REMEDIATION WORK PLAN AND COMPLETION REPORT

for

DICK KRIEG MOTORS
1648 WEST US 421
DELPHI, INDIANA

CARROLL COUNTY
VPR SITE #6160805

ALLIANCE PROJECT NUMBER 17-0083-E

ALLIANCE
Environmental Group, Inc.

ALLIANCE
Environmental Group, Inc.
THE ENVIRONMENTAL SOLUTION

July 1, 2024

Mr. Glenn Bowman
Stoll Keenon Ogden PLLC
334 North Senate Avenue
Indianapols, Indiana 46204

RE: REMEDIATION WORK PLAN AND COMPLETION REOIRT
DICK KRIEG MOTORS
1648 US 421, DELPHI, INDIANA
VRP SITE #6160805
ALLIANCE ENVIRONMENTAL PROJECT NUMBER 71-0083-E

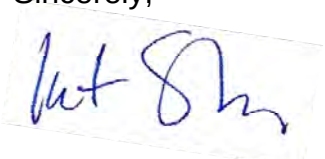
Dear Mr. Bowman:

Alliance Environmental Group, Inc. is pleased to present you with this Remediation Work Plan and Remediation Completion Report for Dick Krieg Motors located at 1648 US 421 in Delphi, Carroll County, Indiana. This report is guided by the IDEM requirements for the Remediation Work Plan Completeness Checklist (State Form 53413, R/2-13) and the Remediation Completion Report Completeness Checklist (State Form 54168, 1-10).

The objective of these reports is to obtain a Certification of Completion for Dick Krieg Motors, VRP Site #6160805.

We trust this report meets your needs. If you have any questions, please call us at (317) 865-3400.

Sincerely,



Kent Shadley, CHMM
Vice President, Field Services

6330 EAST 75TH STREET, SUITE 152, INDIANAPOLIS, INDIANA 46250
TEL (317) 865-3400 • FAX (317) 865-3401
https://aegindy.com

REMEDIATION WORK PLAN AND COMPLETION REPORT

For the facilities of:

DICK KRIEG MOTORS
1648 West US 421
Delphi, Indiana

VRP SITE #6160805

Alliance Environmental Group, Inc. Project Number 17-0083-E

Prepared for:

DICK KRIEG MOTORS
c/o Stoll Keenon Odgen PLLC
334 North Senate Avenue
Indianapolis, Indiana 46204
Attn: Mr. Glenn Bowman

Prepared by:

Alliance Environmental Group, Inc.
6330 East 75th Street, Suite 152, Indianapolis, Indiana 46250
(317) 865-3400

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Appendices

INTRODUCTION

A. Sources of Information

1. Site Name, Address and Telephone

Dick Krieg Motors
1648 West US 421
Delph, Indiana 46923
(765) 564-2113

2. Current Owner and Contact Information

DW Mann Realty LLC
Mr. Dave Mann
1648 West US 421
Delph, Indiana 46923
(765) 564-2113

3. Historical Summary of Site Ownership

The site consists of 16 parcels. All parcels are owned by DW Mann Realty LLC, which acquired all parcels from Krieg Family Farms LLC or Richard and Patricia Krieg on September 3, 2015. Parcels owned by Krieg Family Farms were transferred from Richard and Patricial Krieg on March 28, 2013. Richard and Patricia Krieg obtained the parcels from either T &M Investments (December 19, 1985), Bronsman's Family Center (November 11, 1987), Virgil and June Wasson (April 12, 1995) or Todd-Crawford Motors (July 23, 2015). T & M Investments obtained its parcels from Donal McLemore (December 19, 1985). McLemore obtained the parcels from Jack Brown on January 1, 1977. Site ownership prior to the last owner listed could not be determined from available records.

4. Type of Facility, Past and Present Operations

The site currently operates as Mann Chevrolet-GMC, an automobile sales and service facility. The site previously operated as Dick Krieg Motors, an automobile dealership, since 1974. Prior to Krieg Motors, the site operated as Todd-Crawford Motors. Operations as an automobile dealership may have begun as early as 1961. Use prior to 1961 appears to have been agricultural.

5. Site Contact Responsible for VRP Process

The site contact responsible for the VRP Process is Mr. Richard Krieg.

6. Overview of Initial Discovery of Contamination, Spill History and Previous Investigations Conducted at the Site

Phase I Environmental Site Assessment - A Phase I ESA was completed by Alliance Environmental Group (Project Number 15-0107-E, July 31, 2015). The findings of the Phase I ESA discovered that a 500-gallon used oil tank was removed by the owner in 1995. The removal procedures were not known. A number of empty drums and out-of-service vehicles were located on the southern

portion of the property. In-ground hydraulic lifts were removed from both service buildings on the property. No sampling was performed during the closure of these lifts. Based on the findings a Phase II Investigation was recommended.

Phase II Subsurface Investigation - A Phase II Subsurface Investigation was completed by Alliance Environmental Group (Project Number 15-0119-E, August 26, 2015). Subsurface soil and groundwater samples were collected from four (4) locations, including the hydraulic lifts, the former waste oil tank pit, and the empty drum storage area. The Phase II Investigation identified petroleum and chlorinated solvent impacts near the former drum storage area and the former waste oil tank location. Based on the results the site was enrolled into the Voluntary Remediation Program.

Voluntary Remediation Investigation - A Voluntary Remediation Investigation (VRI) Report was completed Alliance Environmental Group (Project Number 17-0011-U, April 24, 2019). This investigation did not identify any preferential pathways for contamination transport.

Voluntary Remediation Program Investigation – Due to the inconsistent availability of groundwater in the unconsolidated monitoring well network, IDEM requested that three additional monitoring wells be installed to account for the lack of groundwater availability at the site. A Bedrock Monitoring Well Work Plan was approved by IDEM in September, 2019. Three additional monitoring wells (MW-10, MW-11 and MW-12) were installed and completed in bedrock. Laboratory analysis found naphthalene present in MW-12 above residential tap screening levels. No other VOCs, PAHs or lead were reported above residential tap screening levels in the groundwater samples collected for analysis, and no VOCs, PAHs or lead present above screening levels in the soil samples collected and submitted for analysis.

Additional Bedrock Monitoring Well Installation – In order to determine that no contaminants had crossed onto the adjoining property to the south, and to determine that the groundwater delineation was complete, IDEM requested an additional bedrock monitoring well (MW-13) be installed on the adjoining property, approximately 25 feet south of MW-12. The well was installed on March 29, 2023. Soil samples collected from this well were analyzed for VOCs and PAHs. No VOC or PAH analytes were reported present above the laboratory reporting limits (reported ot IDEM June 8, 2023). A groundwater sample was collected from MW-13 as part of a first quarter 2023 monitoring event. The laboratory reported no VOC or PAH analytes present in MW-13.

B. Supporting Documents

1. Discussion of Relevant Previous Reports

In addition to the report referenced above, six quarterly monitoring events were conducted between December 15, 2020 and June 28, 2023. During these monitoring events, 1,2,4-trimethylbenzene and naphthalene exceeded the residential tap water screening level in all events in the samples obtained from MW-1 and MW-2. Additionally, benzene exceeded the residential tap screening level in MW-2 in the last quarterly event. Naphthalene was detected above residential tap screening levels in early monitoring events in MW-12 but was not detected in groundwater sample collected during the last two monitoring events. All other VOCs and PAHs reported present in groundwater during the quarterly monitoring events were below groundwater residential tap screening levels.

2. Data and Documentation Regarding the Site

A site location map and maps showing the location of all soil sampling points, monitoring wells and groundwater flow are included in the Figures attachment to this plan. Soil sampling results, groundwater sampling results, groundwater elevation data, contaminant chemical and toxicological data are provided in the Tables attachment to this plan. Groundwater contaminant concentration trends are provided in the Charts attachment to this report.

C. Remedial Action Objectives

The remedial objective is site closure via an environmental restrictive covenant, as the contaminants are present a low levels and confined to a small area.

No additional work items are planned for remediation.

INVESTIGATON ACTIVITIES

A. Summary of Information Used to Select Remedy

1. Baseline Assessment and Literature Search

a. Geologic and Hydrogeologic Summary

According to the *Soil Survey of Carroll County, Indiana* the site is underlain by Milton Variant channery silt loam, one to four percent slopes, flaggy (map symbol: MuB). Milton Variant soils are gently sloping, shallow, well drained soils on bedrock terraces.

The unconsolidated aquifer system is the Till Veneer Aquifer System, which consists of thin till overlying shallow bedrock. There is little potential for groundwater production in this system in Carroll County. Very few of the reported wells penetrating the aquifer system in Carroll County are completed in unconsolidated materials. The system is commonly bypassed in favor of the

underlying bedrock. The potentiometric surface of the unconsolidated aquifer in this area is unmapped due to no aquifer material.

The bedrock aquifer system underlaying the site is the Silurian and Devonian Carbonates Aquifer System. This aquifer system consists primarily of middle Devonian aged carbonates of the Muscatatuck Group and underlying Silurian carbonates. Because individual units of the Silurian and Devonian systems consist of similar carbonate rock types and cannot easily be distinguished on the basis of water well records, they are considered a single water bearing system. Wells utilizing the Silurian and Devonian Carbonated Aquifer System in Carroll County have reported depths of 100 to 200 feet. Typical yields for domestic wells completed in this system range from 15 to 70 gallons per minute. The potentiometric surface of the bedrock aquifer is approximately 520 feet above mean sea level, or about 30 feet below the surface.

Subsurface investigations found the depth to bedrock to be 2.5 to eight feet below the surface. Groundwater, where present, was encountered at approximately 2.5 to six feet below the surface. Several dry holes were encountered at the site.

b. Physical and Political Geographic Information

The site is located in Section 30, Township 25 North, Range 2 West. The facility UTM coordinates, as determined by topographic map interpolation, are: 16T 526403m E 4493056m N.

The site is located in Deer Creek Township, Carroll County, Indiana.

2. Extent of Subsurface Work, Including:

a. Copies of all Boring Logs and Monitoring Well Construction Logs

Copies of all boring logs and monitoring well construction logs are provided in Appendix A.

b. Boring and Well Location Maps

Boring and well location maps are provided in Appendix A.

c. Field Screening Results for Soils and Groundwater

Field screening results for soils are included on boring logs in Appendix D. Groundwater screening results and field data are provided in Appendix E.

d. Sample Location Map, Cross Sections, Groundwater Flow and Isoconcentration Maps

Sample location maps, cross sections, groundwater flow maps and Isoconcentration maps are provided in Appendix A.

B. Summary of Site Investigation

1. Identification of All Contaminants

Contaminants remaining at the site above published IDEM published levels include benzene, 1,2,4-trimethylbenzene and naphthalene in groundwater.

Chemical and physical properties are shown in Appendix F. Contaminant toxicological data is provided in Appendix F.

The potential effects of residual contamination are limited, as there is no access to groundwater within the affected area.

2. Summary of Site-Specific Geology and Hydrogeology

The soil encountered at the site consisted of brown clay with varying amounts of silt or fine sand, angular fine to coarse gravel was encountered with depth. Bedrock was encountered at approximately 2.5 feet bgs to 8.0 feet bgs in the borings placed on the site. The site is located on the Silurian – Devonian boundary. The bedrock consisted of a brown weathered and fractured dolomite which became blueish gray with depth. The dolomite is consistent with Silurian dolomite identified in the area based on the literature reviewed. The bedrock became less fractured and more competent with depth. The bedrock was fossiliferous and vuggy with dolomite crystal solutioning. The dolomite cores did not effervesce unless finely crushed.

3. Discussion of Sources of Contamination

The source of contamination is unknown but assumed to be from fuel or degreasing solvents discharged through the septic system.

4. Summary and Map of Extent of Contamination

a. Impacted Media, Such as Soil, Soil Vapor, Sediment, Groundwater, Surface Water and Air

There are no impacts to soil, surface water or air. Benzene and naphthalene are present in groundwater above the residential tap screening level but below the residential vapor

b. Concentrations of Contaminants with Tables

Tabulated contaminant concentrations are provided in Appendix B.

c. Concentration Trends

Concentration trends are shown in Appendix C. Concentrations of 1,2,4-trimetyhlbenzene and naphthalene show a downward trend in both MW-1 and MW-2.

C. Summary of Risks Associated with Site

1. Human, Ecological and Environmental Risks for Each Contaminant and Impacted Media, Including discussion of Long and Short-Term Risks, Environmentally Sensitive Areas, and Endangered Species

Dick Krieg motors is not located within a wellhead protection area. Dick Krieg Motors does not lie within a karst area or other geologically susceptible area. No environmentally sensitive areas are located on or adjoining the site. No suitable endangered species habitat is present on the site or adjacent to the site. The affected area is covered by an automobile dealership sales and service building, asphalt, concrete, crushed stone and a small section of turf grass at the southern end of the affected area. The building and pavement form a cap over most of the affected area which limits access to affected groundwater. Additionally, the sporadic presence of groundwater in this area and limited yield make use of groundwater in the unconsolidated deposits highly unusable. Human and ecological risks are minimal.

2. Impact of Current and Future Land-Use Issues, if Applicable, Including Need for Environmental Deed Restrictions and Restrictive Ordinances

The site is subject to an ERC which was recorded on Many 3, 2024. The site is zoned B-2 Local Business. No impact to current or future land use are anticipated for this site, and the site being subject to the ERC will not impact current land use. The listed environmental deed restrictions, including residential, daily childcare and educational facilities for children (K-12 school) are necessary and appropriate for this site, given the contaminants identified.

D. Background Concentration Assessment

No naturally occurring site contaminants were identified during the investigations conducted at Krieg Motors.

E. Additional Field Investigation Requirements

No additional investigation is required to achieve closure.

VAPOR INTRUSION

A. Discussion of Ground Water Results Compared with the Tables in the IDEM Remediation Closure Guide

All groundwater results were below the residential vapor exposure groundwater screening level and the commercial vapor exposure groundwater screening level. Additionally, the area of groundwater contamination is outside the building and approximately 50 feet downgradient from the building.

Vinyl chloride was detected in a groundwater sample acquired from inside the service bays, in the area of the former underground storage tank. A vapor intrusion sample was not collected in this area, as the service bay overhead doors are often open during occupied hours, and due to the nature of automobile repair, the chemical vapors from

products used during auto service and repair would be mostly indistinguishable from any potential vapors from the former underground storage tank area.

B. Description of Further Monitoring Required Until Detected Levels are Below the Screening Levels in the Remediation Closure Guide

As all analytes were below both residential and commercial vapor exposure groundwater screening levels, no further monitoring is required.

REMEDIATION PLAN

A. Evaluation of Remedial Alternatives

Several remedial alternatives were considered, including pump and treat, mobile vacuum extraction and electric resistance heating. The sporadic presence of groundwater in the unconsolidated material combined with the shallow depth to bedrock limits the amount of groundwater which can be recovered for treatment. Groundwater contaminant concentrations are low, and any remedial system would likely have limited effectiveness in reducing contaminant levels below residential tap screening limits. Therefore, plume stability and closure via an environmental restrictive covenant (ERC) was selected as the remedial alternative. The limited areal extent of groundwater contamination and the relatively stable contaminant concentration above residential tap screening levels, combined with the stability of the plume over the time of the investigations support the decision.

B. Potential Pathways of Exposure

The Dick Krieg Motors site was evaluated for potential preferential pathways for either contaminant transport or environmental exposure related to the release which is the subject of the investigations and quarterly monitoring events. Evaluated pathways included subsurface conduits, direct contact, groundwater ingestion and vapor intrusion.

Subsurface utility conduits associated with the site include underground electrical service, natural gas service, storm sewer, and an underground fiber optic line. The storm sewer is located on the south side of US 421, approximately 20 feet north of and parallel to the site's north property line. Two catch basins are present within this section of storm sewer. The storm sewer begins at the north catch basin and flows southeast. There are no catch basins located on the Dick Krieg Motors site. Natural gas enters the building from the north side. Underground electrical service runs from a utility pole southeast of the building, running west and then turning north into the building. Fiber optic runs south out of the building, near the southwest corner of the building, south approximately 200 feet, exits the property, then turns east to a utility pole along 10th Street. All underground utility corridors appear to be located outside the area of groundwater impact.

An oil/water separator is located in the service bays, along the south side of the building. The oil/water separator discharges via an underground sewer line to a manhole approximately 35 feet south of the building. Effluent leaves the manhole to

the west. Ground penetrating radar was able to trace this pipe west of the manhole for approximately 20 feet, where the signal was lost. The manhole is typically filled with water; therefore, the discharge pipe could not be traced to determine its discharge point.

Ground penetrating radar was used to determine the potential location of the septic system leach field. Surveys were conducted on May 8, 2017 and October 29, 2017. A potential leach field area is located in the crushed stone and turf grass area southwest of the building. A copy of the ground penetrating radar survey is included in Appendix E.

The direct contact exposure pathway is limited. Most of the area of interest is covered by the building or is paved with asphalt or crushed stone. The investigation has determined that no chemicals of concern are present at levels which exceed IDEM commercial/industrial screening levels. One chemical of concern, benzo(a)pyrene, was detected at levels which slightly exceed IDEM residential screening levels in a single boring.

The ground water ingestion pathway is limited. Potable water at the Dick Krieg Motors site is provided by well located south of the building. The well is located upgradient from the defined area of groundwater impact. The well is 122 feet deep. The depth to bedrock at the Dick Krieg Motors site ranges from 2.5 to 8.0 feet, the depth to groundwater is 2.5 to 5.9 feet. As contamination is located in near-surface groundwater, and the potable water supply well is located upgradient of the area of impact, groundwater ingestion does not appear to be a viable pathway. Untreated water samples collected from the potable water supply well and analyzed for VOCs, PAHs and lead. No analytes were reported present in the potable water samples.

The vapor intrusion pathway is limited. One chemical of concern, vinyl chloride, is present in groundwater under the building at levels which exceed commercial/industrial vapor exposure screening levels. These groundwater samples were obtained from borings within the facility's service bays. There are significant air changes within these spaces, from exhaust ventilation and operation of overhead doors. Analysis of air samples in operating service areas is unlikely to either prove or deny vapor intrusion.

In summary, no preferential pathways for contaminant transport have been identified.

C. Lines of Evidence

The lines of evidence which support closure via an ERC is supported by the following lines of evidence:

1. The area of groundwater impact is very small.
2. The contaminant plume appears stable and is not migrating.
3. Contaminant concentrations are decreasing.
4. Groundwater in unconsolidated deposits is not present in sufficient quantity to provide adequate yields for residential, commercial, industrial or irrigation use.

5. There are no chemicals of concern in the soil present above IDEM screening levels.
6. The majority of the area of groundwater contamination has been capped by a building or pavement.
7. There is no access to the affected groundwater, due to the structure erected over the area of impact.
8. There is no potential for vapor intrusion into the building. The chemicals of concern identified in groundwater above IDEM screening levels include benzene, 1,2,4-trimethylbenzene and naphthalene. All three compounds are present at levels well below both residential or commercial vapor encroachment groundwater screening levels.
9. There are no potential exposure pathways are incomplete and will remain incomplete.

ENVIRONMENTAL RESTRICTIVE COVENANT

An environmental restrictive covenant (ERC) for the site was made on April 24, 2024 by DW Mann Realty, LLC, and filed with the Carroll County Recorder on May 3, 2024.

The ERC contains two restrictions, which prohibit use of the site for residential purposes, including daily childcare facilities and education facilities (daycare centers and K-12 schools); and groundwater withdrawal. As the Mann Chevrolet facility obtains potable water from a well (located on an affected parcel, but outside the affected area), the ERC contains the following language:

> "Groundwater may be extracted for potable water using the existing private water well identified by GPS coordinates and depicted in Exhibit "B". If the existing well were to fall into disrepair, a replacement at the same location, or within the Affected Area, and depth (or farther from the contaminant plume) may be permissible, provided that well construction plans are submitted to IDEM for review and approval prior to installation, and a confirmation groundwater sample is collected and analyzed for the COCs after installation and prior to potable use. This restriction does not apply to any private water well on the Real Estate outside the Affected Area."

A copy of the ERC is provided in Appendix I.

COMMUNITY RELATIONS

The community relations plan for the Dick Krieg Motors site will involve a Remedial Work Plan notification letter to the following entities:

Adjoining Land Owners:

JLSN Enterprises LLC
5125 N 700 W

Delphi, Indiana 46923

JLSN Enterprises has executed an access agreement allowing the installation of MW-11 and MW-13, which are located on property owned by JLSN Enterprises. Additionally, the barber shop tap water sample collected as part of the quarterly monitoring events was collected from a building owned by JLSN Enterprises.

No other adjacent land owners are affected or potentially affected by the release addressed in this remedial work plan.

Local Health Department:

Carroll County Health Department
101 West Main Street
Delphi, Indiana 46923

There are no school, health care facilities, childcare facilities, senior citizen residential/care facilities or parks located within one-half mile of Dick Krieg Motors.

Upon approval of the remedial work plan, a copy of the work plan will be deposited at the Delphi Public Library, 202 East Main Street, Delphi, Indiana. A remediation work plan notification letter will be sent to JLSN enterprises LLC and to the Carroll County Health Department. A copy of the remediation work plan notification letter is provided in Appendix J.

REMEDIAL ACTION COMPLETION REPORT

As noted above, due to the limited volume and intermittent presence of groundwater in the unconsolidated materials, a remediation system was not installed at the site. Therefore, there were no considerations of system performance and there was no remediation derived waste.

IDEM determined that confirmation sampling was not necessary at this site, as the last quarterly monitoring event was completed in June, 2023.

As there were no remedial activities at the site, site restoration activities will be limited to closure of the existing monitoring well network.

A copy of the Environmental Restrictive Covenant is provided in Appendix I. A list of activity restrictions is provided in Section I.1.(a) and (b) of the ERC on page 2, and restrictions are outlined above in the Environmental Restrictive Covenant section.

APPENDIX A

FIGURES

N

U.S. GEOLOGICAL SURVEY
7.5 MINUTE SERIES TOPOGRAPHIC MAP
DELPHI, IND. QUADRANGLE, 1962
PHOTOREVISED 1979
CONTOUR INTERVAL 10 FEET
SCALE: 1:24000

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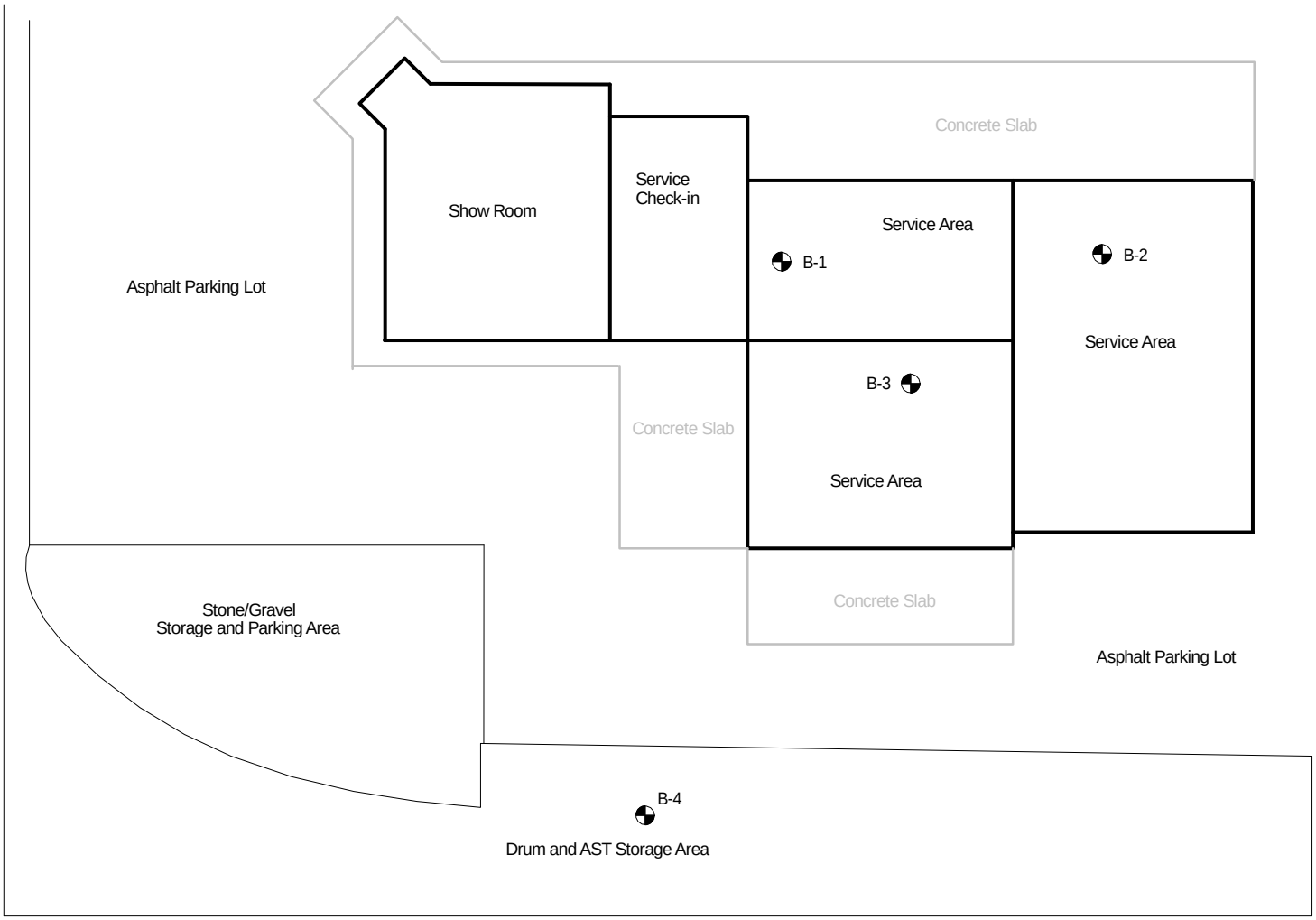
FIGURE 1
SITE LOCATION
DICK KRIEG MOTORS
1648 WEST US HIGHWAY 421
DELPHI, INDIANA



N

Scale: Not to scale

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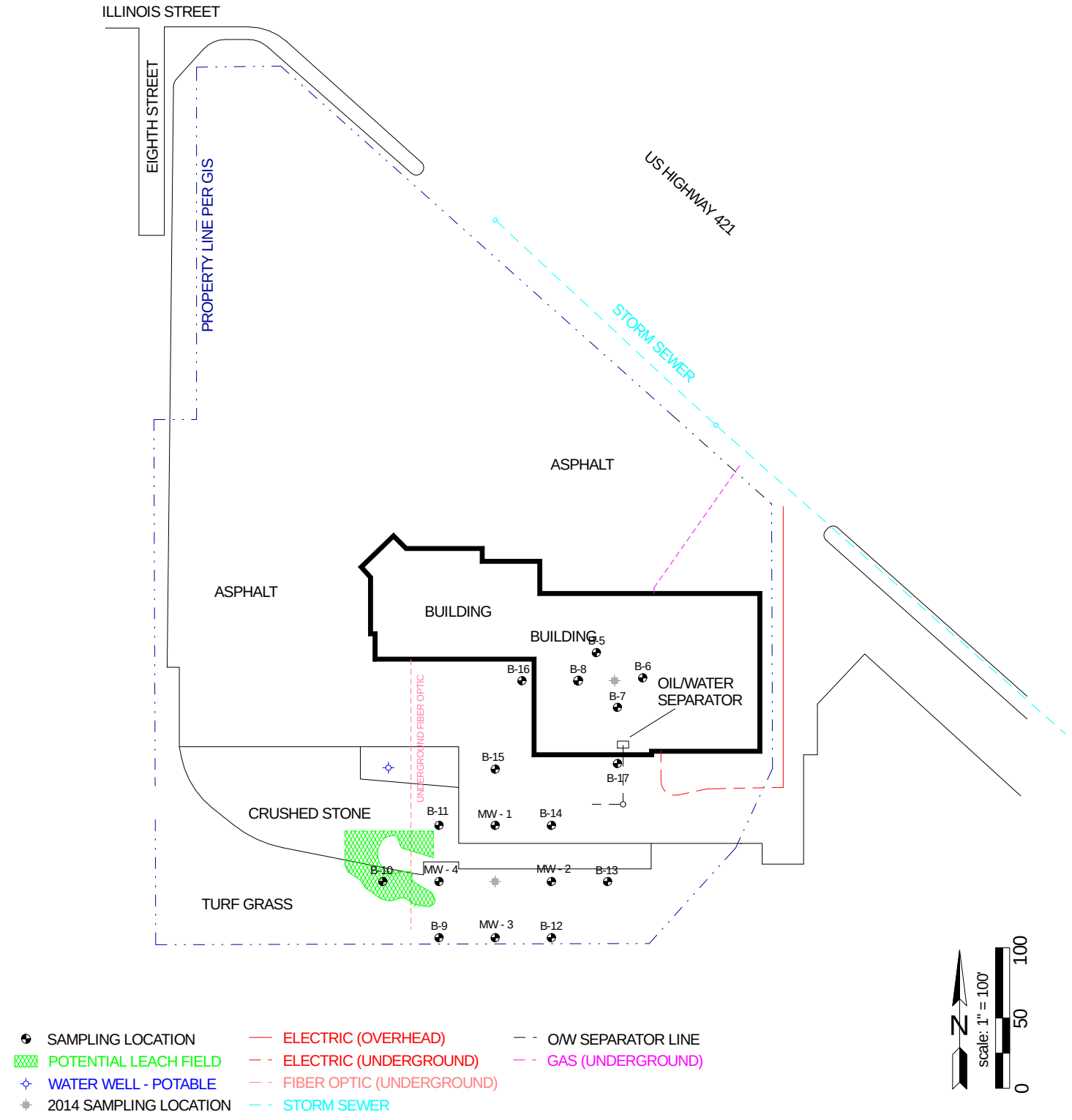
BORING LOCATION MAP
DICK KRIEG MOTORS
DELPHI, INDIANA



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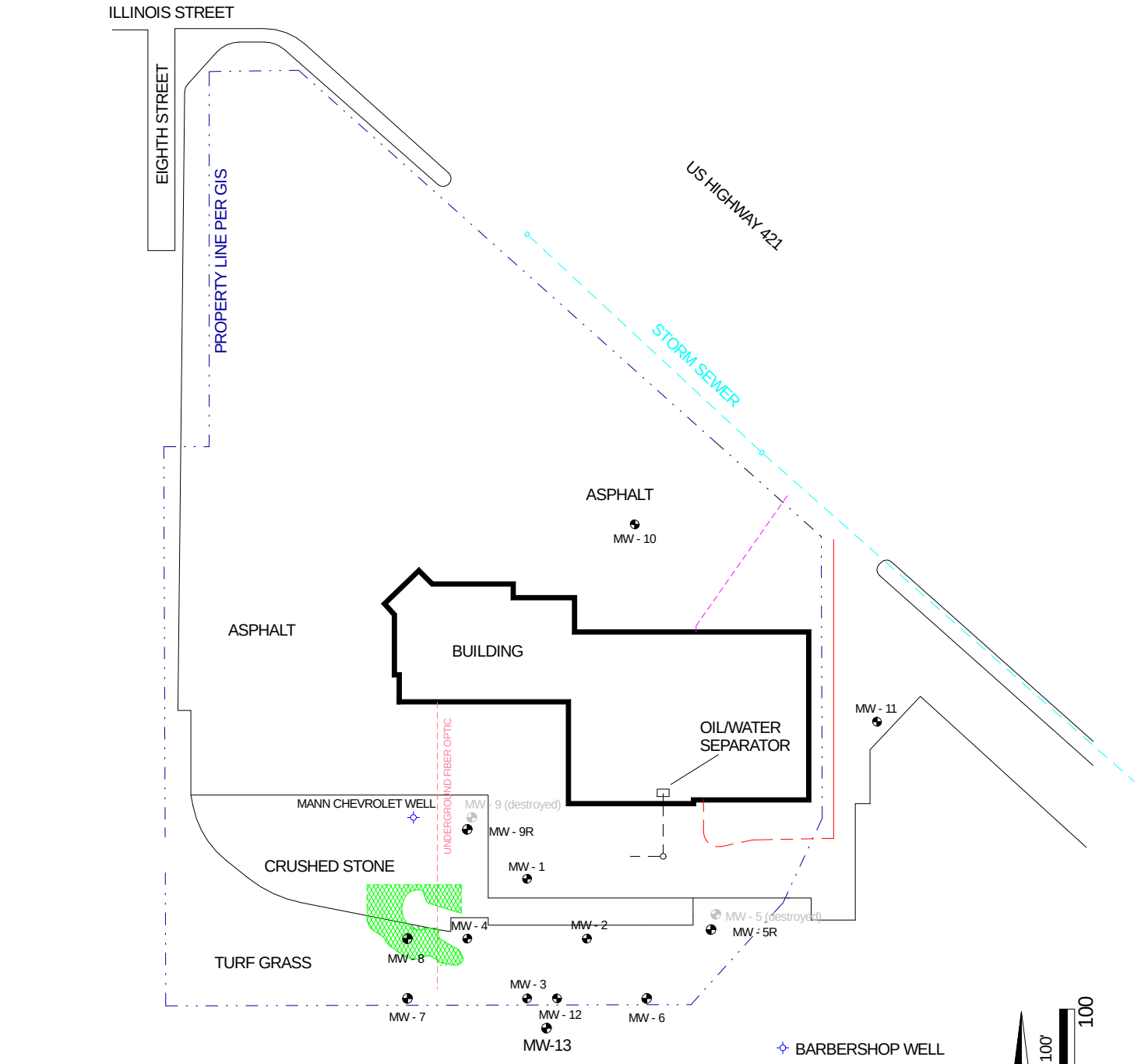
SOIL AND GROUNDWATER SAMPLING LOCATIONS
DICK KREIG MOTORS
1648 WEST US 421
DELPHI, INDIANA



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MONITORING WELL LOCATIONS
DICK KREIG MOTORS
1648 WEST US 421
DELPHI, INDIANA

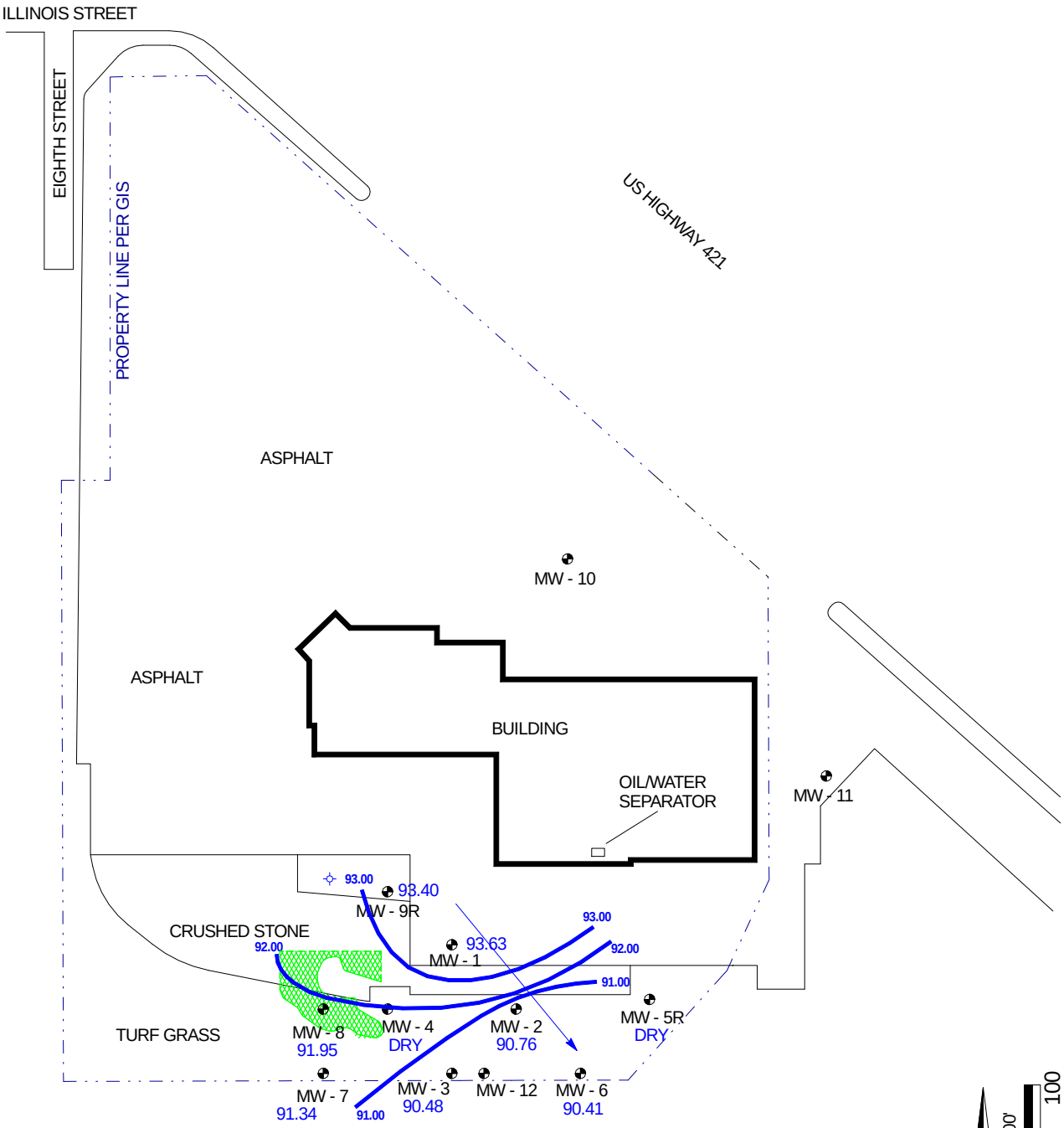

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FIGURE 4A
UNCONSOLIDATED POTENTIOMETRIC SURFACE MAP - DECEMBER 2020
DICK KREIG MOTORS
1648 WEST US 421
DELPHI, INDIANA

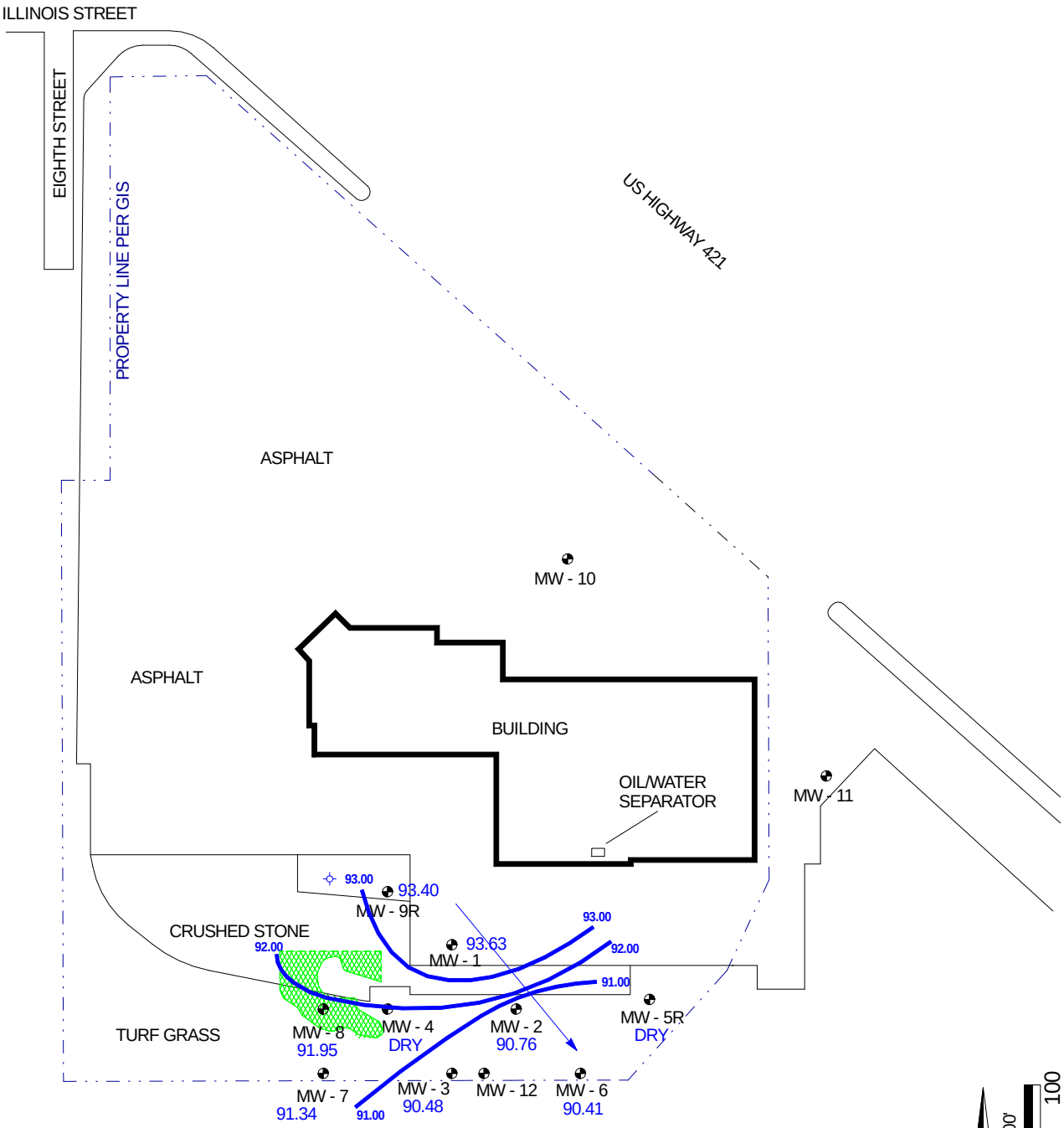

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FIGURE 4A
UNCONSOLIDATED POTENTIOMETRIC SURFACE MAP - DECEMBER 2020
DICK KREIG MOTORS
1648 WEST US 421
DELPHI, INDIANA

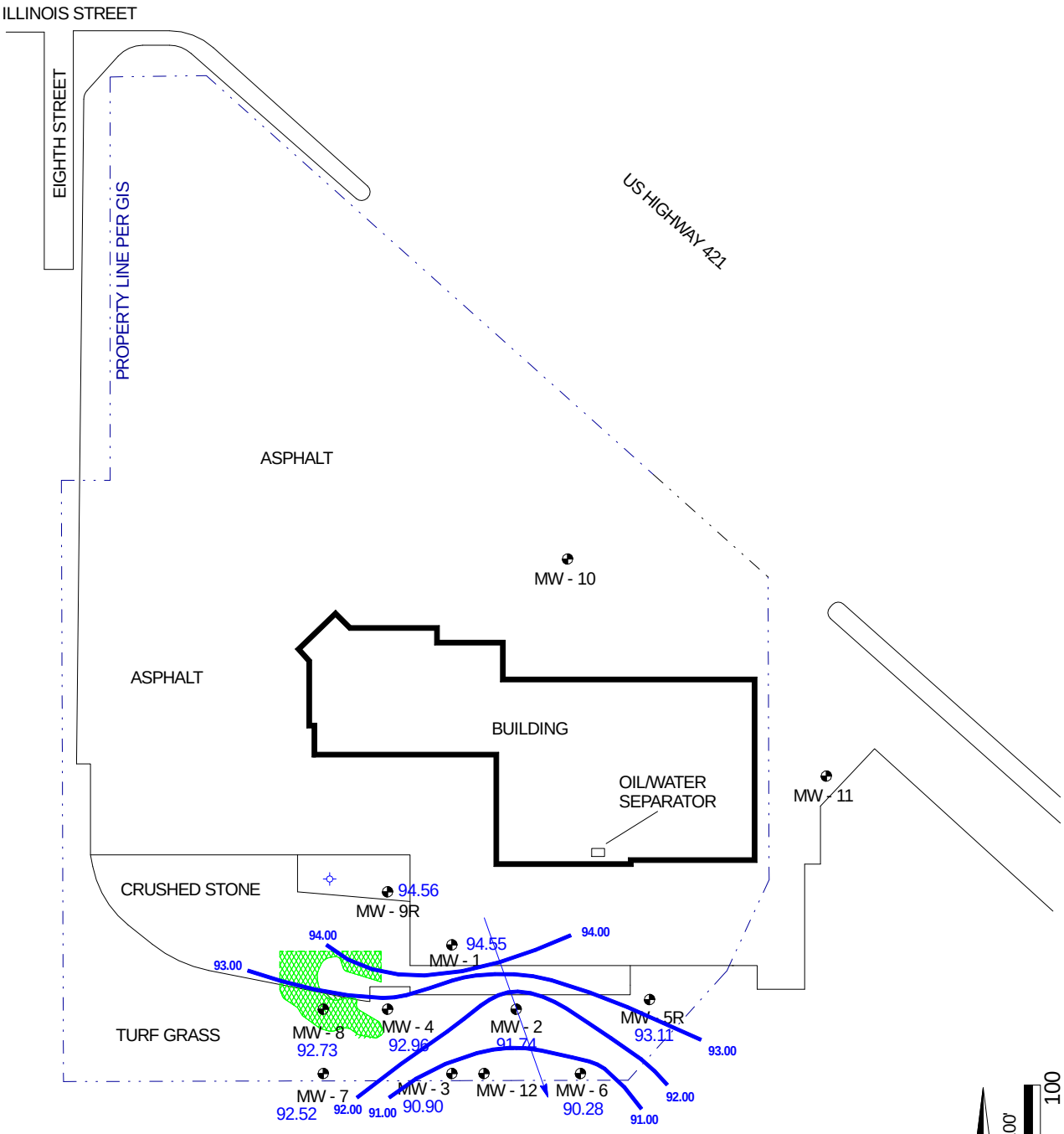

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FIGURE 4A
UNCONSOLIDATED POTENTIOMETRIC SURFACE MAP - DECEMBER 2020
DICK KREIG MOTORS
1648 WEST US 421
DELPHI, INDIANA

