 | 28448.0 | 45874.6 | 1699.1 |
| 4 | 70.6 | 47.6 | 3360.6 | 132.8 | 50.0 | 6640.0 | 10000.6 | 370.4 |
| 5 | 76.3 | 55.9 | 4265.2 | 60.8 | 50.0 | 3040.0 | 7305.2 | 270.6 |
| | | | | | | | Subtotal: | 6612.3 |

**TOTALS**

| AREA | TOTAL VOLUME (cubic-yard) |
|---|---|
| 1 | 18533.8 |
| 2 | 17920.0 |
| 3 | 12872.7 |
| 4 | 1974.6 |
| 5 | 948.4 |
| | 52249.6 |

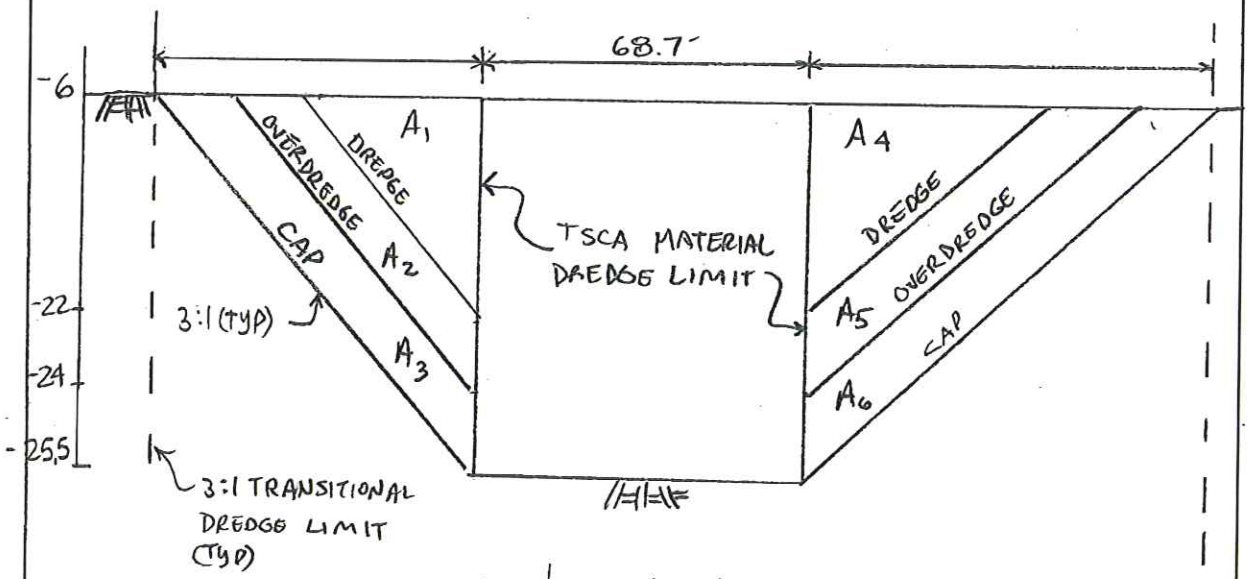
Notes:
1. Reviewed and compared calcs prepared by MC dated 8/20/09 and WK dated 5/8/08
2. For dredge areas, refer to Drawings C1-C4 located in PW:\\lrc-fs-projw:LRC-Chicago\Documents\Projects\
Indiana Harbor and Canal CDF\Dredging Operation\Civil Design\Drawings_100%\Sheet Files\
3. Dredge Volume, Overdredge Volume and Cap Volume accounts for material resulting from 3:1 transition into existing at the front and back of TSCA area
4. Side Slope Transition Dredge Volume is amount of material resulting from 3:1 transition into existing on both sides of TSCA area
5. Side Slope Transition Length measures distance perpendicular from canal wall to 3:1 transition limit as shown on C-1 & C-2
6. Refer to attached hand calcs for Side Slope Transition Cross-Section Area

Fill-in quantity

| US Army Corps of Engineers. Chicago District | PROJECT TITLE: IHC CANAL & CDF | COMPUTED BY: DGA | DATE: 07/16/09 | SHEET: 1 of 5 |
|---|---|---|---|---|
| | COMPUTATION TITLE: TSCA DREDGE VOLUMES | CHECKED BY: SMD | DATE: | |

REFER TO SHEETS C-1 & C-2 FOR LAYOUT OF 3:1 TRANSITIONAL DREDGE LIMIT AROUND TSCA MATERIAL

AREA 1 CROSS-SECTION AREA




$A_1 = \frac{1}{2} \times 16 \times (3 \times 16) = 384$ SF $= A_4$

$A_2 = \frac{1}{2} \times 18 \times (3 \times 18) - 384 = 102$ SF $= A_5$

$A_3 = \frac{1}{2} \times 19.5 \times (3 \times 19.5) - 384 - 102 = 84.4 = A_6$

TOTAL DREDGE = 768 SF

TOTAL OVERDREDGE = 204 SF

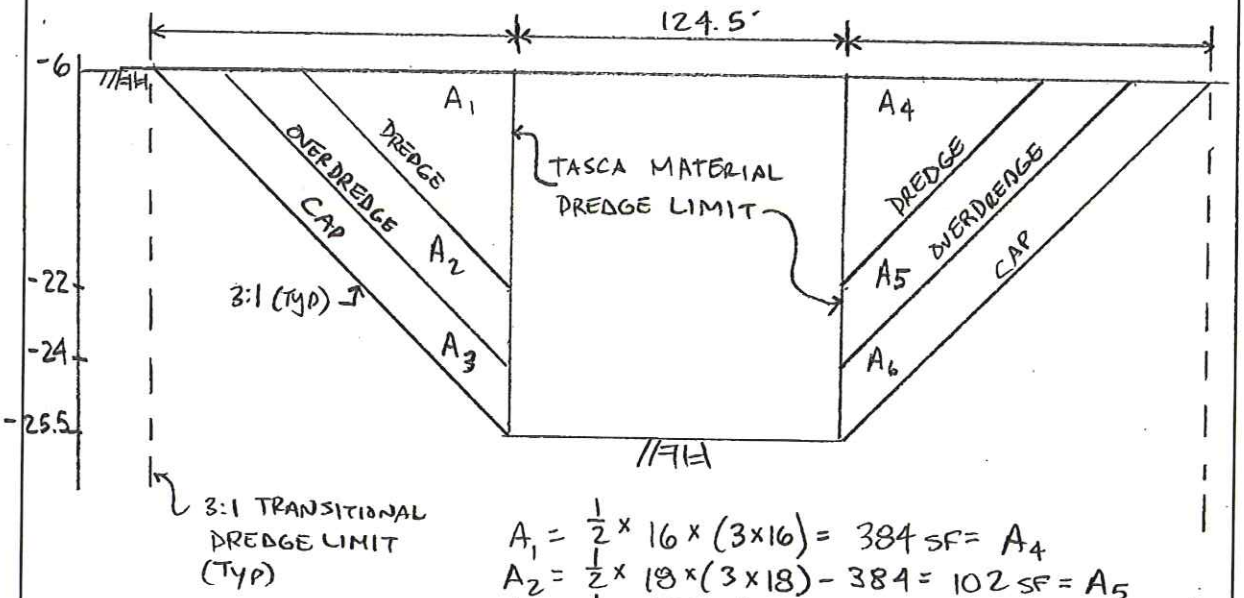
TOTAL CAP = 168.8 SF

TOTAL = 1140.8 SF

| US Army Corps of Engineers. Chicago District | PROJECT TITLE: IHC CANAL & CDF | COMPUTED BY: DGA | DATE: 07/16/09 | SHEET: 2 of 5 |
|---|---|---|---|---|
| | COMPUTATION TITLE: TSCA DREDGE VOLUMES | CHECKED BY: SHD | DATE: | |

REFER TO SHEETS C-1 & C-2 FOR LAYOUT OF 3:1 TRANSITIONAL DREDGE LIMIT AROUND TSCA MATERIAL

AREA 2 CROSS-SECTION AREA




$A_1 = \frac{1}{2} \times 16 \times (3 \times 16) = 384 \text{ SF} = A_4$

$A_2 = \frac{1}{2} \times 18 \times (3 \times 18) - 384 = 102 \text{ SF} = A_5$

$A_3 = \frac{1}{2} \times 19.5 \times (3 \times 19.5) - 384 - 102 = 84.4 \text{ SF} = A_6$

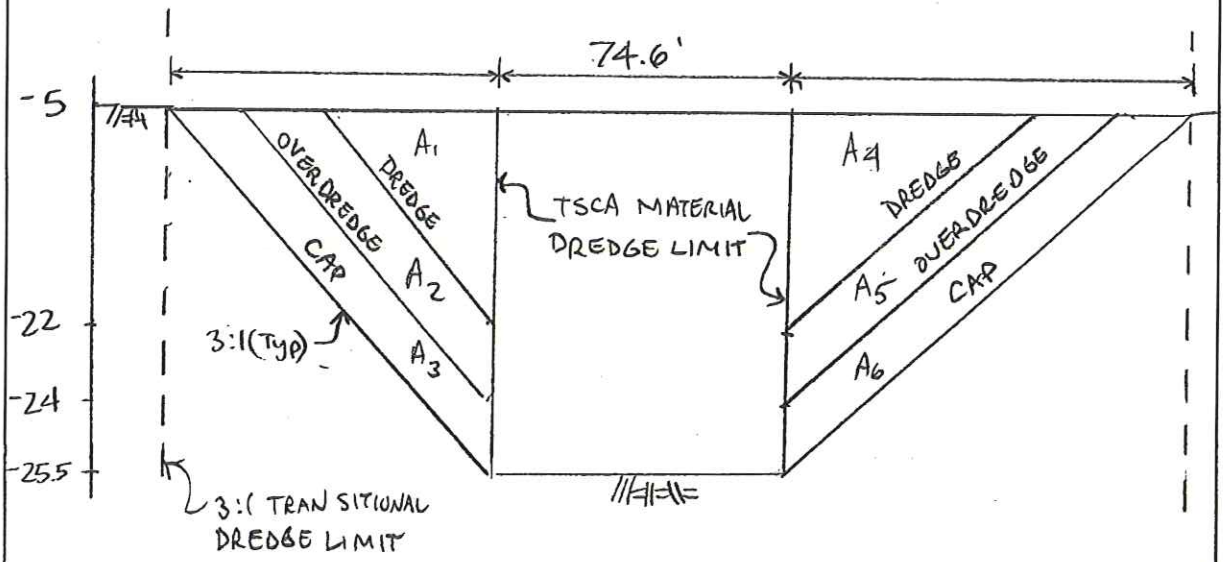
TOTAL DREDGE = 768 SF
TOTAL OVERDREDGE = 204 SF
TOTAL CAP = 168.8 SF

TOTAL = 1140.8 SF

| US Army Corps of Engineers. Chicago District | PROJECT TITLE: IHC CANAL & CDF | COMPUTED BY: DGA | DATE: 07/16/09 | SHEET: 3 of 5 |
|---|---|---|---|---|
| | COMPUTATION TITLE: TSCA DREDGE VOLUMES | CHECKED BY: SMB | DATE: | |

REFER TO SHEETS C-1 & C-2 FOR LAYOUT OF 3:1 TRANSITIONAL DREDGE LIMIT AROUND TSCA MATERIAL

AREA 3 CROSS-SECTION AREA




$A_1 = \frac{1}{2} \times 17 \times (3 \times 17) = 433.5$ SF $= A_4$

$A_2 = \frac{1}{2} \times 19 \times (3 \times 19) - 433.5$ SF $= 108 = A_5$

$A_3 = \frac{1}{2} \times 20.5 \times (3 \times 20.5) - 433.5 = 108 = 88.9$ SF $= A_6$