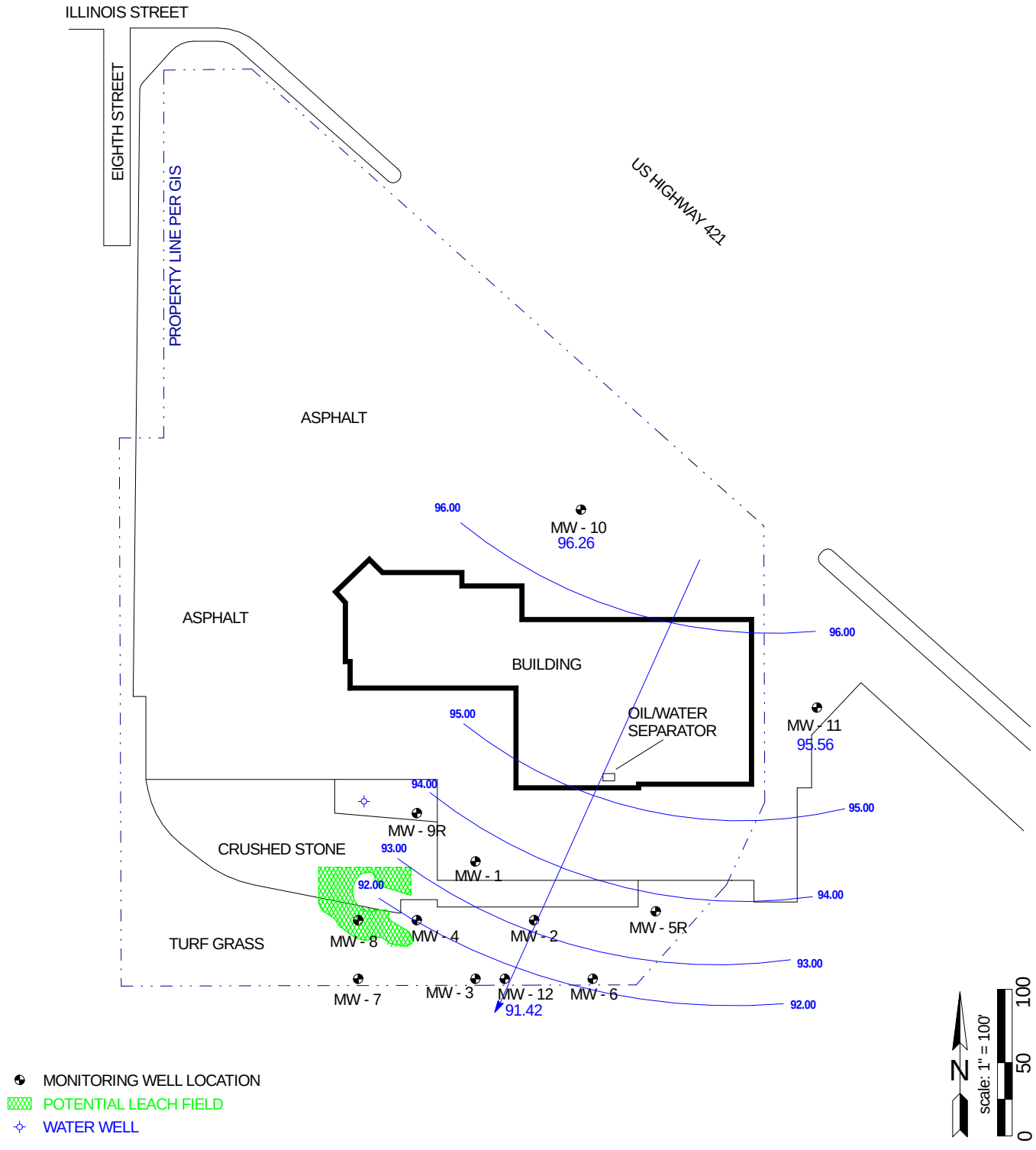

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FIGURE 4B
BEDROCK POTENTIOMETRIC SURFACE MAP - JUNE 2021
DICK KREIG MOTORS
1648 WEST US 421
DELPHI, INDIANA

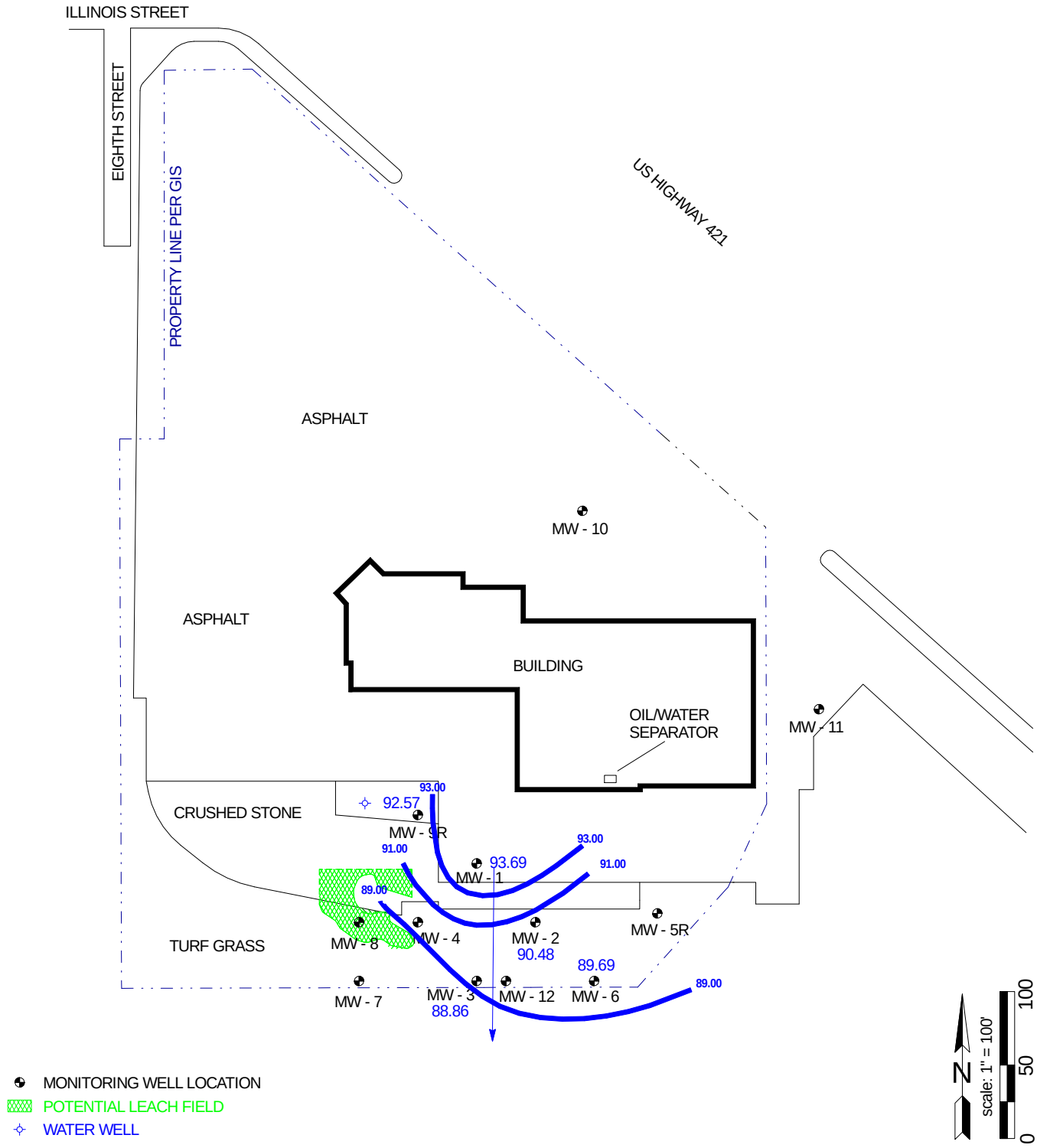

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FIGURE 4A
UNCONSOLIDATED POTENTIOMETRIC SURFACE MAP - SEPTEMBER 2021
1648 WEST US 421
DELPHI, INDIANA

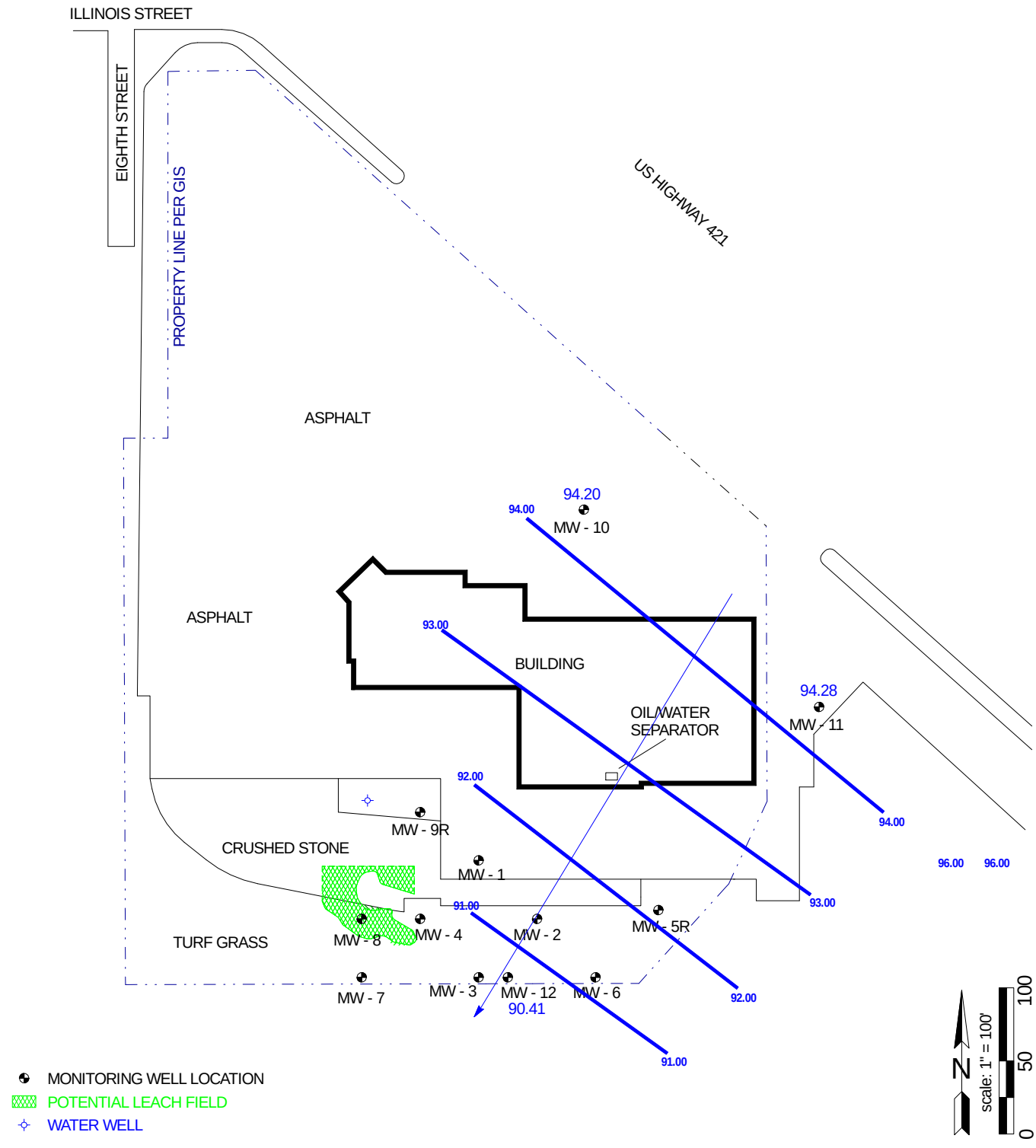

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FIGURE 4B
BEDROCK POTENTIOMETRIC SURFACE MAP - SEPTEMBER 2021
DICK KREIG MOTORS
1648 WEST US 421
DELPHI, INDIANA

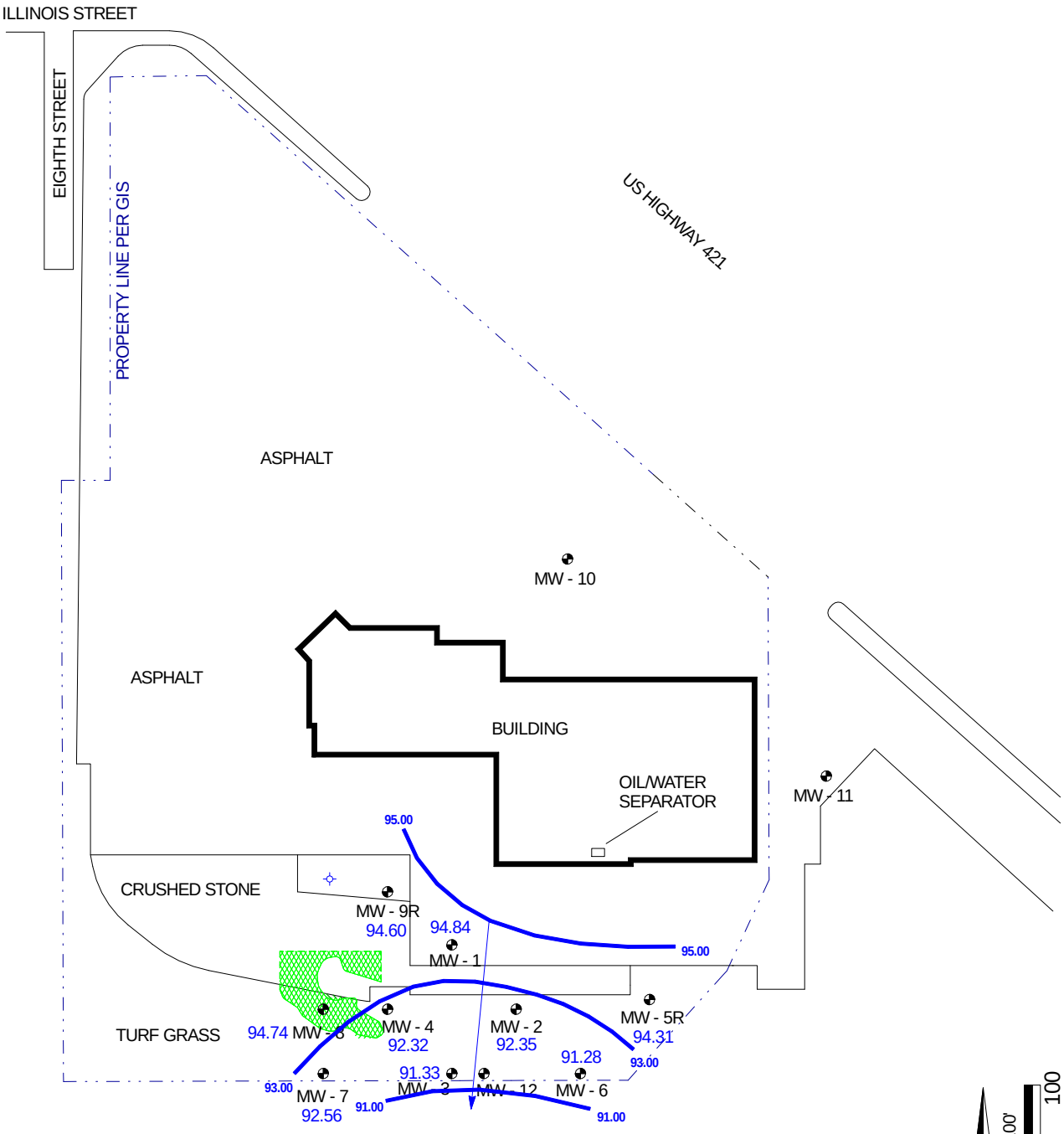

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FIGURE 4A
UNCONSOLIDATED POTENTIOMETRIC SURFACE MAP - JANUARY 2022
1648 WEST US 421
DELPHI, INDIANA

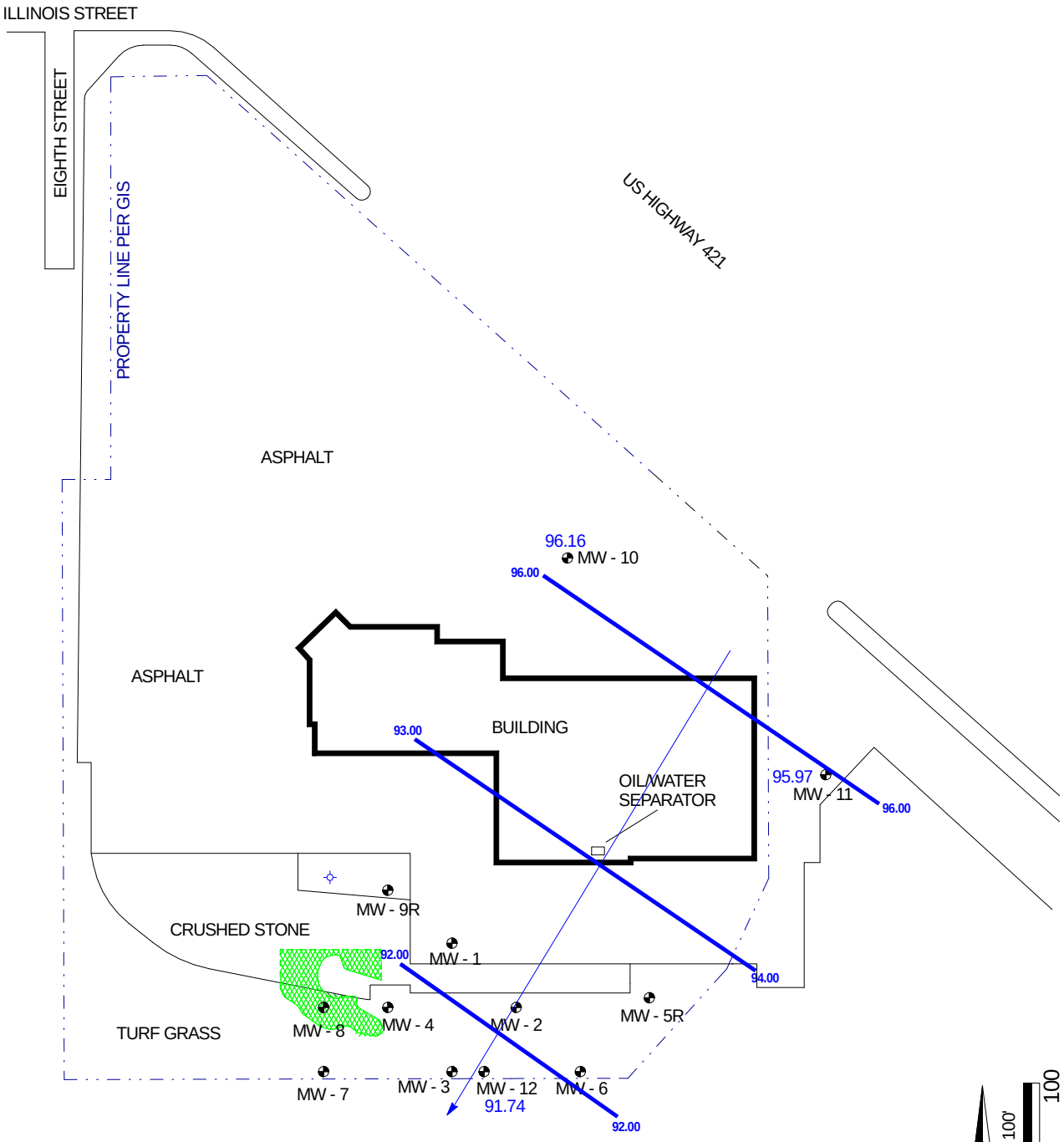

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FIGURE 4B
BEDROCK POTENTIOMETRIC SURFACE MAP - JANUARY 2022
DICK KREIG MOTORS
1648 WEST US 421
DELPHI, INDIANA

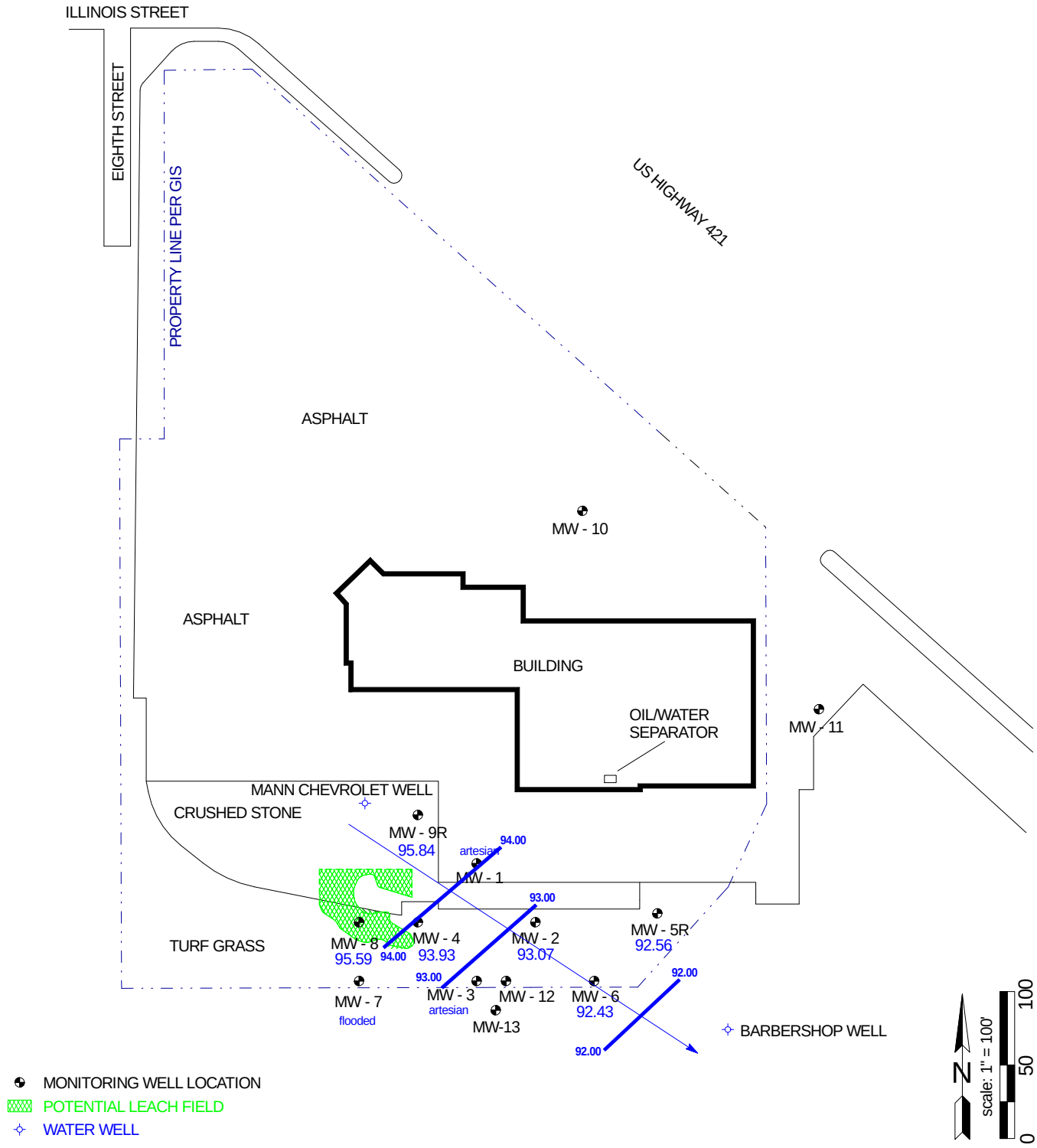

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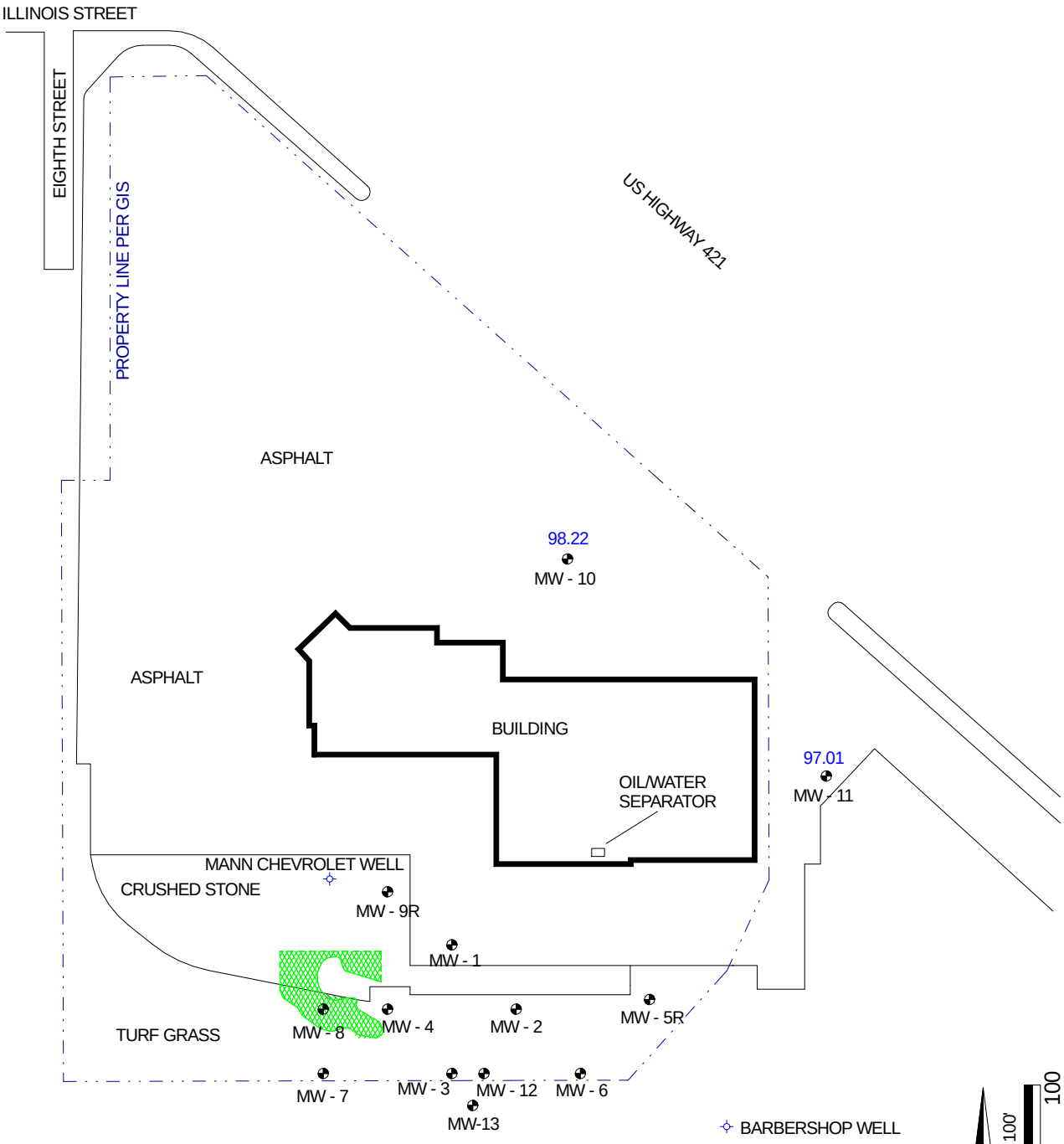
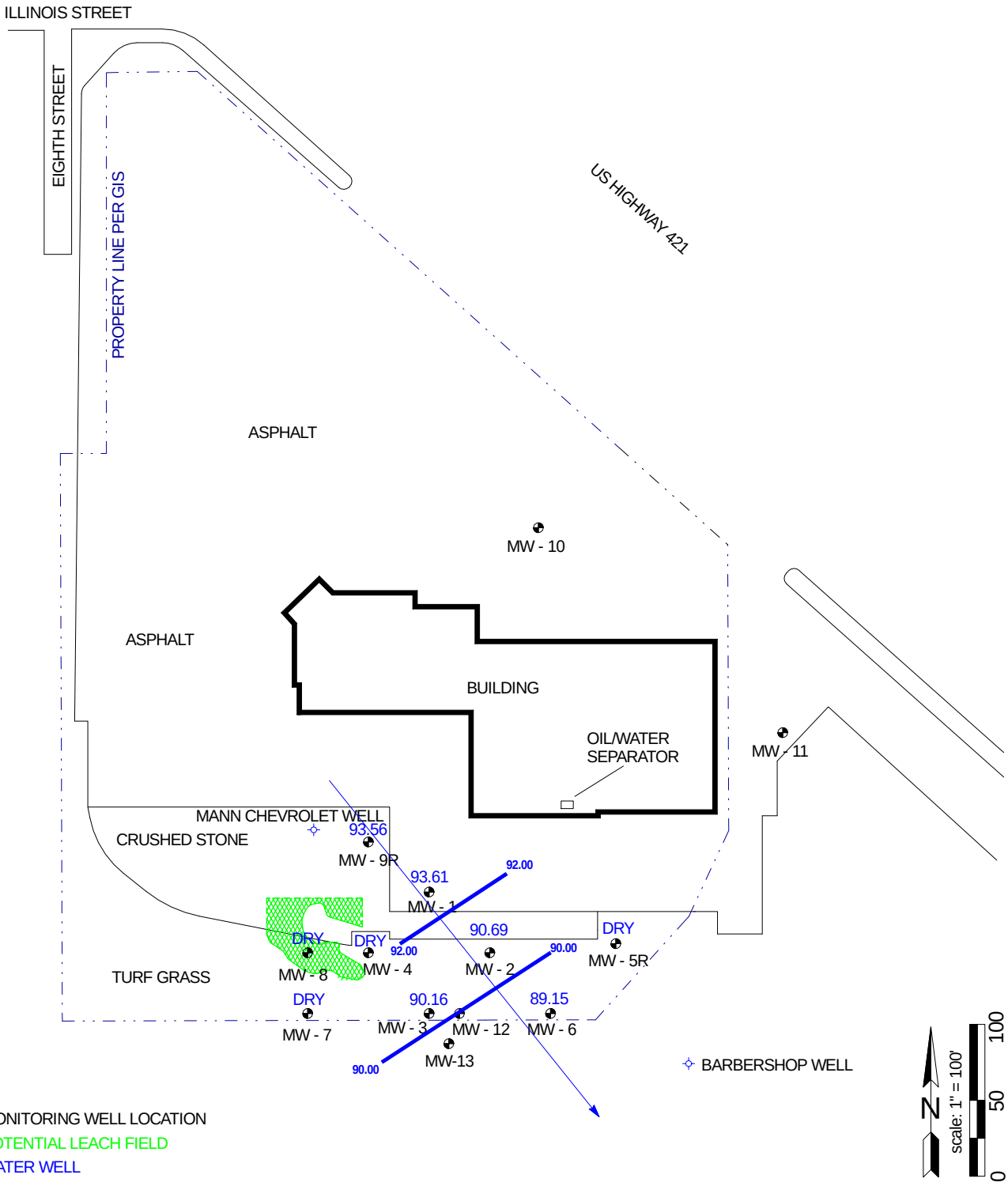
FIGURE 4A
UNCONSOLIDATED POTENTIOMETRIC SURFACE MAP - MARCH 2023
1648 WEST US 421
DELPHI, INDIANA



ALLIANCE Environmental Group, Inc.

FIGURE 4B
BEDROCK POTENTIOMETRIC SURFACE MAP - MARCH 2023
1648 WEST US 421
DELPHI, INDIANA



ALLIANCE Environmental Group, Inc.

FIGURE 4A
UNCONSOLIDATED POTENTIOMETRIC SURFACE MAP - MARCH 2023
1648 WEST US 421
DELPHI, INDIANA

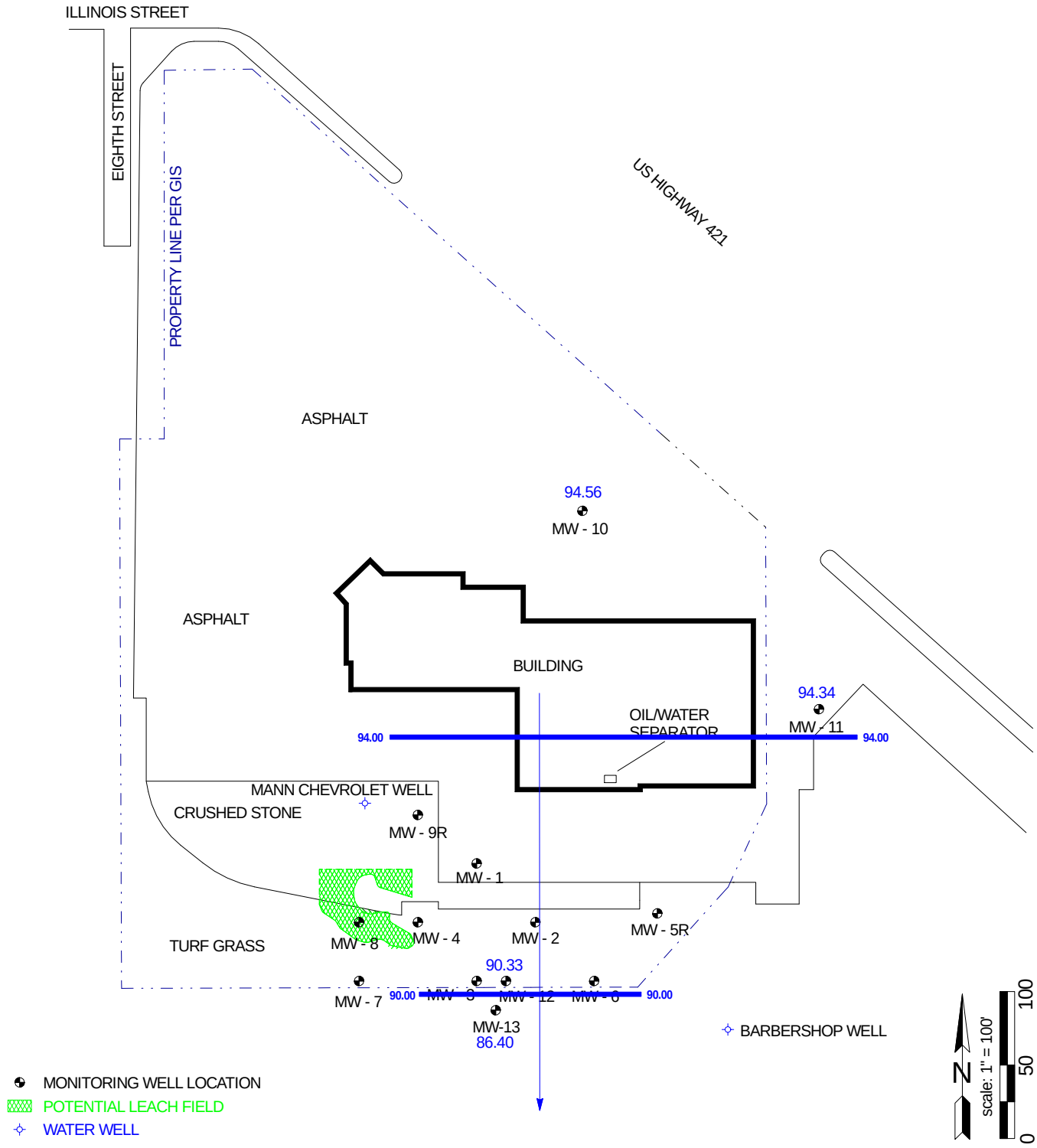


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FIGURE 4B
BEDROCK POTENTIOMETRIC SURFACE MAP - JUNE 2023
1648 WEST US 421
DELPHI, INDIANA

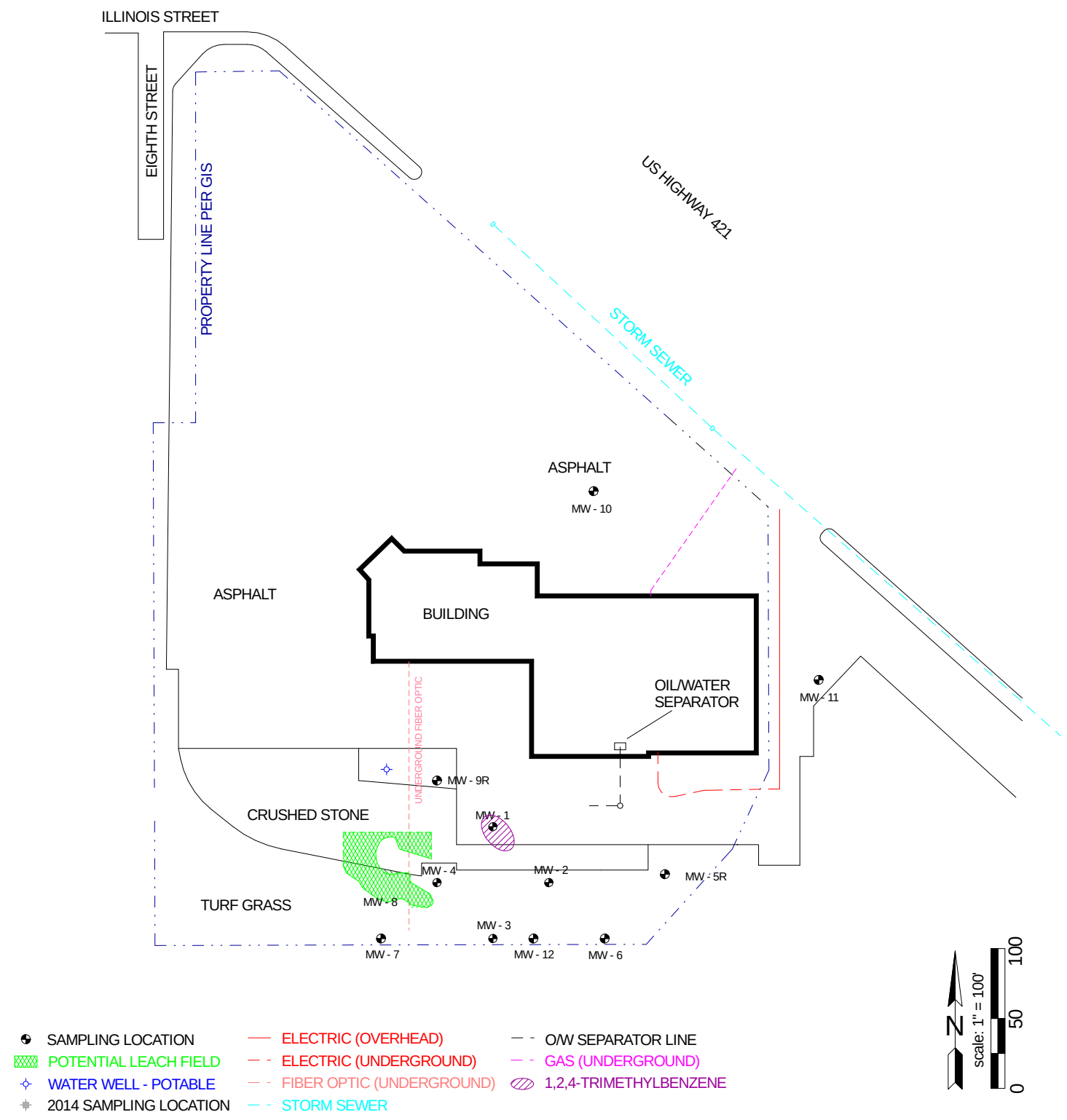

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FIGURE 5A
1,2,4-TRIMETHYLBENZENE IN GROUNDWATER 12/20
DICK KREIG MOTORS
1648 WEST US 421
DELPHI, INDIANA

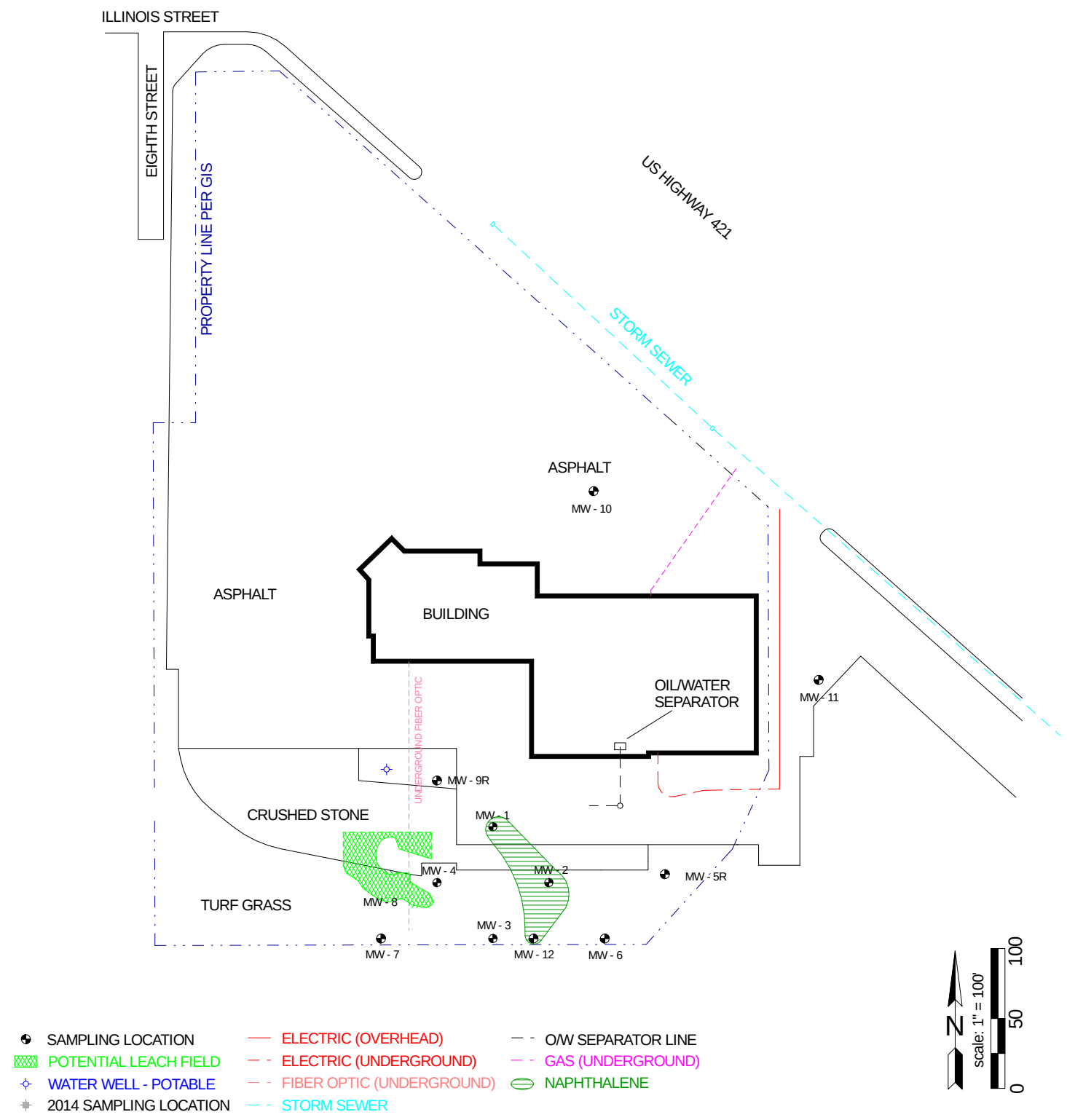

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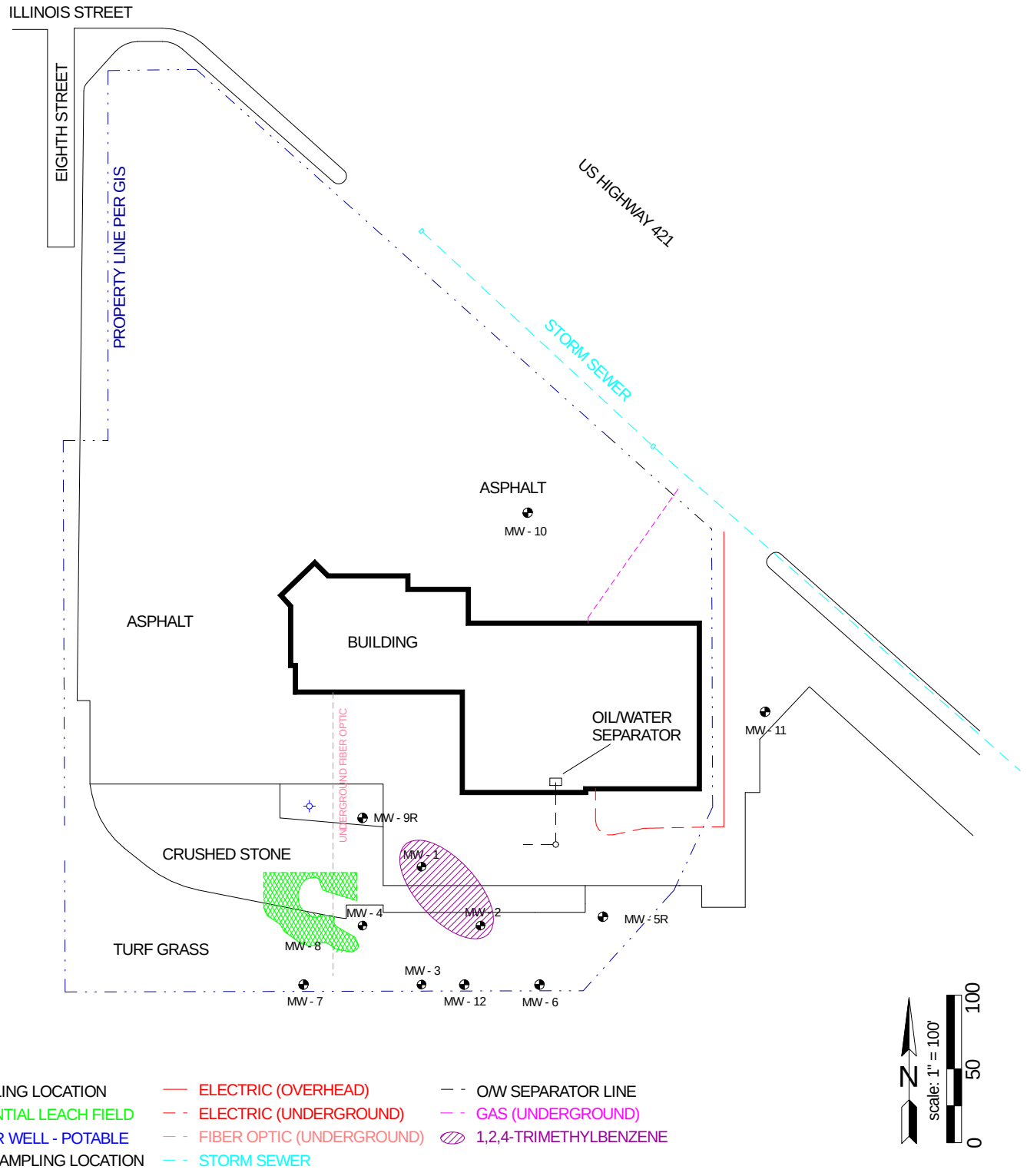
FIGURE 5B
NAPHTHALENE IN GROUNDWATER 12/20
DICK KREIG MOTORS
1648 WEST US 421
DELPHI, INDIANA