TOTAL DREDGE = 867 SF

TOTAL OVERDREDGE = 216 SF

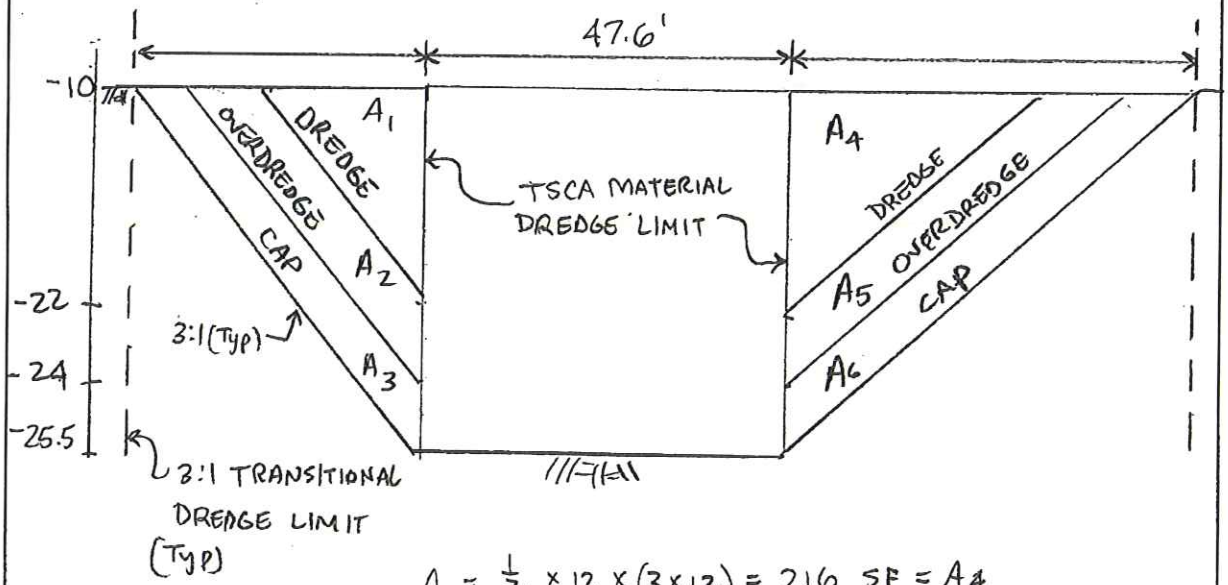
TOTAL CAP = 177.8 SF

TOTAL = 1260 SF

| US Army Corps of Engineers, Chicago District | PROJECT TITLE: IHC CANAL & CDF | COMPUTED BY: DGA | DATE: 07/16/09 | SHEET: 4 of 5 |
|---|---|---|---|---|
| | COMPUTATION TITLE: TSCA DREDGE VOLUMES | CHECKED BY: SMR | DATE: | |

REFER TO SHEETS C-1 & C-2 FOR LAYOUT OF 3:1 TRANSITIONAL DREDGE LIMIT AROUND TSCA MATERIAL

AREA 4 CROSS-SECTION AREA




$A_1 = \frac{1}{2} \times 12 \times (3 \times 12) = 216$ SF $= A_4$

$A_2 = \frac{1}{2} \times 14 \times (3 \times 14) - 216 = 78$ SF $= A_5$

$A_3 = \frac{1}{2} \times 15.5 \times (3 \times 15.5) - 216 - 78 = 66.4$ SF $= A_6$

TOTAL DREDGE = 432 SF

TOTAL OVERDREDGE = 156 SF

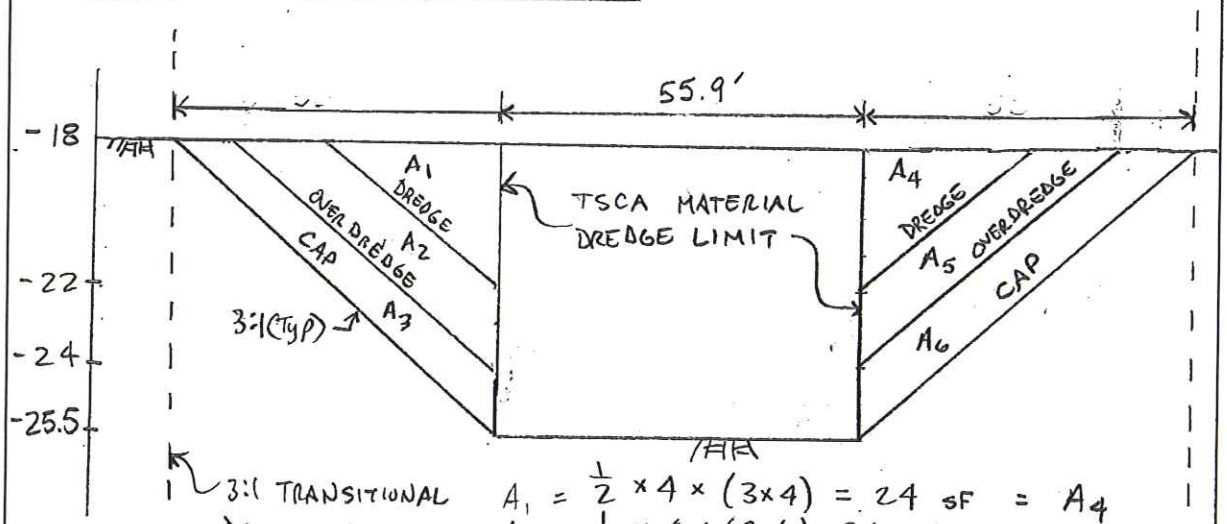
TOTAL CAP = 132.8 SF

TOTAL = 720.8 SF

| US Army Corps of Engineers, Chicago District | PROJECT TITLE: IHC CANAL & CDF | COMPUTED BY: DGA | DATE: 02/16/09 | SHEET: 5 of 5 |
|---|---|---|---|---|
| | COMPUTATION TITLE: TSCA DREDGE VOLUMES | CHECKED BY: SMR | DATE: | |

REFER TO SHEETS C-1 & C-2 FOR LAYOUT OF 3:1 TRANSITIONAL DREDGE LIMIT AROUND TSCA MATERIAL

AREA 5 CROSS-SECTION AREA

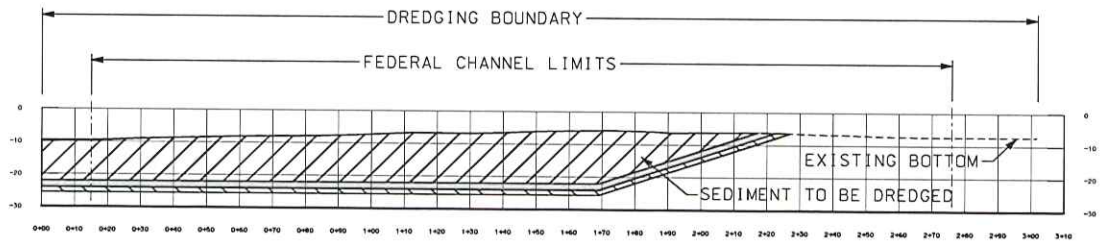



$A_1 = \frac{1}{2} \times 4 \times (3 \times 4) = 24$ SF $= A_4$

$A_2 = \frac{1}{2} \times 6 \times (3 \times 6) - 24 = 30$ SF $= A_5$

$A_3 = \frac{1}{2} \times 7.5 \times (3 \times 7.5) - 24 - 30 = 30.4$ SF $= A_6$

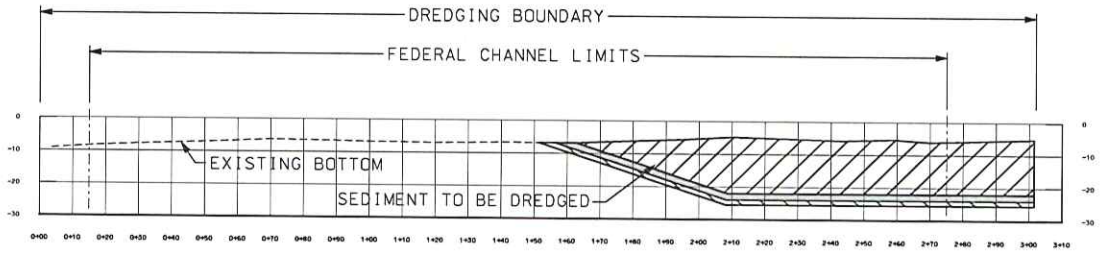
TOTAL DREDGE = 48 SF
TOTAL OVERDREDGE = 60 SF
TOTAL CAP = 60.8 SF
TOTAL = 168.8 SF




CROSS SECTION 1-1
(AREA 1)

NOTE:

TSCA MATERIAL LOCATED BETWEEN -23.4 AND -24.0



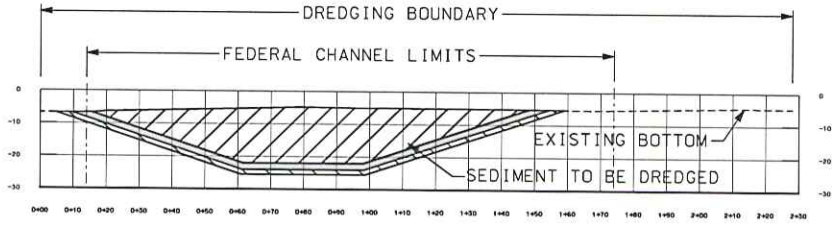

CROSS SECTION 2-2
(AREA 2)

NOTE:

TSCA MATERIAL LOCATED BETWEEN -21.7 AND -24.0

LEGEND

- DREDGE DEPTH TO -22.0 LWD
- OVERDREDGE DEPTH TO -24.0 LWD
- CAP DEPTH TO -25.5 LWD




CROSS SECTION 3-3
(AREA 3)

NOTE:

TSCA MATERIAL LOCATED BETWEEN -20.8 AND -24.0

NOTES:

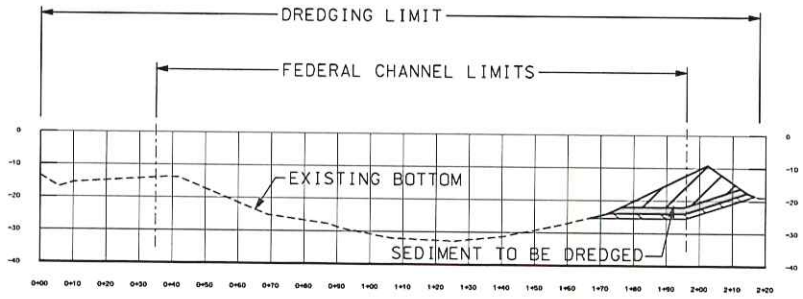
1. TRANSITION SIDE SLOPES 3:1 INTO EXISTING AROUND DREDGING BOUNDARY (TYP).
2. LIMIT OF DREDGING BOUNDARY IS THE SHEET PILE WALL ON BOTH SIDES OF THE CANAL.

U.S. Army Corps of Engineers Chicago District

INDIANA HARBOR & CANAL
EAST CHICAGO, INDIANA
TSCA SEDIMENT VOLUMES

SOUTHERN DREDING AREAS
CROSS SECTIONS

| SCALE: | DATE: | DRAWING CODE: |
|---|---|---|
| 1" = 40' | JULY 2009 | C-3.DGN |



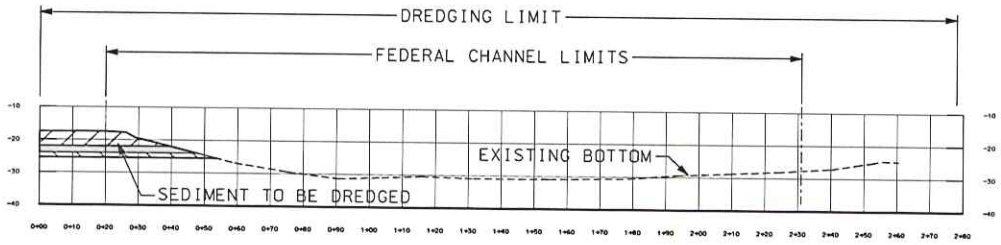

NOTE:

TSCA MATERIAL LOCATED BETWEEN -20.8 AND -24.0

CROSS SECTION 4-4
(AREA 4)

LEGEND

- DREDGE DEPTH TO -22.0 LWD
- OVERDREDGE DEPTH TO -25.5 LWD
- CAP DEPTH TO -27.0 LWD




NOTE:

TSCA MATERIAL LOCATED BETWEEN -20.8 AND -24.0

CROSS SECTION 5-5
(AREA 5)

NOTES:

1. TRANSITION SIDE SLOPES 3:1 INTO EXISTING AROUND DREDGING BOUNDARY (TYP).
2. LIMIT OF DREDGING BOUNDARY IS THE SHEET PILE WALL ON BOTH SIDES OF THE CANAL.

U.S. Army Corps of Engineers Chicago District

INDIANA HARBOR & CANAL
EAST CHICAGO, INDIANA
TSCA SEDIMENT VOLUMES

NORTHERN DREDGING AREAS
CROSS SECTIONS

| SCALE: | DATE: | DRAWING CODE: |
|---|---|---|
| 1" = 40' | JULY 2009 | C-4.DGN |

**Enclosure 5**

**TSCA Volatile Emissions Modeling**
**June 29, 2009**

## METHODOLOGY

First, IHC sediment characteristics were used to compute PCB flux from the cells. Then, the PCB flux and local meteorological data were used to simulate the atmospheric dispersion of PCBs and to compute the ground-level PCB concentration at East Chicago Central High School and at other locations near the CDF. Two computer models were used in this analysis: PCDF and ISCST3. The modeling will be described in more detail in the following sections. The volatile emissions of all other chemicals of concern (COCs), other than PCBs, were estimated previously and are presented in the Ponded CDF Decision memo; this memo only presents emissions of PCBs from the TSCA sediment. It was assumed that volatile emission of other COCs would be unchanged from that presented in the Ponded CDF Decision memo.

## PCB FLUX USING PCDF

Volatile emissions during the placement of TSCA material into the CDF were estimated using the Ponded CDF (PCDF) model developed by LSU and ERDC/WES. A brief summary of the modeling process is included below. Complete documentation of the model is presented in Thibodeaux et al. (2008).

### PCDF INPUTS

Inputs to the model for estimating emissions from TSCA material placement are on Table 1. The TSCA material was assumed to have a concentration of 68 mg/kg PCBs in the volatile emission modeling. This is a conservative assumption because this was the maximum PCB concentration detected in samples taken in 2006 (Matrix 2007), in a study that delineated and characterized the PCB hotspots. The overall average concentration in the IHC sediments in the TSCA delineated areas is approximately 22 mg/kg, which is representative of the sediment once placed in the CDF. For non-TSCA sediment, a concentration of 35 mg/kg was used in the Ponded CDF Decision memo, since a slightly higher concentration is considered conservatively representative of all the sediment in the IHC.

**Table 1. Inputs to the Ponded CDF Emission Model.**

| Property | Value | Notes |
|---|---|---|
| *Sediment Properties* | | |
| Total Organic Carbon Content, TOC | 10% | Typical for IHC sediment |
| Specific Gravity of Sediment, SG | 2.71 | Typical for IHC sediment |
| Sediment PCB Concentration, $w_{aD}$ | 68 mg/kg | Maximum PCB concentration |
| In situ Sediment Water Content, w | 88% | Typical for IHC sediment |
| *Dredging Operational Parameters* | | |
| Influent Slurry Solids Conc., $TSS_{sl}$ | 170 g/L | Typical pumpable slurry conc. |
| Dredging rate, $Q_{ds}$ | 125 $yd^3$/hr | Anticipated dredging rate |
| *CDF Parameters* | | |
| Water Depth, Z | 3.28 ft / 1 m | Assumed maintained pond depth |
| *External Parameters* | | |
| Wind Speed, $v'_1$ | 10 mph | Average wind speed |
| Chemical Conc. in air above CDF, $\rho_{a1}$ | 0 mg/L | Conservative, highest emissions |
| *Chemical Parameters* | | |
| Henry's Law Constant, H | 0.009 | Measured for IHC sediment |
| Partition coeffcient (sed-water), $K_{a32}$ | 8700 L/kg | Measured for IHC sediment |
| Solubility in water, $\rho'_{a2}$ | 0.041 mg/L | Literature value |

Emissions generated during hydraulic versus mechanical placement/disposal of dredged material, as well as emissions from a ponded versus a drained CDF had been previously compared (Estes et al. 2003, 2004). For the first case, it was determined that volatile emissions during hydraulic disposal versus mechanical disposal were comparable, with offsetting factors of higher emissions during hydraulic disposal due to a surface enrichment factor (finer material with higher chemical concentration settling at the surface during hydraulic disposal), versus higher emissions during mechanical disposal due to surface re-wetting (with highest volatilization rates each time the CDF surface is replenished with new material and goes through surface dewatering.) The particulate emissions rates, however, would be significantly higher for the mechanical disposal scenario than for hydraulic placement. For the second case, both volatile and particulate emissions from a ponded CDF were determined to be significantly lower than from a drained CDF.

The currently planned operation during dredging and disposal of TSCA material into the CDF is to hydraulically place non-TSCA material into the TSCA cell before placing the TSCA material into the cell. It is expected that the TSCA material will be dredged after at least one full dredging season of disposal of non-TSCA dredged material had been placed in the TSCA cell. Then after placement of the TSCA material into the cell, more non-TSCA material will be placed over the TSCA material to essentially cover and encapsulate the TSCA material. For this reason, to estimate emissions attributed to TSCA material in the CDF, only emissions during disposal were estimated. The TSCA cell, as well as the rest of the CDF will be kept ponded between dredging and disposal events.

Two TSCA disposal cell options were evaluated: Option 1 with the Northwest TSCA Subcell and Southwest Non-TSCA Subcell and Option 2 with the entire East Cell as the TSCA Cell. Figure 1 is a conceptual sketch of the two options. Volatile emissions from the pond during disposal for the two TSCA disposal cell options are expected to be essentially the same. The reason is that the two options have the same volume of carrier water and the same retention time. For PCBs with low volatility where the concentration in water takes months to get depleted, the source of emission is primarily carrier water from the disposal and to a lesser degree the settled dredged material. All areas receiving the carrier water from the TSCA sediments should be assumed to have the same sediment PCB concentration (i.e., both subcells, TSCA and non-TSCA, and the entire TSCA east cell). The two TSCA disposal options have the same retention time because the presence of the cross dike does not change total retention time (essentially same depth and area).

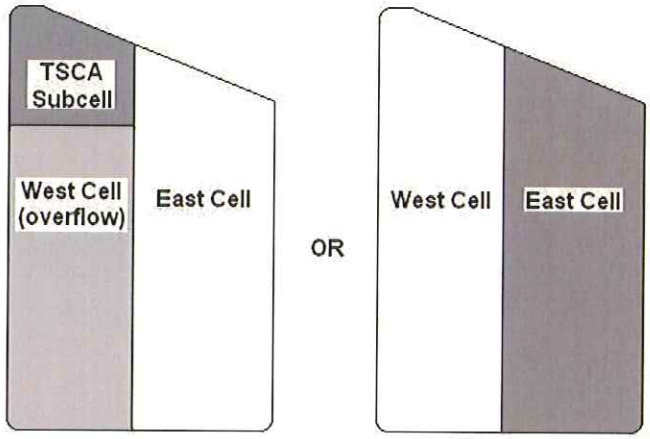



**Figure 1. Schematic of TSCA Material Disposal Options.**

PCDF RESULTS

The estimated rate of emission of PCBs during the TSCA material disposal into the CDF is 87 g/day. The PCB emission rate is used as input in the ISCST3 air dispersion model to estimate PCB concentrations at target receptors.

## PCB CONCENTRATION USING ISCST3

The Industrial Source Complex (ISC3) model is a steady-state, Gaussian plume model that can be used to assess concentrations downwind of a pollutant source. It uses the Gaussian probability distribution to simulate dispersion in the atmosphere. It was developed by the US Environmental Protection Agency (USEPA) in the late 1970s, and the third version was released in the late 1990s.

ISCST3 INPUT

The East Cell of the CDF was modeled as a rectangular area source. Regulatory default options and urban conditions were used. The meteorological data was obtained from the USEPA's Support Center for Regulatory Atmospheric Modeling website (AQMG 2006). The nearest location for surface data was Chicago O'Hare airport, and the nearest location for upper air data was Peoria. Data from 1988 were used. Receptors were placed on a 200-m grid around the CDF site. Discrete receptors were located at the school to ease the inspection of results; the receptor at the Air Monitor location was used to compare with the USEPA results. The receptors are shown as red dots in Figure 2.

The calculated PCB emission rate of 87 g/day from PCDF was divided by the area of the cells to convert the PCB flux to the correct format for the ISCST3 input file. The emission rate used in ISCST3 was $5.20 \times 10^{-9}$ g/m$^2$/s for both the West and East Cell scenarios. This is conservative since the actual concentration of PCBs in the sediment is less than the maximum concentration used for the calculation.

The period of interest for the atmospheric dispersion modeling is the time that the TSCA sediment is being offloaded into the CDF plus the time it takes to place enough non-TSCA sediment to completely cover it. This is the only time that the TSCA disposal location will affect PCB emissions from the CDF. Once non-TSCA sediment covers the TSCA material, the volatile emissions from the disposal cell would be comparable to the emissions from the CDF during normal IHC dredging seasons. It was assumed that it would take two months to dredge and place the TSCA sediment and the cover material. The start month was varied to test the affect of seasonal weather conditions on the atmospheric dispersion of PCBs. The dredging start months of July and August produced the highest PCB concentrations and were thus selected for a conservative analysis.

**Figure 2. Receptor Grid for ISCST3.**

## ISCST3 RESULTS

As mentioned in earlier sections, conservative assumptions were made when computing the PCB emissions, so the modeling results represent the worst-case scenario of the actual flux. The model was run with an averaging time of 1 hour in order to compare the results to the USEPA's Supplemental Risk Assessment (SRA) (USEPA 2006). The one-hour averaging time predicts peaks of higher concentration that could occur for a short period of time. The SRA also used ISCST3 to simulate atmospheric dispersion from the IHC CDF. Table 2 compares the results at the High School Air Monitor receptor.

**Table 2. Comparison of Highest One-Hour Concentration of PCBs.**

| Source | Concentration, $\mu g/m^3$ |
|---|---|
| USEPA Supp Risk Assessment | $3.55 \times 10^{-2}$ |
| USACE ISCST3 model, West Cell (this report) | $2.94 \times 10^{-2}$ |
| USACE ISCST3 model, East Cell (this report) | $1.98 \times 10^{-2}$ |

The ISCST3 results for the entire receptor grid are shown in Figure 3 and Figure 4 at the end of this report. The PCB concentration at the High School Air Monitor during TSCA dredging are consistent with the findings in the SRA; the values are about 20-40% lower than the SRA results. The general conclusion of the SRA was that "cancer risks from possible exposure to the contaminated sediment were found to be within EPA's established safety levels" (USEPA, 2006).

The Occupational Safety and Health Administration (OSHA) has set safety guidelines for PCB exposure in the workplace. The worker inhalation limit for PCBs is 0.5 – 1 mg/m$^3$ over a period of 8 hours for 5 days per week. The dispersion analysis completed in this study modeled 2 months of constant PCB emissions from the CDF. The maximum spike of PCBs in a 1-hour period was over 4 orders of magnitude lower than the OSHA standard for constant exposure over a workday.

## SUMMARY

The issue of volatile emissions that would occur during placement of TSCA material in the Indiana Harbor CDF was investigated. USACE computed the volatile emission of PCBs from the CDF and the ground-level concentration of PCBs after dispersion to the surrounding area. The results were compared to USEPA dispersion modeling of the conditions during dredging and placement.