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1,2,4-TRIMETHYLBENZENE IN GROUNDWATER JUNE 2021
DICK KREIG MOTORS
1648 WEST US 421
DELPHI, INDIANA

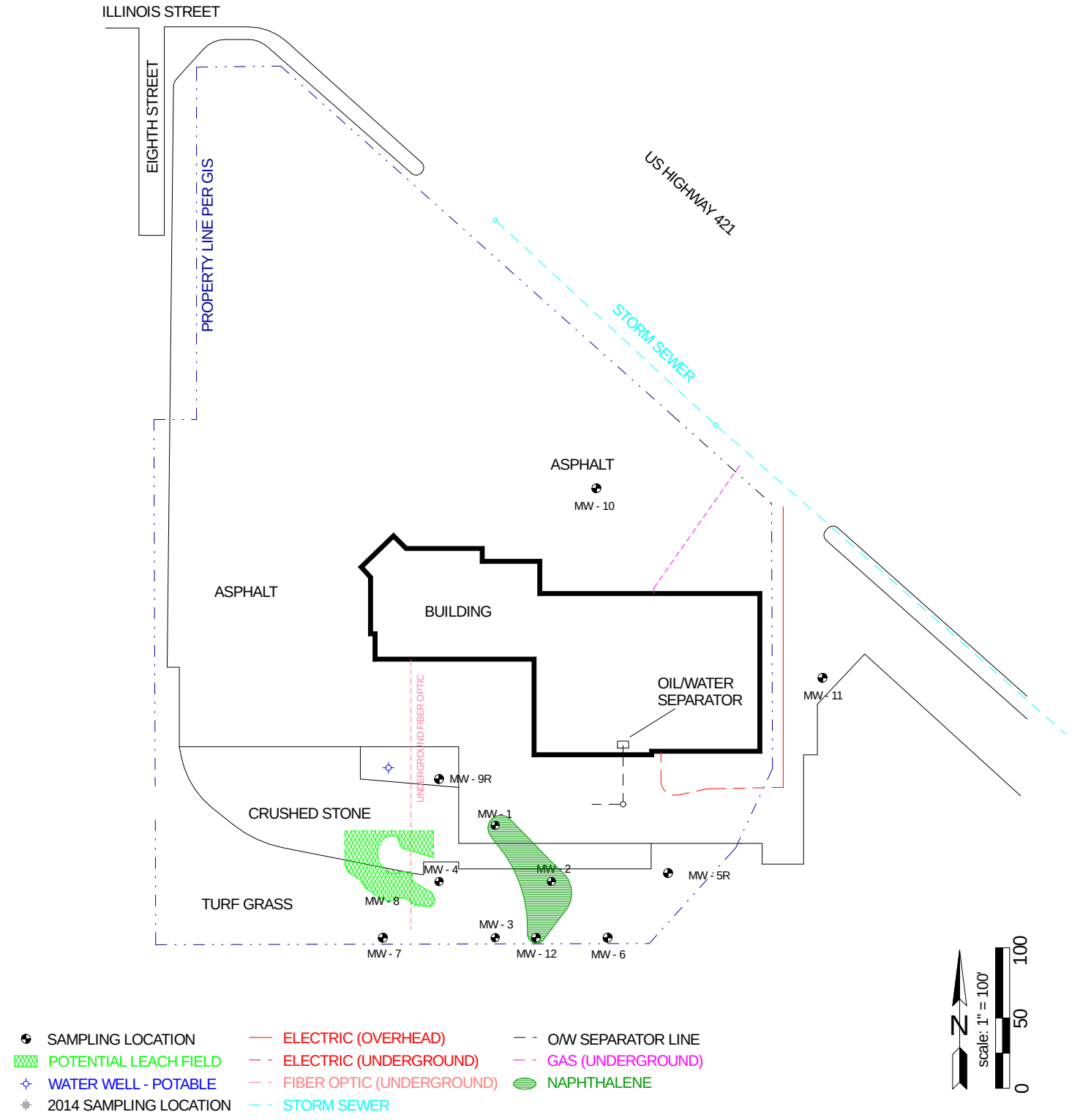

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FIGURE 5b
NAPHTHALENE IN GROUNDWATER JUNE 2021
DICK KREIG MOTORS
1648 WEST US 421
DELPHI, INDIANA

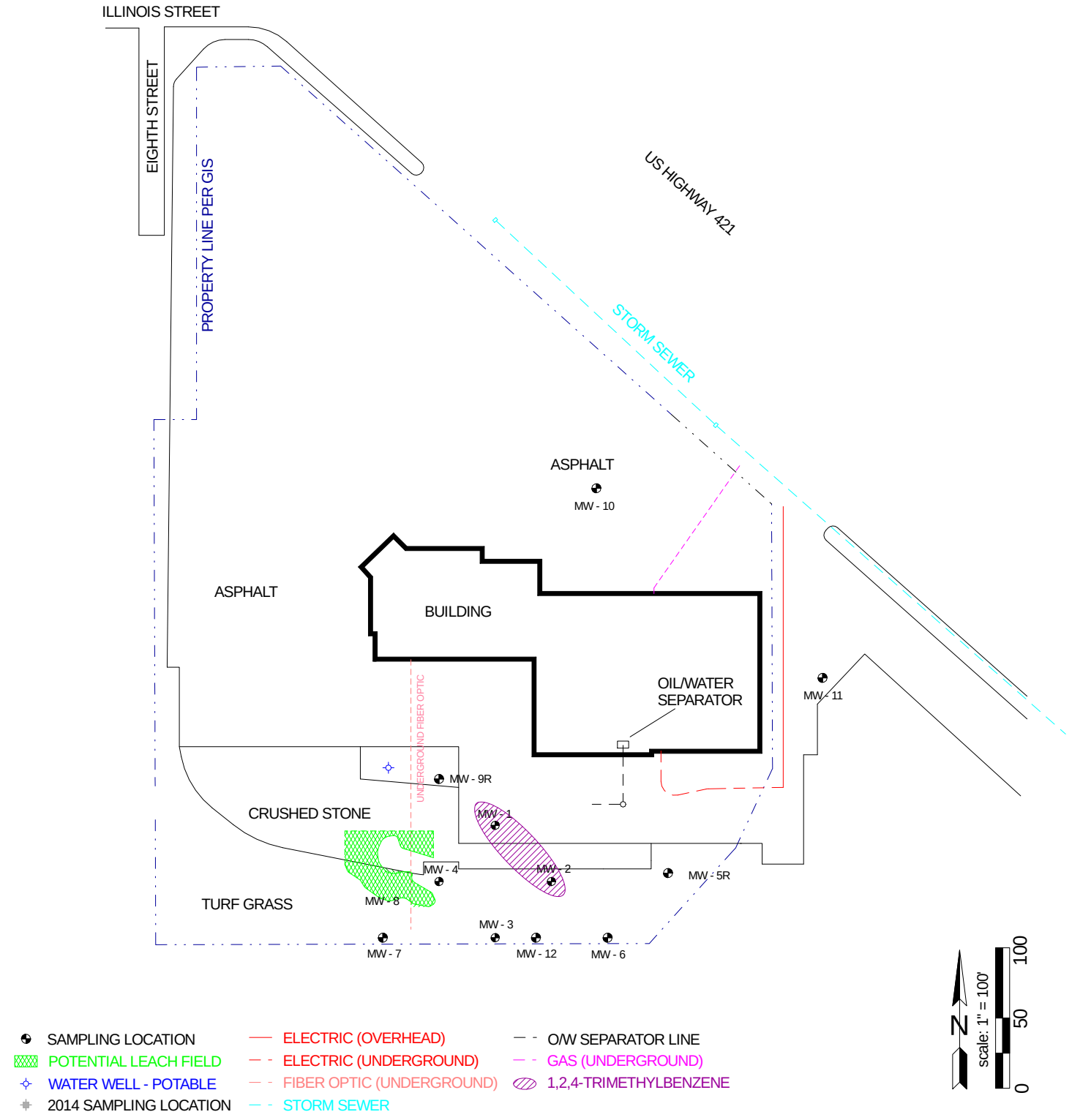

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FIGURE 5A
1,2,4-TRIMETHYLBENZENE IN GROUNDWATER SEPTEMBER 2021
DICK KREIG MOTORS
1648 WEST US 421
DELPHI, INDIANA

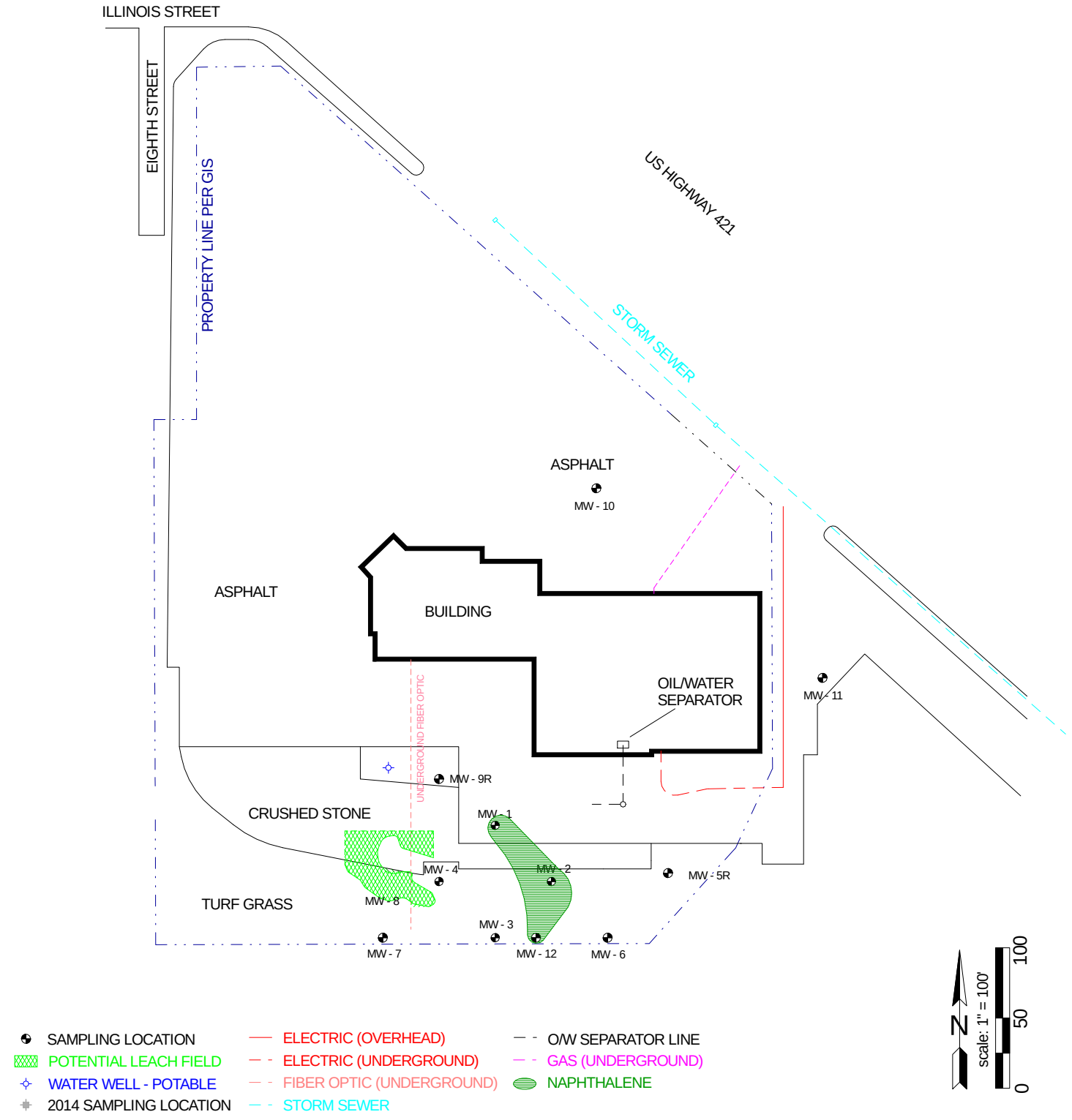

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FIGURE 5b
NAPHTHALENE IN GROUNDWATER JUNE 2021
DICK KREIG MOTORS
1648 WEST US 421
DELPHI, INDIANA

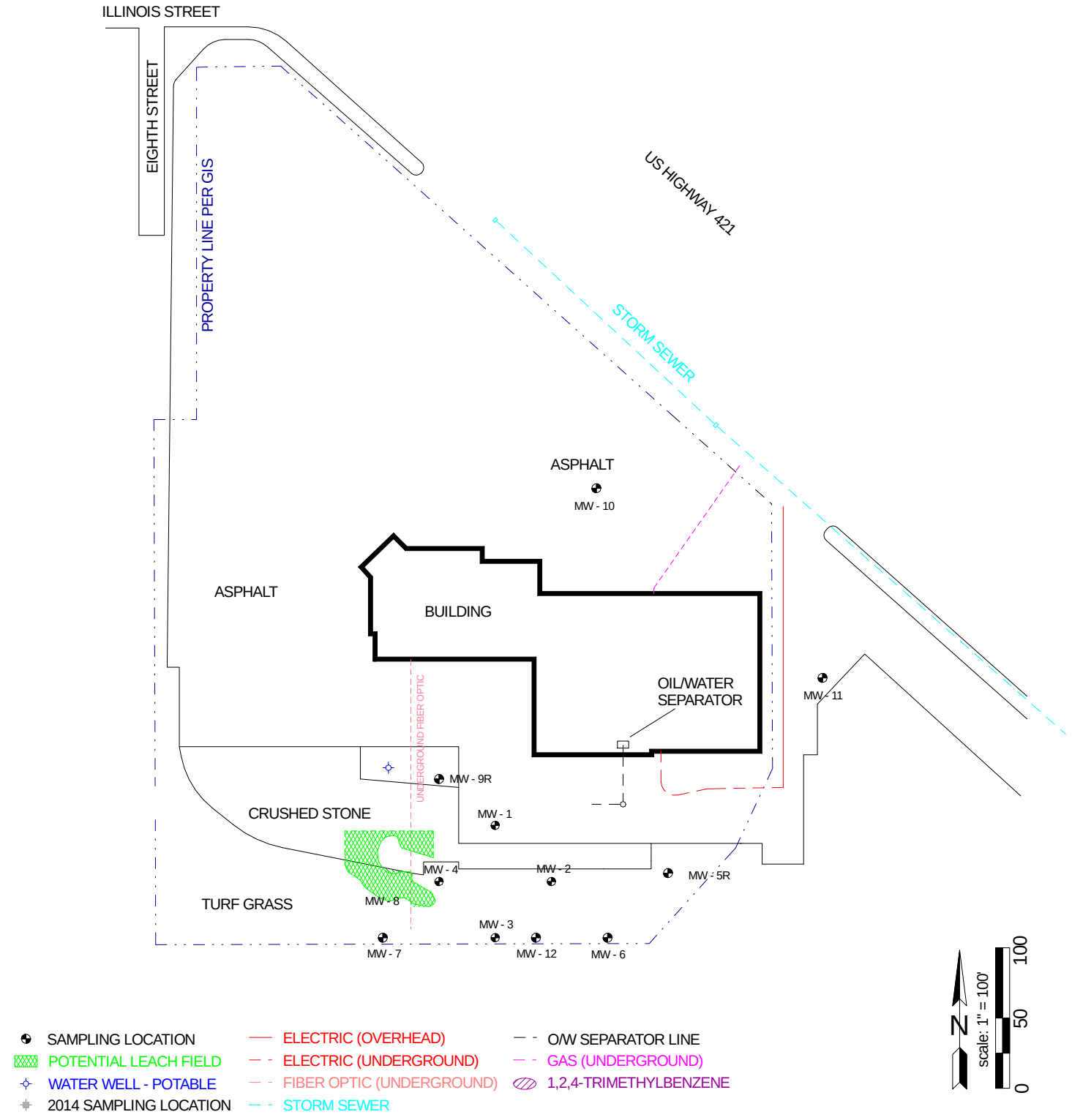

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FIGURE 5A
1,2,4-TRIMETHYLBENZENE IN GROUNDWATER 12/21 - 01/22
DICK KREIG MOTORS
1648 WEST US 421
DELPHI, INDIANA

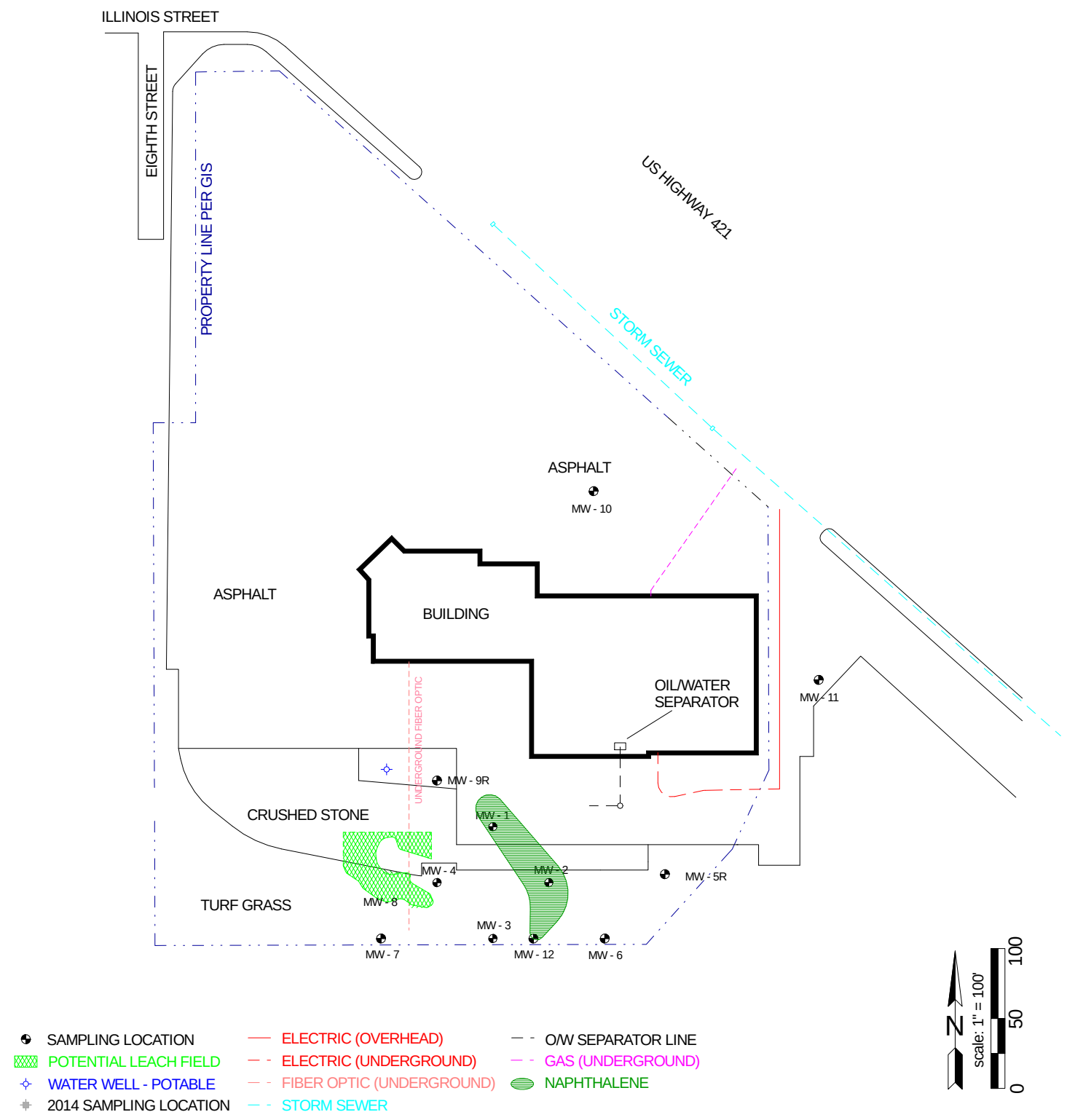

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FIGURE 5b
NAPHTHALENE IN GROUNDWATER 12/21 - 01/22
DICK KREIG MOTORS
1648 WEST US 421
DELPHI, INDIANA

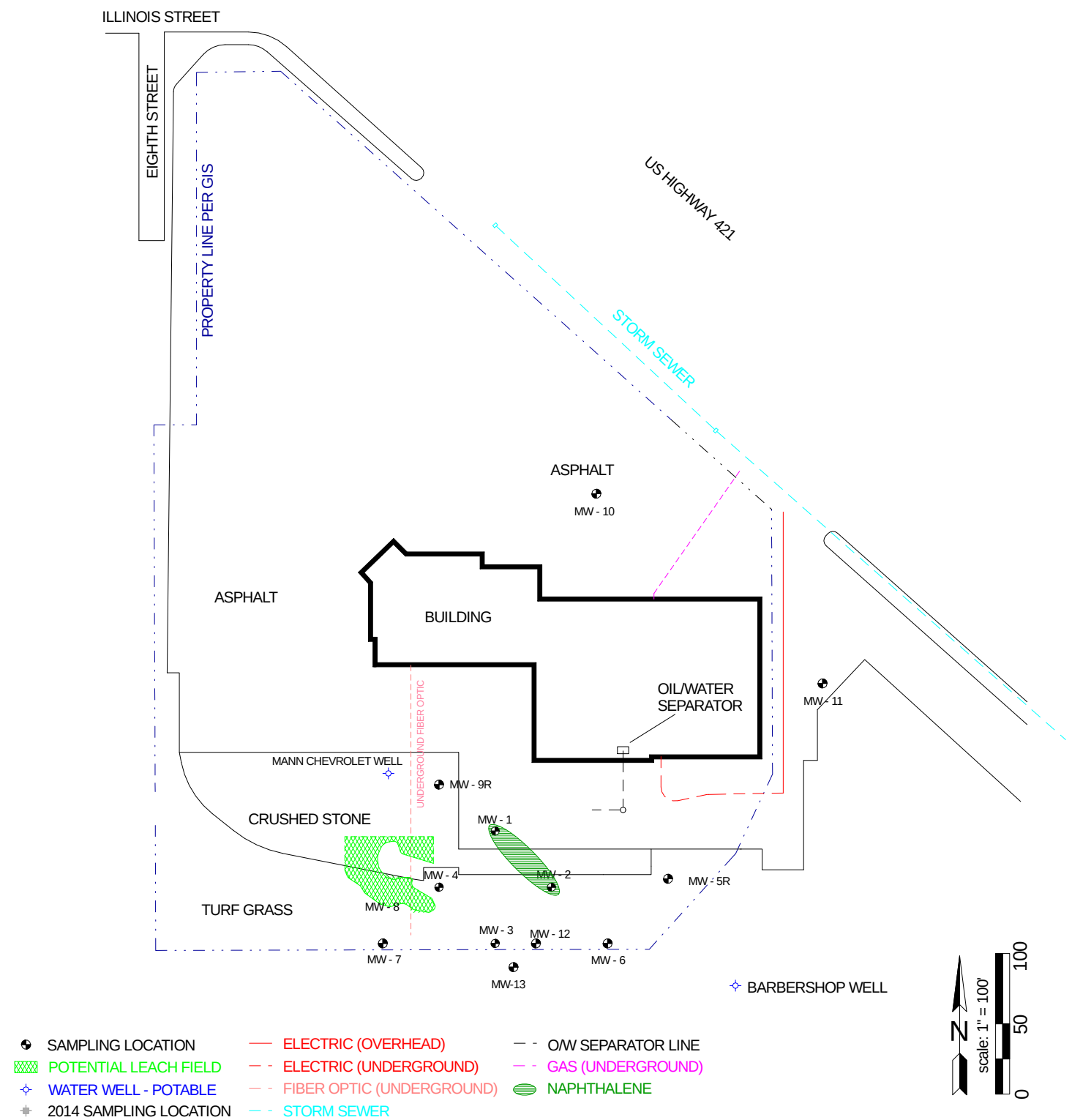

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FIGURE 5b
NAPHTHALENE IN GROUNDWATER 03/23
DICK KREIG MOTORS
1648 WEST US 421
DELPHI, INDIANA

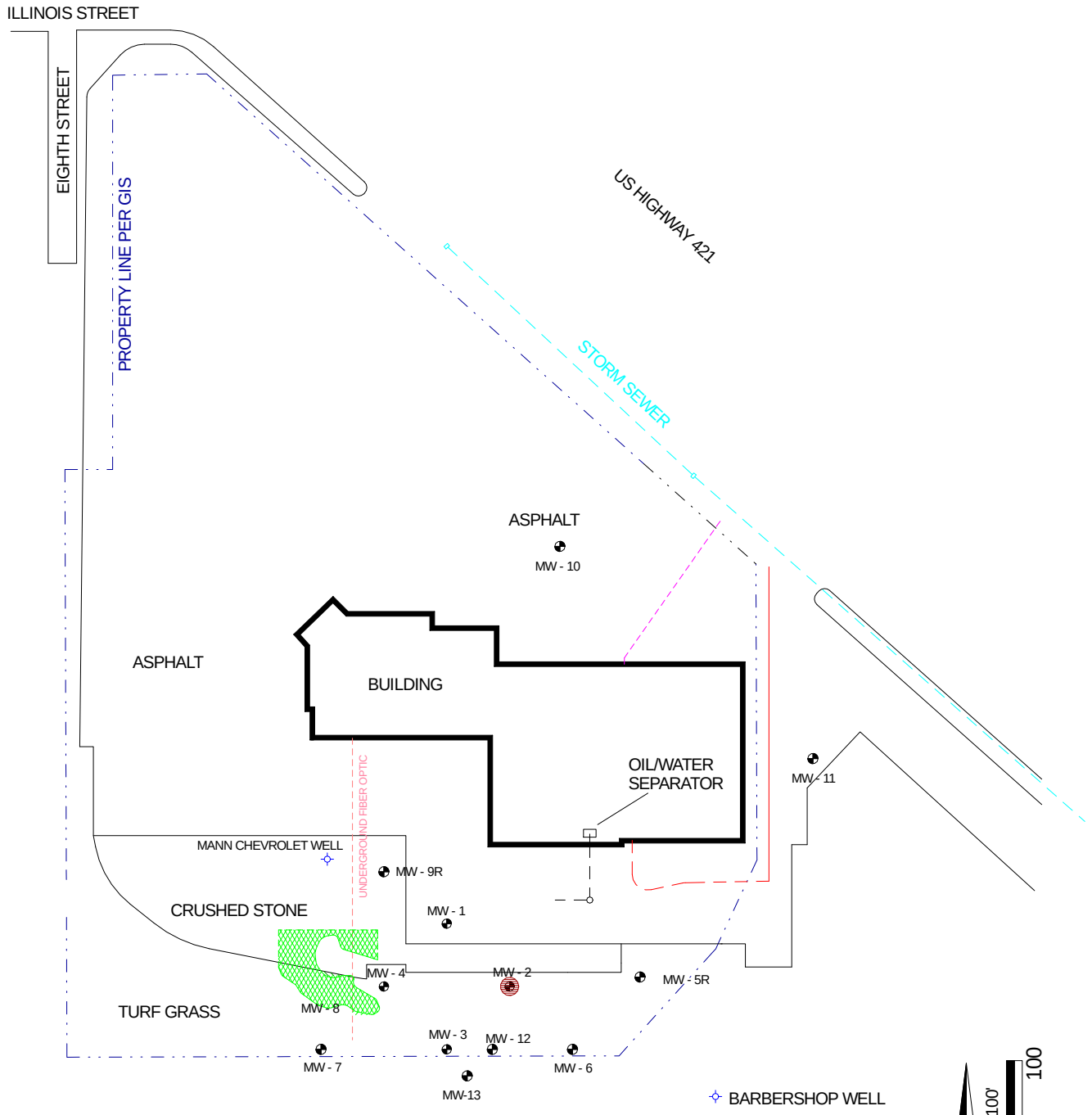

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FIGURE 5A
BENZENE IN GROUNDWATER JUNE 2023
DICK KREIG MOTORS
1648 WEST US 421
DELPHI, INDIANA

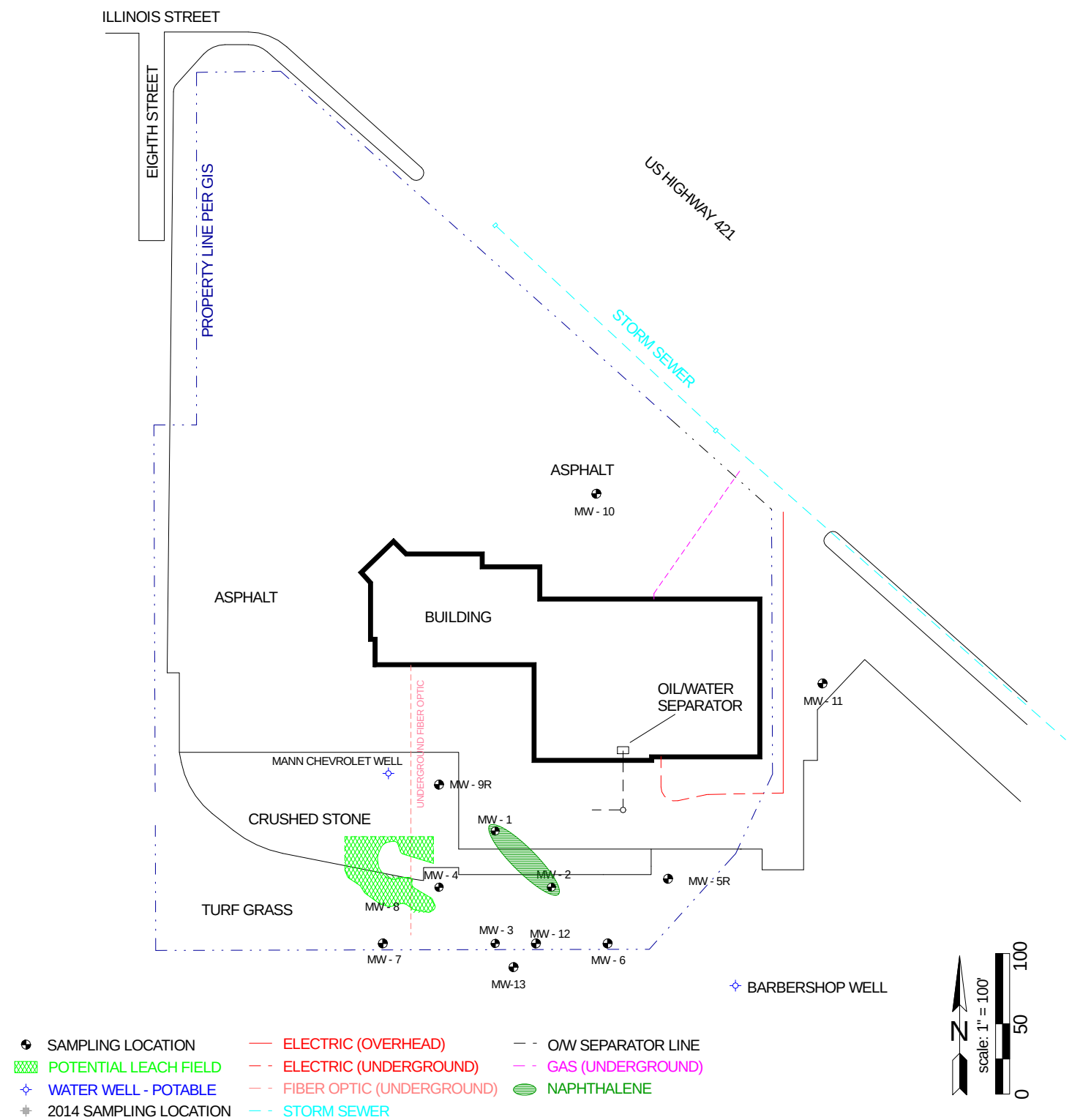

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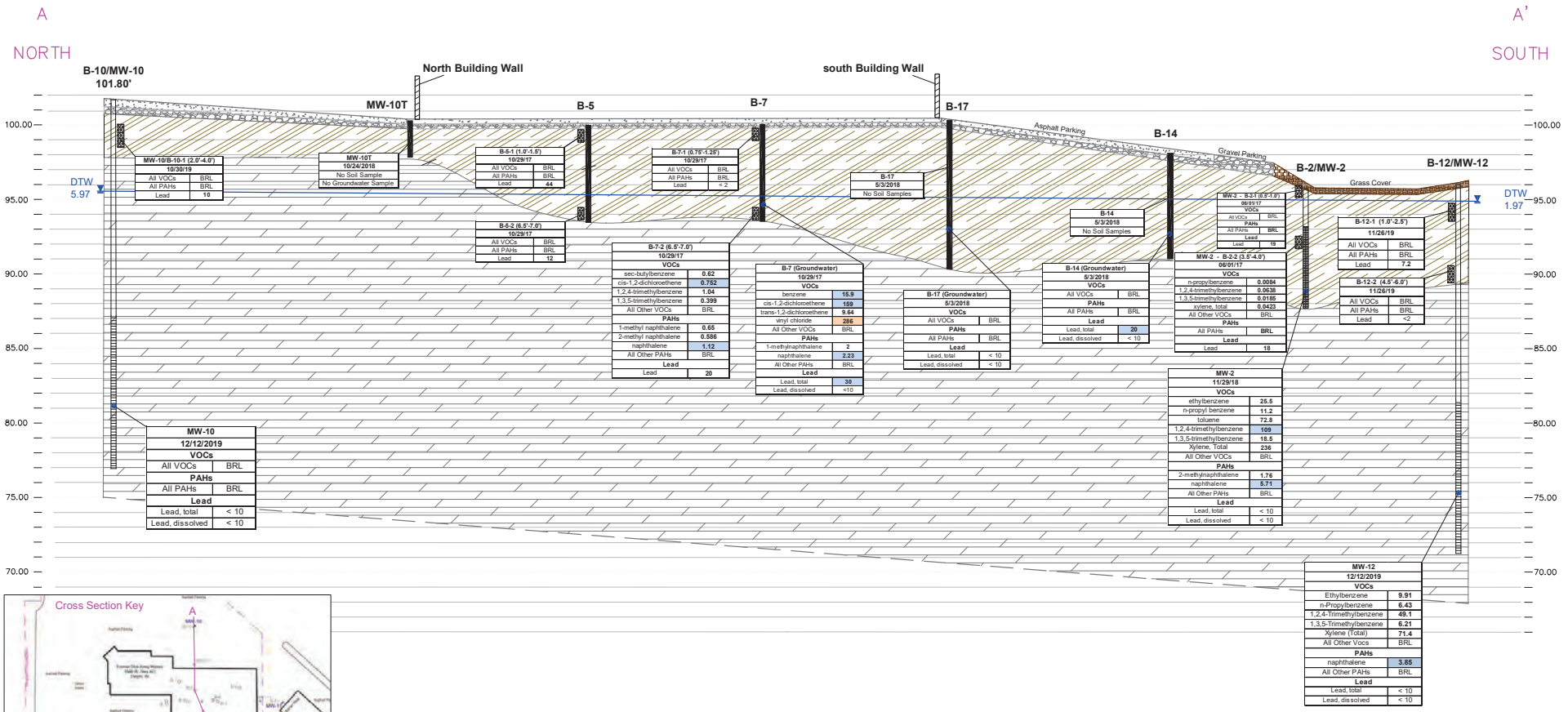
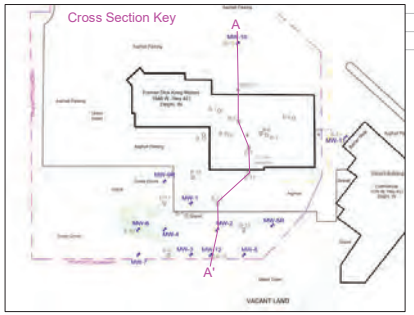
FIGURE 5b
NAPHTHALENE IN GROUNDWATER 03/23
DICK KREIG MOTORS
1648 WEST US 421
DELPHI, INDIANA





ALLIANCE Environmental Group, Inc.
5153 Commerce Square Drive, Suite E
Indianapolis, IN 46237

LEGEND

Geologic Cross Section Legend

- Asphalt
- Concrete
- Gravel
- Brown, silty CLAY, trace fine gravel
- Dolomite, brown to blue gray (with depth), fractured, fossiliferous

- Measured Groundwater Elevation. Depth to Water (DTW) measure on 1/7/20
- Groundwater Sample Interval
- Soil Sample location interval.

Soil Sample Results

B-10-1 (2.0'-4.0')	
10/30/19	
All VOCs	BRL
All PAHs	BRL
Lead	10

Result in mg/kg

Groundwater Results

MW-12	
12/12/2019	
Ethylbenzene	9.91
n-Propylbenzene	6.43
Xylene (Total)	71.4
All Other Vocs	BRL

Result in ug/L or ppb

Sample ID and Sample Depth
Sample Date

Analytes Detected above reporting limits.
Bold result indicates analyte above Laboratory Reporting Limit.
Shaded boxes indicate analyte above IDEM RCG Screening Levels.

BLR = Analytes below laboratory reporting limit.

Note: Refer to tables provided report.

Geologic Cross Section A-A'

Dick Krieg Motors
1648 W. US 421
Delphi, Indiana

PROJECT: 17-0083-E

FIGURE: 8

APPENDIX B

TABLES

Table 2
Soil Sample VOC Analytical Results per US EPA Test Method 8260
Dick Krieg Motors
1648 West US 421
Delphi, Indiana
IDEM VRP Site #6160805

			All VOCs
2020 IDEM RCG SLs		Res-MTG	Varies
		Res-DCLS	Varies
		Com-DCSLs	Varies
		Exc-DCSLs	Varies
ID	Depth Interval	Date	
B-10-1	2.0'-4.0'	10/30/19	BRL
B-11-1	3.0'-3.5'	10/28/19	BRL
B-11-2	1.5'-3.0'	10/28/19	BRL
B-12-1	1.0'-2.5'	11/26/19	BRL
B-12-2	4.5'-6.0'	11/26/19	BRL

Notes:

IDEM RCG = Indiana Department of Environmental Management (IDEM), Remediation Closure Guide

Res-MTG = IDEM RCG, Residential Soil Migration to Groundwater Screening Levels per IDEM RCG, Table A-6, 2020 Screening Levels

Res-DCLS = IDEM RCG, Soil Exposure, Residential Direct Contact Screening Levels per IDEM RCG Table A-6, 2020 Screening Levels

Com-DCSLs = IDEM RCG, Soil Exposure, Commercial/Industrial Direct Contact Screening Levels per IDEM RCG Table A-6, 2020 Screening Levels

Exc-DCSLs = IDEM RCG Soil Exposure, Excavation Direct Contact Screening Levels, per IDEM RCG Table A-6, 2020 Screening Levels

BRL = Below laboratory reporting limits

mg/kg = milligram per kilogram (mg/kg)

ppm = parts per million (ppm)

Depth Interval = feet below ground surface (ft bgs)

Bold result indicates concentration reported by laboratory is above laboratory reporting limits for the specific analyte

Shaded results indicates concentration above analyte specific IDEM RCG Screening Levels

Table 3
Soil PAH Analytical Results per US EPA Test Method 8270
Dick Krieg Motors
1648 West US 421
Delphi, Indiana
IDEM VRP Site #6160805

			benzo(a) pyrene	fluoranthene	phenanthrene	pyrene	All Other PAHs
2020 IDEM RCG SLs		Res-MTG	4.7	1,800	NE	260	Varies
		Res-DCLS	1.5	3,400	NE	2,500	Varies
		Com-DCSLs	21	30,000	NE	23,000	Varies
		Exc-DCSLs	500	68,000	NE	51,000	Varies
Sample ID	Date	Results in mg/kg or parts per million					
B-10-1	2.0'-4.0'	10/30/19	<0.076	<0.38	<0.34	<0.38	BRL
B-11-1	3.0'-3.5'	10/28/19	**0.198**	**0.566**	**0.423**	**0.484**	BRL
B-11-2	1.5'-3.0'	10/28/19	<0.081	<0.40	<0.36	<0.40	BRL
B-12-1	1.0'-2.5'	11/26/19	<0.088	<0.43	<0.39	<0.43	BRL
B-12-2	4.5'-6.0'	11/26/19	<0.082	<0.40	<0.37	<0.40	BRL
DUP-1	B-12-2 (4.5'-6.0')	11/26/19	<0.081	<0.40	<0.36	<0.40	BRL

Notes:

IDEM RCG = Indiana Department of Environmental Management (IDEM), Remediation Closure Guide

Res-MTG = IDEM RCG, Residential Soil Migration to Groundwater Screening Levels per IDEM RCG, Table A-6, 2020 Screening Levels

Res-DCLS = IDEM RCG, Soil Exposure, Residential Direct Contact Screening Levels per IDEM RCG Table A-6, 2020 Screening Levels

Com-DCSLs = IDEM RCG, Soil Exposure, Commercial/Industrial Direct Contact Screening Levels per IDEM RCG Table A-6, 2020 Screening Levels

Exc-DCSLs = IDEM RCG Soil Exposure, Excavation Direct Contact Screening Levels, per IDEM RCG Table A-6, 2020 Screening Levels

BRL = Below laboratory reporting limits

mg/kg = milligram per kilogram (mg/kg)

ppm = parts per million (ppm)

Depth Interval = feet below ground surface (ft bgs)

Bold result indicates concentration reported by laboratory is above laboratory reporting limits for the specific analyte

Shaded results indicates concentration above analyte specific IDEM RCG Screening Levels

NA = sample not submitted for analysis

NE = No Screening Levels established for the specific analyte

Table 4
Soil Lead Analytical Results per US EPA Test Method 6010B
Dick Krieg Motors
1648 West US 421
Delphi, Indiana
IDEM VRP Site #6160805

			Lead
2020 IDEM RCG SLs		**Res-MTG**	**270**
		Res-DCLS	**400**
		Com-DCSLs	**800**
		Exc-DCSLs	**1000**
ID	**Depth Interval**	**Date**	**mg/kg**
B-10-1	2.0'-4.0'	10/30/19	**10**
B-11-1	3.0'-3.5'	10/28/19	**6.3**
B-11-2	1.5'-3.0'	10/28/19	**10**
B-12-1	1.0'-2.5'	11/26/19	**7.2**
B-12-2	4.5'-6.0'	11/26/19	<2
DUP-1 (B12-2)	4.5'-6.0'	11/26/19	<2

Notes:

IDEM RCG = Indiana Department of Environmental Management (IDEM), Remediation Closure Guide

Res-MTG = IDEM RCG, Residential Soil Migration to Groundwater Screening Levels per IDEM RCG, Table A-6, 2020 Screening Levels

Res-DCLS = IDEM RCG, Soil Exposure, Residential Direct Contact Screening Levels per IDEM RCG Table A-6, 2020 Screening Levels

Com-DCSLs = IDEM RCG, Soil Exposure, Commercial/Industrial Direct Contact Screening Levels per IDEM RCG Table A-6, 2020 Screening Levels

Exc-DCSLs = IDEM RCG Soil Exposure, Excavation Direct Contact Screening Levels, per IDEM RCG Table A-6, 2020 Screening Levels

BRL = Below laboratory reporting limits

mg/kg = milligram per kilogram (mg/kg)

ppm = parts per million (ppm)

Depth Interval = feet below ground surface (ft bgs)

Bold result indicates concentration reported by laboratory is above laboratory reporting limits for the specific analyte

Shaded results indicates concentration above analyte specific IDEM RCG Screening Levels

NA = sample not submitted for analysis

Table 5
Groundwater VOC Analytical Results per US EPA Test Method 8260
Dick Krieg Motors
1648 West US 421
Delphi, Indiana
IDEM VRP Site #6160805

		ethylbenzene	n-propyl benzene	1,2,4-trimethylbenzene	1,3,5-trimethylbenzene	Xylene, Total	All Other VOCs
2020 IDEM RCG SLs	Res-TAP	700	660	56	60	10000	Varies
	Res VE GWSLs	NE	NE	NE	NE	NE	Varies
	Com VE GWSLs	NE	NE	NE	NE	NE	Varies
Sample ID	Date	Results in ug/L or parts per billion					
MW-10	12/12/2019	< 5	< 5	< 5	< 5	< 10	BRL
MW-11	12/12/2019	< 5	< 5	< 5	< 5	< 10	BRL
MW-12	12/12/2019	**9.91**	**6.43**	**49.1**	**6.21**	**71.4**	BRL
DUP-1 (MW-12)	12/12/2019	**8.87**	**5.44**	**41.6**	**5.83**	**61.6**	BRL

Notes:

IDEM RCG = Indiana Department of Environmental Management (IDEM), Remediation Closure Guide

Res-TAP = IDEM RCG, Residential Tap Water Screening Levels per IDEM RCG, Table A-6, 2020 Screening Levels

Res VE GWSLs = IDEM RCG, Residential Vapor Exposure Groundwater Screening Levels per IDEM RCG Table A-6, 2020 Screening Levels

Com VE GWSLs = IDEM RCG, Commercial/Industrial Vaper Exposure Groundwater Screening Levels per IDEM RCG Table A-6, 2020 Screening Levels

BRL = Below laboratory reporting limits

ug/L = micrograms per Liter (ug/L)

ppb = parts per billion (ppm)

Bold result indicates concentration reported by laboratory is above laboratory reporting limits for the specific analyte

Shaded results indicates concentration above analyte specific IDEM RCG Screening Levels