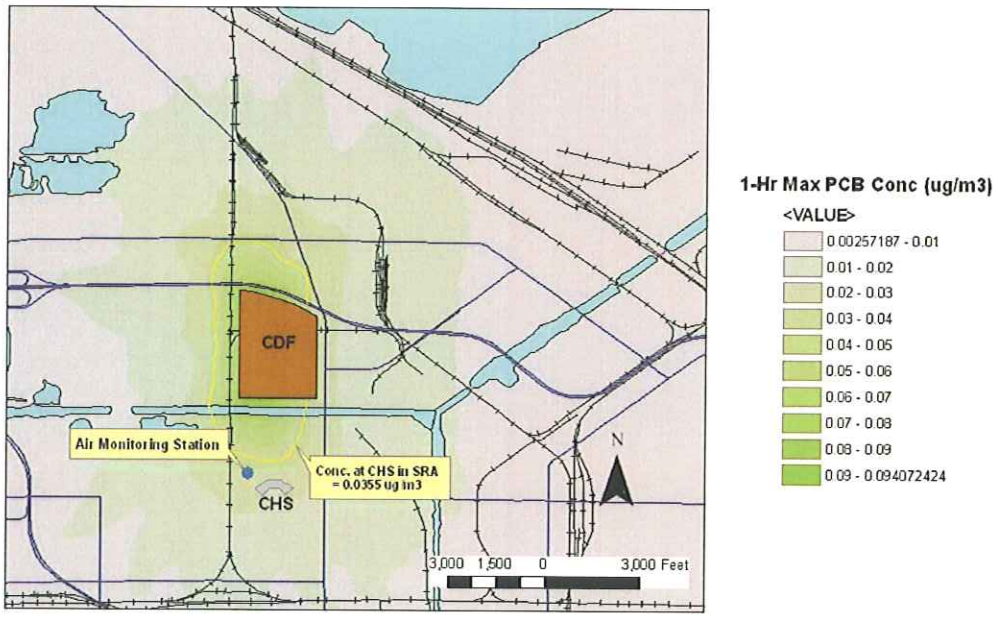



**Figure 3. ISCST3 Results for West Cell Placement.**

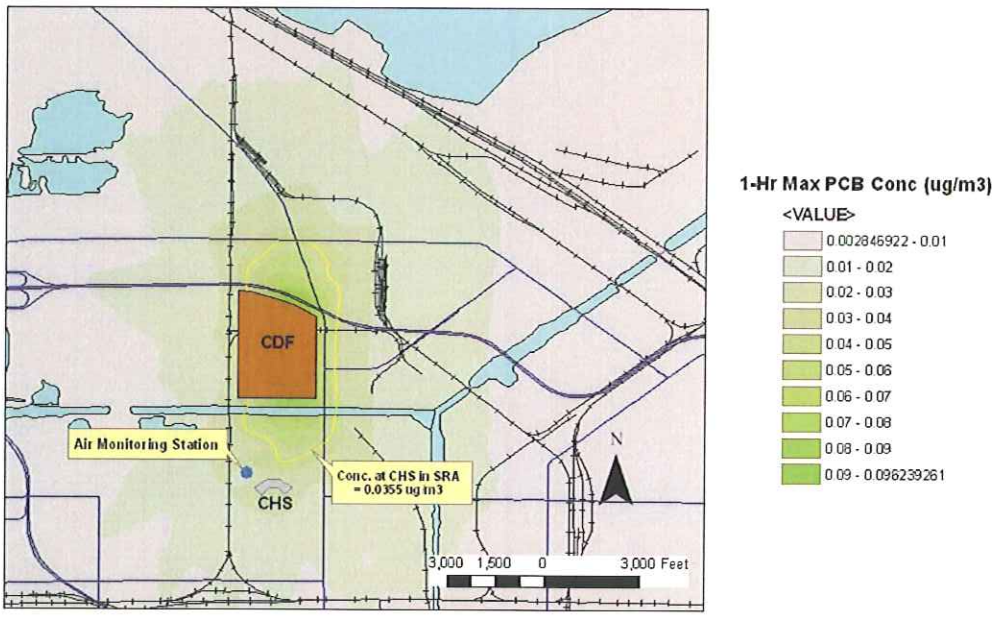



**Figure 4. ISCST3 Results for East Cell Placement.**

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**Enclosure 6**

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

OCT 31 2008

REPLY TO THE ATTENTION OF:
L-8J

Mr. David M. Wethington
Planning, Programs, and Project Management Division
Project Management Branch
Department of the Army
Chicago District, U.S. Army Corps of Engineers
111 North Canal Street
Chicago, Illinois 60606-7206

Re: TSCA Post-Closure Use and Management of the
Proposed Indiana Harbor Confined Disposal Facility (CDF)

Dear Mr. Wethington:

This letter is in response to your July 31, 2008 request for a determination by the U.S. Environmental Protection Agency, Region 5 regarding post-closure use and care requirements under the Toxic Substances Control Act (TSCA) for the proposed Indiana Harbor Confined Disposal Facility (CDF). This letter also addresses your request that EPA reconsider the requirement for testing the effluent from the oil-water separator for PCBs prior to reintroducing the water back into the ground.

With regards to post-closure use and care requirements under TSCA, the specific requirements for the disposal of PCBs are in the federal PCB regulations, at 40 CFR Part 761, promulgated under the authority of TSCA. We have required caps over all CDFs and landfills approved under the federal PCB regulations for the disposal of PCBs. Under the federal PCB regulations for chemical waste landfills at 40 CFR §761.75(c)(3)(ii) and under the federal PCB regulations for risk-based disposal at 40 CFR §761.61(c), EPA can include in an approval any provision found necessary to ensure the site does not present an unreasonable risk of injury to health or the environment. These provisions of the federal PCB regulations enable EPA to require caps over CDFs and landfills used for the disposal of PCBs.

Examples of specific requirements for caps are under the federal PCB regulations for the self-implementing remediation of PCBs at §761.61(a)(7) and (8). These regulations state that, when caps are required to cover waste, they must be maintained in perpetuity and that they must be strong enough to maintain their effectiveness and integrity during use of the cap surface. In addition, caps must be designed and constructed in accordance with § 264.310(a). Final covers must be designed to function with minimum maintenance and the integrity and effectiveness of the cover must be maintained. Also, owners or operators of the facility must comply with all post-closure requirements at §§ 264.117 through 264.120. Under § 264.117(c), post-closure use

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of property must never be allowed to disturb the integrity of the final cover, liner(s), or any other components of the containment system, or the function of the facility's monitoring systems. The exception to this requirement is if the EPA finds the disturbance necessary to the proposed use of the property, the disturbance will not increase the potential hazard to human health or the environment, or it is necessary to reduce a threat to human health or the environment.

As part of the closure plan application and review process, you can propose a recreational use or other use of the CDF. Your application will be evaluated on the criterion of whether or not the design and use will protect human health and the environment.

With regard to your request that EPA reconsider the requirement for testing the effluent from the oil-water separator for PCBs prior to reintroducing the water back into the ground; we have reviewed the applicable and related data you provided. Based on this data, at this time, we are no longer requiring you to test the effluent for PCBs before reintroducing the water into the ground.

If you have any questions regarding this letter, please do not hesitate to contact me, or your staff may contact Jean Greensley, of my staff, at 312-353-1171.

Sincerely,

for Margaret M. Guerriero
Director
Land and Chemicals Division

**Enclosure 7**

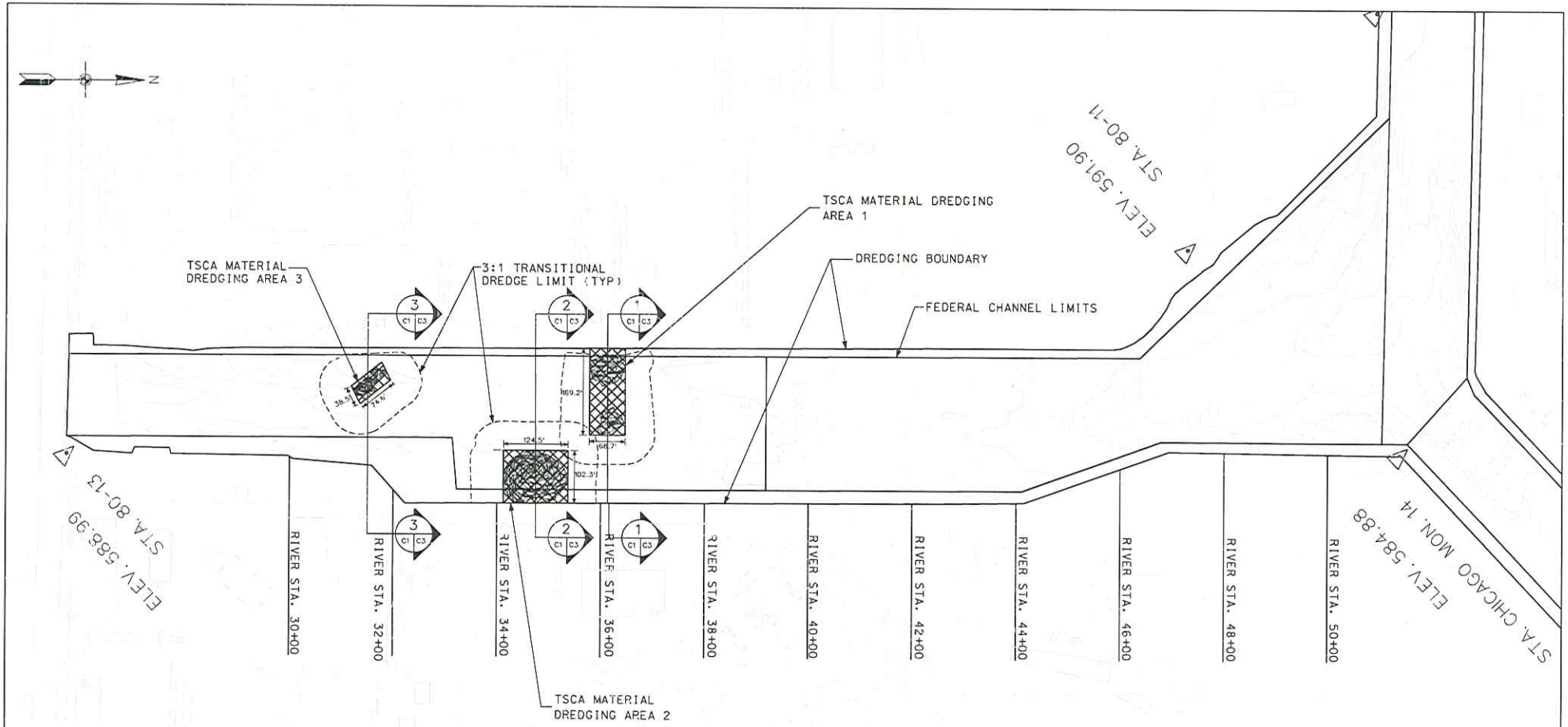
Ponded CDF Layout

■ = Air Monitoring Facility

**Enclosure 8**

Map of TSCA Hotspots

Figure 8-1. Management Unit Locations




NOTES:

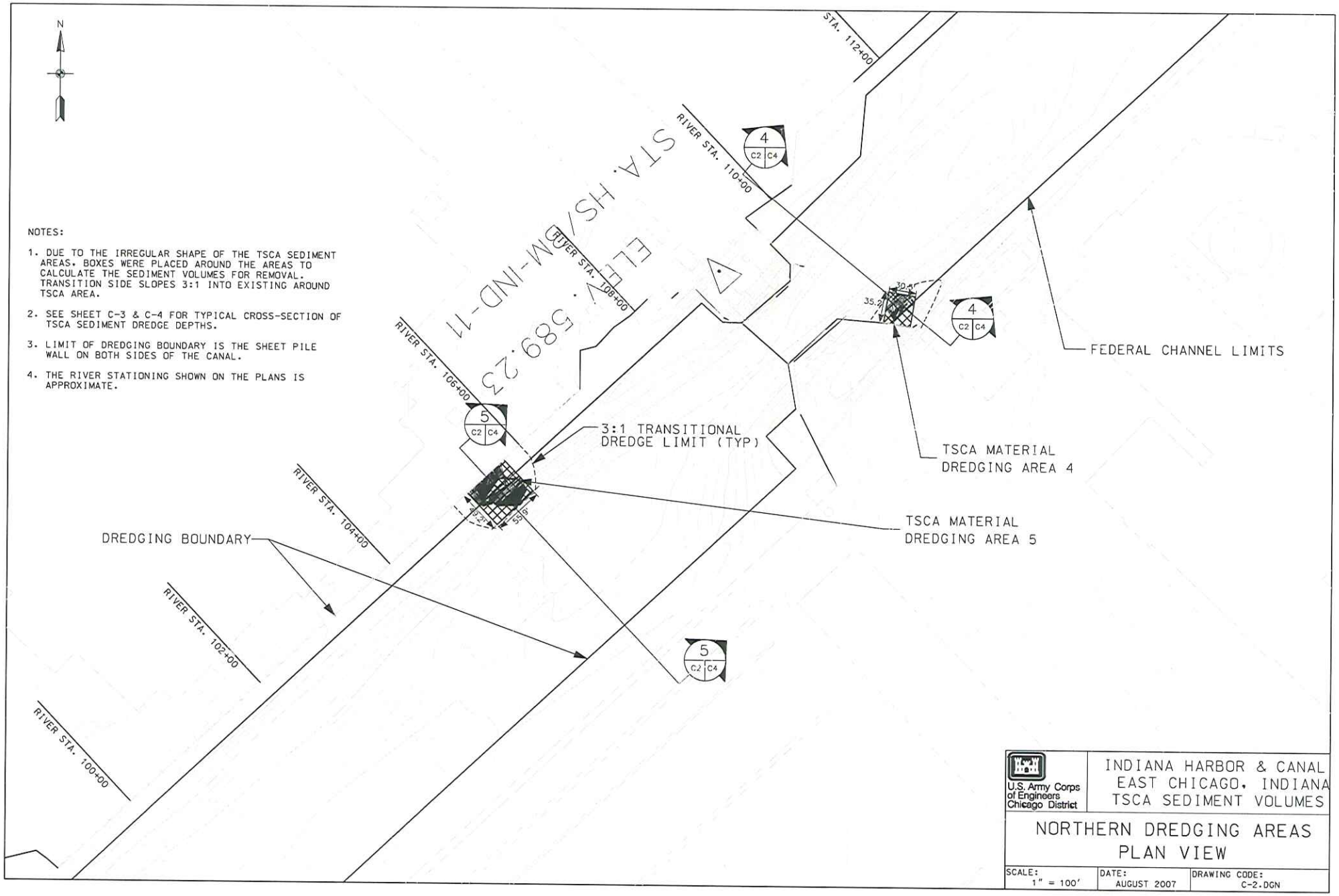
1. DUE TO THE IRREGULAR SHAPE OF THE TSCA SEDIMENT AREAS, BOXES WERE PLACED AROUND THE AREAS TO CALCULATE THE SEDIMENT VOLUMES FOR REMOVAL.
2. SEE SHEET C-3 & C-4 FOR TYPICAL CROSS-SECTION OF TSCA SEDIMENT DREDGE DEPTHS.
3. LIMIT OF DREDGING BOUNDARY IS THE SHEET PILE WALL ON BOTH SIDES OF THE CANAL.
4. THE RIVER STATIONING SHOWN ON THE PLANS IS APPROXIMATE.

U.S. Army Corps of Engineers
Chicago District

INDIANA HARBOR & CANAL
EAST CHICAGO, INDIANA
TSCA SEDIMENT VOLUMES

SOUTHERN DREDGING AREAS
PLAN VIEW

| SCALE: | DATE: | DRAWING CODE: |
|---|---|---|
| 1" = 200' | AUGUST 2007 | C-1.DGN |

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U.S. Army Corps of Engineers
Chicago District

INDIANA HARBOR & CANAL
EAST CHICAGO, INDIANA
TSCA SEDIMENT VOLUMES

NORTHERN DREDGING AREAS
PLAN VIEW

| SCALE: | DATE: | DRAWING CODE: |
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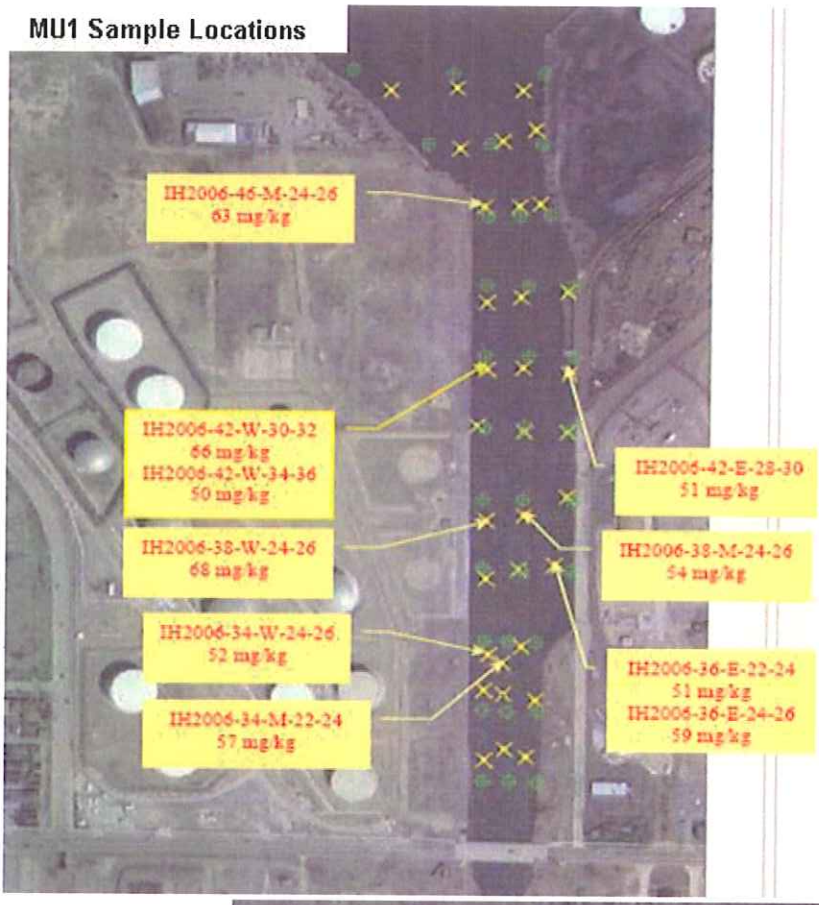
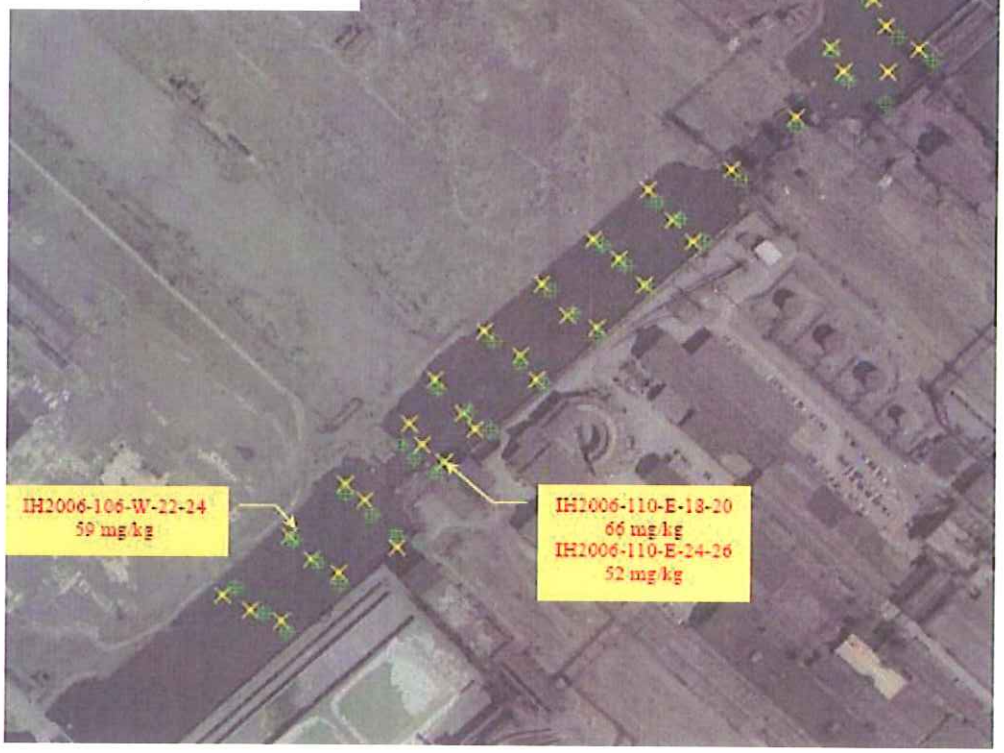
| 1" = 100' | AUGUST 2007 | C-2.DGN |

**MU1 Sample Locations**




**MU2 Sample Locations**



**Enclosure 9**

Cost estimate not included for public dissemination.

CELRC-TS-DH

JAN 3 0 2010

MEMORANDUM FOR RECORD, THRU

TS-DG
TS-C-T

SUBJECT: Indiana Harbor Canal CDF, TSCA Hot Spot Cap Design

1. Purpose. The purpose of this memorandum is to present the design for an in-situ cap that will be installed at TSCA hotspots in the Indiana Harbor Canal (IHC). The objective of the cap design is the physical isolation of any TSCA sediment that remains below the authorized federal navigational depth after dredging. The cap is designed to satisfy geotechnical and hydraulic requirements. Operation and maintenance is also considered.

2. Recommendation. This memorandum recommends the design for the cap of TSCA hotspots in the IHC. The area to be capped (the TSCA hotspots) would be dredged to the additional depth of 1.5' below the overdredge depth for those areas specified. A geotextile blanket would be placed (anchored as needed) in the canal, then a 1.5-ft thick layer of armor stone would be placed on the geotextile. The armor stone will have a $D_{50}$ of 8 inches to resist erosion from propeller wash. Enclosure 1 is the typical cap cross section.

3. Project Description. The sediment in the project area is heavily contaminated with metals, organic compounds, and nutrients; sediment quality with regard to PCB concentrations in the hot spots is discussed in a separate document: "Report of TSCA Sediment Volumes, Indiana Harbor and Canal, East Chicago, Indiana," USACE Chicago District, October 2007. A volume of approximately 60,000 cubic yards of TSCA regulated material (including adjacent non-TSCA regulated material within the dredge prism) is located at two areas of the Federally maintained navigation channel. These areas are shown in Enclosure 2. The current plan is to dredge this material and place the sediment in the Indiana Harbor and Canal Confined Disposal Facility (IHC CDF). Removing material to this depth will expose sediment with PCB concentrations up to 68 mg/kg. In order to maintain navigation while protecting the environment, the TSCA hot spots will be dredged to a depth sufficient to allow the placement of an engineered cap below the Federally authorized channel depth. The cap will isolate the elevated PCB sediments from the water column, and the federal navigation channel can be maintained to the authorized depth above the cap. An additional benefit of a sediment cap or cover is that the concentration of contaminants that wildlife is exposed to would be sharply reduced, in a manner that dredging alone would not likely accomplish (NRC, 2007).

4. Environmental Considerations. The cap design incorporates a geotextile and stone cover layer to ensure that the bed and cap are stable.

a. *Geotextile Blanket.* A geotextile blanket should be placed on top of the sediment surface for stability. Geotextile or sand is commonly placed below stone layers to ensure stability of the underlying bed. The use of a geotextile in place of the 6 inches of sand has the advantages of

constructability; bucket placing of sand is likely to be more uneven than using a geotexitle, spray placing the sand is field dependent and more cumbersome than tacking a geotextile to the sediment surface, the sand layer may erode due to propeller turbulence, and also a geotextile will require less dredge volume potentially, reducing the amount of TSCA material to dredge.

b. *Armor Stone.* Armor stones are used for anchoring, to prevent erosion of the canal sediment bed from propeller wash, as well as for protection from natural processes, such as high flow velocities due to stormwater runoff or ice scouring.

c. *Potential for Biodegradation.* The sediment of the Indiana Harbor Canal is heavily contaminated and anaerobic. Due to the toxic and persistent nature of large organic compounds, there is limited biological (degradation) activity occurring in the sediment. Significant biodegradation of the large organic compounds in the sediment has been shown to be negligible or non-existent. In addition, removal of several feet of sediment (during navigational maintenance activities) would remove the material that would be supporting any existing bioactivity. Thus, capping the sediment will not likely interrupt any naturally occurring degradation processes, nor would the cap be likely to increase the mobilization of contaminants (such as compounds that may be more soluble under anaerobic conditions verses aerobic conditions. The sediment is already anaerobic.) It is not expected that anaerobic microbial activity beneath the cap will cause excessive methane or hydrogen sulfide generation, nor are bubbles of anaerobically generated gases expected to disturb the stone cap.