NA = sample not submitted for analysis

NE = No Screening Levels established for the specific analyte

Table 6
Bedrock Groundwater PAH Results per US EPA Test Method 8270
Dick Krieg Motors
1648 West US 421
Delphi, Indiana
IDEM VRP Site #6160805

		naphthalene	All Other PAHs
2020 IDEM RCG SLs	Res-TAP	1.7	Varies
	Res VE GWSLs	110	Varies
	Com VE GWSLs	460	Varies
Sample ID	Date	Results in ug/L or parts per billion	
MW-10	12/12/19	< 1.0	BRL
MW-11	12/12/19	< 1.0	BRL
MW-12	12/12/19	**3.85**	BRL
DUP-1 (MW-12)	12/12/19	**3.29**	BRL

Notes:

IDEM RCG = Indiana Department of Environmental Management (IDEM), Remediation Closure Guide

Res-TAP = IDEM RCG, Residential Tap Water Screening Levels per IDEM RCG, Table A-6, 2020 Screening Levels

Res VE GWSLs = IDEM RCG, Residential Vapor Exposure Groundwater Screening Levels per IDEM RCG Table A-6, 2020 Screening Levels

Com VE GWSLs = IDEM RCG, Commercial/Industrial Vaper Exposure Groundwater Screening Levels per IDEM RCG Table A-6, 2020 Screening Levels

BRL = Below laboratory reporting limits

ug/L = micrograms per Liter (ug/L)

ppb = parts per billion (ppm)

Bold result indicates concentration reported by laboratory is above laboratory reporting limits for the specific analyte

Shaded results indicates concentration above analyte specific IDEM RCG Screening Levels

NA = sample not submitted for analysis

NE = No Screening Levels established for the specific analyte

Table 7
Groundwater Lead Analytical Results per US EPA Test Method 6010
Dick Krieg Motors
1648 West US 421
Delphi, Indiana
IDEM VRP Site #6160805

		Lead, total	Lead, dissolved
2020 IDEM RCG SLs	Res-TAP	15	15
	Res VE GWSLs	NE	NE
	Com VE GWSLs	NE	NE
ID	Date	Results in ug/L	
MW-10	12/12/19	< 10	< 10
MW-11	12/12/19	< 10	< 10
MW-12	12/12/19	< 10	< 10
DUP-1	12/12/19	< 10	< 10

Notes:

IDEM RCG = Indiana Department of Environmental Management (IDEM), Remediation Closure Guide

Res-TAP = IDEM RCG, Residential Tap Water Screening Levels per IDEM RCG, Table A-6, 2020 Screening Levels

Res VE GWSLs = IDEM RCG, Residential Vapor Exposure Groundwater Screening Levels per IDEM RCG Table A-6, 2020 Screening Levels

Com VE GWSLs = IDEM RCG, Commercial/Industrial Vaper Exposure Groundwater Screening Levels per IDEM RCG Table A-6, 2020 Screening Levels

BRL = Below laboratory reporting limits

ug/L = micrograms per Liter (ug/L)

ppb = parts per billion (ppm)

Bold result indicates concentration reported by laboratory is above laboratory reporting limits for the specific analyte

Shaded results indicates concentration above analyte specific IDEM RCG Screening Levels

NA = sample not submitted for analysis

NE = No Screening Levels established for the specific analyte

Table 8
Soil VOC Analytical Results per US EPA Test Method 8260
Dick Krieg Motors
1648 West US 421
Delphi, Indiana
IDEM VRP Site #6160805

		Analytes	n-butylbenzene	sec-butylbenzene	cis-1,2-dichloroethene	ethylbenzene	p-isopropyltoluene	n-propylbenzene	styrene	toluene	1,2,4-trimethylbenzene	1,3,5-trimethylbenzene	xylene, total	All Other VOCs
2020 IDEM RCG SLs		Res-MTG	64	120	0.41	5.7	NE	25	2.2	14	1.6	1.7	200	Varies
		Res-DCLS	110	150	220	81	NE	260	870	820	220	180	260	Varies
		Com-DCSLs	110	150	2300	250	NE	260	870	820	220	180	260	Varies
		Exc-DCSLs	110	150	2400	480	NE	260	870	820	220	180	260	Varies
Sample ID	Depth Interval (feet bgs)	Date	Results reported in mg/kg or parts per million											
Data from Phase II Subsurface Investigation, dated August 26, 2015, prepared by Alliance Environmental Group														
B-1 (4-8)	7.5' - 8.0'	08/13/15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
B-2 (4-7)	5.75' - 6.25'	08/13/15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
B-3 (4-6)	4.25' - 4.75'	08/13/15	<0.006	<0.006	<0.006	<0.006	<0.006	**0.00828**	<0.006	<0.006	<0.006	<0.006	<0.013	BRL
B-4 (4-7)	5.5' - 6.0'	08/13/15	<0.006	<0.006	<0.006	**0.017**	<0.006	**0.0113**	<0.006	**0.0757**	**0.114**	**0.0289**	**0.128**	BRL
Data from Voluntary Remediation Program Investigation, dated June 8, 2018, prepared by Alliance Environmental Group														
B-1-1	1.0'-1.5'	06/01/17	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.011	BRL
B-1-2	5.5'-6.0'	06/01/17	**0.00633**	**0.00579**	<0.006	**0.0229**	**0.0117**	**0.016**	<0.006	**0.028**	**0.0961**	**0.0349**	**0.135**	BRL
B-2-1	0.5'-1.0'	06/01/17	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.013	BRL
B-2-2	3.5'-4.0'	06/01/17	<0.006	<0.006	<0.006	<0.006	<0.006	**0.0084**	<0.006	<0.006	**0.0638**	**0.0185**	**0.0423**	BRL
B-3-1	0.25'-0.75'	06/01/17	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	**0.0668**	BRL
B-3-2	2.5'-3.0'	06/01/17	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.005	<0.006	<0.006	<0.006	**0.0387**	BRL
B-4-1	0.25'-0.75'	06/01/17	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.011	BRL
B-4-2	3.5'-4.0'	06/01/17	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.012	BRL
B-4-2 DUP	3.5'-4.0'	06/01/01	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.011	BRL
B-5-1	1.0'-1.5'	10/29/17	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.013	BRL
B-5-2	6.5'-7.0'	10/29/17	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.011	BRL
B-6-1	1.0'-1.5'	10/29/17	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.011	BRL
B-6-2	2.5'-3.0'	10/29/17	**0.538**	**0.40**	<0.294	<0.294	<0.294	<0.294	**0.413**	<0.005	<0.005	<0.005	<0.588	BRL
B-7-1	0.75'-1.25'	10/29/17	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.10	BRL
B-7-2	6.5'-7.0'	10/29/17	<0.301	**0.62**	**0.752**	<0.301	<0.301	<0.301	<0.301	<0.301	**1.04**	**0.399**	<0.602	BRL
B-8-1	1.5'-2.0'	10/29/17	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.011	BRL
B-8-2	5.75'-6.25'	10/29/17	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.11	BRL
MW-5-1	0.5'–1.0'	10/23/18	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.012	BRL
MW-5-1 DUP	0.5'–1.0'	10/23/18	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.012	BRL
MW-5-2	7.0'–7.5'	10/23/18	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.012	BRL
MW-6-1	0.5'–1.0'	10/23/18	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.013	BRL
MW-6-2	5.0'–5.5'	10/23/18	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.011	BRL
MW-7-1	0.25'–0.75'	10/23/18	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.13	BRL
MW-7-2	2.5'–3.0'	10/23/18	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.005	<0.006	<0.006	<0.006	<0.012	BRL
MW-8-1	0.25'-0.75'	10/23/18	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.011	BRL
MW-8-2	4.25'-4.75'	10/23/18	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.013	BRL
MW-9-1	0.25'-0.75'	10/23/18	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.011	BRL
MW-9-2	3.5'–4.0'	10/23/18	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.012	BRL
MW-10-1	0.75'-1.25'	10/24/18	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.012	BRL
MW-10-2	2.0'-2.5'	10/24/18	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.011	BRL
MW-5R-1	0.5'-1.0'	01/04/19	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.012	BRL
MW-5R-2	3.5'-4.0'	01/04/19	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.012	BRL
MW-5R-2 DUP	3.5'-4.0'	01/04/19	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.012	BRL
MW-9R-1	0.5'-1.0'	01/04/19	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.014	BRL
MW-9R-2	3.5'-4.0'	01/04/19	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.012	BRL
MW-11-T	1.0'-1.5'	01/04/19	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.13	BRL
B-10-1	2.0'-4.0'	10/30/19	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.011	BRL
B-11-1	3.0'-3.5'	10/28/19	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.011	BRL
B-11-2	1.5'-3.0'	10/28/19	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.012	BRL
B-12-1	1.0'-2.5'	11/26/19	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.13	BRL
B-12-2	4.5'-6.0'	11/26/19	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.012	BRL
DUP-1	B-12-2 (4.5'-6.0')	11/26/19	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.012	BRL

Notes:
IDEM RCG = Indiana Department of Environmental Management (IDEM), Remediation Closure Guide
Res-MTG = IDEM RCG, Residential Soil Migration to Groundwater Screening Levels per IDEM RCG, Table A-6, 2020 Screening Levels
Res-DCLS = IDEM RCG, Soil Exposure, Residential Direct Contact Screening Levels per IDEM RCG Table A-6, 2020 Screening Levels
Com-DCSLs = IDEM RCG, Soil Exposure, Commercial/Industrial Direct Contact Screening Levels per IDEM RCG Table A-6, 2020 Screening Levels
Exc-DCSLs = IDEM RCG Soil Exposure, Excavation Direct Contact Screening Levels, per IDEM RCG Table A-6, 2020 Screening Levels
BRL = Below laboratory reporting limits
mg/kg = milligram per kilogram (mg/kg)
ppm = parts per million (ppm)
Depth Interval = feet below ground surface (ft bgs)
Bold result indicates concentration reported by laboratory is above laboratory reporting limits for the specific analyte
Shaded results indicates concentration above analyte specific IDEM RCG Screening Levels
NA = sample not submitted for analysis

Table 9
Cumulative Soil PAH Analytical Results per US EPA Test Method 8270
Dick Krieg Motors
1648 West US 421
Delphi, Indiana
IDEM VRP Site #6160805

			benzo(a) anthracene	benzo(a) pyrene	benzo(b) fluoranthene	chrysene	fluoranthene	1-methyl naphthalene	2-methyl naphthalene	naphthalene	phenanthrene	pyrene	All Other PAHs
2020 IDEM RCG SLs		Res-MTG	2.1	4.7	60	1800	1800	1.2	3.7	0.11	NE	260	Varies
		Res-DCLS	15	1.5	16	1600	3400	250	340	53	NE	2500	Varies
		Com-DCSLs	210	21	210	21000	30000	390	3000	170	NE	23000	Varies
		Exc-DCSLs	12000	500	12000	100,000	68000	390	6800	3100	NE	51000	Varies
Sample ID	Depth Interval	Date	Results in mg/kg or parts per million										
Data from Phase II Subsurface Investigation, dated August 26, 2015, prepared by Alliance Environmental Group													
B-1 (4-8)	7.5' - 8.0'	08/13/15	<0.36	<0.073	<0.36	<0.36	<0.36	<0.36	<0.36	<0.073	<0.33	<0.36	BRL
B-2 (4-7)	5.75' - 6.25'	08/13/15	<0.36	<0.073	<0.36	<0.36	<0.36	<0.36	<0.36	<0.073	<0.33	<0.36	BRL
B-3 (4-6)	4.25' - 4.75'	08/13/15	<0.41	<0.084	<0.41	<0.41	<0.41	<0.41	<0.41	<0.084	<0.38	<0.41	BRL
B-4 (4-7)	5.5' - 6.0'	08/13/15	<0.41	<0.084	<0.41	<0.41	<0.41	<0.41	<0.41	<0.084	<0.38	<0.41	BRL
Data from Voluntary Remediation Program Investigation, dated June 8, 2018, prepared by Alliance Environmental Group													
B-1-1	1.0'-1.5'	6/1/2017	<0.38	<0.076	<0.38	<0.38	<0.38	<0.38	<0.38	<0.076	<0.34	<0.38	BRL
B-1-2	5.5'-6.0'	6/1/2017	<0.37	<0.075	<0.37	<0.37	<0.37	<0.37	<0.37	<0.075	<0.34	<0.37	BRL
B-2-1	0.5'-1.0'	6/1/2017	<0.42	<0.085	<0.42	<0.42	<0.42	<0.42	<0.42	<0.085	<0.42	<0.42	BRL
B-2-2	3.5'-4.0'	6/1/2017	<0.39	<0.080	<0.39	<0.39	<0.39	<0.39	<0.39	<0.080	<0.39	<0.39	BRL
B-3-1	0.25'-0.75'	6/1/2017	<0.36	<0.074	<0.36	<0.36	<0.36	<0.36	<0.36	<0.074	<0.36	<0.36	BRL
B-3-2	2.5'-3.0'	6/1/2017	<0.37	<0.074	<0.37	<0.37	<0.37	<0.37	<0.37	<0.074	<0.37	<0.37	BRL
B-4-1	0.25'-0.75'	6/1/2017	<0.37	**0.281**	**0.434**	<0.37	**0.474**	<0.37	<0.37	<0.074	<0.33	**0.413**	BRL
B-4-2	3.5'-4.0'	6/1/2017	**0.911**	**0.82**	**1.44**	**0.919**	**1.66**	<0.38	<0.38	<0.078	**0.524**	**1.62**	BRL
B-4-2 DUP	3.5'-4.0'	6/1/2001	**0.729**	**0.672**	**1.18**	**0.735**	**1.43**	<0.37	<0.37	<0.074	**0.453**	**1.3**	BRL
B-5-1	1.0'-1.5'	10/29/17	<0.42	<0.086	<0.42	<0.42	<0.42	<0.42	<0.42	<0.086	<0.38	<0.42	BRL
B-5-2	6.5'-7.0'	10/29/17	<0.38	<0.077	<0.38	<0.38	<0.38	<0.38	<0.38	<0.077	<0.34	<0.38	BRL
B-6-1	1.0'-1.5'	10/29/17	<0.35	<0.071	<0.35	<0.35	<0.35	<0.35	<0.35	<0.071	<0.32	<0.35	BRL
B-6-2	2.5'-3.0'	10/29/17	<0.39	<0.079	<0.39	<0.39	<0.39	<0.39	<0.39	**0.082**	<0.35	<0.39	BRL
B-7-1	0.75'-1.25'	10/29/17	<0.34	<0.070	<0.34	<0.34	<0.34	<0.34	<0.34	<0.070	<0.31	<0.34	BRL
B-7-2	6.5'-7.0'	10/29/17	<0.40	<0.081	<0.40	<0.40	<0.40	**0.65**	**0.586**	**1.12**	<0.36	<0.40	BRL
B-8-1	1.5'-2.0'	10/29/17	<0.36	<0.074	<0.36	<0.36	<0.36	<0.36	<0.36	<0.074	<0.33	<0.36	BRL
B-8-2	5.75'-6.25'	10/29/17	<0.36	<0.074	<0.36	<0.36	<0.36	<0.36	<0.36	<0.074	<0.33	<0.36	BRL
B-9-1	0.5'-1.0'	5/3/2018	<0.42	<0.086	<0.42	<0.42	<0.42	<0.42	<0.42	<0.086	<0.38	<0.42	BRL
B-9-2	3.5'-4.0'	5/3/2018	<0.39	<0.080	<0.39	<0.39	<0.39	<0.39	<0.39	<0.080	<0.36	<0.39	BRL
B-10-1	0.5'-1.0'	5/3/2018	<0.44	<0.089	<0.44	<0.44	<0.44	<0.44	<0.44	<0.089	<0.40	<0.44	BRL
B-10-2	4.0'-4.5'	5/3/2018	<0.41	<0.084	<0.41	<0.41	<0.41	<0.41	<0.41	<0.084	<0.38	<0.41	BRL
B-11-1	0.75'-1.25'	5/3/2018	<0.36	<0.074	<0.36	<0.36	<0.36	<0.36	<0.36	<0.074	<0.33	<0.36	BRL
B-11-2	4.0'-4.5'	5/3/2018	<0.42	<0.086	<0.42	<0.42	<0.42	<0.42	<0.42	<0.086	<0.38	<0.42	BRL
B-11-2 DUP	4.0'-4.5'	5/3/2018	<0.44	<0.089	<0.44	<0.44	<0.44	<0.44	<0.44	<0.089	<0.40	<0.44	BRL
MW-5-1	0.5'–1.0'	10/23/18	<0.40	<0.082	<0.40	<0.40	<0.40	<0.40	<0.40	<0.082	<0.37	<0.40	BRL
MW-5-1 DUP	0.5'–1.0'	10/23/18	<0.40	<0.082	<0.40	<0.40	<0.40	<0.40	<0.40	<0.082	<0.37	<0.40	BRL
MW-5-2	7.0'–7.5'	10/23/18	<0.40	<0.082	<0.40	<0.40	<0.40	<0.40	<0.40	<0.082	<0.34	<0.37	BRL
MW-6-1	0.5'–1.0'	10/23/18	<0.42	<0.085	<0.42	<0.42	<0.42	<0.42	<0.42	<0.085	<0.42	<0.42	BRL
MW-6-2	5.0'–5.5'	10/23/18	<0.35	<0.072	<0.35	<0.35	<0.35	<0.35	<0.35	<0.072	<0.32	<0.35	BRL
MW-7-1	0.25'–0.75'	10/23/18	<0.44	<0.089	<0.44	<0.44	<0.44	<0.44	<0.44	<0.089	<0.40	<0.44	BRL
MW-7-2	2.5'–3.0'	10/23/18	<0.40	<0.082	<0.40	<0.40	<0.40	<0.40	<0.40	<0.082	<0.40	<0.40	BRL
MW-8-1	0.25'-0.75'	10/23/18	<0.37	**0.317**	**0.476**	<0.37	**0.473**	<0.37	<0.37	<0.074	<0.33	<0.37	BRL
MW-8-2	4.25'-4.75'	10/23/18	<0.42	<0.086	<0.42	<0.42	<0.42	<0.42	<0.42	<0.086	<0.38	<0.42	BRL
MW-9-1	0.25'-0.75'	10/23/18	<0.38	<0.077	<0.38	<0.38	<0.38	<0.38	<0.38	<0.077	<0.34	<0.38	BRL
MW-9-2	3.5'-4.0'	10/23/18	<0.40	<0.081	<0.40	<0.40	<0.40	<0.40	<0.40	<0.081	<0.36	<0.40	BRL
MW-10-1	0.75'-1.25'	10/24/18	<0.40	<0.081	<0.40	<0.40	<0.40	<0.40	<0.40	<0.081	<0.40	<0.40	BRL
MW-10-2	2.0'-2.5'	10/24/18	<0.35	<0.071	<0.35	<0.35	<0.35	<0.35	<0.35	<0.071	<0.32	<0.35	BRL
MW-5R-1	0.5'-1.0'	1/4/19	<0.38	<0.078	<0.38	<0.38	<0.38	<0.38	<0.38	<0.078	<0.35	<0.38	BRL
MW-5R-2	3.5'-4.0'	1/4/19	<0.40	<0.081	<0.40	<0.40	<0.40	<0.40	<0.40	<0.081	<0.36	<0.40	BRL
MW-5R-2 DUP	3.5'-4.0'	1/4/19	<0.40	<0.081	<0.40	<0.40	<0.40	<0.40	<0.40	<0.081	<0.36	<0.40	BRL
MW-9R-1	0.5'-1.0'	1/4/19	<0.45	<0.092	<0.45	<0.45	<0.45	<0.45	<0.45	<0.092	<0.41	<0.45	BRL
MW-9R-2	3.5'-4.0'	1/4/19	<0.39	<0.080	<0.39	<0.39	<0.39	<0.39	<0.39	<0.080	<0.36	<0.39	BRL
MW-11-T	1.0'-1.5'	1/4/19	<0.44	<0.089	<0.44	<0.44	<0.44	<0.44	<0.44	<0.089	<0.44	<0.44	BRL
B-10-1	2.0'-4.0'	10/30/19	<0.38	<0.076	<0.38	<0.38	<0.38	<0.38	<0.38	<0.076	<0.34	<0.38	BRL
B-11-1	3.0'-3.5'	10/28/19	<0.38	**0.198**	<0.38	<0.38	**0.566**	<0.38	<0.38	<0.078	**0.423**	**0.484**	BRL
B-11-2	1.5'-3.0'	10/28/19	<0.40	<0.081	<0.40	<0.40	<0.40	<0.40	<0.40	<0.081	<0.36	<0.40	BRL
B-12-1	1.0'-2.5'	11/26/19	<0.43	<0.088	<0.43	<0.43	<0.43	<0.43	<0.43	<0.088	<0.39	<0.43	BRL
B-12-2	4.5'-6.0'	11/26/19	<0.40	<0.082	<0.40	<0.40	<0.40	<0.40	<0.40	<0.082	<0.37	<0.40	BRL
DUP-1	B-12-2 (4.5'-6.0')	11/26/19	<0.40	<0.081	<0.40	<0.40	<0.40	<0.40	<0.40	<0.081	<0.36	<0.40	BRL

Notes:
IDEM RCG = Indiana Department of Environmental Management (IDEM), Remediation Closure Guide
Res-MTG = IDEM RCG, Residential Soil Migration to Groundwater Screening Levels per IDEM RCG, Table A-6, 2020 Screening Levels
Res-DCLS = IDEM RCG, Soil Exposure, Residential Direct Contact Screening Levels per IDEM RCG Table A-6, 2020 Screening Levels
Com-DCSLs = IDEM RCG, Soil Exposure, Commercial/Industrial Direct Contact Screening Levels per IDEM RCG Table A-6, 2020 Screening Levels
Exc-DCSLs = IDEM RCG Soil Exposure, Excavation Direct Contact Screening Levels, per IDEM RCG Table A-6, 2020 Screening Levels
BRL = Below laboratory reporting limits
mg/kg = milligram per kilogram (mg/kg)
ppm = parts per million (ppm)
Depth Interval = feet below ground surface (ft bgs)
Bold result indicates concentration reported by laboratory is above laboratory reporting limits for the specific analyte
Shaded results indicates concentration above analyte specific IDEM RCG Screening Levels
NA = sample not submitted for analysis

Table 10
Soil Lead Analytical Results per US EPA Test Method 6010B
Dick Krieg Motors
1648 West US 421
Delphi, Indiana
IDEM VRP Site #6160805

			Lead
2020 IDEM RCG SLs	Res-MTG		270
	Res-DCLS		400
	Com-DCSLs		800
	Exc-DCSLs		1000
ID	Depth Interval	Date	mg/kg
B-1 (4-8)	7.5' - 8.0'	08/13/15	NA
B-2 (4-7)	5.75' - 6.25'	08/13/15	NA
B-3 (4-6)	4.25' - 4.75'	08/13/15	**125**
B-4 (4-7)	5.5' - 6.0'	08/13/15	**15**
B-1-1	1.0'-1.5'	6/1/2017	**51**
B-1-2	5.5'-6.0'	6/1/2017	**11**
B-2-1	0.5'-1.0'	6/1/2017	**19**
B-2-2	3.5'-4.0'	6/1/2017	**18**
B-3-1	0.25'-0.75'	6/1/2017	**10**
B-3-2	2.5'-3.0'	6/1/2017	**8.3**
B-4-1	0.25'-0.75'	6/1/2017	**27**
B-4-2	3.5'-4.0'	6/1/2017	**29**
B-4-2 DUP	3.5'-4.0'	6/1/2001	**22**
B-5-1	1.0'-1.5'	10/29/2017	**44**
B-5-2	6.5'-7.0'	10/29/2017	**12**
B-6-1	1.0'-1.5'	10/29/2017	**2.6**
B-6-2	2.5'-3.0'	10/29/2017	**59**
B-7-1	0.75'-1.25'	10/29/2017	<2
B-7-2	6.5'-7.0'	10/29/2017	**20**
B-8-1	1.5'-2.0'	10/29/2017	**8.2**
B-8-2	5.75'-6.25'	10/29/2017	**7.7**
B-9-1	0.5'-1.0'	5/3/2018	**37**
B-9-2	3.5'-4.0'	5/3/2018	**9.5**
B-10-1	0.5'-1.0'	5/3/2018	**25**
B-10-2	4.0'-4.5'	5/3/2018	**20**
B-11-1	0.75'-1.25'	5/3/2018	**60**
B-11-2	4.0'-4.5'	5/3/2018	**21**
B-11-2 DUP	4.0'-4.5'	5/3/2018	**20**
MW-5-1	0.5'–1.0'	10/23/18	**5.5**
MW-5-1 DUP	0.5'–1.0'	10/23/18	**5.5**
MW-5-2	7.0'–7.5'	10/23/18	<2
MW-6-1	0.5'–1.0'	10/23/18	**5.1**
MW-6-2	5.0'–5.5'	10/23/18	**10**
MW-7-1	0.25'–0.75'	10/23/18	**4**
MW-7-2	2.5'–3.0'	10/23/18	<2
MW-8-1	0.25'-0.75'	10/23/18	<2
MW-8-2	4.25'-4.75'	10/23/18	**3.2**
MW-9-1	0.25'-0.75'	10/23/18	**8.6**
MW-9-2	3.5'–4.0'	10/23/18	**3**
MW-10-1	0.75'-1.25'	10/24/18	<2
MW-10-2	2.0'-2.5'	10/24/18	<2
MW-5R-1	0.5'-1.0'	1/4/19	**41**
MW-5R-2	3.5'-4.0'	1/4/19	**12**
MW-5R-2 DUP	3.5'-4.0'	1/4/19	**3**
MW-9R-1	0.5'-1.0'	1/4/19	**19**
MW-9R-2	3.5'-4.0'	1/4/19	**6.5**
MW-11-T	1.0'-1.5'	1/4/19	**7.3**
B-10-1	2.0'-4.0'	10/30/19	**10**
B-11-1	3.0'-3.5'	10/28/19	**6.3**
B-11-2	1.5'-3.0'	10/28/19	**10**
B-12-1	1.0'-2.5'	11/26/19	**7.2**
B-12-2	4.5'-6.0'	11/26/19	<2
DUP-1 (B12-2)	4.5'-6.0'	11/26/19	<2

Notes:
IDEM RCG = Indiana Department of Environmental Management (IDEM), Remediation Closure Guide
Res-MTG = IDEM RCG, Residential Soil Migration to Groundwater Screening Levels per IDEM RCG, Table A-6, 2020 Screening Levels
Res-DCLS = IDEM RCG, Soil Exposure, Residential Direct Contact Screening Levels per IDEM RCG Table A-6, 2020 Screening Levels
Com-DCSLs = IDEM RCG, Soil Exposure, Commercial/Industrial Direct Contact Screening Levels per IDEM RCG Table A-6, 2020 Screening Levels
Exc-DCSLs = IDEM RCG Soil Exposure, Excavation Direct Contact Screening Levels, per IDEM RCG Table A-6, 2020 Screening Levels
mg/kg = milligram per kilogram (mg/kg)
ppm = parts per million (ppm)
Depth Interval = feet below ground surface (ft bgs)
Bold result indicates concentration reported by laboratory is above laboratory reporting limits for the specific analyte
Shaded results indicates concentration above analyte specific IDEM RCG Screening Levels
NA = sample not submitted for analysis

Table 11

Soil PCB Analytical Results per US EPA Test Method 8082

Dick Krieg Motors

1648 West US 421

Delphi, Indiana

IDEM VRP Site #6160805

			PCBs						
			Aroclor 1016	Aroclor 1221	Aroclor 1232	Aroclor 1242	Aroclor 1248	Aroclor 1254	Aroclor 1260
2020 IDEM RCG SLs	Res-MTG		2.7	0.016	0.016	0.24	0.24	0.41	1.1
	Res-DCLS		5.7	2.8	2.4	3.2	3.2	1.7	3.4
	Com-DCSLs		51	8.3	7.2	9.5	9.4	9.7	9.9
	Exc-DCSLs		120	520	490	560	550	33	570
ID	Depth Interval	Date	Results in mg/kg or parts per million (ppm)						
B-1 (4-8)	7.5' - 8.0'	08/13/15	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.16	< 0.16
B-2 (4-7)	5.75' - 6.25'	08/13/15	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.16	< 0.16
B-3 (4-6)	Not Sampled	08/13/15	N/A	N/A	N/A	N/A	N/A	N/A	N/A
B-4 (4-7)	Not Sampled	08/13/15	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes:

IDEM RCG = Indiana Department of Environmental Management (IDEM), Remediation Closure Guide

Res-MTG = IDEM RCG, Residential Soil Migration to Groundwater Screening Levels per IDEM RCG, Table A-6, 2020 Screening Levels

Res-DCLS = IDEM RCG, Soil Exposure, Residential Direct Contact Screening Levels per IDEM RCG Table A-6, 2020 Screening Levels

Com-DCSLs = IDEM RCG, Soil Exposure, Commercial/Industrial Direct Contact Screening Levels per IDEM RCG Table A-6, 2020 Screening Levels

Exc-DCSLs = IDEM RCG Soil Exposure, Excavation Direct Contact Screening Levels, per IDEM RCG Table A-6, 2020 Screening Levels

mg/kg = milligram per kilogram (mg/kg)

ppm = parts per million (ppm)

Depth Interval = feet below ground surface (ft bgs)

Bold result indicates concentration reported by laboratory is above laboratory reporting limits for the specific analyte

Shaded results indicates concentration above analyte specific IDEM RCG Screening Levels

NA = sample not submitted for analysis

Table 12
Cumulative Groundwater VOC Analytical Results per US EPA Test Method 8260
Dick Krieg Motors
1648 West US 421
Delphi, Indiana
IDEM VRP Site #6160805

		benzene	1,1-dichloroethane	cis-1,2-dichloroethene	trans-1,2-dichloroethene	ethylbenzene	isopropylbenzene (cumene)	n-propyl benzene	p-isopropyl toluene	4-methyl-2-pentanone (MIBK)	toluene	1,2,4-trimethylbenzene	1,3,5-trimethylbenzene	vinyl chloride	Xylene, Total	All Other VOCs
2020 IDEM RCG SLs	**Res-TAP**	**5**	**27**	**70**	**100**	**700**	**450**	**660**	**NE**	**6300**	**1000**	**56**	**60**	**2**	**10000**	**Varies**
	Res VE GWSLs	**28**	**130**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**2.1**	**NE**	**Varies**
	Com VE GWSLs	**120**	**550**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**35**	**NE**	**Varies**
Sample ID	**Date**	**Results in ug/L or parts per billion (ppb)**														
B-2: W	8/13/15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
B-3: W	8/13/15	<5	**7.74**	**33.5**	<5	<5	<5	<5	<5	<10	<5	**6.69**	<5	**18.3**	<5	BRL
B-4: W	8/13/15	**32.8**	<5	**44.1**	<5	**64.7**	**5.65**	**17**	<5	<10	**1050**	**143**	**48.4**	<2	**382**	BRL
B-7	10/29/17	**15.9**	<5	**159**	**9.64**	<5	<5	<5	<5	<10	<5	<5	<5	**286**	<10	BRL
B-7 DUP	10/29/17	**13.1**	<5	**157**	**9.64**	<5	<5	<5	<5	<10	<5	<5	<5	**285**	<10	BRL
B-8	10/29/17	<5	<5	**607**	**53.7**	<5	<5	<5	<5	<10	<5	<5	<5	**148**	<10	BRL
MW-1	12/21/17	<5	<5	**15.6**	<5	**46.1**	**5.21**	**14.8**	<5	<10	**120.0**	**113**	**34.9**	**2.67**	**282**	BRL
	11/28/18	<5	<5	<5	<5	**72.0**	**5.35**	**16.5**	**11.9**	**19.7**	**92.4**	**150**	**48.0**	<2	**447**	BRL
MW-1 DUP	11/28/18	<5	<5	<5	<5	**72.6**	**5.54**	**16.8**	**12.4**	**20.3**	**91.2**	**150**	**45.6**	<2	**448**	BRL
MW-2	12/21/17	**14.7**	<5	<5	<5	**41.1**	**5.53**	**15.0**	<5	<10	**113.0**	**118**	**35.9**	<2	**314**	BRL
	11/29/18	<5	<5	<5	<5	**25.5**	<5	**11.2**	<5	<10	**72.8**	**109**	**18.5**	<2	**236**	BRL
MW-2 DUP	12/21/17	**13.1**	<5	<5	<5	**40.1**	**5.89**	**15.2**	<5	<10	**112.0**	**115**	**33.9**	<2	**316**	BRL
MW-3	12/21/17	<5	<5	<5	<5	<5	<5	<5	<5	<10	<5	<5	<5	<2	<10	BRL
	11/29/18	<5	<5	<5	<5	<5	<5	<5	<5	<10	<5	<5	<5	<2	<10	BRL
B-11	5/3/18	<5	<5	<5	<5	<5	<5	<5	<5	<10	<5	<5	<5	<2	<10	BRL
B-12	5/3/18	<5	<5	<5	<5	<5	<5	<5	<5	<10	<5	**7.24**	<5	<2	**13.7**	BRL
B-13	5/3/18	<5	<5	<5	<5	<5	<5	<5	<5	<10	<5	<5	<5	<2	<10	BRL
B-14	5/3/18	<5	<5	<5	<5	<5	<5	<5	<5	<10	<5	<5	<5	<2	<10	BRL
B-14 DUP	5/3/18	<5	<5	<5	<5	<5	<5	<5	<5	<10	<5	<5	<5	<2	<10	BRL
B-15	5/4/18	<5	<5	<5	<5	<5	<5	<5	<5	<10	<5	<5	<5	<2	<10	BRL
B-16	5/3/18	<5	<5	<5	<5	<5	<5	<5	<5	<10	<5	<5	<5	<2	<10	BRL
B-17	5/3/18	<5	<5	<5	<5	<5	<5	<5	<5	<10	<5	<5	<5	<2	<10	BRL
TAP	5/3/18	<5	<5	<5	<5	<5	<5	<5	<5	<10	<5	<5	<5	<2	<10	BRL
MW-4	11/28/18	<5	<5	<5	<5	<5	<5	<5	<5	<10	<5	<5	<5	<2	<10	BRL
MW-6	11/29/18	<5	<5	<5	<5	<5	<5	<5	<5	<10	<5	<5	<5	<2	<10	BRL
MW-7	11/29/18	<5	<5	<5	<5	<5	<5	<5	<5	<10	<5	<5	<5	<2	<10	BRL
MW-8	11/28-29/18	<5	<5	<5	<5	<5	<5	<5	<5	<10	<5	<5	<5	<2	<10	BRL
MW-9R	1/22/19	**WELL DRY - NO SAMPLE**														
MW-10	12/12/19	<5	<5	<5	<5	<5	< 5	<5	< 5	<10	<5	<5	<5	<2	<10	BRL
MW-11	12/12/19	<5	<5	<5	<5	<5	< 5	<5	< 5	<10	<5	<5	<5	<2	<10	BRL
MW-12	12/12/19	<5	<5	<5	<5	**9.91**	< 5	**6.43**	< 5	<10	<5	**49.1**	**6.21**	<2	**71.4**	BRL
DUP-1 (MW-12)	12/12/19	<5	<5	<5	<5	**8.87**	< 5	**5.44**	< 5	<10	<5	**41.6**	**5.83**	<2	**61.6**	BRL

Notes:
IDEM RCG = Indiana Department of Environmental Management (IDEM), Remediation Closure Guide
Res-TAP = IDEM RCG, Residential Tap Water Screening Levels per IDEM RCG, Table A-6, 2020 Screening Levels
Res VE GWSLs = IDEM RCG, Residential Vapor Exposure Groundwater Screening Levels per IDEM RCG Table A-6, 2020 Screening Levels
Com VE GWSLs = IDEM RCG, Commercial/Industrial Vaper Exposure Groundwater Screening Levels per IDEM RCG Table A-6, 2020 Screening Levels
BRL = Below laboratory reporting limits
ug/L = micrograms per Liter (ug/L)
ppb = parts per billion (ppm)
Bold result indicates concentration reported by laboratory is above laboratory reporting limits for the specific analyte
Shaded results indicates concentration above analyte specific IDEM RCG Screening Levels
NA = sample not submitted for analysis
NE = No Screening Levels established for the specific analyte

Table 13
Cumulative Groundwater PAH Results per US EPA Test Method 8270
Dick Krieg Motors
1648 West US 421
Delphi, Indiana
IDEM VRP Site #6160805

		1-methylnaphthalene	2-methylnaphthalene	naphthalene	All Other PAHs
2020 IDEM RCG SLs	Res-TAP	11	36	1.7	Varies
	Res VE GWSLs	NE	NE	110	Varies
	Com VE GWSLs	NE	NE	460	Varies
Sample	Date	Results in ug/L or parts per billion			
B-2	08/13/15	N/A	N/A	N/A	N/A
B-3	08/13/15	**1.84**	**1.28**	**2.83**	BRL
B-4	08/13/15	**1.43**	**3.26**	**8.18**	BRL
B-7	10/29/17	**2.92**	<1.0	**3.03**	BRL
B-7 DUP	10/29/17	**2.00**	<1.0	**2.23**	BRL
B-8	10/29/17	<1.0	<1.0	<1.0	BRL
MW-1	12/21/17	<1.0	<5	**10.9**	BRL
	11/28/18	**1.35**	**3.83**	**6.03**	BRL
MW-1 DUP	11/28/18	**1.3**	**3.69**	**5.81**	BRL
MW-2	12/21/17	<1.0	<5	**9.56**	N/A
	11/29/18	<1.0	**1.76**	**5.71**	BRL
MW-2 DUP	12/21/17	<5	<5	**7.85**	N/A
MW-3	12/21/17	<5	<5	<1.4	N/A
	11/29/18	<1.0	<1.0	<1.0	BRL
B-11	05/03/18	<5	<5	<1.4	N/A
B-12	05/03/18	<5	<5	<1.4	N/A
B-13	05/03/18	<5	<5	<1.4	N/A
B-14	05/03/18	<5	<5	<1.4	N/A
B-14 DUP	05/03/18	<5	<5	<1.4	N/A
B-15	05/04/18	<5	<5	<1.4	N/A
B-16	05/03/18	<5	<5	<1.4	N/A
B-17	05/03/18	<5	<5	<1.4	N/A
TAP	05/03/18	<5	<5	<1.4	N/A
MW-4	11/28/18	<1.0	<1.0	<1.0	BRL
MW-6	11/29/18	<1.0	<1.0	<1.0	BRL
MW-7	11/29/18	<1.0	<1.0	<1.0	BRL
MW-8	11/28-29/18	<1.0	<1.0	<1.0	BRL
MW-9R	01/22/19	DRY WELL - SAMPLE			
Bedrock Monitoring Wells					
MW-10	12/12/19	< 1.0	< 1.0	< 1.0	BRL
MW-11	12/12/19	< 1.0	< 1.0	< 1.0	BRL
MW-12	12/12/19	< 1.0	< 1.0	**3.85**	BRL
DUP-1 (MW-12)	12/12/19	< 1.0	< 1.0	**3.29**	BRL

Notes:

IDEM RCG = Indiana Department of Environmental Management (IDEM), Remediation Closure Guide
Res-TAP = IDEM RCG, Residential Tap Water Screening Levels per IDEM RCG, Table A-6, 2020 Screening Levels
Res VE GWSLs = IDEM RCG, Residential Vapor Exposure Groundwater Screening Levels per IDEM RCG Table A-6, 2020 Screening Levels
Com VE GWSLs = IDEM RCG, Commercial/Industrial Vaper Exposure Groundwater Screening Levels per IDEM RCG Table A-6, 2020 Screening Levels
BRL = Below laboratory reporting limits
ug/L = micrograms per Liter (ug/L)
ppb = parts per billion (ppm)
Bold result indicates concentration reported by laboratory is above laboratory reporting limits for the specific analyte
Shaded results indicates concentration above analyte specific IDEM RCG Screening Levels
NA = sample not submitted for analysis
NE = No Screening Levels established for the specific analyte

Table 14
Cumulative Groundwater Lead Analytical Results per US EPA Test Method 6010
Dick Kreig Motors
1648 West US 421
Delphi, Indiana
IDEM VRP Site #6160805

		Lead, total	Lead, dissolved
2020 IDEM RCG SLs	Res-TAP	15	15
	Res VE GWSLs	NE	NE
	Com VE GWSLs	NE	NE
ID	Date	Results in ug/L	
B-2	8/13/15	N/A	N/A
B-3	8/13/15	**30**	**14**
B-4	8/13/15	<10	<10
B-7	10/29/17	**30**	<10
B-7 DUP	10/29/17	**33**	<10
B-8	10/29/17	<10	<10
MW-1	12/21/17	N/A	N/A
	11/28/18	**10**	<10
MW-1 DUP	11/28/18	**20**	<10
MW-2	12/21/17	N/A	N/A
	11/29/18	<10	<10
MW-2 DUP	12/21/17	N/A	N/A
MW-3	12/21/17	N/A	N/A
	11/29/18	<10	<10
B-11	05/03/18	**10**	<10
B-12	05/03/18	<10	<10
B-13	05/03/18	N/A	N/A
B-14	05/03/18	**20**	<10
B-14 DUP	05/03/18	**10**	<10
B-15	05/04/18	N/A	N/A
B-16	05/03/18	**40**	<10
B-17	05/03/18	<10	<10
TAP	05/03/18	N/A	N/A
MW-4	11/28/18	**10**	<10
MW-6	11/29/18	<10	<10
MW-7	11/29/18	<10	<10
MW-8	11/28-29/18	<01	<10
MW-9R	01/22/19	DRY WELL - NO SAMPLE	
MW-10	12/12/19	<10	<10
MW-11	12/12/19	<10	<10
MW-12	12/12/19	<10	<10
DUP-1(MW-12)	12/12/19	<10	<10

Notes:

IDEM RCG = Indiana Department of Environmental Management (IDEM), Remediation Closure Guide
Res-TAP = IDEM RCG, Residential Tap Water Screening Levels per IDEM RCG, Table A-6, 2020 Screening Levels
Res VE GWSLs = IDEM RCG, Residential Vapor Exposure Groundwater Screening Levels per IDEM RCG Table A-6, 2020 Screening Levels
Com VE GWSLs = IDEM RCG, Commercial/Industrial Vaper Exposure Groundwater Screening Levels per IDEM RCG Table A-6, 2020 Screening Levels
BRL = Below laboratory reporting limits
ug/L = micrograms per Liter (ug/L)
ppb = parts per billion (ppm)
Bold result indicates concentration reported by laboratory is above laboratory reporting limits for the specific analyte
Shaded results indicates concentration above analyte specific IDEM RCG Screening Levels
NA = sample not submitted for analysis
NE = No Screening Levels established for the specific analyte

Table 15
PCB Groundwater Sample Analytsis using USEPA Test Method 8082
Dick Kreig Motors
1648 West US 421
Delphi, Indiana
IDEM VRP Site #6160805

			PCBs						
			Aroclor 1016	Aroclor 1221	Aroclor 1232	Aroclor 1242	Aroclor 1248	Aroclor 1254	Aroclor 1260
2020 IDEM RCG SLs	Res-TAP		1.4	0.047	0.047	0.078	0.078	0.078	0.078
ID	Depth Interval	Date	Results in ug/L or parts per billion						
B-1 (4-8)	Not Sampled	08/13/15	N/A	N/A	N/A	N/A	N/A	N/A	N/A
B-2 (4-7)	4-7	08/13/15	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
B-3 (4-6)	Not Sampled	08/13/15	N/A	N/A	N/A	N/A	N/A	N/A	N/A
B-4 (4-7)	Not Sampled	08/13/15	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes:
IDEM RCG = Indiana Department of Environmental Management (IDEM), Remediation Closure Guide
Res-TAP = IDEM RCG, Residential Tap Water Screening Levels per IDEM RCG, Table A-6, 2020 Screening Levels
Res VE GWSLs = IDEM RCG, Residential Vapor Exposure Groundwater Screening Levels per IDEM RCG Table A-6, 2020 Screening
Com VE GWSLs = IDEM RCG, Commercial/Industrial Vaper Exposure Groundwater Screening Levels per IDEM RCG Table A-6, 202(
BRL = Below laboratory reporting limits
ug/L = micrograms per Liter (ug/L)
ppb = parts per billion (ppm)
Bold result indicates concentration reported by laboratory is above laboratory reporting limits for the specific analyte
Shaded results indicates concentration above analyte specific IDEM RCG Screening Levels
NA = sample not submitted for analysis
NE = No Screening Levels established for the specific analyte

Table 1
Groundwater VOC Analytical Results
Dick Krieg Motors
1648 West US421
Delphi, Carroll County, Indiana
IDEM VRP Site #6160805

		acetone	benzene	2-butanone (MEK)	chloroform	cis-1,2-dichloroethene	ethylbenzene	isopropylbenzene (cumene)	p-isopropyltoluene	n-propylbenzene	toluene	1,2,4-trimethylbenzene	1,3,5-trimethylbenzene	xylene, total	all other VOCs
2020 IDEM RCG SLs	Residential Tap	14000	5	5600	80	70	700	450	NL	660	1000	56	60	10,000	varies
	Res VE GWSL	NE	28	NE	NE	NE	NE	NE	NL	NE	NE	NE	NE	NE	varies
	Com VE GWSL	NE	120	NE	NE	NE	NE	NE	NL	NE	NE	NE	NE	NE	varies
Sample ID	**Date**	**all results in ug/L or parts per billion (ppb)**													
Trip Blank	12/15/2020	<100	<5	<10	<5	<5	<5	<5	<5	<5	<5	<5	<5	<10	BRL
	6/22/2021	<100	<5	<10	<5	<5	<5	<5	<5	<5	<5	<5	<5	<10	BRL
	9/28/2021	<100	<5	<10	<5	<5	<5	<5	<5	<5	<5	<5	<5	<10	BRL
	12/27/2022	<100	<5	<10	<5	<5	<5	<5	<5	<5	<5	<5	<5	<10	BRL
	1/13/2022	<100	<5	<10	<5	<5	<5	<5	<5	<5	<5	<5	<5	<10	BRL
	3/28/2023	<100	<5	<10	<5	<5	<5	<5	<5	<5	<5	<5	<5	<10	BRL
	3/31/2023	<100	<5	<10	<5	<5	<5	<5	<5	<5	<5	<5	<5	<10	BRL
	6/28/2023	<100	<5	<10	<5	<5	<5	<5	<5	<5	<5	<5	<5	<10	BTL
MW-1	12/16/2020	<100	<5	<10	<5	<5	**28.5**	<5	**7.39**	**9.43**	**43.9**	**97.3**	**28.7**	**197**	BRL
	6/21/2021	**1900**	<5	<10	<5	**7.32**	**44.3**	**5.64**	**11.7**	**18.1**	**143**	**126**	**41.7**	**252**	BRL
	9/28/2021	**170**	<5	<10	<5	<5	**37.8**	<5	**8.88**	**12.8**	**49.7**	**130**	**55.8**	**227**	BRL
	1/13/2022	<100	<5	<10	<5	<5	**5.65**	<5	<5	<5	**6.38**	**26.6**	**8.06**	**36.4**	BRL
	3/31/2023	<100	<5	<10	<5	<5	<5	<5	<5	<5	**6.22**	**11.9**	**5.16**	**19.3**	BRL
	6/28/2023	<100	<5	<10	<5	<5	<5	<5	<5	<5	<5	**10.2**	<100	**10.9**	BRL
MW-2	12/16/2020	<100	<5	<10	<5	<5	**7.75**	<5	<5	<5	**8.18**	**40.2**	**8.02**	**75.3**	BRL
	6/21/2021	**421**	<5	<10	<5	<5	**27.1**	<5	<5	**8.42**	**41.2**	**70.5**	**16.2**	**205**	BRL
	9/28/2021	<100	<5	<10	<5	<5	**23.3**	<5	<5	**9.95**	**22.6**	**79.5**	**21.2**	**223**	BRL
	12/27/2021	<100	<5	<10	<5	<5	**15.8**	<5	<5	**6.2**	**19.4**	**49.4**	**10.8**	**155**	BRL
	3/28/2023	<100	<5	<10	<5	<5	<5	<5	<5	<5	**24.7**	**6.88**	<5	**72.2**	BRL
	6/28/2023	<100	**12.7**	<10	<5	<5	**23.2**	<5	<5	**6.98**	**70.0**	**65.9**	<5	**194**	BRL
MW-2 DUP	12/27/2021	<100	<5	<10	<5	<5	**16.1**	<5	<5	**6.96**	**22.1**	**49.8**	**10.8**	**145**	BRL
	3/28/2023	<100	<5	<10	<5	<5	<5	<5	<5	<5	**24.6**	**6.67**	<5	**27.4**	BRL
	6/28/2023	<100	**12.7**	<10	<5	<5	23	<5	<5	**7.29**	**69.7**	**65.5**	<5	**193**	BRL
MW-3	12/16/2020	<100	<5	<10	<5	<5	<5	<5	<5	<5	<5	<5	<5	<10	BRL
	6/21/2021	<100	<5	<10	<5	<5	<5	<5	<5	<5	<5	<5	<5	<10	BRL
	9/29/2021	<100	<5	<10	<5	<5	<5	<5	<5	<5	<5	<5	<5	<10	BRL
	1/13/2022	<100	<5	<10	<5	<5	<5	<5	<5	<5	<5	<5	<5	<10	BRL
	3/31/2023	<100	<5	<10	<5	<5	<5	<5	<5	<5	<5	<5	<5	<10	BRL
	6/28/2023	<100	<5	<10	<5	<5	<5	<5	<5	<5	<5	<5	<5	<10	BRL
MW-4	12/15/2020	insufficient water													
	6/21/2021														
	9/82/2021														
	12/27/2021	<100	<5	<10	<5	<5	<5	<5	<5	<5	<5	<5	<5	<10	BRL
	3/28/2023	<100	<5	<10	<5	<5	<5	<5	<5	<5	<5	<5	<5	<10	BRL
	6/28/2023	insufficient water													
MW-5R	12/15/2020	insufficient water													
	6/21/2021														
	9/28/2021														
	12/27/2022	<100	<5	<10	<5	<5	<5	<5	<5	<5	<5	<5	<5	<10	BRL
	3/31/2023	insufficient water													
	6/27/2023	<100	<5	<10	<5	<5	<5	<5	<5	<5	<5	<5	<5	<10	BRL
MW-6	12/16/2020	<100	<5	<10	<5	<5	<5	<5	<5	<5	<5	<5	<5	<10	BRL
	6/21/2021	<100	<5	<10	<5	<5	<5	<5	<5	<5	<5	<5	<5	<10	BRL
	9/29/2021	<100	<5	<10	<5	<5	<5	<5	<5	<5	<5	<5	<5	<10	BRL
	1/13/2022	<100	<5	<10	<5	<5	<5	<5	<5	<5	<5	<5	<5	<10	BRL
	3/29/2023	<100	<5	<10	<5	<5	<5	<5	<5	<5	<5	<5	<5	<10	BRL
	6/28/2023	<100	<5	<10	<5	<5	<5	<5	<5	<5	<5	<5	<5	<10	BRL
MW-7	12/15/2020	<100	<5	<10	<5	<5	<5	<5	<5	<5	<5	<5	<5	<10	BRL
	6/22/2021	<100	<5	<10	<5	<5	<5	<5	<5	<5	<5	<5	<5	<10	BRL
	9/28/2021	insufficient water													
	1/13/2022	<100	<5	<10	<5	<5	<5	<5	<5	<5	<5	<5	<5	<10	BRL
	3/31/2023	flooded													
	6/28/2023	insufficient water													
MW-8	12/15/2020	<100	<5	<10	<5	<5	<5	<5	<5	<5	<5	<5	<5	<10	BRL
	6/22/2021	<100	<5	<10	<5	<5	<5	<5	<5	<5	<5	<5	<5	<10	BRL
	9/28/2021	insufficient water													
	12/27/2021	<100	<5	<10	<5	<5	<5	<5	<5	<5	<5	<5	<5	<10	BRL
	3/28/2023	<100	<5	<10	<5	<5	<5	<5	<5	<5	<5	<5	<5	<10	BRL
	6/27/2023	insufficient water													
MW-9R	12/15/2020	<100	<5	<10	<5	<5	<5	<5	<5	<5	<5	<5	<5	<10	BRL
	6/22/2021	<100	<5	<10	<5	<5	<5	<5	<5	<5	<5	<5	<5	<10	BRL
	9/29/2021	<100	<5	<10	<5	<5	<5	<5	<5	<5	<5	<5	<5	<10	BRL
	1/13/2022	<100	<5	<10	<5	<5	<5	<5	<5	<5	<5	<5	<5	<10	BRL
	3/29/2023	<100	<5	<10	<5	<5	<5	<5	<5	<5	<5	<5	<5	<10	BRL
	6/27/2023	<100	<5	<10	<5	<5	<5	<5	<5	<5	<5	<5	<5	<10	BRL
MW-10	12/25/2020	<100	<5	<10	<5	<5	<5	<5	<5	<5	<5	<5	<5	<10	BRL
	6/21/2021	<100	<5	<10	<5	<5	<5	<5	<5	<5	<5	<5	<5	<10	BRL
	9/29/2021	<100	<5	<10	<5	<5	<5	<5	<5	<5	<5	<5	<5	<10	BRL
	12/27/2021	<100	<5	<10	<5	<5	<5	<5	<5	<5	<5	<5	<5	<10	BRL
	3/28/2023	<100	<5	<10	<5	<5	<5	<5	<5	<5	<5	<5	<5	<10	BRL
	6/27/2023	<100	<5	<10	<5	<5	<5	<5	<5	<5	<5	<5	<5	<10	BRL
MW-11	12/15/2020	<100	<5	<10	**8.68**	<5	<5	<5	<5	<5	<5	<5	<5	<10	BRL
	6/21/2021	<100	<5	<10	<5	<5	<5	<5	<5	<5	<5	<5	<5	<10	BRL
	9/28/2021	<100	<5	<10	<5	<5	<5	<5	<5	<5	<5	<5	<5	<10	BRL
	12/27/2022	<100	<5	<10	<5	<5	<5	<5	<5	<5	<5	<5	<5	<10	BRL
	3/28/2023	<100	<5	<10	<5	<5	<5	<5	<5	<5	<5	<5	<5	<10	BRL
	6/27/2023	<100	<5	<10	<5	<5	<5	<5	<5	<5	<5	<5	<5	<10	BRL
MW-12	12/15/2020	<100	<5	<10	<5	<5	<5	<5	<5	<5	<5	**16.0**	<5	**18.5**	BRL
	6/21/2021	<100	<5	<10	<5	<5	**5.53**	<5	<5	**5.93**	**5.57**	**36.9**	**5.87**	**56.9**	BRL
	9/29/2021	<100	<5	<10	<5	<5	<5	<5	<5	<5	<5	**14.0**	<5	<10	BRL
	1/13/2022	<100	<5	<10	<5	<5	<5	<5	<5	<5	<5	<5	<5	<10	BRL
	3/31/2023	<100	<5	<10	<5	<5	<5	<5	<5	<5	<5	<5	<5	<10	BRL
	6/28/2023	<100	<5	<10	<5	<5	<5	<5	<5	<5	<5	<5	<5	<10	BRL
MW-12 DUP	12/15/2020	<100	<5	<10	<5	<5	<5	<5	<5	<5	<5	<5	<5	<10	BRL
	6/21/2021	<100	<5	<10	<5	<5	**5.11**	<5	<5	**6.16**	**5.03**	**35.6**	**5.41**	**54.7**	BRL
	9/29/2021	<100	<5	<10	<5	<5	<5	<5	<5	<5	<5	**12.6**	<5	**13.0**	BRL
MW-13	3/31/2023	<100	<5	<10	<5	<5	<5	<5	<5	<5	<5	<5	<5	<10	BRL
	6/28/2023	<100	<5	<10	<5	<5	<5	<5	<5	<5	<5	<5	<5	<10	BRL
MANN BATH (well)	6/21/2021	<100	<5	<10	<5	<5	<5	<5	<5	<5	<5	<5	<5	<10	BRL
	9/28/2021	<100	<5	<10	<5	<5	<5	<5	<5	<5	<5	<5	<5	<10	BRL
	1/13/2022	<100	<5	<10	<5	<5	<5	<5	<5	<5	<5	<5	<5	<10	BRL
	3/29/2023	<100	<5	<10	<5	<5	<5	<5	<5	<5	<5	<5	<5	<10	BRL
	6/27/2023	<100	<5	<10	<5	<5	<5	<5	<5	<5	<5	<5	<5	<10	BRL
BARBER	12/15/2020	<100	<5	<10	<5	<5	<5	<5	<5	<5	<5	<5	<5	<10	BRL
	6/22/2021	<100	<5	<10	<5	<5	<5	<5	<5	<5	<5	<5	<5	<10	BRL
	9/28/2021	<100	<5	<10	<5	<5	<5	<5	<5	<5	<5	<5	<5	<10	BRL
	1/13/2022	**349**	<5	**140**	<5	<5	<5	<5	<5	<5	<5	<5	<5	<10	BRL
	3/29/2023	<100	<5	<10	<5	<5	<5	<5	<5	<5	<5	<5	<5	<10	BRL
	6/27/2023	<100	<5	<10	<5	<5	<5	<5	<5	<5	<5	<5	<5	<10	BRL

Table 2
Groundwater PAH Analytical Results
Dick Krieg Motors
1648 West US421
Delphi, Carroll County, Indiana
IDEM VRP Site #6160805

		1-methylnaphthalene	2-methylnaphthalene	naphthalene	all other PAH
2020 IDEM RCG SLs	Residential Tap	11	36	1.7	varies
	Res VE	NE	NE	110	varies
	Com VE GWSL	NE	NE	460	varies
Sample ID	Date	all results in ug/L or parts per billion (ppb)			
MW-1	12/16/2020	**1.92**	**5.36**	**7.62**	BRL
	6/21/2021	**1.87**	**4.94**	**6.54**	BRL
	9/28/2021	**2.57**	**6.96**	**10.1**	BRL
	1/13/2022	**3.7**	**9.51**	**12.2**	BRL
	3/31/2023	**2.28**	**6.23**	**8.51**	BRL
	6/28/2023	**1.79**	**3.88**	**4.69**	BRL
MW-2	12/16/2020	**1.26**	**2.71**	**6.41**	BRL
	6/21/2021	**1.19**	**2.12**	**5.50**	BRL
	9/28/2021	**1.22**	**2.64**	**7.93**	BRL
	12/27/2021	**1.25**	**1.95**	**5.56**	BRL
	3/28/2023	**1.01**	**2.21**	**6.48**	BRL
	6/28/2023	<1.0	**1.31**	**2.97**	BRL
MW-2 DUP	12/27/2022	**1.06**	**1.65**	**4.66**	BRL
	3/28/2023	**1.13**	**2.42**	**6.68**	BRL
	6/28/2023	<1.0	**1.23**	**3.16**	BRL
MW-3	12/16/2020	<1.0	<1.0	<1.0	BRL
	6/21/2021	<1.0	<1.0	<1.0	BRL
	9/29/2021	<1.0	<1.0	<1.0	BRL
	1/13/2022	<1.0	<1.0	<1.0	BRL
	3/31/2023	<1.0	<1.0	<1.0	BRL
	6/28/2023	<1.0	<1.0	<1.0	BRL
MW-4	12/15/2020	insufficient water			
	6/21/2021				
	9/28/2021				
	12/27/2021	<1.0	<1.0	<1.0	BRL
	3/28/2021	<1.0	<1.0	<1.0	BRL
	6/28/2023	insufficient water			
MW-5R	12/15/2020	insufficient water			
	6/21/2021				
	9/28/2021				
	12/27/2021	<1.0	<1.0	<1.0	BRL
	3/31/2023	insufficient water			
	6/27/2023	<1.0	<10	<1.0	BRL
MW-6	12/16/2020	<1.0	<1.0	<1.0	BRL
	6/21/2021	<1.0	<1.0	<1.0	BRL
	9/29/2021	<1.0	<1.0	<1.0	BRL
	1/13/2022	<1.0	<1.0	<1.0	BRL
	3/29/2023	<1.0	<1.0	<1.0	BRL
	6/28/2023	<1.0	<1.0	<1.0	BRL
MW-7	12/15/2020	<1.0	<1.0	<1.0	BRL
	6/22/2021	<1.0	<1.0	<1.0	BRL
	9/28/2021	insufficient water			
	1/13/2022	<1.0	<1.0	<1.0	BRL
	3/31/2023	flooded			
	6/28/2023	insufficient water			
MW-8	12/15/2020	<1.0	<1.0	<1.0	BRL
	6/22/2021	<1.0	<1.0	<1.0	BRL
	9/28/2021	insufficient water			
	12/27/2021	<1.0	<1.0	<1.0	BRL
	3/28/2023	<1.0	<10	<10	BRL
	6/28/2023	insufficient water			
MW-9R	12/15/2020	<1.0	<1.0	<1.0	BRL
	6/22/2021	<1.0	<1.0	<1.0	BRL
	9/29/2021	<1.0	<1.0	<1.0	BRL
	1/13/2022	insufficient water for sample volume			
	3/29/2023	<1.0	<1.0	<1.0	BRL
	6/27/2023	<1.0	<1.0	<1.0	BRL
MW-10	12/25/2020	<1.0	<1.0	<1.0	BRL
	6/21/2021	<1.0	<1.0	<1.0	BRL
	9/28/2021	<1.0	<1.0	<1.0	BRL
	12/29/2021	<1.0	<1.0	<1.0	BRL
	3/28/2023	<1.0	<1.0	<1.0	BRL
	6/27/2023	<1.0	<1.0	<1.0	BRL
MW-11	12/15/2020	<1.0	<1.0	<1.0	BRL
	6/21/2021	<1.0	<1.0	<1.0	BRL
	9/28/2021	<1.0	<1.0	<1.0	BRL
	12/29/2021	<1.0	<1.0	<1.0	BRL
	3/28/2023	<1.0	<1.0	<1.0	BRL
	6/27/2023	<1.0	<1.0	<1.0	BRL
MW-12	12/15/2020	<1.0	<1.0	**1.97**	BRL
	6/21/2021	<1.0	<1.0	**1.74**	BRL
	9/29/2021	<1.0	<1.0	**2.35**	BRL
	1/13/2022	<1.0	**1.07**	**3.77**	BRL
	3/31/2023	<1.0	<1.0	<1.0	BRL
	6/28/2023	<1.0	<1.0	<1.0	BRL
MW-12 DUP	12/15/2020	<1.0	<1.0	**1.76**	BRL
	6/21/2021	<1.0	<1.0	**1.55**	BRL
	9/29/2021	<1.0	<1.0	**1.75**	BRL
MW-13	3/31/2023	<1.0	<1.0	<1.0	BRL
	6/28/2023	<1.0	<1.0	<1.0	BRL
MANN BATH (WELL)	6/22/2021	<1.0	<1.0	<1.0	BRL
	9/28/2021	<1.0	<1.0	<1.0	BRL
	1/13/2022	<1.0	<1.0	<1.0	BRL
	3/29/2023	<1.0	<1.0	<1.0	BRL
	6/27/2023	<1.0	<1.0	<1.0	BRL
BARBER	12/15/2020	<1.0	<1.0	<1.0	BRL
	6/21/2021	<1.0	<1.0	<1.0	BRL
	9/28/2021	<1.0	<1.0	<1.0	BRL
	1/13/2022	<1.0	<1.0	<1.0	BRL
	3/29/2023	<1.0	<1.0	<1.0	BRL
	6/27/2023	<1.0	<1.0	<1.0	BRL

Table 3
Monitoinrg Well Contsrutction, Survey and Groundwater Elevation Data
Dick Krieg Motors
1648 West US421
Delphi, Carroll County, Indiana
IDEM VRP Site #6160805

Well ID	Total Depth	Screened Interval		Top of Casing	Data Collection Date	Depth To Water	Free Product Thickness	Groundwater Elevation
MW-1	8.00	3.00	8.00	96.27	12/15/2020	2.64	0.00	93.63
					6/21/2021	1.72	0.00	94.55
					9/28/2021	2.58	0.00	93.69
					1/13/2022	1.43	0.00	94.84
					3/28/2023	ARTESIAN		
					6/27/2023	2.66	0.00	93.61
MW-2	8.00	2.50	8.00	95.26	12/15/2020	4.50	0.00	90.76
					6/21/2021	3.52	0.00	91.74
					9/28/2021	4.78	0.00	90.48
					1/13/2022	1.91	0.00	93.35
					3/28/2023	2.19	0.00	93.07
					6/27/2023	4.57	0.00	90.69
MW-3	4.50	1.50	4.00	92.74	12/15/2020	2.26	0.00	90.48
					6/21/2021	1.84	0.00	90.9
					9/28/2021	3.88	0.00	88.86
					1/13/2022	1.41	0.00	91.33
					3/28/2023	ARTESIAN		
					6/27/2023	2.58	0.00	90.16
MW-4	4.00	1.00	4.00	95.84	12/15/2020	DRY	0.00	DRY
					6/21/2021	3.58	0.00	92.26
					9/28/2021	DRY	0.00	DRY
					1/13/2022	2.52	0.00	93.32
					3/28/2023	1.91	0.00	93.93
					6/27/2023	DRY	DRY	DRY
MW-5R	4.00	1.50	4.00	96.31	12/15/2020	DRY	DRY	DRY
					6/21/2021	3.20	0.00	93.11
					9/28/2021	DRY	0.00	DRY
					1/13/2022	2.00	0.00	94.31
					3/28/2023	3.75	0.00	92.56
					6/27/2023	3.18	0.00	93.13
MW-6	5.50	2.50	5.50	92.98	12/15/2020	2.57	0.00	90.41
					6/21/2021	2.70	0.00	90.28
					9.28.2021	3.29	0.00	89.69
					1/13/2022	1.70	0.00	91.28
					3/28/2023	0.55	0.00	92.43
					6/27/2023	3.83	0.00	89.15
MW-7	3.00	1.50	3.00	94.02	12/15/2020	2.68	0.00	91.34
					6/21/2021	1.50	0.00	92.52
					9/28/2021	DRY	0.00	DRY
					1/13/2022	1.46	0.00	92.56
					3/28/2023	FLOODED		
					6/27/2023	DRY	DRY	DRY
MW-8	5.00	3.00	5.00	96.21	12/15/2020	4.26	0.00	91.95
					6/21/2021	3.48	0.00	92.73
					9/28/2021	DRY	0.00	DRY
					1/13/2022	1.47	0.00	94.74
					3/28/2023	1.62	0.00	94.59
					6/27/2023	DRY	DRY	DRY
MW-9R	4.00	1.50	4.00	97.05	12/15/2020	3.65	0.00	93.40
					6/21/2021	2.49	0.00	94.56
					9/28/2021	4.48	0.00	92.57
					1/13/2022	2.45	0.00	94.60
					3/28/2023	1.21	0.00	95.84
					6/27/2023	3.49	0.00	93.56
MW-10	23.50	13.50	23.50	101.51	12/15/2020	7.47	0.00	94.04
					6/21/2021	5.25	0.00	96.26
					9/28/2021	7.31	0.00	94.20
					1/13/2022	5.35	0.00	96.16
					3/28/2023	3.29	0.00	98.22
					6/27/2023	6.95	0.00	94.56
MW-11	24.00	14.00	24.00	100.30	12/15/2020	6.09	0.00	94.21
					6/21/2021	4.74	0.00	95.56
					9/29/2021	6.02	0.00	94.28
					1/13/2022	4.33	0.00	95.97
					3/28/2023	3.29	0.00	97.01
					6/27/2023	5.96	0.00	94.34
MW-12	23.50	13.50	23.50	92.82	12/15/2020	2.40	0.00	90.42
					6/21/2021	1.40	0.00	91.42
					9/28/2021	2.41	0.00	90.41
					1/13/2022	1.08	0.00	91.74
					3/28/2023	ARTESIAN		
					6/27/2023	2.49	0.00	90.33
MW-13	23.5	13.5	23.5	90.03	3/30/2023	ARTESIAN		
					6/272023	3.63	0.00	86.40

APPENDIX C

CHARTS

Chart 1
MW-1 Groundwater1,2,4-trimethylbenzene Trend
Dick Krieg Motors
1648 West US 421
Delphi, Carroll County, Indiana
IDEM VRP Site #6160805

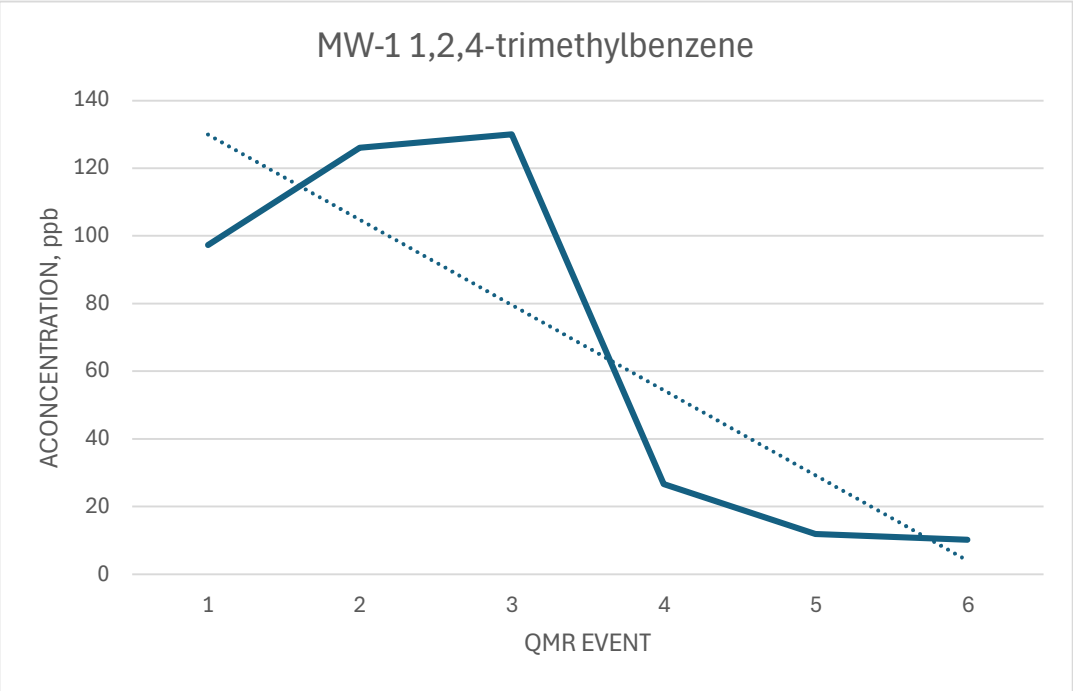


Chart 2
MW-2 Groundwater1,2,4-trimethylbenzene Trend
Dick Krieg Motors
1648 West US 421
Delphi, Carroll County, Indiana
IDEM VRP Site #6160805

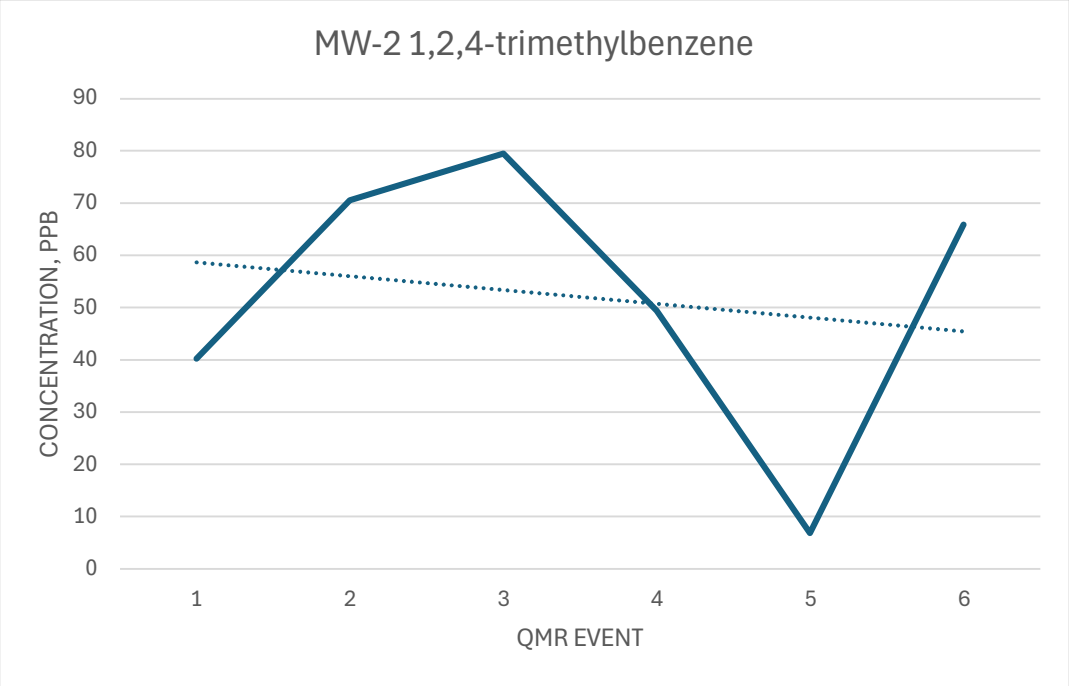


Chart 3
MW-1 Groundwater Naphthalene Trend
Dick Krieg Motors
1648 West US 421
Delphi, Carroll County, Indiana
IDEM VRP Site #6160805

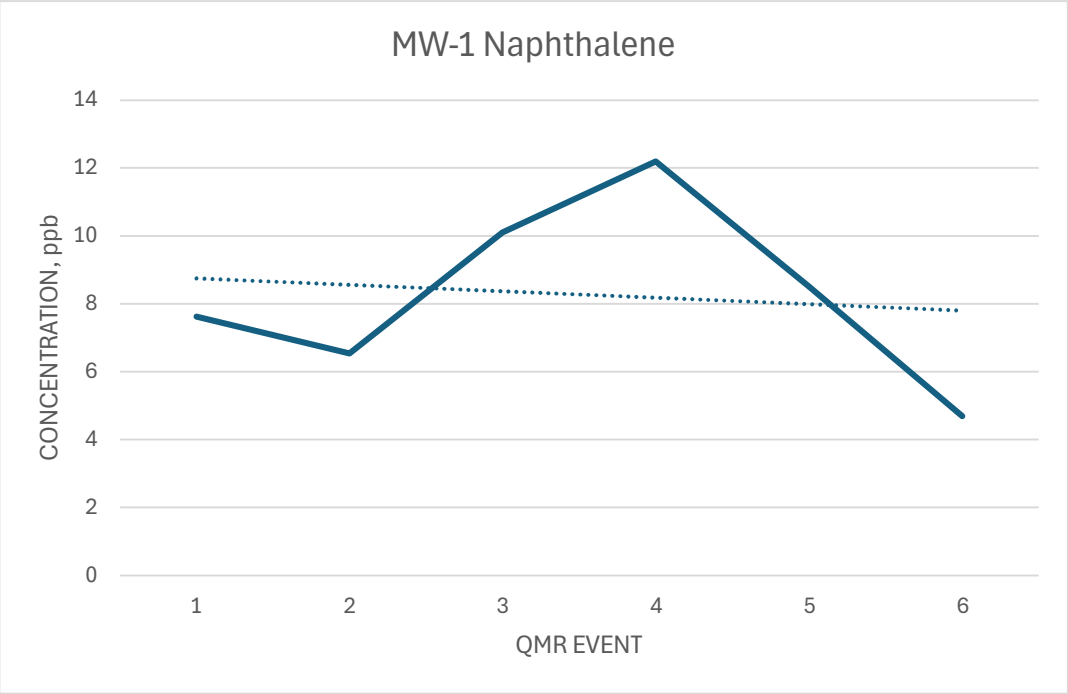
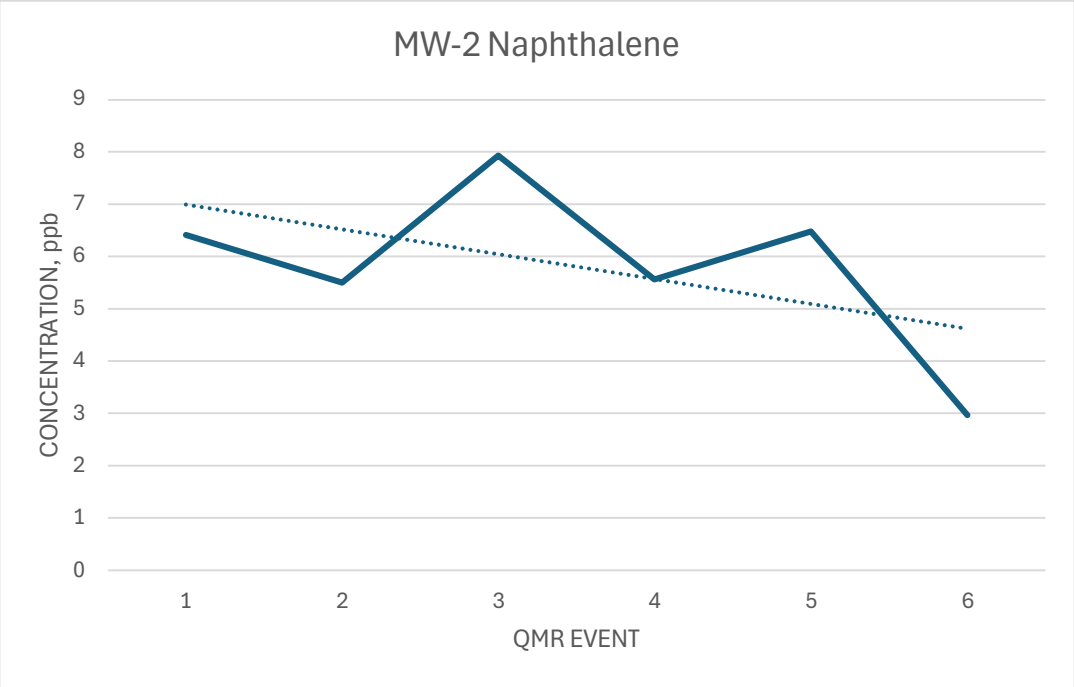


Chart 4
MW-2 Groundwater Naphthalene Trend
Dick Krieg Motors
1648 West US 421
Delphi, Carroll County, Indiana
IDEM VRP Site #6160805



APPENDIX D

SOIL BORING LOGS
MONITORING WELL CONSTRUCTION LOGS

ALLIANCE
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5153 Commerce Square Drive, Suite E
Indianapolis, Indiana 46237

B-1 / MW - 1

Dick Krieg Motors
1648 West US 421
Delphi, Indiana

Job Number: 17-0083-E

Driller: Earth Exploration
Drill Method: Hollow Stem Auger
Water Level:

Rig: Geoprobe 7720 DT
Borehole Diameter: 7.625 inch
Logged by: STS

Date Started: 06/01/2017
Date Finished: 06/01/2017
Checked by: KRS

Sample	Blow Count	Recovery	PID	Depth	Graphic Log	Material Description and Remarks	Well Details	Well Construction
						ASPHALT, 3"	Flush Mounted Manhole	
						CRUSHED STONE, 3"	Locking J-Plug	
							Concrete Seal	
1		40	0.0	2		SOIL SAMPLE B-1-1	Bentonite Grout Seal	
							Schedule 40 PVC Riser, 3' - 0", 2" dia.	
				4				
							Sand Filter Pack	
2		45	0.0	6		SOIL SAMPLE B-1-2 SILT LOAM, moist, brown	Schedule 40 PVC Screen, 5' - 0" 2" dia., 0.010" factory slot	
				8		REFUSAL AT 8'-0"		
				10				
				12				
				14				

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B-2 / MW - 2

Dick Krieg Motors
1648 West US 421
Delphi, Indiana

Page: 1 of 1
Job Number: 17-0083-E

Driller: Earth Exploration
Drill Method: Hollow Stem Auger
Water Level: 4' - 0"

Rig: Geoprobe 7720 DT
Borehole Diameter: 7.625 inch
Logged by: STS

Date Started: 06/01/2017
Date Finished: 06/01/2017
Checked by: KRS

Sample	Blow Count	Recovery	PID	Depth	Graphic Log	Material Description and Remarks	Well Details
						TOPSOIL, 2"	Flush Mounted Manhole
						CRUSHED STONE, 4"	Locking J-Plug
							Concrete Seal
							Bentonite Grout Seal
1		20	0.0	2		SOIL SAMPLE B-2-1 SILT LOAM, moist, brown	Schedule 40 PVC Riser, 2' - 6", 2" dia.
				4		SOIL SAMPLE B-2-2 SAND, brown	Sand Filter Pack
2		40	0.0	6		SILT LOAM, moist, brown	Schedule 40 PVC Screen, 5' - 6" 2" dia., 0.010" factory slot
				8		REFUSAL AT 8'-0"	
				10			
				12			
				14			

Well Construction

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B-3 / MW - 3

Dick Krieg Motors
1648 West US 421
Delphi, Indiana

Job Number: 17-0083-E

Driller: Earth Exploration
Drill Method: Hollow Stem Auger
Water Level:

Rig: Geoprobe 7720 DT
Borehole Diameter: 7.625 inch
Logged by: STS

Date Started: 06/01/2017
Date Finished: 06/01/2017
Checked by: KRS

Sample	Blow Count	Recovery	PID	Depth	Graphic Log	Material Description and Remarks	Well Details	Well Construction
1		40	13.4	0		TOPSOIL, 2"	Flush Mounted Manhole Locking J-Plug Concrete Seal Bentonite Grout Seal Schedule 40 PVC Riser, 1' - 0", 2" dia. Sand Filter Pack Schedule 40 PVC Screen, 3' - 0" 2" dia., 0.010" factory slot	
				2		SOIL SAMPLE B-3-1 SILT LOAM, moist, brown		
				4		SOIL SAMPLE B-3-2 LIMESTONE, weathered		
						REFUSAL AT 4'-6"		
				6				
				8				
				10				
				12				
				14				

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B-4 / MW - 4

Dick Krieg Motors
1648 West US 421
Delphi, Indiana

Page: 1 of 1
Job Number: 17-0083-E

Driller: Earth Exploration
Drill Method: Hollow Stem Auger
Water Level:

Rig: Geoprobe 7720 DT
Borehole Diameter: 7.625 inch
Logged by: STS

Date Started: 06/01/2017
Date Finished: 06/01/2017
Checked by: KRS

Sample	Blow Count	Recovery	PID	Depth	Graphic Log	Material Description and Remarks	Well Details	Well Construction
1		60	0.0	2		TOPSOIL, 2" SOIL SAMPLE B-3-1 SILT LOAM, moist, brown	Flush Mounted Manhole Locking J-Plug Concrete Seal Bentonite Grout Seal Schedule 40 PVC Riser, 1' - 0", 2" dia. Sand Filter Pack Schedule 40 PVC Screen, 3' - 0" 2" dia., 0.010" factory slot	
				4		SOIL SAMPLE B-3-2 REFUSAL AT 4'-0"		
				6				
				8				
				10				
				12				
				14				

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MW - 5

Dick Krieg Motors
1648 West US 421
Delphi, Indiana

Page: 1 of 1
Job Number: 17-0083-E

Driller: Earth Exploration
Drill Method: Hollow Stem Auger
Water Level: 5' - 00"

Rig: Geoprobe 7720 DT
Borehole Diameter: 7.625 inch
Logged by: KRS

Date Started: 10/23/2018
Date Finished: 10/23/2018
Checked by: KRS

Sample	Blow Count	Recovery	PID	Depth	Graphic Log	Material Description and Remarks	Well Details
1		65	0.0	2		CRUSHED STONE SOIL SAMPLE MW-5-1	Flush Mounted Manhole Locking J-Plug Concrete Seal Bentonite Grout Seal Schedule 40 PVC Riser, 3' - 0", 2" dia.
2		70	0.0	4 6		SILT LOAM, moist, brown SOIL SAMPLE MW-5-2	Sand Filter Pack Schedule 40 PVC Screen, 2' - 0" 2" dia., 0.010" factory slot
3		0		8		NO RECOVERY	
				10 12 14		REFUSAL AT 8' - 06"	

Well Construction

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MW - 5R

Dick Krieg Motors
1648 West US 421
Delphi, Indiana

Page: 1 of 1
Job Number: 17-0083-E

Driller: Earth Exploration
Drill Method: Hollow Stem Auger
Water Level: DRY

Rig: Geoprobe 7720 DT
Borehole Diameter: 7.625 inch
Logged by: MA

Date Started: 01/04/2019
Date Finished: 01/04/2019
Checked by: KRS

Sample	Blow Count	Recovery	PID	Depth	Graphic Log	Material Description and Remarks	Well Details	Well Construction
1		65	3.4	2		TOPSOIL CRUSHED STONE SOIL SAMPLE MW-5R-1 SILT LOAM, moist, dark brown	Flush Mounted Manhole Locking J-Plug Concrete Seal Bentonite Grout Seal Schedule 40 PVC Riser, 1' - 6", 2" dia. Sand Filter Pack Schedule 40 PVC Screen, 2' - 6" 2" dia., 0.010" factory slot	
				4		SOIL SAMPLE MW-5R-2 REFUSAL AT 4'-00"		
				6				
				8				
				10				
				12				
				14				

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MW - 6

Dick Krieg Motors
1648 West US 421
Delphi, Indiana

Page: 1 of 1
Job Number: 17-0083-E

Driller: Earth Exploration
Drill Method: Hollow Stem Auger
Water Level: N/A

Rig: Geoprobe 7720 DT
Borehole Diameter: 7.625 inch
Logged by: KRS

Date Started: 10/23/2018
Date Finished: 10/23/2018
Checked by: KRS

Sample	Blow Count	Recovery	PID	Depth	Graphic Log	Material Description and Remarks	Well Details	Well Construction
1		30	0.0	2		TOPSOIL, 2" SILT LOAM, moist, brown SOIL SAMPLE MW-6-1 SILT LOAM with limestone flakes	Flush Mounted Manhole Locking J-Plug Concrete Seal Bentonite Grout Seal Schedule 40 PVC Riser, 2' - 6", 2" dia. Schedule 40 PVC Screen, 3' - 0" 2" dia., 0.010" factory slot Sand Filter Pack	
				4				
				6		SOIL SAMPLE MW-6-2 REFUSAL AT 5' - 06"		
				8				
				10				
				12				
				14				

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MW - 7

Dick Krieg Motors
1648 West US 421
Delphi, Indiana

Page: 1 of 1
Job Number: 17-0083-E

Driller: Earth Exploration | **Rig: Geoprobe 7720 DT** | **Date Started: 10/23/2018**
Drill Method: Hollow Stem Auger | **Borehole Diameter: 7.625 inch** | **Date Finished: 10/23/2018**
Water Level: DRY | **Logged by: KRS** | **Checked by:**

Sample	Blow Count	Recovery	PID	Depth	Graphic Log	Material Description and Remarks	Well Details	Well Construction
1		65	0.0	2		TOPSOIL, 3" SILT LOAM, moist, brown approximately 20% rock fragments REFUSAL AT 3'-0"	Flush Mounted Manhole Locking J-Plug Concrete Seal Bentonite Grout Seal Schedule 40 PVC Riser, 1' - 6", 2" dia. Sand Filter Pack Schedule 40 PVC Screen, 1' - 6" 2" dia., 0.010" factory slot	

SOIL SAMPLE MW-7-1
SOIL SAMPLE MW-7-2

4
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MW - 8

Dick Krieg Motors
1648 West US 421
Delphi, Indiana

Page: 1 of 1
Job Number: 17-0083-E

Driller: Earth Exploration
Drill Method: Hollow Stem Auger
Water Level: DRY

Rig: Geoprobe 7720 DT
Borehole Diameter: 7.625 inch
Logged by: KRS

Date Started: 10/23/2018
Date Finished: 10/23/2018
Checked by: KRS

Sample	Blow Count	Recovery	PID	Depth	Graphic Log	Material Description and Remarks	Well Details	Well Construction
1		70	0.0	2		TOPSOIL, 2" SOIL SAMPLE B-8-1 SILT LOAM, moist, brown	Flush Mounted Manhole Locking J-Plug Concrete Seal Bentonite Grout Seal Schedule 40 PVC Riser, 3' - 0", 2" dia. Sand Filter Pack	
2		45	0.0	4		SOIL SAMPLE B-8-2 LIMESTONE, weathered REFUSAL AT 4'-11"	Schedule 40 PVC Screen, 2' - 0" 2" dia., 0.010" factory slot	
				6				
				8				
				10				
				12				
				14				

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MW - 9

Dick Krieg Motors
1648 West US 421
Delphi, Indiana

Page: 1 of 1
Job Number: 17-0083-E

Driller: Earth Exploration
Drill Method: Hollow Stem Auger
Water Level: DRY

Rig: Geoprobe 7720 DT
Borehole Diameter: 7.625 inch
Logged by: KRS

Date Started: 10/23/2018
Date Finished: 10/23/2018
Checked by: KRS

Sample	Blow Count	Recovery	PID	Depth	Graphic Log	Material Description and Remarks	Well Details	Well Construction
1		60	0.0	2	SOIL SAMPLE B-9-1	SILT LOAM, moist, brown	Flush Mounted Manhole Locking J-Plug Concrete Seal Bentonite Grout Seal Schedule 40 PVC Riser, 1' - 0", 2" dia. Sand Filter Pack Schedule 40 PVC Screen, 2' - 11" 2" dia., 0.010" factory slot	
				4	SOIL SAMPLE B-9-2	REFUSAL AT 3'-11"		
				6				
				8				
				10				
				12				
				14				

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MW - 9R

Dick Krieg Motors
1648 West US 421
Delphi, Indiana

Page: 1 of 1
Job Number: 17-0083-E

Driller: Earth Exploration
Drill Method: Hollow Stem Auger
Water Level: DRY

Rig: Geoprobe 7720 DT
Borehole Diameter: 7.625 inch
Logged by: MA

Date Started: 01/04/2019
Date Finished: 01/04/2019
Checked by: KRS

Sample	Blow Count	Recovery	PID	Depth	Graphic Log	Material Description and Remarks	Well Details	Well Construction
1		40	0.2	2	SOIL SAMPLE MW-9R-1	SILT LOAM, moist, dark brown	Flush Mounted Manhole Locking J-Plug Concrete Seal Bentonite Grout Seal Schedule 40 PVC Riser, 1' - 6", 2" dia. Sand Filter Pack Schedule 40 PVC Screen, 2' - 6" 2" dia., 0.010" factory slot	
				4	SOIL SAMPLE MW-9R-2	REFUSAL AT 4'-00"		
				6				
				8				
				10				
				12				
				14				

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MW - 10

Dick Krieg Motors
1648 West US 421
Delphi, Indiana

Job Number: 17-0083-E

Driller: Earth Exploration
Drill Method: Hollow Stem Auger
Water Level: DRY

Rig: Geoprobe 7720 DT
Borehole Diameter: 7.625 inch
Logged by: KRS

Date Started: 10/24/2018
Date Finished: 10/24/2018
Checked by: KRS

Sample	Blow Count	Recovery	PID	Depth	Graphic Log	Material Description and Remarks	Well Details	Well Construction
						CONCRETE	No monitoring well installed due to shallow depth to bedrock	
1		100	0.0	2		SOIL SAMPLE B-10-1 SILT LOAM, moist, brown		
						SOIL SAMPLE B-10-2 REFUSAL AT 2'-06"		
				4				
				6				
				8				
				10				
				12				
				14				

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MW - 10T

Dick Krieg Motors
1648 West US 421
Delphi, Indiana

Job Number: 17-0083-E

Driller: Earth Exploration
Drill Method: Hollow Stem Auger
Water Level: DRY

Rig: Geoprobe 7720 DT
Borehole Diameter: 7.625 inch
Logged by: KRS

Date Started: 10/24/2018
Date Finished: 10/24/2018
Checked by: KRS

Sample	Blow Count	Recovery	PID	Depth	Graphic Log	Material Description and Remarks	Well Details	Well Construction
1		100	0.0	2		CONCRETE BLANK DRILLED TO REFUSAL NO SAMPLES COLLECTED MW-10T PLACED 6" WEST OF MW-10 REFUSAL AT 2'-06"	TEMPORARY WELL CASING Schedule 40 PVC Riser, 1' - 0", 2" dia. extends above ground Schedule 40 PVC Screen, 2' - 06" 1" dia., 0.010" factory slot	

4
6
8
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12
14

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MW - 11T

Dick Krieg Motors
1648 West US 421
Delphi, Indiana

Page: 1 of 1
Job Number: 17-0083-E

Driller: Earth Exploration | **Rig: Hand Auger** | **Date Started: 01/04/2019**
Drill Method: Hollow Stem Auger | **Borehole Diameter: 7.625 inch** | **Date Finished: 01/04/2019**
Water Level: DRY | **Logged by: KRS** | **Checked by: KRS**