5. Hydraulic Considerations. The hydraulic design of the TSCA cap sized the armor stone to resist erosion caused by propeller wash. The stone size selected is expected to resist erosive forces induced by boat propellers of tugboats most likely to be operating in the IHC.

a. *Erosion Potential of Flow Velocity.* Flow reversals happen often in the IHC because of the level of Lake Michigan. The flow velocity fluctuates in both magnitude and direction. Previous analysis as part of the Grand Calumet River Feasibility Study showed that average velocities in the IHC are fairly low (less than +/- 3 ft/s) and the canal acts as a sediment trap, even for fine sands and silts. There is a low potential for erosion due to flow velocities; this factor was not used to size the armor stone.

b. *Stone Size based on Propeller Wash.* Information provided by TS-C-T indicated that the primary boat traffic in the TSCA hotspot areas consists of tugboats and barges. Using the characteristics of various tugboats active in the IHC, the required $D_{50}$ of armor stone that would resist propeller wash erosion was computed. Computations are attached in Enclosure 4. The selected $D_{50}$ is 8 inches, large cobbles. The armor stone layer thickness should be at least $2D_{50}$, or 16 inches. A review of the stone size by the USACE Engineering and Research Development Center (ERDC) indicates that this size stone is quite conservative.

c. *Discussion.* The propeller wash results include one high outlier, the John M. Selvick of Cal River Fleeting. The computed $D_{50}$ for that boat was 13.5 in, while the remaining 8 boats required a $D_{50}$ of 8 in or less. The outlier was not included in the stone size selection for a few

reasons. First, while the boat does operate in the IHC, and it is not representative of the majority of boats currently working there. Additionally, conservative assumptions were made during the computations meaning shear stress was generally overestimated.

6. Geotechnical Considerations. The geotechnical design of the TSCA cap considered the strength of the sediments underlying the cap.

a. *Data.* To analyze the stability of a TSCA cap for the dredging of Indiana Harbor Canal, knowledge of local sediments is utilized. Bubbly Creek, which is the South Fork South Branch of the Chicago River between the Racine Avenue Pump Station and the South Branch of the Chicago River was the subject of an intensive Cone Penetrometer (CPT) investigation consisting of 164 CPTs through soft sediment over a 7800 ft long reach to tag the underlying till. The investigation included three confirmatory Standard Penetration Test (SPT) borings to provide physical samples coincident with CPT soundings. The SPT borings included five sets of index property tests (grain size, organic content, and specific gravity). Additionally CPT soundings were performed at locations of previous channel soil borings and locations of previous torvane testing. The major findings of the Bubbly Creek Investigation were sediment thickness, compression modulus, shear strength, and soil description. The index properties gathered at Bubbly Creek are as shown below and are comparable to those found in IHC investigations, also shown below.

**Comparison of Engineering Properties of Sediment**

| **Parameter** | **Canal Branch and Lake George - Composite** | **Bubbly Creek** |
|---|---|---|
| Grain size: | | |
| Gravel % | 0 | 1.7 |
| Sand % | 35 | 39.9 |
| silt + clay % | 65 | 56.4 |
| Moisture content | 51 | 60 |
| Soil classification | highly plastic clay (CH) | Variable (peat, CL, CH) |
| Specific Gravity | 2.71 | 1.6 |
| Unit Weight, pcf (dry) | 71 | 51 |
| Unit Weight, pcf (sat) | 107 | 82 |
| Organic content (Total organic carbon) % | 14 | 27 |
| Liquid Limit | 60 | IS |
| Plasticity Index | 33 | IS |
| Undrained shear strength, su, tsf | Not Available | 0.15 – 0.35 |
| Drained shear strength phi' | Not Available | Not Measured |

| **Parameter** | **Canal Branch and Lake George - Composite** | **Bubbly Creek** |
|---|---|---|
| Modulus of Compressibility, tsf | Not Available | 5 – 40 |
| Compression Index, Cc | Not Available | IS |
| Permeability, cm/s | $8.66 \times 10^{-8}$ | Not Measured |
| Thickness, ft | | |
| max | Unknown | 19.6 |
| min | Unknown | 1.8 |
| avg | Unknown | 11.4 |

IS = insufficient sample

Both the IHC and Bubbly Creek investigations show similar water content, however the Bubbly Creek investigation shows lower specific gravity. This indicates that the Bubbly Creek material is likely more peat-like and the IHC material is more soil-like. The more soil-like material at IHC is likely to be less compressible with higher shear strength than the peat-like material at Bubbly Creek. Therefore using the Bubbly Creek parameters is considered conservative.

b. *Impact on Cap Design.* To analyze the stability of a cap, various stone thicknesses were considered. The analyses of bearing capacity were for layers of 6 – 8" diameter stone. The required shear strength can be assumed to be same as the effective unit weight of the stones (See Geotechnical Attachments). The required shear strength is as follows:

**Minimum Required Shear Strength**

| Stone Thickness, ft | Required Shear Strength (su), tsf |
|---|---|
| 1.5 | 0.02 |
| 2 | 0.04 |
| 3 | 0.06 |

Comparing the required shear strength with the shear strength profiles from Bubbly Creek shows that in nearly every instance that the sediment will remain stable in terms of bearing capacity. For this analysis stability is considered only as a function of the shear strength of the sediment.

From the point of view of constructability it is likely that stone will be placed in piles larger than the design thickness of 1.5 ft and spread. Based on this assumption the maximum thickness of a stone pile assuming is approximately 7.5 ft (Enclosure 5). However, to prevent settlement and to ensure that the cap is even and stable, stone will not be allowed to be piled, but instead

will be placed by bucket or similar controlled method. Specific controls and constraints on the stone placement will be determined during future design activities.

7. Operations and Maintenance Considerations. The operations component of the TSCA cap design was the boat traffic information. Maintenance considerations include development of a monitoring and maintenance plan for the TSCA cap areas.

a. *Boat Traffic*. The vessels operating in and around the Indiana Harbor and Canal were used as the basis for sizing the armor stone. Boat size is not expected to change in the IHC, since navigational depths are not being increased beyond historically maintained depths.

b. *Maintenance/Monitoring*. After construction the cap could be monitored on a regular basis and after storm events of a specified magnitude; monitoring would consist of surveying elevations to ensure that the capped areas are not eroding. If the cap thickness is decreased by more than 6 in (for example), more armor stone could be added. A navigation notice could be disseminated if needed to bar anchoring in the TSCA cap areas.

8. References. Enclosure 5 is a bibliography of references used to prepare this design.

9. P.O.C. for this decision is Brigid Briskin, ext 5514.

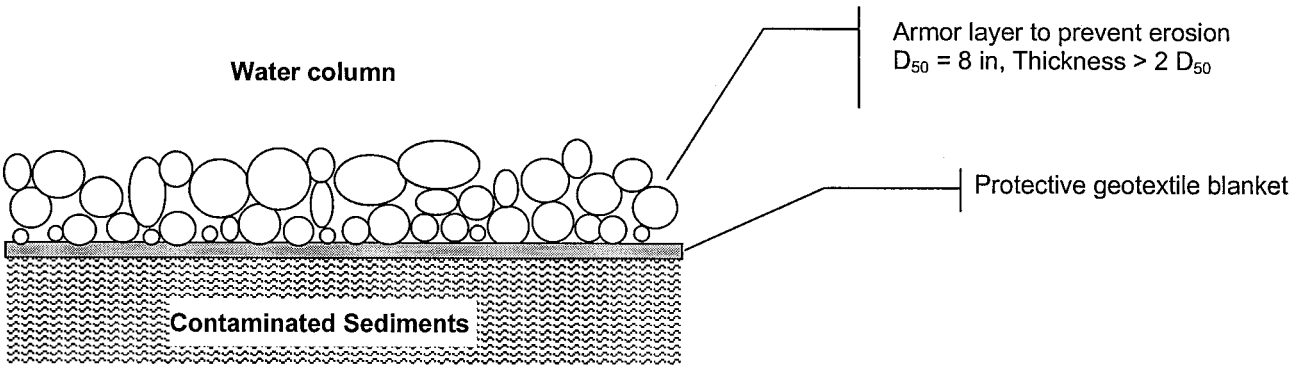
JAY A. SEMMLER, P.E.
Chief, Hydraulic and Environmental Engineering

Encls
1. Typical Cap Cross Section
2. TSCA Cap Locations
3. Hydraulic Attachments
4. Geotechnical Attachments
5. References