Sample	Blow Count	Recovery	PID	Depth	Graphic Log	Material Description and Remarks	Well Details	Well Construction
			0.0	0		ASPHALT	TEMPORARY WELL CASING	
						CRUSHED STONE	Schedule 40 PVC Riser, 1' - 0", 2" dia. extends above ground	
						SILT LOAM, moist, brown	Schedule 40 PVC Screen, 2' - 00" 1" dia., 0.010" factory slot	
				2		REFUSAL AT 2'-00"		
						SOIL SAMPLE MW-11-T		
				4				
				6				
				8				
				10				
				12				
				14				

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B-9

Dick Krieg Motors
1648 West US 421
Delphi, Indiana

Job Number: 17-0083-E

Driller: Earth Exploration
Drill Method: Hollow Stem Auger
Water Level: no water observed

Rig: Geoprobe 7720 DT
Borehole Diameter: 7.625 inch
Logged by: KRS

Date Started: 05/03/2018
Date Finished: 05/03/2018
Checked by:

Sample	Blow Count	Recovery	PID	Depth	Graphic Log	Material Description and Remarks
						TOPSOIL
1		50	0.0	2	SOIL SAMPLE B-9-1	SILT LOAM, moist, dark brown
				4	SOIL SAMPLE B-9-2	BORING TERMINATED AT 4' - 00" - REFUSAL
				6		
				8		
				10		
				12		
				14		

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B-10

Dick Krieg Motors
1648 West US 421
Delphi, Indiana

Job Number: 17-0083-E

Driller: Earth Exploration
Drill Method: Hollow Stem Auger
Water Level: no water observed

Rig: Geoprobe 7720 DT
Borehole Diameter: 7.625 inch
Logged by: KRS

Date Started: 05/03/2018
Date Finished: 05/03/2018
Checked by:

Sample	Blow Count	Recovery	PID	Depth	Graphic Log	Material Description and Remarks
						TOPSOIL
1		70	0.0	2	SOIL SAMPLE B-10-1	SILT LOAM, moist, dark brown
2		100	0.0	4	SOIL SAMPLE B-10-2	BORING TERMINATED AT 4' - 06" - REFUSAL
				6		
				8		
				10		
				12		
				14		

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Environmental Group, Inc.
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B-11

Dick Krieg Motors
1648 West US 421
Delphi, Indiana

Job Number: 17-0083-E

Driller: Earth Exploration
Drill Method: Hollow Stem Auger
Water Level: 4' - 06"

Rig: Geoprobe 7720 DT
Borehole Diameter: 7.625 inch
Logged by: KRS

Date Started: 05/03/2018
Date Finished: 05/03/2018
Checked by:

Sample	Blow Count	Recovery	PID	Depth	Graphic Log	Material Description and Remarks
						CRUSHED STONE
1		80	0.0	2	SOIL SAMPLE B-11-1	SILT LOAM, moist, dark brown
2		100	0.0	4	SOIL SAMPLE B-11-2	BORING TERMINATED AT 5' - 00" - REFUSAL
				6		
				8		
				10		
				12		
				14		

ALLIANCE
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B-12

Dick Krieg Motors
1648 West US 421
Delphi, Indiana

Job Number: 17-0083-E

Driller: Earth Exploration | **Rig: Geoprobe 7720 DT** | **Date Started: 05/03/2018**
Drill Method: Hollow Stem Auger | **Borehole Diameter: 7.625 inch** | **Date Finished: 05/03/2018**
Water Level: | **Logged by: KRS** | **Checked by:**

Sample	Blow Count	Recovery	PID	Depth	Graphic Log	Material Description and Remarks
						TOPSOIL
1		10	0.0	2		NO RECOVERY
2		0		4		
				6		BORING TERMINATED AT 6' - 04" - REFUSAL
				8		
				10		
				12		
				14		

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B-13

Dick Krieg Motors
1648 West US 421
Delphi, Indiana

Job Number: 17-0083-E

Driller: Earth Exploration
Drill Method: Hollow Stem Auger
Water Level: 6' - 05"

Rig: Geoprobe 7720 DT
Borehole Diameter: 7.625 inch
Logged by: KRS

Date Started: 05/03/2018
Date Finished: 05/03/2018
Checked by:

Sample	Blow Count	Recovery	PID	Depth	Graphic Log	Material Description and Remarks
						TOPSOIL, 2"
1		60	0.0	2		SILT LOAM, moist, dark brown
2		50	0.0	4		
				6 ▼		
						BORING TERMINATED AT 6' - 06" - REFUSAL
				8		
				10		
				12		
				14		

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B-14

Dick Krieg Motors
1648 West US 421
Delphi, Indiana

Job Number: 17-0083-E

Driller: Earth Exploration
Drill Method: Hollow Stem Auger
Water Level: 4' - 06"

Rig: Geoprobe 7720 DT
Borehole Diameter: 7.625 inch
Logged by: KRS

Date Started: 05/03/2018
Date Finished: 05/03/2018
Checked by:

Sample	Blow Count	Recovery	PID	Depth	Graphic Log	Material Description and Remarks
						ASPHALT
						CRUSHED STONE
1		75	0.0	2		SILT LOAM, moist, dark brown
				4		▼
2		80	0.0	6		
						BORING TERMINATED AT 6' - 11" - REFUSAL
				8		
				10		
				12		
				14		

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B-15

Dick Krieg Motors
1648 West US 421
Delphi, Indiana

Job Number: 17-0083-E

Driller: Earth Exploration | **Rig: Geoprobe 7720 DT** | **Date Started: 05/03/2018**
Drill Method: Hollow Stem Auger | **Borehole Diameter: 7.625 inch** | **Date Finished: 05/03/2018**
Water Level: no water at completion | **Logged by: KRS** | **Checked by:**

Sample	Blow Count	Recovery	PID	Depth	Graphic Log	Material Description and Remarks
						ASPHALT
						CRUSHED STONE
1		75	0.0	2		SILT LOAM, moist, dark brown
2		65	0.0	4		NOTE: approximately 8" of water in boring after 24 hours
				6		BORING TERMINATED AT 6' - 00" - REFUSAL
				8		
				10		
				12		
				14		

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B-16

Dick Krieg Motors
1648 West US 421
Delphi, Indiana

Job Number: 17-0083-E

Driller: Earth Exploration | **Rig: Geoprobe 7720 DT** | **Date Started: 05/03/2018**
Drill Method: Hollow Stem Auger | **Borehole Diameter: 7.625 inch** | **Date Finished: 05/03/2018**
Water Level: | **Logged by: KRS** | **Checked by:**

Sample	Blow Count	Recovery	PID	Depth	Graphic Log	Material Description and Remarks
						ASPHALT
						CRUSHED STONE
1		10	0.0	2		
				4		
2		0		6		NO RECOVERY
				8		
3		0				
				10		BORING TERMINATED AT 10' - 00" - REFUSAL
				12		
				14		

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B-17

Dick Krieg Motors
1648 West US 421
Delphi, Indiana

Job Number: 17-0083-E

Driller: Earth Exploration | **Rig: Geoprobe 7720 DT** | **Date Started: 05/03/2018**
Drill Method: Hollow Stem Auger | **Borehole Diameter: 7.625 inch** | **Date Finished: 05/03/2018**
Water Level: | **Logged by: KRS** | **Checked by:**

Sample	Blow Count	Recovery	PID	Depth	Graphic Log	Material Description and Remarks
						ASPHALT
						CRUSHED STONE
1		10	0.0	2		
				4		
2		0		6		NO RECOVERY
				8		
3		0				
				10		BORING TERMINATED AT 9' - 10" - REFUSAL
				12		
				14		

B-10/MW-10

Krieg Motors	1648 West US 421		Delphi, Indiana
Project Number	17-0083-E	Drill Rig	CME 55
Geologist	Joe Gordon	Ground Elevation	101.51 Feet
Date Drilled	10/30/19	Total Depth of Borehole	25 feet Feet
Borehole Diameter	4.5 Inches	Depth to Water	5.97 Feet

Graphic Log	Description	Depth	Sample	PID	% Recovery	Blow Counts	Completion
	ASPHALT						
	GRAVEL and FILL MATERIAL, crushed stone with fines						
	CLAY, with silt. some gravel, moist, brown to dark brown			1.3	80	2-2-3-4	
	gravel increases with depth (likely weathered bedrock)						
	Refusal at 4.2 feet bgs.	5					
	DOLOMITE, brown to blue gray (with depth), fractured, fossiliferous, no effervesence unless crushed						
	vuggy	10					
	becomes more competent	15					
		20					
	BORING TERMINATED AT 25 FT BGS.	25					

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B-11/MW-11

Krieg Motors	1648 West US 421		Delphi, Indiana
Project Number	17-0083-E	Drill Rig	CME 55
Geologist	Joe Gordon	Ground Elevation	100.30 Feet
Date Drilled	10/31/19	Total Depth of Borehole	25 feet Feet
Borehole Diameter	4.0 Inches	Depth to Water	5.56 Feet

Graphic Log	Description	Depth	Sample	PID	% Recovery	Blow Counts	Completion
	ASPHALT						
	GRAVEL, crrushed stone with fines			0.1	75		
	CLAY, with silt. some gravel, moist, brown to dark brown			1.1	80	7-4-4-4	
	gravel increases with depth (likely weathered bedrock)			1.5	25	5-50/5	
	Refusal at 3.5 feet.						
	DOLOMITE, brown to blue gray, fractured, fossiliferous, no effervesence unless crushed	5					
		10					
		15					
		20					
	BORING TERMINATED AT 25 FT BGS.	25					

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B-12/MW-12

Krieg Motors	1648 West US 421		Delphi, Indiana
Project Number	17-0083-E	Drill Rig	CME 55
Geologist	Joe Gordon	Ground Elevation	96.82 Feet
Date Drilled	11/26/19	Total Depth of Borehole	25 feet Feet
Borehole Diameter	Inches	Depth to Water	1.97 Feet

Graphic Log	Description	Depth	Sample	PID	% Recovery	Blow Counts	Completion
	TOP SOIL						
	CLAY, with silt. some gravel, moist, brown to dark brown			0.2	30	3-4-3	
	gravel increases with depth (likely weathered bedrock)			0.8	20	3-4-2	
	silty sandy CLAY, gray to greenish, some gravel, very wet to saturated	5		0.9			
	more gravel, silt with depth [gravelly CLAY]						
	Refusal at 6.5 feet bgs.						
	DOLOMITE, brown to blue gray (with depth), fractured, fossiliferous, no effervesence unless crushed	10					
	fractured						
	vuggy	15					
	more competent with depth	20					
	BORING TERMINATED AT 23.5 FT BGS.	25					

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BORING LOG

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Drill Rig:	CME55	Date Drilled:	3-30-23	Logged By:
Boring Dia:	8 Inches	Boring Number:	MW-13	Joe Gordon

Sample	Blow Counts	Completion	Depth Feet	Lithology	Description
	1-1-3-3				ORGANIC TOP SOIL
	1-8-REFUSAL				clayey SILT, brown, trace of fine gravel, very moist, REFUSAL AT 3.5 FT BGS. PID=0.0 ppmv
			5		DOLOMITE, brown to blue gray (with depth), fractured, fossiliferous, vuggy. PID=0.6 ppmv
			10		
			15		more competent with depth
			20		
					BORING TERMINATED
			25		
			30		
			35		

Completion Notes:

Site:

Dick Krieg Motors
1648 West US 421
Delphi, Indiana

Project No.: 17-0083-E

APPENDIX E

FIELD SCREENING RESULTS

Table 1
Groundwater Elevation Data
Dick Krieg Motors
1648 West US 421
Delphi, Indiana
IDEM VRP Site #6160805

Well ID	Date	Top of Casing Elevation	Depth to Ground Water	Ground Water Elevation	Free Product Thickness	Corrected Groundwater Elevation	Monitoring Well Depth	Monitoring Well Screen Interval
MW-1	10/29/17	96.27	2.52	93.75	0	93.75	8.00	3 – 8
	12/21/17		3.04	93.23	0	93.23		
	11/28/18		1.80	94.47	0	94.47		
MW-2	10/29/17	95.26	4.66	90.60	0	90.6	8.00	2.5 – 8
	12/21/17		5.93	89.33	0	89.33		
	11/29/18		3.79	91.47	0	91.47		
MW-3	10/29/17	92.74	2.35	90.39	0	90.39	4.50	1.5 - 4
	12/21/17		3.45	89.29	0	89.29		
	11/92/18		3.79	88.95	0	88.95		
MW-4	10/29/17	95.84	DRY	---	---	---	4.00	1 – 4
	12/21/17		DRY	---	---	---		
	11/28/18		2.79	93.05	0	93.05		
MW-5R	1/22/19	96.31	DRY	---	---	---	4.00	1.5 - 4
MW-6	11/29/18	92.98	2.01	90.97	0	90.97	5.50	2.5 - 5.5
MW-7	11/29/18	94.02	1.71	92.31	0	92.31	3.00	1.5 - 3
MW-8	11/28/18	96.21	2.39	93.83	0	93.83	5.00	3 - 5
MW-9R	1/22/19	97.05	DRY	---	---	---	4.00	1.5 - 4
MW-10	12/12/19	101.51	6.30	95.21	0	95.21	23.50	13.5 - 23.5
	1/7/20		5.97	95.54	0	95.54		
MW-11	12/12/19	100.30	5.49	94.81	0	94.81	24.00	14 - 24
	1/7/20		5.56	94.74	0	94.74		
MW-12	12/12/19	96.82	1.69	95.13	0	95.13	23.50	13.5 - 23.5
	1/7/20		1.97	94.85	0	94.85		

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LOW-FLOW GROUNDWATER SAMPLING FIELD DATA SHEET

Project Name and Number:

Monitoring Well Number: MW-1

Field Staff Name(s):

Sampling Date:

Weather Conditions:

Well Condition:

Total Well Depth: 8

Depth to Water: 2.64

Purge Amount: 5.91

Time Intervals:	Depth to Water:	Water Quality Parameters						Field Observations:
		pH:	Specific Conductivity (µS/cm)	Dissolved Oxygen: (mg/L)	Temperature:	ORP (mV):	Turbidity (NTU):	
1145	2.69	6.92	0.969	0.79	8.74	-65	17.53	WELL NEEDS METAL COVER.
1150	2.71	6.89	0.978	5.97	9.58	-81	7.1	MOST LIKELY REMOVED WHEN
1155	2.72	6.88	0.933	0.00	9.47	-83	10.9	SNOW PLOWING. - NOT RECENT.
1200	2.80	6.89	0.930	0.00	9.47	-87	44	
1205	2.80	6.87	0.946	0.00	9.89	-80	38	
~~1200~~ 1210	2.81	6.90	0.959	0.00	9.79	-91	15.9	- PURGE AMOUNT ACHIEVED.
1215	2.81	6.91	0.899	0.00	9.80	-90		- WELL STABLE EXCEPT FOR
1220	2.82	6.91	0.942	0.00	9.91	-87		TURBIDITY.
Page ____ of ____		Variance Allowed Prior to Sampling:						Sample Collection Time: 1225
		0.1	3%	3%	3%	10 mV	10%	

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LOW-FLOW GROUNDWATER SAMPLING FIELD DATA SHEET

Project Name and Number:

Monitoring Well Number: MW-2

Field Staff Name(s):

Sampling Date:

Weather Conditions:

Well Condition:

Total Well Depth: 8

Depth to Water: 4.50

Purge Amount: 3.87

Time Intervals:	Depth to Water:	Water Quality Parameters						Field Observations:
		pH:	Specific Conductivity (µS/cm)	Dissolved Oxygen: (mg/L)	Temperature:	ORP (mV):	Turbidity (NTU):	
0920	4.64	7.08	0.739	13.09	10.49	-126	5.1	
0925	4.75	6.81	0.724	12.16	10.66	-113	1.0	
0930	5.05	6.80	0.783	10.33	10.69	-114	31.6	
0935	5.36	6.97	0.742	10.91	10.79	-116	7.9	
0940	5.50	6.83	0.759	10.83	10.70	-118	8.3	
0945	5.63	6.91	0.793	16.79	10.89	-115	9.3	
								WELL STABILIZED. PURGE AMOUNT: ≈ 3 GALLONS.
Page ____ of ____		Variance Allowed Prior to Sampling:						
		0.1	3%	3%	3%	10 mV	10%	Sample Collection Time: 0950

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LOW-FLOW GROUNDWATER SAMPLING FIELD DATA SHEET

Project Name and Number:

Monitoring Well Number: MW-3

Field Staff Name(s):

Sampling Date:

Weather Conditions:

Well Condition:

Total Well Depth: 4.5

Depth to Water: 2.26

Purge Amount: 2.46

Time Intervals:	Depth to Water:	Water Quality Parameters						Field Observations:
		pH:	Specific Conductivity (µS/cm)	Dissolved Oxygen: (mg/L)	Temperature:	ORP (mV):	Turbidity (NTU):	PUMP EMPTIED WELL. MA WILL WAIT FOR RECHARGE & COLLECT SAMPLE VIA BAILERS.
								-LOW FLOW COMPLETE. MA GOES BACK TO MW-3 FOR ~~EEE~~ BAILING WELL. PRIOR TO PUMP FAILURE, PURGE AMT ≈ 1 GAL. MA WILL PURGE REMAINING AMT & TAKE SAMPLE
Page ____ of ____		Variance Allowed Prior to Sampling:						Sample Collection Time: 1240
		0.1	3%	3%	3%	10 mV	10%	

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LOW-FLOW GROUNDWATER SAMPLING FIELD DATA SHEET

Project Name and Number:
Monitoring Well Number: MW-4
Field Staff Name(s):
Sampling Date:
Weather Conditions:
Well Condition:
Total Well Depth: 4
Depth to Water:
Purge Amount:

Time Intervals:	Depth to Water:	pH:	Specific Conductivity (µS/cm)	~~Dissolved Oxygen: (mg/L)~~ TDS	Temperature:	ORP (mV):	Turbidity (NTU):	Field Observations:
		—	—	—	—			WELL COMPLETELY DRY. NO SAMPLE COLLECTED
Page ___ of ___		Variance Allowed Prior to Sampling: 0.1	3%	3%	3%	10 mV	10%	Sample Collection Time: ___

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LOW-FLOW GROUNDWATER SAMPLING FIELD DATA SHEET

Project Name and Number:
Monitoring Well Number: MW-5R
Field Staff Name(s):
Sampling Date:
Weather Conditions:
Well Condition:
Total Well Depth: 4
Depth to Water: ~~3.18~~ DRY
Purge Amount: ~~3E~~ N/A

Time Intervals:	Depth to Water:	pH:	Specific Conductivity (µS/cm)	Dissolved Oxygen: (mg/L)	Temperature:	ORP (mV):	Turbidity (NTU):	Field Observations:
								DRY WELL
Page ___ of ___		Variance Allowed Prior to Sampling: 0.1	3%	3%	3%	10 mV	10%	Sample Collection Time: —

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LOW-FLOW GROUNDWATER SAMPLING FIELD DATA SHEET

Project Name and Number:

Monitoring Well Number: MW-C6

Field Staff Name(s):

Sampling Date:

Weather Conditions:

Well Condition:

Total Well Depth: 5.5

Depth to Water: 2.57

Purge Amount: 3.24

Time Intervals:	Depth to Water:	Water Quality Parameters						Field Observations:
		pH:	Specific Conductivity (µS/cm)	Dissolved Oxygen: (mg/L)	Temperature:	ORP (mV):	Turbidity (NTU):	
1015	2.83	7.71	0.548	6.38	8.32	-8	625	PURGE AMOUNT ACHIEVED
1020	2.86	7.49	0.539	9.99	8.83	21	146	
1025	2.87	7.40	0.536	10.08	8.95	36	33.0	
1030	2.87	7.37	0.530	16.09	4.32	54	6.3	
1035	2.90	7.36	0.540	9.83	9.33	61	3.8	
Page ____ of ____		Variance Allowed Prior to Sampling:						Sample Collection Time: 1045
		0.1	3%	3%	3%	10 mV	10%	

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LOW-FLOW GROUNDWATER SAMPLING FIELD DATA SHEET

Project Name and Number:

Monitoring Well Number: MW-7

Field Staff Name(s):

Sampling Date:

Weather Conditions:

Well Condition:

Total Well Depth: 3

Depth to Water: 2.68

Purge Amount: .36G

Time Intervals:	Depth to Water:	pH:	Specific Conductivity (μS/cm)	~~Dissolved Oxygen (mg/L)~~ TDS	Temperature:	ORP (mV):	Turbidity (NTU):	Field Observations:
		Water Quality Parameters						
		7.55	1.55	0.69	7.4			-DUE TO H_2O DEPTH, LOW-FLOW NOT POSSIBLE. SAMPLE COLLECTED VIA BAILERS.
Page ___ of ___	Variance Allowed Prior to Sampling:	0.1	3%	3%	3%	10 mV	10%	Sample Collection Time: 0846

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LOW-FLOW GROUNDWATER SAMPLING FIELD DATA SHEET

Project Name and Number:

Monitoring Well Number: MW-8

Field Staff Name(s):

Sampling Date:

Weather Conditions:

Well Condition:

Total Well Depth: 5

Depth to Water: 4.26

Purge Amount: .81 G.

Time Intervals:	Depth to Water:	Water Quality Parameters						Field Observations:
		pH:	Specific Conductivity (µS/cm)	~~Dissolved Oxygen (mg/L)~~ TDS	Temperature:	ORP (mV):	Turbidity (NTU):	
		—	—	—	—			DUE TO H_2O DEPTH, LOW-FLOW NOT POSS. BLE. COLLECTED VIA BAILERS, NOT ENOUGH H_2O FOR PNA COLLECTION. VOC ONLY.
Page ____ of ____		Variance Allowed Prior to Sampling:						Sample Collection Time: 0908
		0.1	3%	3%	3%	10 mV	10%	

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LOW-FLOW GROUNDWATER SAMPLING FIELD DATA SHEET

Project Name and Number:

Monitoring Well Number: MW-9R

Field Staff Name(s):

Sampling Date:

Weather Conditions:

Well Condition:

Total Well Depth: 4

Depth to Water: 3.65

Purge Amount: 0.39

Time Intervals:	Depth to Water:	Water Quality Parameters						Field Observations:
		pH:	Specific Conductivity (µS/cm)	~~Dissolved Oxygen (mg/L)~~ TDS	Temperature:	ORP (mV):	Turbidity (NTU):	
		7.76	1.34	.68	7.2			
Page ____ of ____		Variance Allowed Prior to Sampling:						
		0.1	3%	3%	3%	10 mV	10%	Sample Collection Time: 1241

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LOW-FLOW GROUNDWATER SAMPLING FIELD DATA SHEET

Project Name and Number:

Monitoring Well Number: MW-10

Field Staff Name(s):

Sampling Date:

Weather Conditions:

Well Condition:

Total Well Depth: 23.5

Depth to Water: 7.47

Purge Amount: 1.95

Time Intervals:	Depth to Water:	Water Quality Parameters						Field Observations:
		pH:	Specific Conductivity (µS/cm)	TDS ~~Dissolved Oxygen: (mg/L)~~	Temperature:	ORP (mV):	Turbidity (NTU):	
		7.05	0.91	0.63	12.2			
Page ___ of ___		Variance Allowed Prior to Sampling:						
		0.1	3%	3%	3%	10 mV	10%	Sample Collection Time: 1200

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LOW-FLOW GROUNDWATER SAMPLING FIELD DATA SHEET

Project Name and Number:
Monitoring Well Number: mw-11
Field Staff Name(s):
Sampling Date:
Weather Conditions:
Well Condition:
Total Well Depth: 24
Depth to Water: 6.09
Purge Amount: 2.196

Time Intervals:	Depth to Water:	Water Quality Parameters						Field Observations:
		pH:	Specific Conductivity (µS/cm)	TDS ~~Dissolved Oxygen (mg/L)~~	Temperature:	ORP (mV):	Turbidity (NTU):	
		7.16	0.87	0.52	12.2			
Page ____ of ____		Variance Allowed Prior to Sampling: 0.1	3%	3%	3%	10 mV	10%	Sample Collection Time: 1120

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LOW-FLOW GROUNDWATER SAMPLING FIELD DATA SHEET

Project Name and Number:
Monitoring Well Number: MW-12
Field Staff Name(s):
Sampling Date:
Weather Conditions:
Well Condition:
Total Well Depth: 23.5
Depth to Water: 2.4
Purge Amount: 2.58

Time Intervals:	Depth to Water:	pH:	Specific Conductivity (µS/cm)	~~Dissolved Oxygen (mg/L)~~ TDS	Temperature:	ORP (mV):	Turbidity (NTU):	Field Observations:
		7.14	0.46 ↔	0.92	11.0			MS/MSD - VOC + PNA FROM 12.
Variance Allowed Prior to Sampling:		0.1	3%	3%	3%	10 mV	10%	Sample Collection Time: 1100

Page ____ of ____

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LOW-FLOW GROUNDWATER SAMPLING FIELD DATA SHEET

Project Name and Number: MARS / Kokomo VT-0083-C
Monitoring Well Number: MW-8
Field Staff Name(s): MA / JB
Sampling Date: 6/22/21
Weather Conditions: Sunny 72°
Well Condition: ok
Total Well Depth: 4.65
Depth to Water: 3.48 (6/21) 4.07 (6/22)
Purge Amount: NA

Time Intervals:	Depth to Water:	Water Quality Parameters: pH:	Specific Conductivity (µS/cm)	Dissolved Oxygen: (mg/L)	Temperature:	ORP (mV):	Turbidity (NTU):	Field Observations:
		Original water levels collected on 6/21 upon Arrival						
		Level in MW-8 dropped from 3.48' to 4.07' on 6/22/21						
		Approx. 10" of water in bailer						
		Sample from bottom of 1st bailer						
		Not Enough Volume to purge						
		Sample 10:28 on 6/22/21						
Page ____ of ____		Variance Allowed Prior to Sampling: 0.1	3%	3%	3%	10 mV	10%	Sample Collection Time: 1028

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LOW-FLOW GROUNDWATER SAMPLING FIELD DATA SHEET

Project Name and Number: MAW / KLEEG 17-0083-E
Monitoring Well Number: MW-9L
Field Staff Name(s): MA / JB
Sampling Date: 6/22/21
Weather Conditions:
Well Condition: Sunny ~ 70° Well in OK Cond.
Total Well Depth: 4.14
Depth to Water: 2.49 (6/21) 3.10 (6/22)
Purge Amount: N/A

Time Intervals:	Depth to Water:	Water Quality Parameters: pH:	Specific Conductivity (µS/cm)	Dissolved Oxygen: (mg/L)	Temperature:	ORP (mV):	Turbidity (NTU):	Field Observations:
		HEAVY RAIN ON 6/18 & 6/19						
	[redacted] Dodg.	Water level collected 6/21/22.						
		6/22/21 only about ~ 1' of water in well						
		Not enough volume to purge						
		Sample 1st bailer w/ only foot of H2O From bottom of bailer						
Page ____ of ____		Variance Allowed Prior to Sampling: 0.1	3%	3%	3%	10 mV	10%	Sample Collection Time: 0954

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LOW-FLOW GROUNDWATER SAMPLING FIELD DATA SHEET

Project Name and Number: Kaiser/Mapp 17-0083-6
Monitoring Well Number: MW-7
Field Staff Name(s): MA/JB
Sampling Date: 6/22
Weather Conditions: Sunny ≈ 72°
Well Condition: OK
Total Well Depth: 3.04
Depth to Water: 1.58 (6/21/22) 2.65 (6/22/22)
Purge Amount: NA

Time Intervals:	Depth to Water:	Water Quality Parameters: pH:	Specific Conductivity (µS/cm)	Dissolved Oxygen: (mg/L)	Temperature:	ORP (mV):	Turbidity (NTU):	Field Observations:
		*Heavy Rain 6/18 & 6/19						
		Original water levels Collected 6/21/22 upon Arrival						
		Water level in MW-7 dropped from 1.58 to 2.65 overnight 6/21 to 6/22						
		Approx. 8-10" of water in First Basket						
		Sample Collected From bottom of 1st basket						
		Not Enough Volume to Purge						
		Use 6/21 water level for GW Map						
		All Network Measured Am of 6/21/22						
Page ____ of ____		Variance Allowed Prior to Sampling: 0.1	3%	3%	3%	10 mV	10%	Sample Collection Time: 1045

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LOW-FLOW GROUNDWATER SAMPLING FIELD DATA SHEET

Project Name and Number: Miles/MAPN 17-0083-E
Monitoring Well Number: MW-4
Field Staff Name(s): MA / JA
Sampling Date: 6/22/21
Weather Conditions: Sunny 72°
Well Condition: OK
Total Well Depth: 3.88
Depth to Water: 3.58 (6/21) 3.80 (6/22)
Purge Amount: N/A

Time Intervals:	Depth to Water:	Water Quality Parameters						Field Observations:
		pH:	Specific Conductivity (µS/cm)	Dissolved Oxygen: (mg/L)	Temperature:	ORP (mV):	Turbidity (NTU):	
		Heavy Rain on 6/18 & 6/19						
		6/21 Level taken upon Arrival @ Site						
		Level Dropped to Nearly Dry by 6/22						
		Sample Attempted @ 1005 on 6/22/21						
		No water in Bailer only 0.08' of water measured.						
		NO SAMPLE - DRY						
Page ____ of ____		Variance Allowed Prior to Sampling:						Sample Collection Time: ____
		0.1	3%	3%	3%	10 mV	10%	

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LOW-FLOW GROUNDWATER SAMPLING FIELD DATA SHEET

Project Name and Number: Kaiser/Mapp 17-0083-E
Monitoring Well Number: MW-5R
Field Staff Name(s): MA/JB
Sampling Date:
Weather Conditions: Sunny ≈ 72°
Well Condition:
Total Well Depth: 3.45
Depth to Water: 3.20 (6/21/21) 3.41 (6/22/21)
Purge Amount:

Time Intervals:	Depth to Water:	Water Quality Parameters: pH:	Specific Conductivity (µS/cm)	Dissolved Oxygen: (mg/L)	Temperature:	ORP (mV):	Turbidity (NTU):	Field Observations:
		Heavy Rain 6/18 & 6/19						
		Original Network Water Levels Collected upon Arrival 6/21						
		MW-5R went from 0.25' of water to basically Dry From 6/21 to 6/22						
		Attempted to Sample @ 16:40 6/22/21						
		NO WATER IN BAILER.						
					NO Sample - Dry			
Page ____ of ____		Variance Allowed Prior to Sampling: 0.1	3%	3%	3%	10 mV	10%	Sample Collection Time: N/A

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LOW-FLOW GROUNDWATER SAMPLING FIELD DATA SHEET

Project Name and Number: MAW Chevy 17-0083-C
Monitoring Well Number: MW - 1
Field Staff Name(s): MA/JB
Sampling Date: 6-21-2021
Weather Conditions:
Well Condition: NEEDS MANHOLE COVER
Total Well Depth: 7.08
Depth to Water: 1.72
Purge Amount: 5.4L / 1.42gl.

Time Intervals:	Depth to Water:	Water Quality Parameters						Field Observations:
		pH:	Specific Conductivity (µS/cm)	Dissolved Oxygen: (mg/L)	Temperature:	ORP (mV):	Turbidity (NTU):	
[illegible] 1122	1.80	7.21	1.17	1.09	24.84	-87	70.3	NEW COVER IS REQUIRED
1127	1.80	6.86	1.17	0.83	24.75	-93	71.4	
1131	1.81	6.81	1.17	0.76	24.76	-96	73.5	
1135	1.80	6.82	1.17	0.65	24.75	-97	72.2	
1138	1.83	6.78	1.17	0.55	24.73	-103	62.6	
1141	1.83	6.77	1.17	0.50	24.65	-104	54.8	
1144	1.83	6.77	1.17	0.47	24.67	-104	54.1	
Page ____ of ____		Variance Allowed Prior to Sampling:						Sample Collection Time: 1145
		0.1	3%	3%	3%	10 mV	10%	

START: 1117

STOP:

FLOW: ≈ 200 mL/m

49 1/2 27

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LOW-FLOW GROUNDWATER SAMPLING FIELD DATA SHEET

Project Name and Number: MAnn Glory 17-0093-E
Monitoring Well Number: MW-2
Field Staff Name(s): MA/JB
Sampling Date: 6/21/21
Weather Conditions:
Well Condition:
Total Well Depth: 7.80
Depth to Water: 3.52
Purge Amount: ≈5L / ≈1.35gal.
START TIME: 1202

Time Intervals:	Depth to Water:	Water Quality Parameters						Field Observations:
		pH:	Specific Conductivity (µS/cm)	Dissolved Oxygen: (mg/L)	Temperature:	ORP (mV):	Turbidity (NTU):	
1207	3.80	7.09	1.19	0.84	23.92	-97	28.3	START: 1202
1212	3.87	7.05	1.11	0.57	22.98	-106	38.7	
1216	3.93	7.03	1.09	0.44	22.63	-108	48.8	
1220	3.96	7.04	1.08	0.39	21.75	-110	51.5	STOP: 1227
1223	3.98	7.02	1.07	0.35	21.54	-110	50.6	
1226	4.00	7.00	1.06	0.33	21.38	-112	49.7	Flow Rate ≈ 200 ml/min
Page ____ of ____		Variance Allowed Prior to Sampling:						Sample Collection Time: 1227
		0.1	3%	3%	3%	10 mV	10%	

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LOW-FLOW GROUNDWATER SAMPLING FIELD DATA SHEET

Project Name and Number:

Monitoring Well Number: MW - 6

Field Staff Name(s): MAJB

Sampling Date: 6/21/21

Weather Conditions:

Well Condition: OK

Total Well Depth: 4.87

Depth to Water: 2.70

Purge Amount: ≈ 5.4L / 1.48gal.

Start Time 12:49

Time Intervals:	Depth to Water:	Water Quality Parameters: pH:	Specific Conductivity (µS/cm)	Dissolved Oxygen: (mg/L)	Temperature:	ORP (mV):	Turbidity (NTU):	Field Observations:
1249	2.70	7.65	0.666	3.61	19.81	-53	151	START: 1244
1254	2.73	7.69	0.662	1.44	19.39	-44	157	
1258	2.70	7.64	0.663	1.19	19.26	-41	136	
1302	2.70	7.55	0.663	1.07	19.82	-35	126	
1305	2.70	7.54	0.665	0.97	18.77	-33	29.5	
1308	2.70	7.51	~~0.665~~ 0.664	0.93	18.79	-30	53.0	
1311	2.70	7.50	0.667	0.89	18.79	-29	47.2	
		Flow rate ≈ 200 ml/min						
Page ____ of ____		Variance Allowed Prior to Sampling: 0.1	3%	3%	3%	10 mV	10%	Sample Collection Time: 1312

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LOW-FLOW GROUNDWATER SAMPLING FIELD DATA SHEET

Project Name and Number: MANN CHEVY 17.0083-E
Monitoring Well Number: MW-3
Field Staff Name(s): JB / MA
Sampling Date: 6-21-2021
Weather Conditions: OVERCAST / 72°
Well Condition: GOOD
Total Well Depth: 4.37
Depth to Water: 1.84
Purge Amount:

Time Intervals:	Depth to Water:	Water Quality Parameters: pH:	Specific Conductivity (µS/cm)	Dissolved Oxygen: (mg/L)	Temperature:	ORP (mV):	Turbidity (NTU):	Field Observations:
1329	~~2.38~~	7.23	0.845	0.97	20.08	-89	58.0	GOOD CONDITION
1334	2.45	7.29	0.819	0.49	19.96	-103	49.1	
1338	2.48	7.27	0.820	0.39	19.98	-107	45.6	
1341	2.48	7.30	0.823	0.32	20.02	-108	43.8	
1344	2.48	7.30	0.825	0.27	20.05	-109	42.7	
1347	2.48	7.30	0.826	0.28	20.06	-110	42.3	
			Flow rate ~ 100 ml/min					
Page ____ of ____		Variance Allowed Prior to Sampling: 0.1	3%	3%	3%	10 mV	10%	Sample Collection Time: 1348

START: 1329

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LOW-FLOW GROUNDWATER SAMPLING FIELD DATA SHEET

Project Name and Number: MANN/KNEE 17-0083-E

Monitoring Well Number: MANN Cherry Restroom Tap & Barbershop tap

Field Staff Name(s): MA / JB

Sampling Date: 6/21 – 6/22/21

Weather Conditions:

Well Condition:

Total Well Depth:

Depth to Water:

Purge Amount:

Time Intervals:	Depth to Water:	Water Quality Parameters						Field Observations:
		pH:	Specific Conductivity (µS/cm)	Dissolved Oxygen: (mg/L)	Temperature:	ORP (mV):	Turbidity (NTU):	
	Mann Cherry office Bathroom TAP water (cold) Sampled @ 1420 on 6/21/21							
	Barbershop Bathroom tap (cold) Sampled @ 0945 on 6/22/21							
	EACH TAP WAS RAN ≥ 5 MINUTES prior to Sample Collection							
Page ____ of ____		Variance Allowed Prior to Sampling:						
		0.1	3%	3%	3%	10 mV	10%	Sample Collection Time:

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LOW-FLOW GROUNDWATER SAMPLING FIELD DATA SHEET

Project Name and Number: MANN Chevy 17-0083-E
Monitoring Well Number: MW-10
Field Staff Name(s): MA/JB
Sampling Date: 6/21/21
Weather Conditions:
Well Condition:
Total Well Depth: ~23.90
Depth to Water: 5.25
Purge Amount: ~2.5 Gal

Time Intervals:	Depth to Water:	Water Quality Parameters: pH:	Specific Conductivity (µS/cm)	Dissolved Oxygen: (mg/L)	Temperature:	ORP (mV):	Turbidity (NTU):	Field Observations:
		23.90						
		- 5.25						
		18.65'		target purge volume = 2.28 gal.				
		purged ~2.5		GAL prior to Sampling Via Mini-bailer				
				pH = 7.33				
				Cond. = 1.27				
Page ____ of ____		Variance Allowed Prior to Sampling: 0.1	3%	3%	3%	10 mV	10%	Sample Collection Time: 1430

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LOW-FLOW GROUNDWATER SAMPLING FIELD DATA SHEET

Project Name and Number: 17-0083-E Main Chevy
Monitoring Well Number: MW-11
Field Staff Name(s): MA/JB
Sampling Date: 6/21/21
Weather Conditions:
Well Condition:
Total Well Depth: 24.15'
Depth to Water: 4.74
Purge Amount: ≈ 2.5 GAL

Time Intervals:	Depth to Water:	Water Quality Parameters: pH:	Specific Conductivity (µS/cm)	Dissolved Oxygen: (mg/L)	Temperature:	ORP (mV):	Turbidity (NTU):	Field Observations:
								Bolt needs Replaced
		TARGET Purge Volume = 2.37 Gal/or						
		Purged Approx 2.5 Gal prior to Sample						Via mini Bailer
				pH = 7.21				
				C.D. = 1.76				
Page ____ of ____		Variance Allowed Prior to Sampling: 0.1	3%	3%	3%	10 mV	10%	Sample Collection Time: 1430

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LOW-FLOW GROUNDWATER SAMPLING FIELD DATA SHEET

Project Name and Number:
Monitoring Well Number: MW-12
Field Staff Name(s): MA / JB
Sampling Date: 6/21/21
Weather Conditions:
Well Condition:
Total Well Depth: 28.13
Depth to Water: 1.40
Purge Amount: ≈ 2.5 gal.

Time Intervals:	Depth to Water:	Water Quality Parameters: pH:	Specific Conductivity (µS/cm)	Dissolved Oxygen: (mg/L)	Temperature:	ORP (mV):	Turbidity (NTU):	Field Observations:
		TARGET Purge Volume = 2.67 Gallons						
		PURGED: ≈ 2.8 GAL						
		PH:	7.30					
		COND:	[illegible]	1.51				
				Dup. @ MS/MSD Collected From MW-12				
Page ____ of ____		Variance Allowed Prior to Sampling: 0.1	3%	3%	3%	10 mV	10%	Sample Collection Time: 1500

LF

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LOW-FLOW GROUNDWATER SAMPLING FIELD DATA SHEET

Project Name and Number: KRIEGA MOTORS
Monitoring Well Number: MW-1
Field Staff Name(s): K. SHADLEY / T. STUBBS
Sampling Date: 9/28/2021
Weather Conditions: SUNNY 75°F
Well Condition: MISSING MANHOLE COVER
Total Well Depth: 6.81
Depth to Water: 2.53
Purge Amount: 2.07 GAL

Time Intervals:	Depth to Water:	Water Quality Parameters: pH:	Specific Conductivity (µS/cm)	Dissolved Oxygen: (mg/L)	Temperature:	ORP (mV):	Turbidity (NTU):	Field Observations:
12:44	2.63	6.98	1.97	2.61	25.74	-122	18.4	
12:49	2.63	6.76	1.37	1.09	25.86	-131	6.81	
12:54	2.64	6.77	1.35	0.50	25.86	-136	34.0	
12:59	2.66	6.75	1.33	0.31	26.02	-143	27.4	
1304	2.64	6.78	1.33	0.26	26.19	-144	26.4	
1309	2.66	6.76	1.32	0.17	25.97	-147	24.7	
1314	2.66	6.77	1.31	0.11	26.00	-149	22.1	
1319	2.67	6.77	1.30	0.09	26.05	-150	21.2	
1324	2.67	6.77	1.30	0.07	26.04	-151	20.7	
Page 1 of 1		Variance Allowed Prior to Sampling: 0.1	3%	3%	3%	10 mV	10%	Sample Collection Time: 13:24

LF

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LOW-FLOW GROUNDWATER SAMPLING FIELD DATA SHEET

Project Name and Number: KRIEGER MOTORS
Monitoring Well Number: MW-2
Field Staff Name(s): K. SHADLOW / T. STUBBS
Sampling Date: 9/28/2021
Weather Conditions: SUNNY 75° F
Well Condition: GOOD
Total Well Depth: 7.58
Depth to Water: 4.78
Purge Amount: 1.30

Time Intervals:	Depth to Water:	Water Quality Parameters						Field Observations:
		pH:	Specific Conductivity (µS/cm)	Dissolved Oxygen: (mg/L)	Temperature:	ORP (mV):	Turbidity (NTU):	
14.07	4.95	6.96	1.02	0.44	25.67	-135	443	
1412	5.26	6.80	1.01	0.14	24.73	-137	317	
1417	5.46	6.79	1.04	0.00	24.63	-142	256	
1422	5.46	6.81	1.05	0.00	24.68	-148	456	
1427	5.57	6.87	1.06	0.00	24.31	-157	110	
1432	5.60	6.88	1.08	0.00	24.39	-151	29.9	
1437	5.62	6.89	1.09	0.00	24.46	-153	15.7	
1442	5.62	6.92	1.10	0.00	24.47	-155	11.3	
1447	5.66	6.92	1.09	0.00	24.42	-152	11.6	
Page 1 of 1		Variance Allowed Prior to Sampling:						Sample Collection Time: 14:47
		0.1	3%	3%	3%	10 mV	10%	

BAIL

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LOW-FLOW GROUNDWATER SAMPLING FIELD DATA SHEET

Project Name and Number: KRUEG MOTORS

Monitoring Well Number: MW-3

Field Staff Name(s): K. SHADLEY / T. STUBBS

Sampling Date: 9/28/2021

Weather Conditions: SUNNY 75° F

Well Condition:

Total Well Depth: 4.13 / 4.10 (9/29/2021)

Depth to Water: 3.88

Purge Amount: 0.66

Time Intervals:	Depth to Water:	Water Quality Parameters pH:	Specific Conductivity (µS/cm)	Dissolved Oxygen: (mg/L)	Temperature:	ORP (mV):	Turbidity (NTU):	Field Observations:
		7.23	1.07		21.8			
Page 1 of 1		Variance Allowed Prior to Sampling: 0.1	3%	3%	3%	10 mV	10%	Sample Collection Time: 12:40

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LOW-FLOW GROUNDWATER SAMPLING FIELD DATA SHEET

Project Name and Number: KRIEG MOTORS
Monitoring Well Number: MW-4
Field Staff Name(s): K. SHADDAY / T. STUBBS
Sampling Date: 9/28/2021
Weather Conditions: SUNNY 75 °F
Well Condition: GOOD
Total Well Depth: 3.63
Depth to Water: DRY
Purge Amount: —

Time Intervals:	Depth to Water:	Water Quality Parameters						Field Observations:
		pH:	Specific Conductivity (µS/cm)	Dissolved Oxygen: (mg/L)	Temperature:	ORP (mV):	Turbidity (NTU):	
Page 1 of 1		Variance Allowed Prior to Sampling:						Sample Collection Time: N/A
		0.1	3%	3%	3%	10 mV	10%	

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LOW-FLOW GROUNDWATER SAMPLING FIELD DATA SHEET

Project Name and Number: KRIEGS MOTORS
Monitoring Well Number: MW-5R
Field Staff Name(s): K. SHADLEY / T. STUBBS
Sampling Date: 9/28/2021
Weather Conditions: SUNNY 75 °F
Well Condition: GOOD
Total Well Depth: 3.19
Depth to Water: DRY
Purge Amount: —

Time Intervals:	Depth to Water:	Water Quality Parameters						Field Observations:
		pH:	Specific Conductivity (µS/cm)	Dissolved Oxygen: (mg/L)	Temperature:	ORP (mV):	Turbidity (NTU):	
Page 1 of 1		Variance Allowed Prior to Sampling:						
		0.1	3%	3%	3%	10 mV	10%	Sample Collection Time: N/A

LF

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LOW-FLOW GROUNDWATER SAMPLING FIELD DATA SHEET

Project Name and Number: Kriger Motors
Monitoring Well Number: MW - 6
Field Staff Name(s): K. Shadley / T. Stubbs
Sampling Date: 9/28/2021
Weather Conditions: Sunny 75°F
Well Condition: Good
Total Well Depth: 4.64
Depth to Water: 3.29
Purge Amount: 0.66

Time Intervals:	Depth to Water:	Water Quality Parameters						Field Observations:
		pH:	Specific Conductivity (µS/cm)	Dissolved Oxygen: (mg/L)	Temperature:	ORP (mV):	Turbidity (NTU):	
		7.40	0.82		21.9			
Page 1 of 1		Variance Allowed Prior to Sampling:						
		0.1	3%	3%	3%	10 mV	10%	Sample Collection Time: 13:34 9/29/2021

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LOW-FLOW GROUNDWATER SAMPLING FIELD DATA SHEET

Project Name and Number: KRIEG MOTORS
Monitoring Well Number: MW-7
Field Staff Name(s): K. SHADLEY / T. STUBBS
Sampling Date: 9/28/2021
Weather Conditions: SUNNY 75° F
Well Condition: PAD FROST HEAVE
Total Well Depth: 3.79
Depth to Water: DRY
Purge Amount: —

Time Intervals:	Depth to Water:	Water Quality Parameters: pH:	Specific Conductivity (µS/cm)	Dissolved Oxygen: (mg/L)	Temperature:	ORP (mV):	Turbidity (NTU):	Field Observations:
Page 1 of 1		Variance Allowed Prior to Sampling: 0.1	3%	3%	3%	10 mV	10%	Sample Collection Time: N/A

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LOW-FLOW GROUNDWATER SAMPLING FIELD DATA SHEET

Project Name and Number: KRIEG MOTORS
Monitoring Well Number: MW-8
Field Staff Name(s): K. SHADLEY / T. STUBBS
Sampling Date: 9/23/2021
Weather Conditions: SUNNY 75° F
Well Condition: GOOD
Total Well Depth: 4.38
Depth to Water: DRY
Purge Amount: —

Time Intervals:	Depth to Water:	Water Quality Parameters pH:	Specific Conductivity (µS/cm)	Dissolved Oxygen: (mg/L)	Temperature:	ORP (mV):	Turbidity (NTU):	Field Observations:
Page 1 of 1		Variance Allowed Prior to Sampling: 0.1	3%	3%	3%	10 mV	10%	Sample Collection Time: N/A

BALL

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LOW-FLOW GROUNDWATER SAMPLING FIELD DATA SHEET

Project Name and Number: KRIEG MOTORS
Monitoring Well Number: MW-9R
Field Staff Name(s): K. SHADLEY / T. STUBBS
Sampling Date: 9/29/2021
Weather Conditions: SUNNY 79°F
Well Condition: GOOD
Total Well Depth: 4.89
Depth to Water: 4.48
Purge Amount: 0.21 GAL

Time Intervals:	Depth to Water:	pH:	Specific Conductivity (µS/cm)	Dissolved Oxygen: (mg/L)	Temperature:	ORP (mV):	Turbidity (NTU):	Field Observations:
		7.01	1.05		23.1			
Page 1 of 1	Variance Allowed Prior to Sampling:	0.1	3%	3%	3%	10 mV	10%	Sample Collection Time: 10:20

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LOW-FLOW GROUNDWATER SAMPLING FIELD DATA SHEET

Project Name and Number: KRUSE MOORS
Monitoring Well Number: MW-10
Field Staff Name(s): K. SMOLEN / T. STUBBS
Sampling Date: 9/28/2021
Weather Conditions: SUNNY 75°F
Well Condition: GOOD
Total Well Depth: 23.63
Depth to Water: 7.31
Purge Amount: 2.01 GAL

Time Intervals:	Depth to Water:	Water Quality Parameters						Field Observations:
		pH:	Specific Conductivity (µS/cm)	Dissolved Oxygen: (mg/L)	Temperature:	ORP (mV):	Turbidity (NTU):	
		6.98	1.13		23.0			
Page 1 of 1		Variance Allowed Prior to Sampling:						
		0.1	3%	3%	3%	10 mV	10%	Sample Collection Time: 14:40

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LOW-FLOW GROUNDWATER SAMPLING FIELD DATA SHEET

Project Name and Number: KRIEG MOTORS

Monitoring Well Number: MW-11

Field Staff Name(s): K. SHADLEY / T. STUBBS

Sampling Date: 9/28/2021

Weather Conditions: SUNNY 75° F

Well Condition: GOOD

Total Well Depth: 23.92

Depth to Water: DRY (LESS THAN 4") Purge Amount: —

9/29/2021 DTW= 6.02

Time Intervals:	Depth to Water:	Water Quality Parameters pH:	Specific Conductivity (µS/cm)	Dissolved Oxygen: (mg/L)	Temperature:	ORP (mV):	Turbidity (NTU):	Field Observations:
		7.61	1.03		23.6			
Page 1 of 1		Variance Allowed Prior to Sampling: 0.1	3%	3%	3%	10 mV	10%	Sample Collection Time: 15:30

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LOW-FLOW GROUNDWATER SAMPLING FIELD DATA SHEET

Project Name and Number: KRIEG MOTORS
Monitoring Well Number: MW-12
Field Staff Name(s): K. SHADLEY / T. STUBBS
Sampling Date: 9/29/2021
Weather Conditions: SUNNY 75° F
Well Condition: GOOD
Total Well Depth: 23.84'
Depth to Water: 2.41'
Purge Amount: 2.61 GAL 3.0

Time Intervals:	Depth to Water:	Water Quality Parameters						Field Observations:
		pH:	Specific Conductivity (µS/cm)	Dissolved Oxygen: (mg/L)	Temperature:	ORP (mV):	Turbidity (NTU):	
		7.31	0.91		21.1			
Page 1 of 1		Variance Allowed Prior to Sampling:						Sample Collection Time: 14:20
		0.1	3%	3%	3%	10 mV	10%	

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LOW-FLOW GROUNDWATER SAMPLING FIELD DATA SHEET

Project Name and Number: 17-0083-E
Monitoring Well Number: MW-1
Field Staff Name(s): TS/AM
Sampling Date: 1-13-22
Weather Conditions: Ice on the ground & Cloudy
Well Condition: 1.43
Total Well Depth: 8.00 ft
Depth to Water: ~~2.84~~ ft
Purge Amount: 3.2 l

Time Intervals:	Depth to Water:	Water Quality Parameters						Field Observations:
		pH:	Specific Conductivity (µS/cm)	Dissolved Oxygen: (mg/L)	Temperature:	ORP (mV):	Turbidity (NTU):	
11:05	1.51	6.70	1.41	1.76	7.43	-66	196	
11:10	1.48	6.72	1.39	0.53	7.87	-80	87.1	
11:15	1.49	6.76	1.37	0.38	8.08	-88	60.8	
11:20	1.48	6.77	1.36	0.35	8.25	-94	34.7	35%
11:25	1.50	6.77	1.35	0.27	8.41	-98	22.5	13.7%
11:30	1.58	6.76	1.34	0.24	8.40	-100	19.4	6.7%
11:35	1.59	6.76	1.34	0.66	8.49	-103	18.1	
11:40	1.66	6.76	1.35	2.36	8.49	-105	18.6	
~~11:45~~								
Page 1 of 1		Variance Allowed Prior to Sampling:						Sample Collection Time:
		0.1	3%	3%	3%	10 mV	10%	

$$s^2 = \frac{\sum (x_i - \bar{x})^2}{n-1} \qquad \frac{x_{i+1} - x_i}{x_i}$$

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LOW-FLOW GROUNDWATER SAMPLING FIELD DATA SHEET

Project Name and Number: 17-0083-E
Monitoring Well Number: MW-2
Field Staff Name(s): TS/AM
Sampling Date: 12-27-21
Weather Conditions: Cloudy
Well Condition:
Total Well Depth: 8.00 ft
Depth to Water: 1.91 ft
Purge Amount: 2.97 gal

Time Intervals:	Depth to Water:	Water Quality Parameters						Field Observations:
		pH:	Specific Conductivity (µS/cm)	Dissolved Oxygen: (mg/L)	Temperature: °C	ORP (mV):	Turbidity (NTU):	
start 1216	1.97	6.73	0.991	13.08	12.24	-138	521	
1221	2.13	6.67	1.01	6.12	11.74	-129	190	
1226	2.11	6.65	1.01	5.08	11.57	-129	95.1	
1231	2.12	6.66	1.01	4.52	11.49	-129	61.4	
1236	2.13	6.68	1.01	4.17	11.40	-131	47.8	
1241	2.10	6.70	1.02	3.59	11.33	-132	36.3	
1246	2.11	6.84	1.02	5.51	11.25	-132	31.2	
1251	2.12	6.75	1.02	3.06	11.18	-133	26.6	
1256	2.10	6.74	1.02	2.10	11.13	-132	21.3	
1301	2.11	6.74	1.01	1.75	11.11	-132	19.6	
1306	2.12	6.74	1.02	1.70	11.13	-132	18.9	foam coming from well
	2.11							
Variance Allowed Prior to Sampling:		0.1	3%	3%	3%	10 mV	10%	

Page 1 of 1

Sample Collection Time: _____

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LOW-FLOW GROUNDWATER SAMPLING FIELD DATA SHEET

Project Name and Number: 17-0087-E
Monitoring Well Number: MW-3
Field Staff Name(s): TS/AM
Sampling Date: 1-13-22
Weather Conditions: Ice on the ground Cloudy
Well Condition:
Total Well Depth: 4.50
Depth to Water: 1.41
Purge Amount: 1.50

Time Intervals:	Depth to Water:	Water Quality Parameters						Field Observations:
		pH:	Specific Conductivity (µS/cm)	Dissolved Oxygen: (mg/L)	Temperature:	ORP (mV):	Turbidity (NTU):	
14:54	1.79	6.93	0.682	0.50	8.38	-35	404	
14:59	1.81	6.94	0.671	0.00	8.04	-45	150	
15:04	1.83	6.94	0.657	0.00	7.88	-48	74.8	Increased pump Pressure & Flow rate
15:09	2.01	6.94	0.656	0.00	7.64	-50	3.5	Lowered Pump P & Q (Flow rate)
15:14	1.54	6.93	0.656	0.00	7.96	-51	3.5	
15:19	1.61	6.91	0.657	0.00	8.03	-52	3.6	
15:24	1.57	6.92	0.654	0.00	8.27	-52	2.5	
15:29	1.75	6.92	0.657	0.00	7.93	-54	2.1	
Page 1 of 1		Variance Allowed Prior to Sampling:						Sample Collection Time:
		0.1	3%	3%	3%	10 mV	10%	

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LOW-FLOW GROUNDWATER SAMPLING FIELD DATA SHEET

Project Name and Number: 17-2083-E
Field Staff Name(s): TS/AM
Weather Conditions: Cloudy
Total Well Depth: 4.00 ft

Monitoring Well Number: MW-4
Sampling Date: 12-27-21
Well Condition:
Depth to Water: 2.52 ft
Purge Amount:

Time Intervals:	Depth to Water:	Water Quality Parameters: pH:	Specific Conductivity (µS/cm)	Dissolved Oxygen: (mg/L)	Temperature:	ORP (mV):	Turbidity (NTU):	Field Observations:
@ 1500	2.78	6.93	0.938	6.59	10.56	71	90	
1505	2.12	6.88	0.949	8.79	9.48	98	64.2	
1510	2.35	6.87	0.955	7.87	9.41	104	32.3	
1515	1.18	6.89	0.953	7.56	9.43	107	28.3	
1520	N/A	6.89	0.952	7.44	9.47	107	30.3	
finish	3.00 ft							
Page 1 of 1	Variance Allowed Prior to Sampling:	0.1	3%	3%	3%	10 mV	10%	Sample Collection Time:

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LOW-FLOW GROUNDWATER SAMPLING FIELD DATA SHEET

Project Name and Number: 17-0083-E
Monitoring Well Number: MW-5R
Field Staff Name(s): TS/AM
Sampling Date: 12-27-21
Weather Conditions: Cloudy
Well Condition:
Total Well Depth: [redacted] 4.00 ft
Depth to Water: 2.00ft
Purge Amount: 0.99 gal

Time Intervals:	Depth to Water:	Water Quality Parameters						Field Observations:
		pH:	Specific Conductivity (µS/cm)	Dissolved Oxygen: (mg/L)	Temperature: C	ORP (mV):	Turbidity (NTU):	
10:49	2.00ft	7.57	0.209	12.12	10.32	160	>1000	
1054		7.38	0.209	9.87	9.9	173	704	
1059		7.42	0.216	9.16	10.73	170	[redacted]472	
1104		7.50	0.232	8.99	11.06	160	344	
1109		7.57	0.250	8.75	11.50	155	271	
1114		7.56	0.263	8.78	11.57	150	189	
1119	2.32ft	7.57	0.289	9.16	11.44	148	146	
Page 1 of 1		Variance Allowed Prior to Sampling:						Sample Collection Time:
		0.1	3%	3%	3%	10 mV	10%	

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LOW-FLOW GROUNDWATER SAMPLING FIELD DATA SHEET

Project Name and Number: 17-0083-E

Monitoring Well Number: MW-6

Field Staff Name(s): TS/AM

Sampling Date: 1-13-22

Weather Conditions: Ice on the ground Cloudy

Well Condition:

Total Well Depth: ~~[illegible]~~ 5.50 ft

Depth to Water: 1.80 ft

Purge Amount: 1.86

Time Intervals:	Depth to Water:	Water Quality Parameters pH:	Specific Conductivity (µS/cm)	Dissolved Oxygen: (mg/L)	Temperature:	ORP (mV):	Turbidity (NTU):	Field Observations:
15:53	1.79	7.26	0.523	2.70	8.76	-56	132	
15:58	1.79	7.17	0.524	0.09	5.5	-50	40.8	
16:03	1.82	7.16	0.525	0.03	8.69	-47	15.9	
16:08	1.80	7.12	0.525	0.33	8.69	-44	8.0	
16:13	1.78	7.12	0.526	0.25	8.71	-42	5.8	
16:18	1.80	7.11	0.526	0.00	8.72	-40	4.3	
~~16:23~~								
Page 1 of 1		Variance Allowed Prior to Sampling: 0.1	3%	3%	3%	10 mV	10%	Sample Collection Time:

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LOW-FLOW GROUNDWATER SAMPLING FIELD DATA SHEET

Project Name and Number: 17-0083-E
Field Staff Name(s): +5/AM
Weather Conditions: Ice on the ground Cloudy
Total Well Depth: 3.00

Monitoring Well Number: MW-7
Sampling Date: 1-13-22
Well Condition:
Depth to Water: 1.46
Purge Amount: 0.75

Time Intervals:	Depth to Water:	Water Quality Parameters pH:	Specific Conductivity (µS/cm)	Dissolved Oxygen: (mg/L)	Temperature:	ORP (mV):	Turbidity (NTU):	Field Observations:
13:50	1.30	7.43	0.289	4.72	7.87	-87	184	
13:55	HIT PUMP	7.29	0.317	3.13	7.03	-69	477	
14:00	" "	7.18	0.311	3.38	8.68	-63	393	
14:05	"	7.26	0.326	4.27	8.93	-60	369	
Page 1 of 1	Variance Allowed Prior to Sampling:	0.1	3%	3%	3%	10 mV	10%	Sample Collection Time:

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LOW-FLOW GROUNDWATER SAMPLING FIELD DATA SHEET

Project Name and Number: 17-0083-E
Field Staff Name(s): TS/AM
Weather Conditions: Cloudy
Total Well Depth: 5.00 ft

Monitoring Well Number: MW-8
Sampling Date: 12-27-21
Well Condition:
Depth to Water: 1.47 ft
Purge Amount: 1.74

Time Intervals:	Depth to Water:	pH:	Specific Conductivity (µS/cm)	Dissolved Oxygen: (mg/L)	Temperature:	ORP (mV):	Turbidity (NTU):	Field Observations:
1535	1.51	7.37	0.759	14.33	9.80	90	130	
1540	1.50	7.09	0.765	13.21	9.68	92	120	
1545	2.00	7.10	0.752	11.81	9.27	101	89.5	
1550	2.32	7.13	0.744	11.11	9.20	104	59.0	
1555	2.41	7.15	0.737	11.25	9.12	105	51.8	
1600	2.78	7.15	0.721	11.00	9.05	107	35.6	
1605	N/A	7.13	0.710	10.48	9.04	108	32.7	
finish	3.45							
Page 1 of 1		Variance Allowed Prior to Sampling: 0.1	3%	3%	3%	10 mV	10%	Sample Collection Time:

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LOW-FLOW GROUNDWATER SAMPLING FIELD DATA SHEET

Project Name and Number: 17-0083-E
Monitoring Well Number: MW-9R
Field Staff Name(s): TS/AM
Sampling Date: 1-13-22
Weather Conditions: Ice on the ground Cloudy
Well Condition:
Total Well Depth: 4.00 ft
Depth to Water: ~~1.50~~ 2.45 ft
Purge Amount: 0.75

Time Intervals:	Depth to Water:	pH:	Specific Conductivity (µS/cm)	Dissolved Oxygen: (mg/L)	Temperature:	ORP (mV):	Turbidity (NTU):	Field Observations:
		Water Quality Parameters						
13:22	hitting top of	7.33	0.932	2.26	7.44	-60	314	
13:27	pump.	7.00	0.937	0.32	7.08	-57	116	
								WELL RAN DRY
Page 1 of 1		Variance Allowed Prior to Sampling:						Sample Collection Time:
		0.1	3%	3%	3%	10 mV	10%	

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LOW-FLOW GROUNDWATER SAMPLING FIELD DATA SHEET

Project Name and Number: 17-0083-E
Monitoring Well Number: MW-10
Field Staff Name(s): TS/AM
Sampling Date: 12-22-21
Weather Conditions: Cloudy
Well Condition:
Total Well Depth: 23.50 ft
Depth to Water: 5.35 ft
Purge Amount: 2.22 gal

Time Intervals:	Depth to Water:	Water Quality Parameters						Field Observations:
		pH:	Specific Conductivity (µS/cm)	Dissolved Oxygen: (mg/L)	Temperature:	ORP (mV):	Turbidity (NTU):	
		7.22	1.31		9.9			
Page 1 of 1		Variance Allowed Prior to Sampling:						Sample Collection Time:
		0.1	3%	3%	3%	10 mV	10%	

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LOW-FLOW GROUNDWATER SAMPLING FIELD DATA SHEET

Project Name and Number: 17-0083-E
Monitoring Well Number: MW-11
Field Staff Name(s): TS/AM
Sampling Date: 12-27-21
Weather Conditions: Cloudy
Well Condition:
Total Well Depth: 24.00 ft
Depth to Water: 4.33 ft
Purge Amount: 2.4 gal

Time Intervals:	Depth to Water:	Water Quality Parameters						Field Observations:
		pH:	Specific Conductivity (µS/cm)	Dissolved Oxygen: (mg/L)	Temperature:	ORP (mV):	Turbidity (NTU):	
		7.39	1.37		9.6			
		Variance Allowed Prior to Sampling:						
Page 1 of 1		0.1	3%	3%	3%	10 mV	10%	Sample Collection Time:

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LOW-FLOW GROUNDWATER SAMPLING FIELD DATA SHEET

Project Name and Number: 17-0083-E

Monitoring Well Number: MW-12

Field Staff Name(s): TS/AM

Sampling Date: 1-13-22

Weather Conditions: Ice on the ground cloudy

Well Condition:

Total Well Depth: 23.50 ft

Depth to Water: ~~0.00~~ 1.08 ft

Purge Amount: ~~2.73~~ ~~10.98~~ 2.73

Time Intervals:	Depth to Water:	Water Quality Parameters pH:	Specific Conductivity (µS/cm)	Dissolved Oxygen: (mg/L)	Temperature:	ORP (mV):	Turbidity (NTU):	Field Observations:
11:45	1.11	7.25	1.19		7.8			
Page 1 of 1		Variance Allowed Prior to Sampling: 0.1	3%	3%	3%	10 mV	10%	Sample Collection Time:

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LOW-FLOW GROUNDWATER SAMPLING FIELD DATA SHEET

Project Name and Number: KRIEGER MOTORS
Monitoring Well Number: MW-7
Field Staff Name(s): K. SHADLEY
Sampling Date: 3/31/2023
Weather Conditions:
Well Condition: FLOODED
Total Well Depth:
Depth to Water: ABOVE MANHOLE
Purge Amount: ——

Time Intervals:	Depth to Water:	Water Quality Parameters						Field Observations:
		pH:	Specific Conductivity (µS/cm)	Dissolved Oxygen: (mg/L)	Temperature:	ORP (mV):	Turbidity (NTU):	
Page 1 of 1		Variance Allowed Prior to Sampling:						Sample Collection Time:
		0.1	3%	3%	3%	10 mV	10%	

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LOW-FLOW GROUNDWATER SAMPLING FIELD DATA SHEET

Project Name and Number: KRIEG MOTORS

Monitoring Well Number: MW-5R

Field Staff Name(s): K. SHADLEY

Sampling Date: 3/31/2023

Weather Conditions:

Well Condition: PAD ELEVATED DUE TO FROST HEAVE

Total Well Depth: 4.00

Depth to Water: 3.75

Purge Amount: —

Time Intervals:	Depth to Water:	Water Quality Parameters: pH:	Specific Conductivity (µS/cm)	Dissolved Oxygen: (mg/L)	Temperature:	ORP (mV):	Turbidity (NTU):	Field Observations:
	INSUFFICIENT WATER FOR SAMPLE							
Page 1 of 1	Variance Allowed Prior to Sampling:	0.1	3%	3%	3%	10 mV	10%	Sample Collection Time:

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LOW-FLOW GROUNDWATER SAMPLING FIELD DATA SHEET

Project Name and Number: Krieg Motors
Monitoring Well Number: MW-3
Field Staff Name(s): K. Shadow
Sampling Date: 3/31/2023
Weather Conditions: Cloudy 65° F
Well Condition: Fair
Total Well Depth: 4.50
Depth to Water: Artesian
Purge Amount: ———

Time Intervals:	Depth to Water:	Water Quality Parameters						Field Observations:
		pH:	Specific Conductivity (µS/cm)	Dissolved Oxygen: (mg/L)	Temperature:	ORP (mV):	Turbidity (NTU):	
		6.91	1.35		9.42			
Page 1 of 1		Variance Allowed Prior to Sampling:						Sample Collection Time:
		0.1	3%	3%	3%	10 mV	10%	

ALLIANCE Environmental Group, Inc.
5153 COMMERCE SQUARE DRIVE, SUITE E, INDIANAPOLIS, INDIANA 46237
14074 TRADE CENTER DRIVE, SUITE 246, FISHERS, INDIANA 46038 PHONE:
317-865-3400 FAX: 317-865-3401

LOW-FLOW GROUNDWATER SAMPLING FIELD DATA SHEET

Project Name and Number: KIZIER MOTORS
Monitoring Well Number: MW-6
Field Staff Name(s): K. SHADDOX
Sampling Date: 3/31/2023
Weather Conditions: CLOUDY, 65° F
Well Condition: FAIR
Total Well Depth: 5.50
Depth to Water: ARTESIAN
Purge Amount: ———

Time Intervals:	Depth to Water:	Water Quality Parameters						Field Observations:
		pH:	Specific Conductivity (µS/cm)	Dissolved Oxygen: (mg/L)	Temperature:	ORP (mV):	Turbidity (NTU):	
		7.01	1.26		9.47			
Page 1 of 1		Variance Allowed Prior to Sampling:						Sample Collection Time: ———
		0.1	3%	3%	3%	10 mV	10%	

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5153 COMMERCE SQUARE DRIVE, SUITE E, INDIANAPOLIS, INDIANA 46237
14074 TRADE CENTER DRIVE, SUITE 246, FISHERS, INDIANA 46038 PHONE:
317-865-3400 FAX: 317-865-3401

LOW-FLOW GROUNDWATER SAMPLING FIELD DATA SHEET

Project Name and Number: Monitoring Well Number:

Field Staff Name(s): Sampling Date:

Weather Conditions: Well Condition:

Total Well Depth: Depth to Water: Purge Amount:

Time Intervals:	Depth to Water:	Water Quality Parameters						Field Observations:
		pH:	Specific Conductivity (µS/cm)	Dissolved Oxygen: (mg/L)	Temperature:	ORP (mV):	Turbidity (NTU):	
Page ____ of ____		Variance Allowed Prior to Sampling:						Sample Collection Time: ____
		0.1	3%	3%	3%	10 mV	10%	

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14074 TRADE CENTER DRIVE, SUITE 246, FISHERS, INDIANA 46038 PHONE: 317-865-3400 FAX: 317-865-3401

LOW-FLOW GROUNDWATER SAMPLING FIELD DATA SHEET

Project Name and Number: KRIEG MOTORS
Monitoring Well Number: MW-12
Field Staff Name(s): K. SHADLEY
Sampling Date: 3/31/2023
Weather Conditions: CLOUDY 65 F
Well Condition: FAIR
Total Well Depth: 23.50
Depth to Water: ARTESIAN
Purge Amount: ——

Time Intervals:	Depth to Water:	Water Quality Parameters: pH:	Specific Conductivity (µS/cm)	Dissolved Oxygen: (mg/L)	Temperature:	ORP (mV):	Turbidity (NTU):	Field Observations:
		6.97	1.32		9.73			
Page 1 of 1	Variance Allowed Prior to Sampling:	0.1	3%	3%	3%	10 mV	10%	Sample Collection Time:

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5153 COMMERCE SQUARE DRIVE, SUITE E, INDIANAPOLIS, INDIANA 46237
14074 TRADE CENTER DRIVE, SUITE 246, FISHERS, INDIANA 46038 PHONE:
317-865-3400 FAX: 317-865-3401

LOW-FLOW GROUNDWATER SAMPLING FIELD DATA SHEET

Project Name and Number: KRIEG MOTORS
Monitoring Well Number: MW-13
Field Staff Name(s): K. SHADLEY
Sampling Date: 3/31/2023
Weather Conditions: CLOUDY 65 F
Well Condition: GOOD
Total Well Depth: 23.5
Depth to Water: ARTESIAN
Purge Amount: ——

Time Intervals:	Depth to Water:	Water Quality Parameters						Field Observations:
		pH:	Specific Conductivity (µS/cm)	Dissolved Oxygen: (mg/L)	Temperature:	ORP (mV):	Turbidity (NTU):	
		6.92	1.27		9.78			
Page 1 of 1		Variance Allowed Prior to Sampling:						Sample Collection Time:
		0.1	3%	3%	3%	10 mV	10%	

Groundwater Sampling Field Data Sheet

Site Name: Mann's Chevy

Date: 6-28-2023

Address: _____

Lab Analysis: _____

Well ID: MW-1

Sample Method: ⊘ low flow ○ bailer ○ other

Initial DTW: 2.66 (6.72) 2.68 (6.78) Total Depth: 6.78 Start Time: 12.32 Screened Interval: _____

Field Data

H_2O Reading DTW	Data Set	Time	Temp (°C)	pH	ORP	SC mS	Turbidity (NTU)	DO	Comment
2.72	1	12.32	24.42	7.07	-139	1.42	23.2	0.03	
2.73	2	12.35	24.57	7.06	-150	1.42	17.9	0.0	
2.73	3	12.38	24.56	7.05	-157	1.42	16.8	0.0	
2.74	4	12.41	24.59	7.05	-162	1.42	16.0	0.0	
2.75	5	12.44	24.57	7.05	-167	1.42	15.4	0.0	
2.75	6	12.47	24.56	7.04	-174	1.42	15.3	0.0	
2.75	7	12.50	24.57	7.04	-174	1.41	15.0	0.0	
2.76	8	12.53	24.68	7.04	-177	1.41	14.8	0.0	

Time Sample Collected: _____

Approximate Purge Time: _____

Sample Interval: _____

Approximate Flow Rate: _____ ml/min

Total Amount Purged: (in gallons): 2 Liter Conversion: 3.7854 _____ liters

Celcius Converstion to Fahrenheit: _____ Fahrenheit

Gallons per linear ft.

2"=0.163

4"=0.653

Well Condition: Cover Scrapped off

Weather Conditions: _____

1.0 gal

Groundwater Sampling Field Data Sheet

Site Name: Mann's Chevy

Date: 6-27-23

Address: _____

_____

Lab Analysis: _____

_____

Well ID: MW-5R

Sample Method: ○ low flow ⊗ bailer ○ other

Initial DTW: 3.18 Total Depth: 3.47 Start Time: _____ Screened Interval: _____

Field Data

H_2O Reading DTW	Data Set	Time	Temp (°C)	pH	ORP	SC	Turbidity (NTU)	DO	Comment
	1								
	2								
	3								
	4								
	5								
	6								
	7								
	8								

Time Sample Collected: _____

Approximate Purge Time: _____

Sample Interval: _____

Approximate Flow Rate: _____ ml/min

Total Amount Purged: (in gallons): _____ Liter Conversion: 3.7854 _____ liters

Celcius Converstion to Fahrenheit: _____ Fahrenheit

Gallons per linear ft.

2"=0.163

4"=0.653

Well Condition: pad pushed out of the ground

Weather Conditions: _____

Groundwater Sampling Field Data Sheet

Site Name: Munn's Chevy Address: _____

Date: 6-28-24 _____

Lab Analysis: _____

_____

Well ID: MW-6 Sample Method: ○ low flow ✗ bailer ○ other

Initial DTW: 3.83 (6-27) / 4.01 (6-28) Total Depth: 4.78 Start Time: _____ Screened Interval: _____

Field Data

H_2O Reading DTW	Data Set	Time	Temp (°C)	pH	ORP	SC (mS)	Turbidity (NTU)	DO	Comment
	1	09:37	17.7	7.50		.82	.42 ppt		Sample - No Purge
	2								
	3								
	4								
	5								
	6								
	7								
	8								

Time Sample Collected: _____

Approximate Purge Time: _____

Sample Interval: _____

Approximate Flow Rate: _____ ml/min

Total Amount Purged: (in gallons): 0.00 Liter Conversion: 3.7854 _____ liters

Celcius Converstion to Fahrenheit: _____ Fahrenheit

Gallons per linear ft.

2"=0.163

4"=0.653

Well Condition: _____

Weather Conditions: _____

Groundwater Sampling Field Data Sheet

Site Name: Mann's Chevy

Date: 6-27-23

Address: _____

_____

Lab Analysis: _____

_____

Well ID: MW-7

Sample Method: ○ low flow ○ bailer ○ other

Initial DTW: ~~MW-7~~ Dry Total Depth: 3.07 Start Time: _____ Screened Interval: _____

Field Data

H_2O Reading DTW	Data Set	Time	Temp (°C)	pH	ORP	SC	Turbidity (NTU)	DO	Comment
	1								
	2								
	3								
	4								
	5								
	6								
	7								
	8								

Time Sample Collected: _____

Approximate Purge Time: _____

Sample Interval: _____

Approximate Flow Rate: _____ ml/min

Total Amount Purged: (in gallons): _____ Liter Conversion: 3.7854 _____ liters

Celcius Converstion to Fahrenheit: _____ Fahrenheit

Gallons per linear ft.

2"=0.163

4"=0.653

Well Condition: pulled out of the ground a lot

Weather Conditions: _____

Groundwater Sampling Field Data Sheet

Site Name: Dick Krieg

Date: 6-27-23

Address: _____

_____

Lab Analysis: _____

_____

Well ID: mw-8

Sample Method: ◯ low flow ◯ bailer ◯ other

Initial DTW: Dry Total Depth: 4.66 Start Time: _____ Screened Interval: _____

Field Data

H_2O Reading DTW	Data Set	Time	Temp (°C)	pH	ORP	SC	Turbidity (NTU)	DO	Comment
	1								
	2								
	3								
	4								
	5								
	6								
	7								
	8								

Time Sample Collected: _____

Approximate Purge Time: _____

Sample Interval: _____

Approximate Flow Rate: _____ ml/min

Total Amount Purged: (in gallons): _____ Liter Conversion: 3.7854 _____ liters

Celcius Converstion to Fahrenheit: _____ Fahrenheit

Gallons per linear ft.

2"=0.163

4"=0.653

Well Condition: pad pushed out of the ground a little

Weather Conditions: _____

Groundwater Sampling Field Data Sheet

Site Name: Mann's Chevy Address: _____

Date: _____

Lab Analysis: _____

Well ID: MW-9R Sample Method: ○ low flow ⊗ bailer ○ other

Initial DTW: 3.49 Total Depth: 4.14 Start Time: _____ Screened Interval: _____

Field Data

H_2O Reading DTW	Data Set	Time	Temp (°C)	pH	ORP	SC	Turbidity (NTU)	DO	Comment
	1		21.1	7.04		0.87 ms		[illegible]	.40ppt
	2								
	3								
	4								
	5								
	6								
	7								
	8								

Time Sample Collected: 2:49

Approximate Purge Time: _____

Sample Interval: _____

Approximate Flow Rate: _____ ml/min

Total Amount Purged: (in gallons): _____ Liter Conversion: 3.7854 _____ liters

Celcius Converstion to Fahrenheit: _____ Fahrenheit

Gallons per linear ft.

2"=0.163

4"=0.653

Well Condition: Sample No Purge

Weather Conditions: _____

Groundwater Sampling Field Data Sheet

Site Name: Mann's Chevy

Address: _____

Date: ~~MW-10~~ 6-27-23

Lab Analysis: _____

Well ID: MW-10

Sample Method: ○ low flow ⊘ bailer ○ other

Initial DTW: 6.95 Total Depth: 23.89 Start Time: _____ Screened Interval: _____

Field Data

H_2O Reading DTW	Data Set	Time	Temp (°C)	pH	ORP	SC	Turbidity (NTU)	DO	Comment
	1	12:36	20.6	7.37		1.21 ms	2.60 ppt		
	2								
	3								
	4								
	5								
	6								
	7								
	8								

Time Sample Collected: 12:36

Approximate Purge Time: _____

Sample Interval: _____

Approximate Flow Rate: _____ ml/min

Total Amount Purged: (in gallons): 2.0 Liter Conversion: 3.7854 _____ liters

Celcius Converstion to Fahrenheit: _____ Fahrenheit

Gallons per linear ft.

2"=0.163

4"=0.653

Well Condition: _____

Weather Conditions: _____

Groundwater Sampling Field Data Sheet

Site Name: Manns Chevy

Date: 6-27-23

Address: _____

_____

Lab Analysis: _____

_____

Well ID: MW-11

Sample Method: ○ low flow ⊘ bailer ○ other

Initial DTW: 5.96 Total Depth: 24.19 Start Time: _____ Screened Interval: _____

Field Data

H_2O Reading DTW	Data Set	Time	Temp (°C)	pH	ORP	SC	Turbidity (NTU)	DO	Comment
	1								
	2								
	3								
	4								
	5								
	6								
	7								
	8								

Time Sample Collected: 12:45

Approximate Purge Time: _____

Sample Interval: _____

Approximate Flow Rate: _____ ml/min

Total Amount Purged: (in gallons): 3 Liter Conversion: 3.7854 _____ liters

Celcius Converstion to Fahrenheit: _____ Fahrenheit

Gallons per linear ft.

2"=0.163

4"=0.653

Well Condition:

_____

_____

_____

Weather Conditions:

_____

Groundwater Sampling Field Data Sheet

Site Name: Mann's Chevy Address: _____

Date: 6-27-23

Lab Analysis: _____

Well ID: MW-12 Sample Method: ○ low flow ⊗ bailer ○ other

Initial DTW: 2.49 (6-27) / 2.88 (6-28) Total Depth: ~~19.76~~ 20.03 Start Time: _____ Screened Interval: _____

Field Data

H_2O Reading DTW	Data Set	Time	Temp (°C)	pH	ORP	SC	Turbidity (NTU)	DO	Comment
	1	12.08	16.8	7.25		1.04	.52 NTU		
	2								
	3								
	4								
	5								
	6								
	7								
	8								

Time Sample Collected: _____

Approximate Purge Time: _____

Sample Interval: _____

Approximate Flow Rate: _____ ml/min

Total Amount Purged: (in gallons): 3 Liter Conversion: 3.7854 _____ liters

Celcius Converstion to Fahrenheit: _____ Fahrenheit

Gallons per linear ft.

2"=0.163

4"=0.653

Well Condition: _____

Weather Conditions: _____

Groundwater Sampling Field Data Sheet

Site Name: Mann's Chevy Address:

Date: 6-28-23

Lab Analysis:

Well ID: MW-13 Sample Method: ○ low flow ⊘ bailer ○ other

Initial DTW: 3.63 (6-27) 3.99 (6-28) Total Depth: 23.45 Start Time: 10.28 Screened Interval:

Field Data

H_2O Reading DTW	Data Set	Time	Temp (°C)	pH	ORP	SC (ms)	Turbidity (NTU)	DO	Comment
	1	10.28	15.4	7.27		1.09	.54		
	2								
	3								
	4								
	5								
	6								
	7								
	8								

Time Sample Collected: 10:28

Approximate Purge Time:

Sample Interval:

Approximate Flow Rate: ml/min

Total Amount Purged: (in gallons): 2.5 Liter Conversion: 3.7854 liters

Celcius Converstion to Fahrenheit: Fahrenheit

Gallons per linear ft.

2"=0.163

4"=0.653

Well Condition: pad wobbly

Weather Conditions:

Groundwater Sampling Field Data Sheet

Site Name: Mann's Chevy

Date: 6-27-23

Address: _____

_____

Lab Analysis: _____

_____

Well ID: Dealership

Sample Method: ○ low flow ○ bailer ⊗ other

Initial DTW: _____ Total Depth: _____ Start Time: _____ Screened Interval: _____

Field Data

H_2O Reading DTW	Data Set	Time	Temp (°C)	pH	ORP	SC	Turbidity (NTU)	DO	Comment
	1	10:37	19.4	7.60		0.79 ms	0.39 ppt		
	2								
	3								
	4								
	5								
	6								
	7								
	8								

Time Sample Collected: 10:37

Approximate Purge Time: _____

Sample Interval: _____

Approximate Flow Rate: _____ ml/min

Total Amount Purged: (in gallons): _____ Liter Conversion: 3.7854 _____ liters

Celcius Converstion to Fahrenheit: _____ Fahrenheit

Gallons per linear ft.

2"=0.163

4"=0.653

Well Condition:

_____

_____

_____

Weather Conditions:

_____

Groundwater Sampling Field Data Sheet

Site Name: Munn's Chevy Address: _____

Date: 6-27-23 _____

Lab Analysis: _____

_____

Well ID: Barber shop Sample Method: ○ low flow ○ bailer ○ other

Initial DTW: _____ Total Depth: _____ Start Time: _____ Screened Interval: _____

Field Data

H_2O Reading DTW	Data Set	Time	Temp (°C)	pH	ORP	SC	Turbidity (NTU)	DO	Comment
	1	10:17	22.6	7.21		1-2 ms	0.50 ppt		
	2								
	3								
	4								
	5								
	6								
	7								
	8								

Time Sample Collected: 10:21

Approximate Purge Time: _____

Sample Interval: _____

Approximate Flow Rate: _____ ml/min

Total Amount Purged: (in gallons): _____ Liter Conversion: 3.7854 _____ liters

Celcius Converstion to Fahrenheit: _____ Fahrenheit

Gallons per linear ft.

2"=0.163

4"=0.653

Well Condition: _____

Weather Conditions: _____

Groundwater Sampling Field Data Sheet

Site Name: Mann's Chevy

Date: 6-28-23

Address: _____

_____

Lab Analysis: _____

_____

Well ID: MW-3

Sample Method: ⊘ low flow ○ bailer ○ other

Initial DTW: 2.57 (6-27) / 2.92 (6-28) Total Depth: 4.11 Start Time: _____ Screened Interval: _____

Field Data

H_2O Reading DTW	Data Set	Time	Temp (°C)	pH	ORP	SC (ms)	Turbidity (NTU)	DO	Comment
Hit Pump	1	10 05	19.85	7.13	-11	.801	77.9	11.24	Hit the pump
"	2	10 08	20.16	7.13	-8	.794	81.4	8.57	"
"	3	10.11	20.28	7.14	-3	.795	80.1	7.98	"
	4								
	5								
	6								
	7								
	8								

Time Sample Collected: _____

Approximate Purge Time: _____

Sample Interval: _____

Approximate Flow Rate: _____ ml/min

Total Amount Purged: (in gallons): .25 Liter Conversion: 3.7854 _____ liters

Celcius Converstion to Fahrenheit: _____ Fahrenheit

Gallons per linear ft.

2"=0.163

4"=0.653

Well Condition:

_____

_____

_____

Weather Conditions:

_____

Groundwater Sampling Field Data Sheet

Site Name: Mann's Chevy

Date: 6-27-23

Address: _____

_____

Lab Analysis: _____

_____

Well ID: MW-4

Sample Method: ○ low flow ○ bailer ○ other

Initial DTW: Dry Total Depth: 3.98 Start Time: _____ Screened Interval: _____

Field Data

H_2O Reading DTW	Data Set	Time	Temp (°C)	pH	ORP	SC	Turbidity (NTU)	DO	Comment
	1								
	2								
	3								
	4								
	5								
	6								
	7								
	8								

Time Sample Collected: _____

Approximate Purge Time: _____

Sample Interval: _____

Approximate Flow Rate: _____ ml/min

Total Amount Purged: (in gallons): _____ Liter Conversion: 3.7854 _____ liters

Celcius Converstion to Fahrenheit: _____ Fahrenheit

Gallons per linear ft.

2"=0.163

4"=0.653

Well Condition:

_____

_____

_____

Weather Conditions:

_____

Groundwater Sampling Field Data Sheet

Site Name: Mann's Chevy

Date: 6-27-23

Address: _____

_____

Lab Analysis: _____

_____

Well ID: MW-5R

Sample Method: ○ low flow ⊗ bailer ○ other

Initial DTW: 3.18 Total Depth: 3.47 Start Time: _____ Screened Interval: _____

Field Data

H_2O Reading DTW	Data Set	Time	Temp (°C)	pH	ORP	SC	Turbidity (NTU)	DO	Comment
	1								
	2								
	3								
	4								
	5								
	6								
	7								
	8								

Time Sample Collected: _____

Approximate Purge Time: _____

Sample Interval: _____

Approximate Flow Rate: _____ ml/min

Total Amount Purged: (in gallons): _____ Liter Conversion: 3.7854 _____ liters

Celcius Converstion to Fahrenheit: _____ Fahrenheit

Gallons per linear ft.

2"=0.163

4"=0.653

Well Condition: pad pushed out of the ground

Weather Conditions: _____

Groundwater Sampling Field Data Sheet

Site Name: Munn's Chevy Address: _____

Date: 6-28-24

Lab Analysis: _____

Well ID: MW-6 Sample Method: ○ low flow ✕ bailer ○ other

Initial DTW: 3.83 (6-27) 4.01 (6-28) Total Depth: 4.78 Start Time: _____ Screened Interval: _____

Field Data

H_2O Reading DTW	Data Set	Time	Temp (°C)	pH	ORP	SC (ms)	Turbidity (NTU)	DO	Comment
	1	09:37	17.7	7.50		.82	.42 ppt		Sample - No Purge
	2								
	3								
	4								
	5								
	6								
	7								
	8								

Time Sample Collected: _____

Approximate Purge Time: _____

Sample Interval: _____

Approximate Flow Rate: _____ ml/min

Total Amount Purged: (in gallons): 0.00 Liter Conversion: 3.7854 _____ liters

Celcius Converstion to Fahrenheit: _____ Fahrenheit

Gallons per linear ft.

2"=0.163

4"=0.653

Well Condition: _____

Weather Conditions: _____

Groundwater Sampling Field Data Sheet

Site Name: Main's Chevy Address: _____

Date: 6-27-23

Lab Analysis: _____

Well ID: MW-2 Sample Method: ☒ low flow ○ bailer ○ other

Initial DTW: 4.57 (6.27) 5.09 (6.73) Total Depth: 7.57 Start Time: 7.94 Screened Interval: _____

Field Data

H_2O Reading DTW	Data Set	Time	Temp (°C)	pH	ORP	MS SC	Turbidity (NTU)	DO	Comment
	1	11.21	17.89	7.14	-139	1.19	24.8	.02	
	2	11.24	17.56	7.09	-146	1.19	41.3	00.0	
5.97	3	11.27	17.09	7.09	-147	1.21	43.2	0.0	
6.00	4	11.30	16.82	7.10	-150	1.24	32.3	0.0	
6.22	5	11.33	16.72	7.11	-146	1.24	20.5	0.0	
6.23	6	11.36	16.90	7.13	-143	1.23	14.6	0.0	
	7								
	8								

Time Sample Collected: _____

Approximate Purge Time: _____

Sample Interval: _____

Approximate Flow Rate: _____ ml/min

Total Amount Purged: (in gallons): 1.25 Liter Conversion: 3.7854 _____ liters

Celcius Converstion to Fahrenheit: _____ Fahrenheit

Gallons per linear ft.

2"=0.163

4"=0.653

Well Condition: MS/MSD - Dup.

Weather Conditions: _____

APPENDIX F

CHEMICAL AND PROPERTIES OF CONTAMINANTS
TOXOLOGICAL PROPERTIES OF CONTAMINANTS

CHEMICAL AND PHYSICAL PROPERTIES

CHEMICALS OF CONCERN

DICK KRIEG MOTORS, DELPHI, INDIANA

	Benzene	**1,2,4-trimethylbenzene**	**Naphthalene**
Formula	C_6H_6	C_9H_{12}	$C_{18}H_8$
Molecular weight	78.11 g/mol	120.19 g/mol	128.17 g/mol
Melting point	42° F	-77° F	176° F
Boiling point	176° F	337° F	424° F
Density	0.88	0.88	1.15
Vapor density	2.77	4.15	4.42
Vapor pressure	75 mm Hg	1 mm Hg	0.08 mm Hg
Flash point	12° F	112° F	174° F

TOXOLOGICAL DATA

CHEMICALS OF CONCERN

DICK KRIEG MOTORS, DELPHI, INDIANA

	Benzene	**1,2,4-trimethylbenzene**	**Naphthalene**
CAS RN	71-43-2	95-63-6	91-20-3
OSHA PEL	1 ppm	None	10 ppm
OSHA STEL	5 ppm	Not determined	N/A
IDLH	500 ppm	Not determined	250 ppm
LD_{50}	340 mg/kg (mouse)	5 g/kg (rat)	100 mg/kg (mouse)

CAS RN: Chemical Abstracts Service Registry Number

OSHA – Occupational Safety and Health Administration

PEL – permissible exposure limit (typically 8 hours)

STEL – short term exposure limit (usually 15 minutes)

IDLH – immediately dangerous to life and health

LD50 – lethal dose, 50% of test animals

APPENDIX G

QUALITY PROJECT ASSURANCE PLAN

QUALITY MANUAL

ENVision Laboratories, Inc.
1439 Sadlier Circle West Drive
Indianapolis, IN 46239

Responsible Parties

Name	Function	Phone	Signatures	Date
Travis Garrett	Laboratory Technical Director	317-351-8632	Travis J. Garrett	05-24-24
Cheryl Crum	Quality Assurance Manager	317-351-8632	Cheryl A. Crum	05-24-24
David Norris	Deputy Technical Director	317-351-8632	David Norris	05-24-24

Revision Number:	**23**	**Effective Date:**	**05-24-24**
Distribution List:	This *Quality Manual* governs the quality program for all operating units of the laboratory, as shown on the organization chart presented in the manual.		