CF:
CELRC-PM-PL-E
CELRC-PM-PM
CELRC-TS-C
CELRC-TS-D

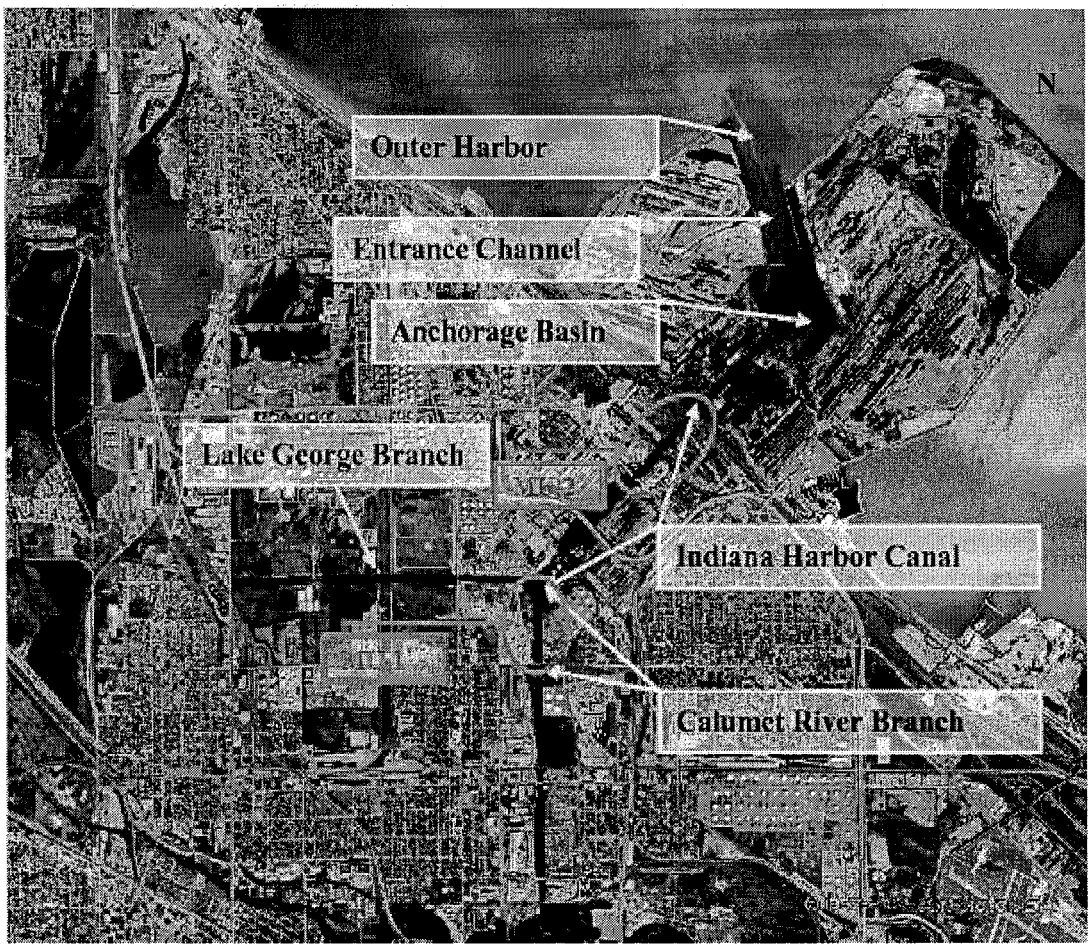
**ENCLOSURE 1**

ENCLOSURE 1: TYPICAL CAP CROSS SECTION

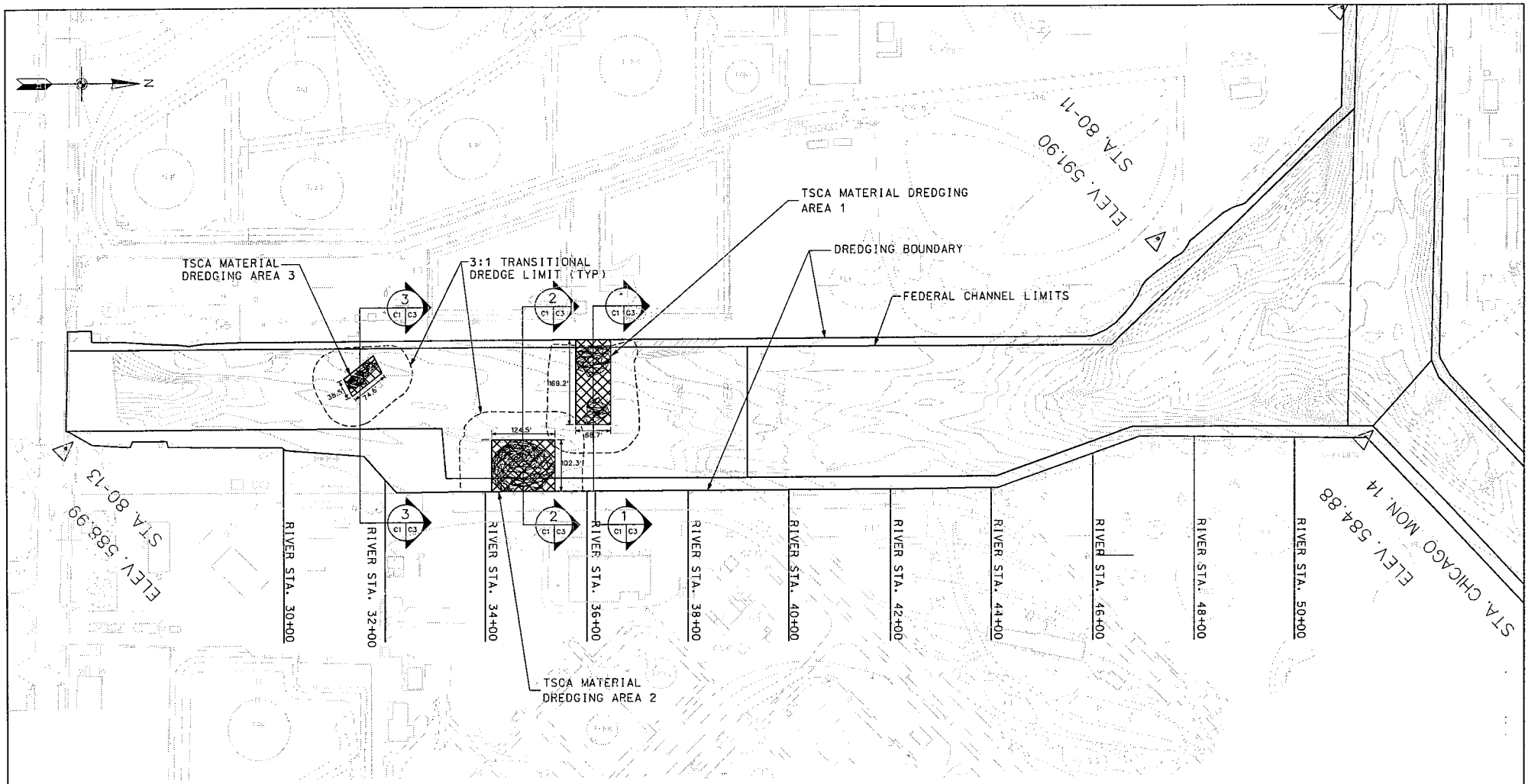


**ENCLOSURE 2**

Map of TSCA Hotspots




Management Unit Locations

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U.S. Army Corps of Engineers
Chicago District

INDIANA HARBOR & CANAL
EAST CHICAGO, INDIANA
TSCA SEDIMENT VOLUMES

SOUTHERN DREDGING AREAS
PLAN VIEW

| SCALE: | DATE: | DRAWING CODE: |
|---|---|---|
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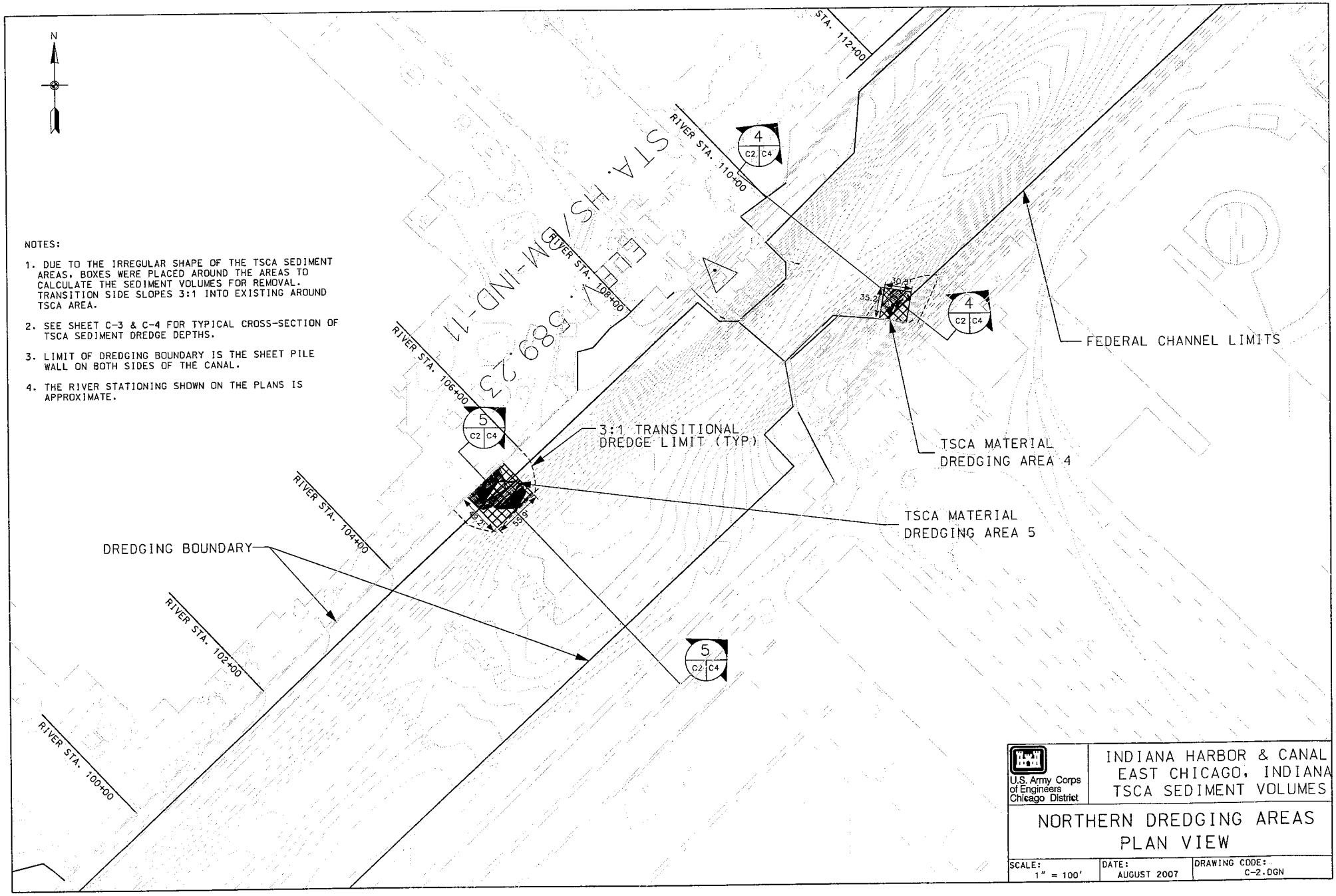


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**ENCLOSURE 3**

| US Army Corps of Engineers. Chicago District | PROJECT TITLE: IHC CDF | COMPUTED BY: BJB | DATE: 1/13/09 | SHEET: 1 of 3 |
|---|---|---|---|---|
| | COMPUTATION TITLE: TSCA Cap - Propeller Wash | CHECKED BY: | DATE: | |

Given: Boat propellers can produce high bottom velocities in streams, which could erode the channel bed.

Find: What size of armor stone would protect the TSCA cap from propeller-induced erosion?

Solution:

Use equations from Appendix A of the following report:

Palermo, M; Maynord, S; Miller, J; and Reible, D. 1998. "Guidance for In-Situ Subaqueous Capping of Contaminated Sediments," EPA 905-B96-004, Great Lakes National Program office, Chicago, IL.

Jet Velocity Exiting Propeller

$$U_o = C_2 \left(\frac{P_d}{D_p^2}\right)^{1/3}$$

where $U_o$ = jet velocity, ft/s
$C_2$ = constant $\begin{cases} 9.72, \text{ non-ducted prop} \\ 7.68, \text{ ducted prop} \end{cases}$
$P_d$ = applied engine power per prop, Hp
$D_p$ = propeller diameter, ft

Max Bottom Velocity in Propeller Wash of Maneuvering Vessel

$$V_b(max) = C_1 U_o \frac{D_p}{H_p}$$

where $V_b(max)$ = max bottom velocity, ft/s
$C_1$ = constant $\begin{cases} 0.22, \text{ non-ducted} \\ 0.30, \text{ ducted} \end{cases}$
$H_p$ = distance from prop. shaft to channel bottom, ft

Note: Equation derived from data in which $D_p/H_p < 1.2$

Stone Size

$$V_b(max) = C_3\sqrt{g \Delta D_{50}}$$

where $C_3$ = constant $\begin{cases} 0.55, \text{ no movement} \\ 0.6\text{-}0.7, \text{ small transp.} \end{cases}$
$g$ = gravity acceleration, ft/s$^2$
$\Delta$ = relative density = $(\rho_s - \rho_w)/\rho_w$
$D_{50}$ = median stone diameter

$$D_{50} = \left(\frac{V_b(max)}{C_3}\right)^2 \frac{1}{g\Delta}$$

| US Army Corps of Engineers. Chicago District | PROJECT TITLE: IHC CDF | COMPUTED BY: BJB | DATE: 1/13/09 | SHEET: 2 of 3 |
|---|---|---|---|---|
| | COMPUTATION TITLE: TSCA Cap - Propeller Wash | CHECKED BY: | DATE: | |

## Design Boat and Other Assumptions

- Typical boats in IHC are tugboats and barges. A list of tugboats operating in the canal (attached) was provided by TS-C-T.

- Assumed propeller depth = ship's draft
- Assumed water surface = 0 ft LWD

} conservative

- Ducted propellers at 100% power

## Computations

Excel was used to compute $D_{50}$ for the various boats and a water depth of 24 ft (Project depth 22 ft + 2 ft overdredge). Sample calcs for the tug Alice E (AMC) follow, and spreadsheet results are attached.

1. Jet velocity: $U_o = 7.68\left[\frac{1700}{(5)^2}\right]^{1/3} = 31.3$ ft/s

2. Max. bottom velocity: $V_b(max) = (0.30)(31.3)\left(\frac{5}{24-10}\right) = 3.36$ ft/s

3. Stone size: $D_{50} = \left(\frac{3.36}{0.6}\right)^2\left(\frac{1}{32.2}\right)\left(\frac{1}{1.65}\right) = \boxed{0.59 \text{ ft} = 7.08 \text{ in} = \text{large cobbles}}$

*Characteristics of Tugboats Operating in the Indiana Harbor Canal*

| Fleet Name | Vessel Name | Capacity | Length | Breadth | Draft | H.P | Wheel dia. | No. Props |
|---|---|---|---|---|---|---|---|---|
| AMC | Defiance | 26T | 44' | 18' | 6 | 775 | 4 | 1 |
| AMC | Alice E | 146T | 81' | 24' | 10 | 1700 | 5 | 1 |
| Hannah | Tanker Barges | 2369-1560 | 290'-240' | 60'-50' | 18'-12' | | | |
| Hannah | Daryl C. | 268T | 102' | 28' | 8 | 3500 | 6 | 2 |
| Hannah | Hannah D | 134T | 86' | 24' | 10 | 1700 | 5 | 1 |
| Hannah | Margaret M | 167T | 89' | 24' | 10 | 1700 | 5 | 1 |
| Cal River Fleeting | John M. Perry | 76T | 66' | 19' | 9 | 1000 | 4 | 1 |
| Cal River Fleeting | John M. Selvick | 256T | 118' | 24' | 13 | 3600 | 6 | 2 |
| Cal River Fleeting. | Jimmy Wray | 95T | 72' | 22' | 12 | 1200 | 5 | 1 |
| Cal River Fleeting | Kimberly Selvick | 93T | 52' | 28' | 10 | 825 | 4 | 1 |

*Armor Stone Sizing for Propeller Wash*

| Fleet Name | Vessel Name | $U_0$ | $D_p/H_p$ | $V_b$ (max) | Median Stone Diameter, $D_{50}$ | | | Size Class |
|---|---|---|---|---|---|---|---|---|
| | | (ft/s) | | (ft/s) | (ft) | (in) | (mm) | |
| AMC | Defiance | 28.0 | 0.2 | 1.9 | 0.18 | 2.19 | 56 | VCG |
| AMC | Alice E | 31.3 | 0.4 | 3.4 | 0.59 | 7.08 | 180 | LC |
| Hannah | Tanker Barges | -- | -- | -- | -- | | -- | -- |
| Hannah | Daryl C. | 28.0 | 0.4 | 3.2 | 0.52 | 6.24 | 158 | LC |
| Hannah | Hannah D | 31.3 | 0.4 | 3.4 | 0.59 | 7.08 | 180 | LC |
| Hannah | Margaret M | 31.3 | 0.4 | 3.4 | 0.59 | 7.08 | 180 | LC |
| Cal River Fleeting | John M. Perry | 30.5 | 0.3 | 2.4 | 0.31 | 3.73 | 95 | SC |
| Cal River Fleeting | John M. Selvick | 28.3 | 0.5 | 4.6 | 1.12 | 13.45 | 342 | SB |
| Cal River Fleeting | Jimmy Wray | 27.9 | 0.4 | 3.5 | 0.64 | 7.64 | 194 | LC |
| Cal River Fleeting | Kimberly Selvick | 28.6 | 0.3 | 2.5 | 0.31 | 3.77 | 96 | SC |

*Constants*

| | |
|---|---|
| C1 = | 0.3 |
| C2 = | 7.68 |
| C3 = | 0.6 |
| Δ = | 1.65 |
| g = | 32.2 |
| water depth = | 24 |

*AGU Grain Size Classification Scale*

| Size Class | Min (mm) | Max (mm) | Abbrev. |
|---|---|---|---|
| Clay | 0.002 | 0.004 | CLAY |
| Very Fine Silt | 0.004 | 0.008 | VFM |
| Fine Silt | 0.008 | 0.016 | FM |
| Medium Silt | 0.016 | 0.032 | MM |
| Coarse Silt | 0.032 | 0.0625 | CM |
| Very Fine Sand | 0.0625 | 0.125 | VFS |
| Fine Sand | 0.125 | 0.25 | FS |
| Medium Sand | 0.25 | 0.5 | MS |
| Coarse Sand | 0.5 | 1 | CS |
| Very Coarse Sand | 1 | 2 | VCS |
| Very Fine Gravel | 2 | 4 | VFG |
| Fine Gravel | 4 | 8 | FG |
| Medium Gravel | 8 | 16 | MG |
| Coarse Gravel | 16 | 32 | CG |
| Very Coarse Grave | 32 | 64 | VCG |
| Small Cobbles | 64 | 128 | SC |
| Large Cobbles | 128 | 256 | LC |
| Small Boulders | 256 | 512 | SB |
| Medium Boulders | 512 | 1024 | MB |
| Large Boulders | 1024 | 2048 | LB |

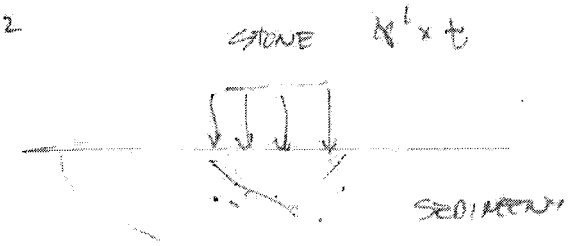
**ENCLOSURE 4**

| US Army Corps of Engineers. Chicago District | PROJECT TITLE: LHC Dredging | COMPUTED BY: JWS | DATE: 9 Dec 09 | SHEET: 1 of 3 |
|---|---|---|---|---|
| | COMPUTATION TITLE: Sediment Cap Thickness cl | CHECKED BY: LKC | DATE: 12 Jan 09 | |

Assume that a 1ft x 1ft layer of stone is placed below water. Assume thickness of 1, 2, and 3 ft. What is the minimum shear strength required?

Steps
1. sketch problem
2. determine relations
3. determine input parameters
4. solve
5. discuss

Step 1 & 2




Step 3 $\gamma' = 140 - 62.4 = 77.6 \frac{lb}{ft^3}$

| US Army Corps of Engineers, Chicago District | PROJECT TITLE: 114C Dredging | COMPUTED BY: JWS | DATE: 9 Jan 09 | SHEET: 2 of 3 |
|---|---|---|---|---|
| | COMPUTATION TITLE: Sediment Cap Thickness 3 | CHECKED BY: LKC | DATE: 12 Jan 09 | |

B = L square ftg

ignore penetration

$$q_{ult} = 5c\left(1 + 0.3\frac{B}{L}\right) + \cancel{\gamma D_f}$$

$$= 5\frac{q_u}{2}(1 + 0.3)$$

$$= 3.25\, q_u$$

$$q_{all} = \frac{q_{ult}}{\cancel{FS}\ 3} = \frac{q_{ult}}{3}$$

$$q_{all} = \frac{3.25\, q_u}{3} \approx q_u$$

$$P - q_{all} \le 0$$

$$P \le q_{all} \le q_{u,min}$$

| US Army Corps of Engineers. Chicago District | PROJECT TITLE: IHC Dredging | COMPUTED BY: JWS | DATE: 9Jan09 | SHEET: 3 of 3 |
|---|---|---|---|---|
| | COMPUTATION TITLE: Sediment Cap Thickness | CHECKED BY: LKC | DATE: 12Jan09 | |

Step 4

| thickness, ft | lb/ft² | ← gain → $t_f$ | $t_{sf}$ |
|---|---|---|---|
| 1 | 77.6 | 0.04 | 0.02 |
| 2 | 155.2 | 0.08 | 0.04 |
| 3 | 232.8 | 0.12 | 0.06 |

Step 5 generally sediment can be expected to have shear strights on order of above those calculated. ∴ cap thickness of 1, 2, and 3 ft should be supported by sediment.

the bearing capacity usually has to be calculated for two different conditions: (1) total stress analysis (short-term condition) which uses the undrained shear strength of the plastic soil and (2) effective stress analysis (long-term condition) which uses the drained shear strength parameters ($c'$ and $\phi'$) of the plastic soil.

***Total Stress Analysis.*** This type of analysis uses the undrained shear strength of the plastic soil (Sec. 6.5.2). The undrained shear strength $s_u$ could be determined from field tests, such as the vane shear test (VST), or in the laboratory from unconfined compression tests. If the undrained shear strength is approximately constant with depth, then $s_u = c$ and $\phi = 0$ for Eqs. (8.1) and (8.3).

If unconsolidated undrained triaxial compression tests (ASTM D 2850-95, 1998) are performed, then an envelope similar to Fig. 6.16 should be obtained for the saturated plastic soil and the $\phi = 0$ concept should be utilized (Sec. 6.5.2). For example, as shown in Fig. 6.16, the undrained shear strength parameters are $c = 2.1$ psi (14.5 kPa) and $\phi = 0$.

Note in Table 8.2 that for $\phi = 0$, the bearing capacity factors are $N_c = 5$, $N_\gamma = 0$, and $N_q = 1$. For both of these cases—undrained shear strength $s_u$ and shear strength from unconsolidated undrained triaxial compression tests on saturated cohesive soil ($\phi = 0$ concept)—the bearing capacity Eqs. (8.1) and (8.3) reduce to the following:

For strip footings:

$$q_{ult} = 5c + \gamma_t D_f = 5S_u + \gamma_t D_f \tag{8.5a}$$

For spread footings:

$$q_{ult} = 5c\,[1 + 0.3\,(B/L)] + \gamma_t D_f = 5s_u\,[1 + 0.3\,(B/L)] + \gamma_t D_f \tag{8.5b}$$

Because of the use of total stress parameters, the groundwater table does not affect Eq. (8.5). An example of the use of the bearing capacity equation for cohesive soil is presented below:

*Example.* Assume the same conditions as the prior example, except that the strip footing will be constructed in a clay deposit having the shear strength parameters shown in Fig. 6.16.

*Solution.* For the strip footing, use Eq. (8.5*a*) where $c = 2.1$ psi (300 psf, 14.5 kPa). Using $\gamma_t = 19$ kN/m$^3$ (120 pcf) and $D_f = 0.9$ m (3 ft) from the prior example and substituting these values into Eq. (8.5*a*), the ultimate bearing capacity $q_{ult} = 90$ kPa (1800 psf). Using a factor of safety of 3, the allowable bearing pressure $q_{all} = 30$ kPa (600 psf).

As is the case for the above two examples, the ultimate bearing capacity of plastic soil is often much less than the ultimate bearing capacity of cohesionless soil. This is the reason that local building codes (such as Table 8.1) allow higher allowable bearing pressures for cohesionless soil (such as sand) than plastic soil (such as clay). Also, because the ultimate bearing capacity does not increase with footing width for saturated plastic soils, there is often no increase allowed for an increase in footing width (see footnote marked § in Table 8.1).

In some cases, it may be appropriate to use total stress parameters $c$ and $\phi$ in order to calculate the ultimate bearing capacity. For example, suppose a structure (such as an oil tank or grain elevator) is constructed and then sufficient time elapses that the saturated plastic soil consolidates under this load. If the oil tank or grain elevator is then quickly filled, the saturated plastic soil would be subjected to an undrained loading. This condition can be modeled by performing consolidated undrained triaxial compression tests (ASTM D 4767-95, 1998) in order to determine the total stress parameters $c$ and $\phi$. On the basis of the $\phi$ value, the bearing capacity factors would be obtained from Table 8.2 and then the ultimate bearing capacity would be calculated from Eqs. (8.1) or (8.3).

| US Army Corps of Engineers. Chicago District | PROJECT TITLE: IHC Dredging | COMPUTED BY: JWS | DATE: 21Jan09 | SHEET: 1 of 1 |
|---|---|---|---|---|
| | COMPUTATION TITLE: Sediment Cap Placement | CHECKED BY: | DATE: | |

What is max thickness of stone that can be placed assuming $S_u = 0.15$ tsf

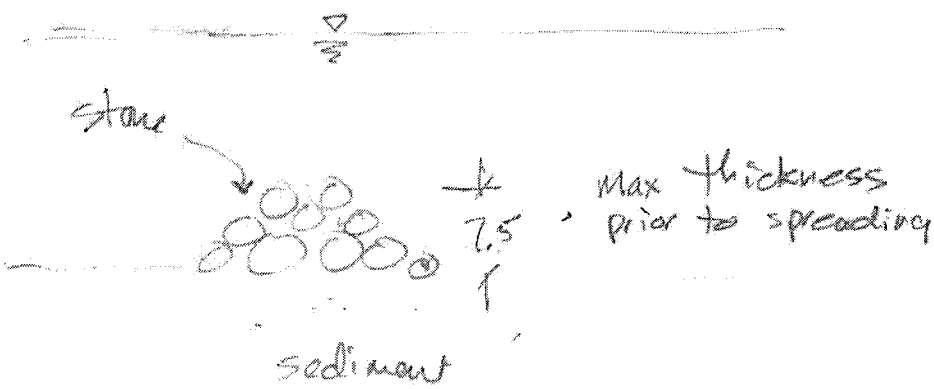
$q_u = 2 \times S_u = 2 \times 0.15 = 0.30$ tsf

$q_u = P_{max}$

$P_{max} = \gamma h = (140 \text{ pcf} - 62.4 \text{ pcf})\, h$

$0.30 \frac{\text{ton}}{\text{ft}^2} \times \frac{2000 \text{ lb}}{1 \text{ ton}} = 77.6 \frac{\text{lb}}{\text{ft}^3}\, h$

$h = 7.7 \text{ ft}$ max ~7.5"



**ENCLOSURE 5**

ENCLOSURE 5: REFERENCES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