SECTION 2 - TABLE OF CONTENTS

SECTION 3 – INTRODUCTION AND SCOPE

The purpose of this *Quality Manual* is to outline the quality system for the ENVision Laboratories, Inc. The *Quality Manual* defines the policies, procedures, and documentation that assure analytical services continually meet a defined standard of quality that is designed to provide clients with data of known and documented quality and, where applicable, demonstrate regulatory compliance.

POLICY

The *Quality Manual* sets the standard under which all laboratory operations are performed including the laboratory's organization, objectives, and operating philosophy.

3.1 Scope of Testing

The laboratory scope of analytical testing services includes those listed on the following table:

EPA Method 8270C/SIM: Semivolatile Organic Compounds by GC/MS/SIM
EPA Method 8260B: Volatile Organic Compounds by GC/MS
EPA Method 3520C: Continuous Liquid-Liquid Extraction
EPA Method 3550C: Ultrasonic Extraction
EPA Method 5030B: Purge-and-Trap for Aqueous Samples
EPA Method 5035A: Closed-System Purge-and-Trap and Extraction for Volatile Organics in Soil and Waste Samples
EPA Method 1684: Total, Fixed, and Volatile Solids in Water, Solids, and Biosolids
EPA Method 6010B: ICP Metals (**Inductively Coupled Plasma-Atomic Emission Spectrometry)**
EPA Method 7470A/7471A: Mercury (Manual Cold Vapor Technique)
EPA Method 3050B: Acid Digestion of Sediments, Sludges, and Soils for Metals by ICP
EPA Method 3010A: ACID DIGESTION OF AQUEOUS SAMPLES AND EXTRACTS FOR TOTAL METALS BY ICP SPECTROSCOPY

3.2 Table of Contents, References and Appendices

The table of contents is in Section 2 of this Manual.

3.3 Terms & Definitions and Acronyms Used

Quality control terms are generally defined within the section that describes the activity.

Acronyms

A list of acronyms used in this document and their definitions are:

ANSI	–	American National Standards Institute
ASQC	–	American Society for Quality Control
ASTM	–	American Society for Testing and Materials
Blk	–	Blank
°C	–	degrees Celsius
cal	–	calibration
CAR	-	Corrective Action Report
CAS	–	Chemical Abstract Service
CCV	–	Continuing calibration verification
CEO	-	Chief Executive Officer
COC	–	Chain of custody
DOC	–	Demonstration of Capability
DRO	-	Diesel Range Organics
EPA	–	Environmental Protection Agency
ERO	-	Extended Range Organics
GC/FID	-	gas chromatography/flame ionization detector
GC/MS	–	gas chromatography/mass spectrometry
GRO	-	Gasoline Range Organics
ICP-MS	–	inductively coupled plasma-mass spectrometry
ICV	–	Initial calibration verification
ISO/IEC	–	International Organization for Standardization/International Electrochemical Commission
LCS	–	Laboratory control sample
LFB	–	Laboratory fortified blank
LOD	-	Limit of Detection
LOQ	-	Limit of Quantitation
MDL	–	method detection limit
mg/Kg	–	milligrams per kilogram
mg/L	–	milligrams per liter
MS	–	matrix spike
MSD	–	matrix spike duplicate
NIST	–	National Institute of Standards and Technology
PID	-	Photo Ionization Detector
PT	–	Proficiency Test(ing)
QA	–	Quality Assurance
QC	–	Quality Control
QAM	–	Quality Assurance Manager
RL	–	Reporting level
RPD	–	Relative percent difference
RSD	–	Relative standard deviation
SD	-	Standard Deviation
SOPs	–	Standard operating procedures
spk	–	spike
std	–	standard
TPH	-	Total Petroleum Hydrocarbon
ug/L	–	micrograms per liter
VOC	–	Volatile organic compound

SECTION 4 – ORGANIZATIONAL ROLES AND RESPONSIBILITIES

POLICY

The laboratory is a legally identifiable organization. Through application of the policies and procedures outlined in this chapter, the laboratory assures that it is impartial and that personnel are free from undue commercial, financial, or other undue pressures that might influence their technical judgment. The laboratory is responsible for carrying out testing activities that meet the EPA method requirements and the needs of the client.

Mission Statement: ENVision Laboratories, Incorporated is an innovative, state-of-the-art environmental laboratory aimed at providing competitively priced analytical data with superior customer service. We view ourselves as partners with our clients, our employees and our community. Our goal is moderate growth, annual profitability, and maintaining a fun work environment.

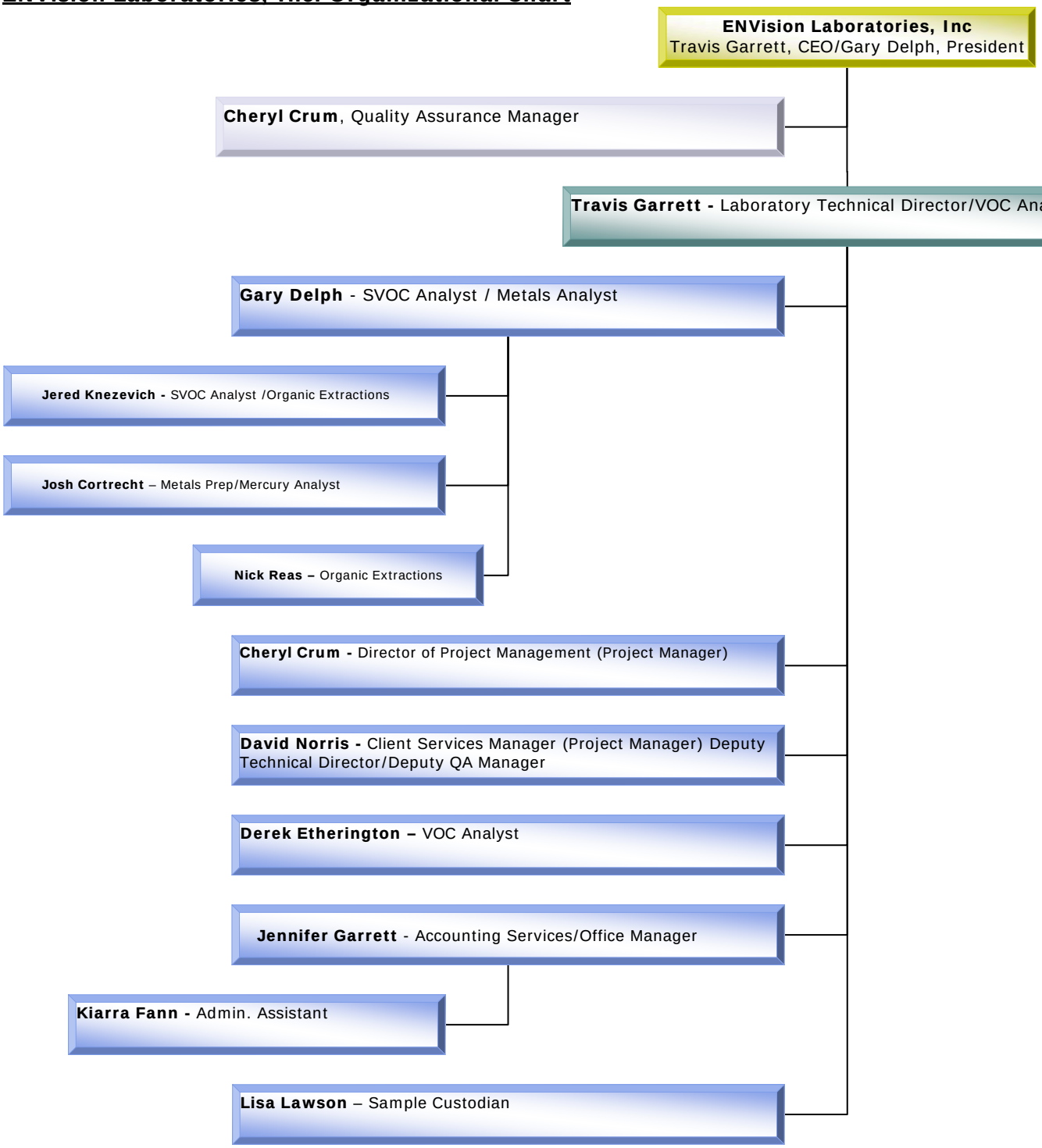
4.1 Laboratory Organizational Structure

Policy

The organizational structure (see chart below) minimizes the potential for conflicting or undue interests that might influence the technical judgment of analytical personnel. All laboratory personnel must attempt to avoid involvement in any activities that would diminish competence, impartiality, judgment, or operational integrity.

The laboratory is a privately owned, commercially independent testing laboratory operating in Indianapolis, IN. The federal tax ID number is available upon request, if applicable.

ENVision Laboratories, Inc. Organizational Chart



4.2 Responsibility and Authority

The term "MANAGEMENT" includes the titles, Laboratory Technical Director, Deputy Technical Directors, CEO, President, Quality Assurance Manager, and Deputy Quality Assurance Manager.

Policy

Management has overall responsibility for the technical operations and authority needed to generate the required quality of laboratory operations.

Management's commitment to quality and to the Quality System is stated in the Quality Policy, which is upheld through the application of related policies and procedures.

Management ensures technical competence of personnel operating equipment, performing tests, evaluating results, or signing reports, and limits authority to perform laboratory functions to those appropriately trained and/or supervised.

Procedure

The assignment of responsibilities, authorities, and interrelationships of the personnel who manage, perform, or verify work affecting the quality of environmental tests is documented in Section 17.1 of the Quality Manual.

Management bears specific responsibility for maintenance of the Quality System. This includes defining roles and responsibilities to personnel, approving documents, providing required training, providing a procedure for confidential reporting of data integrity issues, and periodically reviewing data, procedures, and documentation.

Management ensures that audit findings and corrective actions are completed within required time frames.

Designated alternates are appointed by management during the absence of the Laboratory Technical Director or the Quality Assurance Manager, and always if the absence is more than 15 days.

Management is responsible for defining the minimal level of education, qualifications, experience, and skills necessary for all positions in the laboratory and assuring that technical staff have demonstrated capabilities in their tasks.

Training is kept up to date as described in Section 17.4 by periodic review of training records and through employee performance review.

SECTION 5 – QUALITY SYSTEMS

The laboratory's Quality System is documented in this *Quality Manual* and associated quality system documents. Together they describe the policies, objectives, principles, organizational authority, responsibilities, accountability, and implementation plan of the organization for ensuring quality in its work processes, products, and services. All associated quality documents are available for an on-site assessment.

5.1 Quality Policy

The quality policy is signed and dated, and is issued under the authority of the highest level of laboratory management, which demonstrates management's commitment to integrity, ethics, the quality system and associated standards.

Quality Policy Statement

The objective of the quality system and the commitment of management is to consistently provide our customers with data of known and documented quality that meets their requirements. Our policy is to use good professional practices, to maintain quality, and to uphold the highest quality of service. The laboratory ensures that personnel are free from any commercial, financial, and other undue pressures, which might adversely affect the quality of work. This policy is implemented and enforced through the unequivocal commitment of management, at all levels, to the Quality Assurance (QA) principles and practices outlined in this manual. However, the primary responsibility for quality rests with each individual within the laboratory organization. Every laboratory employee must ensure that the generation and reporting of quality analytical data is a fundamental priority. Every laboratory employee is required to familiarize themselves with the quality documentation and to implement the policies and procedures in their work. All employees are trained annually on ethical principles and procedures surrounding the data that is generated. The laboratory maintains a strict policy of client confidentiality.

5.2 Quality Manual

Policy

Management ensures that the laboratory's policies and objectives for quality are documented by reference or by inclusion in the *Quality Manual*, and that the *Quality Manual* is communicated to, understood by, and implemented by all personnel concerned.

Where the *Quality Manual* documents laboratory requirements, a separate SOP or policy is not required.

Procedure

All employees sign a form, kept with their training file stating that they have read and understood the *Quality Manual*, including the quality policy. The *Quality Manual* is maintained current and up-to-date by the Quality Assurance Manager.

SECTION 6 – DOCUMENT MANAGEMENT

This Section describes procedures for document management, which includes controlling, distributing, reviewing, and accepting modifications. The purpose of document management is to preclude the use of invalid and/or obsolete documents.

The laboratory manages three types of documents, 1) controlled, 2) approved, and 3) obsolete.

A CONTROLLED DOCUMENT is one that is uniquely identified, issued, tracked, and kept current as part of the quality system. Controlled documents may be internal documents or external documents.

APPROVED means reviewed, and either signed and dated, or acknowledged in writing or secure electronic means by the issuing authority(ies).

OBSOLETE DOCUMENTS are documents that have been superseded by more recent versions.

POLICY

All documents that affect the quality of laboratory data are managed appropriate to the scope and depth required.

6.1 Controlled Documents

Policy

Documents will be reviewed and approved for use by Quality Assurance Manager and/or Laboratory Technical Director prior to issue.

Procedure

Documents are reviewed every 2 years to ensure their contents are suitable and in compliance with the current quality systems requirements and changing regulations or procedures. However, test method SOP's are reviewed annually.

Approved copies of documents are available at all locations where operations are essential to the effective functions of the laboratory. Copies of documents to distribute to laboratory personnel are assigned a unique number and recorded in the Quality Assurance Manager's Controlled document logbook. Management will determine the employees to whom the documents will be appropriately distributed. The unique document number is recorded next to the individual's name and the document storage area will be indicated. The employee initials that the copy was received. When the document is no longer valid, the date the document became obsolete is recorded, and the retrieved copies are checked off next to each employee's name.

Controlled internal documents are uniquely identified with 1) date of issue, 2) revision identification, 3) page number, 4) total number of pages or a mark to indicate the end of the document, and 5) the signatures of the issuing authority (i.e. management).

A master list of controlled internal documents is maintained that includes distribution, location, and revision dates. A master list of controlled external documents is also maintained that includes title, author, copyright date, and date of publication, and location. The controlled document list is maintained by the Quality Assurance Manager. The controlled document list is updated periodically.

6.1.1 Document Changes to Controlled Documents

6.1.1.1 Paper Document Changes

Policy

Document changes are approved by the original approving authority.

The document management process allows for handwritten modifications to documents.

Procedure

Document changes are approved with signature and dated by management. The modified document is then copied and distributed, and obsolete documents are removed.

Amendments to documents are incorporated into a new revision and reissued as soon as practicable.

6.1.1.2 Electronic Document Changes

Procedure

Suggested revisions to electronic documents are presented to management for review and approval. Changes to electronic documents are approved either on an accompanying form or through electronic means (such as email, change tracking functions, or memoranda).

Where practicable, the altered text or new text in the draft is identified during the revision or review process to provide for easy identification of the modifications.

6.2 Obsolete Documents

Policy

All invalid or obsolete documents are removed, or otherwise prevented from unintended use.

Procedure

Obsolete documents retained for legal use or historical knowledge preservation are appropriately marked and retained. Obsolete documents are identified as being obsolete by management. All copies of the obsolete document are collected from employees according to the Master List log. One copy of the obsolete document will be retained by the Quality Assurance Manager and clearly marked “Obsolete” on the

front cover of the document. All other copies are destroyed by the Quality Assurance Manager.

6.3 Standard Operating Procedures

STANDARD OPERATING PROCEDURES (SOPs) are used to ensure consistency of application of common procedures, are written procedures that describe in detail how to accurately reproduce laboratory processes, and are of two types: 1) test method SOPs, which have specifically required details, and 2) general use SOPs which document the more general organizational procedures. SOPs accurately reflect all phases of current laboratory activities.

General use SOPs do not have to be formal documents with predefined section headings and contents. They can be less formal descriptions of procedures described in the *Quality Manual* or other documents.

Policy

Copies of all (General Use and Test Method) SOPs and published or referenced test methods are accessible to all personnel.

Procedure

Each SOP indicates the effective date, the revision number, and the signature(s) of the Quality Assurance Manager, Laboratory Technical Director, and Deputy Technical Director. See SOP on Writing SOP's ENQA01 for the numbering system used for organization and how SOP's are distributed to personnel.

6.3.1 Test Method SOPs

Policy

The laboratory has SOPs for all test methods performed and for procedures that are part of the Quality System that accurately reflect how the analytical process is carried out. Where equipment manuals or published methods accurately reflect laboratory procedures in detail, a separate SOP is not required.

Any deviation from a test method is documented, including both a description of the change made and a technical justification. The deviation from a test method is reported to the client.

Procedure

Each Test Method SOP includes or references (as applicable) the following:

a) identification of the test method;
b) applicable matrix or matrices;
c) detection limit;
d) scope and application, including components to be analyzed;
e) summary of the test method;
f) definitions;
g) interferences;
h) safety;

i) equipment and supplies;
j) reagents and standards;
k) sample collection, preservation, shipment and storage;
l) quality control, including acceptance criteria (5.4.10.6);
m) calibration and standardization;
n) procedure;
o) data analysis and calculations;
p) method performance;
q) pollution prevention;
r) data assessment and acceptance criteria for quality control measures;
s) corrective actions for out-of-control ;
t) contingencies for handling out-of-control or unacceptable data;
u) waste management;
v) references; and,
w) any tables, diagrams, flowcharts and validation data.

SECTION 7 – REVIEW OF REQUESTS, TENDERS AND CONTRACTS

POLICY

The review of all new work assures that oversight is provided so that requirements are clearly defined, the laboratory has adequate resources and capability, and the test method is applicable to the customer's needs. This process assures that all work will be given adequate attention without shortcuts that may compromise data quality.

Contracts for new work may be formal bids, signed documents, verbal, or electronic.

PROCEDURE

7.1 Procedure for the Review of Work Requests

The laboratory determines if it has the necessary certification, resources, including schedule, equipment, deliverables, and personnel to meet the work request.

The laboratory informs the client of the results of the review if it indicates any potential conflict, deficiency, lack of accreditation, or inability of the lab to the complete the work satisfactorily.

The client is informed of any deviation from the contract including the test method or sample handling processes. All differences between the request and the final contract are resolved and recorded before any work begins. It is necessary that the contract be acceptable to both the laboratory and the client.

The review process is repeated when there are amendments to the original contract by the client. The participating personnel are given copies of the amendments.

The Director of Project Manager or Client Services Manager will review the work request. For routine projects and other simple tasks, a review by the Director of Project Manager or Client Services Manager is considered adequate. The Director of Project Manager or Client Services Manager confirms that the laboratory has any required certifications, that it can meet the client's data quality and reporting requirements, and that the lab has the capacity to meet the clients turn around needs. For new, complex, or large projects, the proposed work contract is given to the Laboratory Technical Director. The Laboratory Technical Director will in turn forward the work contract to the appropriate personnel to evaluate items such as:

- Contractual obligations, bonding issues, and payment terms
- Method capabilities, analyte lists, reporting limits, and quality control limits
- Turnaround time feasibility
- QA/QC issues; including certifications
- Formal laboratory quote
- Final report formatting and electronic deliverable documents
- Final sample disposal requirements
- Need for subcontractor laboratory

The Director of Project Manager or Client Services Manager submits the bid and formal quote to the client and maintains copies of all signed contracts and updated contracts in the appropriate client file.

7.2 Documentation of Review

Records are maintained for every contract or work request, when appropriate. This includes pertinent discussions with a client relating to the client's requirements or the results of the work during the period of execution of the contract.

SECTION 8 – SUBCONTRACTING OF TESTS

A SUBCONTRACT LABORATORY is defined as a laboratory external to this laboratory, or at a different location than the address indicated on the front cover of this manual, that performs analyses for this laboratory.

POLICY

When subcontracting analytical services, the laboratory assures work requiring accreditation is placed with a laboratory that meets applicable statutory and regulatory requirements for performing the tests.

PROCEDURE

A list of subcontractors is maintained by the Quality Assurance Manager.

A copy of the certificate and the analyte list for subcontractors are maintained as evidence of compliance.

The laboratory shall advise the client of the intent to subcontract the work in writing (email is acceptable). When possible, the laboratory gains the approval of the client to subcontract all of their work prior to implementation, preferably in writing. The Director of Project Management or Client Services Manager retains the written client approval for subcontracted work in the appropriate client file. (See SOP ENSPL01 Section 6.0 for procedure for subcontracting samples.)

The laboratory performing the subcontracted work is identified in the final report. The laboratory assumes responsibility to the client for the subcontractor's work, except in the case where a client or a regulating authority specified which subcontractor is to be used.

SECTION 9 – PURCHASING SERVICES AND SUPPLIES

POLICY

The laboratory ensures that purchased supplies and services that affect the quality of environmental tests are of the required or specified quality by using approved suppliers and products.

The laboratory has procedures for purchasing, receiving, and storage of supplies that affect the quality of environmental tests.

PROCEDURE

The Laboratory Technical Director, Quality Assurance Manager or their designee reviews and approves the supplier of services and supplies and approves technical content of purchasing documents prior to ordering. A list of technically approved items for ordering is created by the Laboratory Technical Director. Approval to order items not on the approved list must be made in writing by the Laboratory Technical Director or Quality Assurance Manager.

Evaluation of suppliers is accomplished by ensuring the supplier ships the product or material ordered and that the material is of the appropriate quality by signing packing slips or other supply receipt documents. The purchasing documents contain the data that adequately describe the services and supplies ordered.

The laboratory keeps a list of approved suppliers.

Analysts list needed items on designated board for ordering. The items are reviewed, approved for appropriateness and then ordered by one of the following personnel: Laboratory Technical Director, Quality Assurance Manager or their designee.

Online orders are checked for accuracy before final submission. Order confirmations are received through email and are printed and verified for accuracy, initialed, and dated. As ordered items are received, the accompanying packing lists are cross-checked with received items, initialed, and dated as received. Packing slips are then cross-checked with the applicable order confirmation and attached to it. Orders are inspected and verified to contain the correct item ordered. Once all items for each order are received, the order confirmation and attached packing lists are retained in the appropriate vendor file.

Phone orders are recorded on the appropriate order form (see Appendix 4 & 5) which includes vendor name, vendor phone number, date of order, item numbers and/or item description and quantity ordered. As ordered items are received, the accompanying packing lists are cross-checked with received items, initialed and dated as received. Packing slips are then cross-checked with the applicable order form and attached to it. Once all items for each order are received, the order form and attached packing lists are retained in the appropriate vendor file.

SECTION 10 – SERVICE TO THE CLIENT

The laboratory collaborates with clients and/or their representatives in clarifying their requests and in monitoring of the laboratory performance related to their work. Each request is reviewed to determine the nature of the request and the laboratory's ability to comply with the request within the confines of prevailing statutes and/or regulations without risk to the confidentiality of other clients.

The Laboratory Sales Representative seeks client feedback, both positive and negative, from customers during client visits, phone conversations, and email. The feedback is provided to management to improve the management system, testing, and calibration activities, and customer service.

10.1 Client Confidentiality

Policy

The laboratory confidentiality policy is to not divulge or release any information to a third party without proper authorization.

All electronic data (storage or transmissions) are kept confidential, based on technology and laboratory limits, as required by client or regulation.

Procedure

During the course of business, the laboratory is privy to data or information considered confidential or proprietary to the clients. This information includes but is not limited to test results, origin of samples, business relationships with clients, information about the client's business, laboratory procedures, and client list. All such information is kept strictly confidential and discussed only with those designated as technical contacts, purchasing agents for the particular project or with corporate officers for the client's company. The information will not be discussed with anyone not designated as a contact without written permission from the client.

A confidentiality statement is used on all email, documents, and transmitted (fax) information. The following Confidentiality Notice (or equivalent) is used:

Confidentiality Notice: *The information contained in this message is intended for the use of the addressee, and may be confidential and/or privileged. If the reader of this message is not the intended recipient, or the employee or agent responsible to deliver it to the intended recipient, you are hereby notified that any dissemination, distribution or copying of this communication is strictly prohibited. If you have received this communication in error, please notify the sender immediately.*

SECTION 11 – COMPLAINTS

The purpose of this section is to assure that customer complaints are addressed and corrected. This includes requests to verify results or analytical data.

POLICY

The laboratory management reviews all complaints and determines appropriate action.

PROCEDURE

All customer complaints are documented (ie. via email, phone log, project notes) by the person receiving the complaint and taken to management for review. The Laboratory Technical Director or Quality Assurance Manager will determine when a complaint justifies further action. If it is determined that a complaint is without merit, it is documented, and the client is contacted. If it is determined that the complaint has merit, a corrective action is initiated. See Section 13 for corrective action procedures.

SECTION 12 – CONTROL OF NON-CONFORMING WORK

NON-CONFORMING WORK is work that does not meet acceptance criteria or requirements. Non-conformances can include unacceptable quality control results (see Section 24 Assuring the Quality of Results) or departures from standard operating procedures or test methods. Requests for departures from laboratory procedures are approved by the Laboratory Technical Director or Quality Assurance Manager and documented.

POLICY

The policy for control of non-conforming work is to identify the non-conformance, determine if it will be permitted, and take appropriate action. All employees have the authority to stop work on samples when any aspect of the process does not conform to laboratory requirements.

PROCEDURE

Non-conformance of work with established policies and procedures or those of the client will be investigated upon discovery. See Appendix 3 for the Non-conformance/Corrective Action Report form. The Laboratory Technical Director or Quality Assurance Manager will assign the appropriate personnel to investigate the issue. Any non-conformance will be evaluated for its significance, its impact on the data, and the need for corrective action. The client is notified within five business days if their data has been impacted. If necessary, work will be halted until the issue is resolved. Resumption of work after non-conformance is authorized by the Laboratory Technical Director or Quality Assurance Manager.

The procedure for investigating and taking associated corrective actions of non-conforming work are described in Section 13.

Whenever the identification of non-conformance casts doubt on the ability of the laboratory to comply with its own policies and procedures, an audit of the area affected should be performed to evaluate compliance.

SECTION 13 – CORRECTIVE ACTION

CORRECTIVE ACTION is the action taken to eliminate the causes of an existing nonconformity, defect, or other undesirable situation in order to prevent recurrence.

POLICY

Deficiencies cited in external assessments, internal quality audits, data reviews, client complaints or inquiries, or managerial reviews are documented and require corrective action. Corrective actions taken are appropriate for the magnitude of the problem and the degree of risk.

PROCEDURE

Any analyst or member of management recognizing that an issue warrants investigation can initiate corrective action. The Quality Assurance Manager is responsible for monitoring and recording corrective action. See Appendix 3 for the Non-conformance/Corrective Action Report form.

All deficiencies are investigated and a corrective action plan developed and implemented if determined necessary. The implementation is monitored for effectiveness.

Specific corrective action protocols specified in test methods may over-ride general corrective action procedures specified in this manual.

13.1 Selection and Implementation of Corrective Actions

ROOT CAUSE is the condition or event that, if corrected or eliminated, would prevent the recurrence of a deficiency.

Once an exceedance or nonconformance is noted, the first action is an investigation to determine the root cause. Records are maintained of nonconformances requiring corrective action to show that the root cause(s) was investigated, and includes the results of the investigation.

Where uncertainty arises regarding the best approach for analysis of the cause of exceedances that require corrective action, appropriate personnel will recommend corrective actions to be initiated by the analyst.

The Quality Assurance Manager ensures that corrective actions are discharged within the agreed upon time frame.

13.2 Monitoring of Corrective Action

Policy

Appropriate personnel, as determined by the QA Manager, will monitor implementation and documentation of the corrective action to assure that the corrective actions were effective. The QA Manager or Laboratory Technical Director has the authority to assign for work to resume if a work stoppage has been deemed appropriate for non-conformance.

Procedure

The Quality Assurance Manager will assign a unique number, CA#, to the top of the Non-conformance/Corrective Action Report Form (Appendix 3). The unique number, client name, project number or lab area effected, date assigned, analyst assigned, and closure date are recorded in the Table of Contents section of the Corrective Action Logbook. A deadline date for the investigation is assigned on the Non-conformance/Corrective Action Report. The analyst must return the form to the Quality Assurance Manager before the deadline expires.

The Quality Assurance Manager will monitor the effectiveness of the solution implemented by appropriate follow-up and record findings on the Non-conformance/Corrective Action Report form. The closure of the CAR will be document on the form by the signatures of the applicable lab manager, Quality Assurance Manager, and Laboratory Technical Director. The QA Manager will review Corrective Action Report forms for failures that indicate a systemic or reoccurring problem. If the QA Manager suspects that the laboratory is not in compliance with its own policies and procedures, an internal audit of the appropriate area will be conducted.

13.3 Technical Corrective Action

CAUSE ANALYSIS in corrective action investigates the root cause of the problem.

Policy

Sample data associated with a failed quality control indicator is evaluated for the need to be reanalyzed or qualified.

Procedure

Unacceptable quality control results are documented, and if the evaluation requires cause analysis, the cause and solution are recorded.

The analyst is responsible for initiating or recommending corrective actions and ensuring that exceedances of quality control acceptance criteria are documented. Analysts routinely implement corrective actions for data with unacceptable QC measures. First level correction may include re-analysis without further assessment. If the test method SOPs addresses the specific actions to take, they are followed. Otherwise, corrective actions start with assessment of the cause of the problem.

The Laboratory Technical director or Quality Assurance Manager review corrective action reports and suggest improvements, alternative approaches, and procedures where needed.
If the data reported are affected adversely by the nonconformance, the client is notified in writing.

The discovery of a non-conformance for results that have already been reported to the client must be immediately evaluated for significance of the non-conformance, its acceptability to the client, and determination of the appropriate corrective action.

13.4 Policy for Exceptionally Permitting Departures from Documented Policies and Procedures

Policy

The laboratory allows the release of non-conforming data only with approval on a case-by-case basis by the Laboratory Technical Director or Quality Assurance Manager. To the extent possible, samples are reported only if all quality control measures are acceptable. If a specific quality control measure is found to be out of control, and the data is to be reported, all samples associated with the failed item are reported with appropriate lab defined data qualifier(s). Planned departures from procedures or policies do not require audits or investigations.

Procedure

Permitted departures for non-conformances, such as QC failures, are fully documented and include the reason for the departure, the affected SOP(s), the impact of the departure on the data, and the data.

SECTION 14 – PREVENTIVE ACTION

PREVENTIVE ACTION, rather than corrective action, is a pro-active process aimed at minimizing or eliminating inferior data quality or other non-conformance through scheduled maintenance and review, before the non-conformance occurs.

Preventive action includes, but is not limited to, review of QC data to identify quality trends, regularly scheduled staff quality meetings, annual budget reviews, annual managerial reviews, scheduled preventive instrument maintenance, review of SOPs for consistency against reference methods, work load reviews, and other actions taken to identify potential quality problems and/or to implement process improvement plans. If preventive action is required, action plans are developed, implemented, and monitored to reduce the likelihood of the occurrence of such non-conformances and to take advantage of the opportunities for improvement.

All employees have the authority to recommend preventive action procedures, however management is responsible for implementing preventive action.

SECTION 15 – CONTROL OF RECORDS

RECORDS are a subset of documents, usually data recordings that include annotations, such as daily refrigerator temperatures posted to a laboratory form, lists, spreadsheets, or analyst notes on a chromatogram. Records may be on any form of media, including electronic and hard copy. Records include Chain of Custody records, analytical reports, and Project Management notes/project folders. Records allow for the historical reconstruction of laboratory activities related to sample-handling and analysis.

POLICY

The laboratory maintains a record system appropriate to its needs, records all laboratory activities, and complies with applicable standards or regulations as required.

PROCEDURE

The laboratory retains all original observations, calculations and derived data, calibration records, and a copy of the test report for a minimum of five years.

Records of all procedures to which a sample is subjected while in the possession of the laboratory are kept.

Analytical records should include the following:

- Laboratory sample ID code
- Date of analysis and time of analysis is required if the holding time is 72 hours or less or when time critical steps are included in the analysis, e.g., extractions, and incubations
- Instrumentation identification and instrument operating conditions/parameters (or reference to such data)
- Analysis type
- All manual calculations, e.g., manual integrations
- Analyst's or operator's initials/signature
- sample preparation including cleanup and separation protocols, ID codes, volumes, weights, instrument printouts, meter readings, calculations, reagents
- Sample analysis
- standard and reagent origin, receipt, preparation, and use
- calibration criteria, frequency and acceptance criteria
- data and statistical calculations, review, confirmation, interpretation, assessment and reporting conventions
- quality control protocols and assessment
- electronic data security, software documentation and verification, software and hardware audits, backups, and records of any changes to automated data entries
- method performance criteria including expected quality control requirements

15.1 Records Management and Storage

Policy

All quality records, including electronic records, are easy to retrieve, legible, and protected from deterioration or damage; held secure and in confidence; and are available for a minimum of five years.

The laboratory maintains a record management system for all quality records including laboratory notebooks, instrument logbooks, standards logbooks, and records for data reduction, validation, storage and reporting.

Archived information and access logs are protected against fire, theft, loss, environmental deterioration, vermin, and in the case of electronic records, electronic or magnetic sources.

In the event that the laboratory transfers ownership or goes out of business, all quality records are maintained and are available for a minimum of five years.

Procedure

All electronic records are backed-up. See SOP ENQA06 for Data Backup/Archiving procedure. Access to protected records is limited to laboratory management or their designees to prevent unauthorized access or amendment.

Procedures for identification, collection, access, filing, storage, and disposal of records are found below:

Identification: Records are uniquely identified.

Collection: Observations, data, and calculations are recorded at the time they are made. All generated data, except those that are generated by automated data collection systems, are recorded directly, promptly and **legibly in permanent black ink**. All documentation entries are signed or initialed by responsible staff. The reason for the signature or initials is clearly indicated in the records (e.g., sampled by, prepared by, reviewed by, etc.) When mistakes are made in technical records, each mistake is crossed out with a single line (not erased, made illegible, or deleted) and the correct value entered alongside. Corrections are signed or initialed by the person making the correction. When changes are made to technical records for reasons other than for correction of transcription errors, the reason for the change is recorded on the document.

Storage: All records stored on electronic media are supported by the hardware and software required for retrieval and have hard-copies or write protected copies.

Filing: Records are filed promptly and in an organized fashion.

Access: Access to archived information is documented with an access log.

Disposal: Records are disposed of according to applicable regulation, client request, or after five years.

15.2 Legal Chain of Custody Records

EVIDENTIARY SAMPLE DATA are used as legal evidence.

Procedures for evidentiary samples are documented in a SOP ENSPL01 Section 7.0.

SECTION 16 – AUDITS AND MANAGEMENT REVIEW

AUDITS measure laboratory performance and verify compliance with project requirements. Audits specifically provide management with an on-going assessment of the quality system. They are also instrumental in identifying areas where improvement in the quality system will increase the reliability of data. Audits are of four main types: internal, external, performance, and system.

As part of the overall internal audit program, the laboratory shall ensure that a review is conducted with respect to any inappropriate actions or vulnerabilities related to data integrity. Discovery of potential issues shall be handled in a confidential manner until such time as a follow up evaluation, full investigation, or other appropriate actions have been completed and the issues clarified. All investigations that results in finding of inappropriate activity shall be documented and include an disciplinary actions involved, corrective actions taken, and all appropriate notifications of clients. All documentation of these investigations and actions taken are maintained for at least five years.

16.1 Internal Audits

Policy

The laboratory conducts internal audits of its quality and management systems activities, including data integrity, using trained and qualified personnel at least annually. Personnel may not audit their own activities except when it can be demonstrated that an effective audit will be carried out.

Procedure

Annually, the laboratory prepares a schedule of internal audits to be performed during the year. The audit schedule is maintained by the Quality Assurance Manager. These audits verify compliance with the requirements of the quality system, including analytical methods, SOPs, ethics policies, other laboratory policies.

It is the responsibility of the Quality Assurance Manager to plan and organize audits as required by the schedule and requested by management.
The area audited, the audit findings, and corrective actions are recorded.

All investigations that result in findings of inappropriate activity are documented and include any disciplinary actions involved, corrective actions taken, and all appropriate notifications of clients.

Clients must be notified within five business days, in writing, when audit findings cast doubt on the validity of the data.

Audits are reviewed after completion to assure that corrective actions were implemented in a timely manner and were effective.

16.2 External Audits

Policy

It is the laboratory's policy to cooperate and assist with all external audits, whether performed by clients or an outside authority.

All external audits are fully documented and tracked to closure.

Procedure

Management ensures that all areas of the laboratory are accessible to auditors as applicable and that appropriate personnel are available to assist in conducting the audit.

Any findings related to an external audit follow corrective action procedures.

Management ensures that corrective actions are carried out within the timeframe specified by the auditor(s).

16.3 Performance Audits

Performance audits may be Proficiency Test Samples, internal single blind samples, double blind samples through a provider or client, or anything that tests the performance of the analyst and method.

The policy and procedures for Proficiency Test Samples are discussed in Section 23.7

16.4 System Audits and Management Reviews

Policy

Top level management reviews the quality system and maintains records of review findings and actions.

Procedure

The quality system is reviewed annually, and findings are recorded. Managers assure that actions are performed within agreed time frames. See Managerial Review SOP ENQA09 for review procedure.

Findings from management reviews are recorded. These records ensure that corrective actions are completed in an appropriate time frame.

SECTION 17 – PERSONNEL, TRAINING, AND DATA INTEGRITY

17.1 Job Descriptions

Policy

Job descriptions are available for all positions that manage, perform, or verify work affecting data quality, and are located in the employee training files maintained by the QA Manager. The laboratory must use personnel who are employed, or under contract to, the laboratory. The QA Manager maintains records of the technical personnel which include; dates of employment, approved signatures and initials, list of persons authorized to approve or release reports of testing or analysis of environmental samples.

Procedure

Job descriptions include the specific tasks, minimum education and qualifications, skills, and experience required for each position. The education and technical background of each employee (generally in the form of a resume) is documented in each employee training file maintained by the Quality Assurance Manager.

17.1.1 Metals/Wet Chemistry Analyst

The Metals/Wet Chemistry Analyst is responsible for the preparation and analysis of all samples requiring metals and/or wet chemistry analysis. This includes sample preparation and analysis, instrument maintenance, data reduction, validation, reporting and archiving, and carrying out any and all requirements of the established QA program that pertain to their area. Analyst must be able to follow good laboratory practices, adhere to policies and procedures set forth in the Quality Assurance Manual.

Minimum Requirements: Bachelor's Degree in Biology/Chemistry/Environmental Science or related science and/or 3 years environmental laboratory experience.

17.1.2 Organic Extractions Analyst

The Organic Extractions Analyst is responsible for the preparations of all water and soil samples requiring SVOC or TPH-DRO/ERO analysis. This includes sample extraction, concentration and packaging, maintaining all extraction records and carrying out any and all requirements of the established QA program that pertain to their area. The analyst will also be responsible for general laboratory duties such as washing glassware and maintenance of the lab. Analyst must be able to follow good laboratory practices, adhere to policies and procedures set forth in the Quality Assurance Manual.

Minimum Requirements: High School degree.

17.1.3 SVOC or TPH-DRO/ERO Analyst

The SVOC or TPH-DRO/ERO Analyst is responsible for the analysis of all samples requiring semivolatile organic compounds and/or TPH-DRO/ERO. This includes chemical analysis, instrument maintenance, data reduction, validation, reporting and archiving, and carrying out any and all requirements of the established QA program that pertain to

their area. Analyst must be able to follow good laboratory practices, adhere to policies and procedures set forth in the Quality Assurance Manual.

Minimum Requirements: Bachelor's Degree in Biology/Chemistry/Environmental Science or related science and/or 3 years environmental laboratory experience, and knowledge of Chemstation Software

17.1.4 **VOC Prep Analyst**

The VOC Prep Analyst is responsible for the preparation of all water and soil samples requiring volatile organic compounds and/or TPH-GRO analysis. This includes sample measuring, weighing, diluting, or archiving samples, maintaining all preparation records and carrying out any and all requirements of the established QA program that pertain to their area. The analyst will also be responsible for general laboratory duties such as washing glassware and maintenance of the lab. Analyst must be able to follow good laboratory practices, adhere to policies and procedures set forth in the Quality Assurance Manual.

Minimum Requirements: High School degree.

17.1.5 **VOC Analyst**

The VOC Analyst is responsible for the analysis of all samples requiring volatile organic compounds and/or TPH-GRO. This includes chemical analysis, instrument maintenance, data reduction, validation, reporting and archiving, and carrying out any and all requirements of the established QA program that pertain to their area. Analyst must be able to follow good laboratory practices, adhere to policies and procedures set forth in the Quality Assurance Manual.

Minimum Requirements: Bachelor's Degree in Biology/Chemistry/Environmental Science or related science and/or 3 years environmental laboratory experience, and knowledge of Chemstation Software

17.1.6 **Director of Project Management/Client Services Manager (Project Managers)**

The Director of Project Management / Client Services Manager (Project Managers) prepare and deliver final reports to clients in a timely manner and are the primary lines of communication to the clients. The Project Managers review the logged samples in the LIMS system, generate draft invoices, and track due dates. Project Managers are responsible for evaluating all aspects of incoming or potential projects. They must determine in advance if volume of samples, matrices, testing parameters, quoted price, and/or turnaround time required are within the capabilities of ENVision or a subcontractor laboratory before beginning new work. It is also the responsibility of the Project Managers to review requests, tenders, and contracts before commencing work. Project Managers must consider accreditation status, subcontracted analyses, analytical methods, reporting limits, QA/QC requirements, and other data quality objectives before beginning new work. The project manager will notify the client immediately of any potential conflict and record the resolution of any issues in the project file. The Project Managers cooperate with the clients to clarify client requests and monitor the labs performance in relation to the work completed.

Minimum Requirements: Bachelor's Degree in Biology/Chemistry/Environmental Science or related science and/or 5 years environmental laboratory experience.

17.1.7 **Safety Manager**

The Safety Manager plans, develops, and implements a safety program to ensure a safe workplace for all employees. The Safety Manager conducts safety training and promotes a high degree of safety awareness among employees. The Safety Manager is responsible for maintaining MS/DS sheets for chemicals, properly identifying potential hazards using signs, investigating work-related injuries, and coordinating annual solvent monitoring of all Extractions analysts. The Safety Manager conducts regular safety audits/inspections and assures the laboratory is adhering to the policies in the company's Safety Manual.

Minimum Requirements: High School degree / safety training.

17.1.8 **Sample Custodian**

The Sample Custodian receives samples delivered directly from clients and accepts shipments of sample coolers from couriers. The Sample custodian is responsible for unpacking sample coolers, recording sampling temperatures, comparing samples to the COC and noting discrepancies. The Sample Custodian also log samples into the LIMS system, assign due dates and provides analysts with a work list for each job. The Sample Custodian accurately labels the samples, distributes them to the appropriate storage area, splits and subcontracts samples, if necessary, archives samples subsequent to analysis and arranges for appropriate sample disposal. The Sample Custodian also prepares customer bottle kits. The Sample Custodian must be able to follow good laboratory practices, adhere to policies and procedures set forth in the Quality Assurance Manual.

Minimum Requirements: High School degree

17.1.9 **Quality Assurance Manager**

The Quality Assurance Manager (QAM) has the authority and responsibility for ensuring that the quality system is implemented and followed. The QAM is the focal point for the quality system and has oversight of quality control data. The QAM maintains the Quality Assurance Manual, all training files, SOPs, logbooks, Proficiency Test records, MDL and DOC documentation. The QAM has direct access to the Laboratory Director and is independent of operations where the QAM has oversight. The Quality Assurance Manager ensures that quality control procedures are being followed, quality systems are maintained, audits are scheduled and performed, and Proficiency Testing samples are ordered and reported. The QAM evaluates data objectively and performs assessments without managerial influence. The QA Manager notifies laboratory management of deficiencies in the quality system and monitors corrective action. The Quality Assurance Manager must have general knowledge of the analytical test methods performed in the laboratory. The Deputy QA Manager assumes these responsibilities in the absence of the Quality Assurance Manager. The QAM must have documented training and/or experience in QA/QC Procedures and the laboratory's quality system.

Minimum Requirements: Bachelor's Degree in Biology/Chemistry/Environmental Science or related science and/or 10 years environmental laboratory experience.

17.1.10 **Laboratory Technical Director**

The Laboratory Technical Director exercises full time day-to-day supervision of laboratory operations. The Laboratory Technical Director's responsibilities include, but are not limited to, monitoring standards of performance in quality control and quality assurance; signing demonstrations of capability; monitoring the validity of the analyses performed and data generated in the laboratory to assure reliable data. The Laboratory Technical Director also ensures that analytical methods are interpreted and executed appropriately and that instrumentation is adequate, maintained, and operated properly. The Laboratory Technical Director coordinates with the Quality Assurance Manager to develop and implement Standard Operating Procedures as well as performing Managerial Audits. The Laboratory Technical Director observes work flow to ensure proper staffing and materials are available for performing the analyses. The Technical Director certifies that personnel with appropriate educational and/or technical background perform all tests for which the laboratory utilizes. The Deputy Technical Director assumes these responsibilities in the absence of the Technical Director.

Minimum Requirements: Bachelor's Degree in Biology/Chemistry/Environmental Science or related science and/or 10-15 years environmental laboratory experience.

17.1.11 **Chief Executive Officer (CEO) and President**

The CEO and President are responsible for the overall administrative, technical, and financial direction of the company. The CEO and President assume financial responsibility and financial liability for the company, develop company policies and procedures, research and consider the growth potential for current and future markets, and keep the company's focus on the technical edge of the environmental laboratory market. The CEO and President are committed to insure a framework is in place for the company to provide quality systems guidelines of the highest standard.

Minimum Requirements: Bachelor's Degree in Biology/Chemistry/Environmental Science or business and/or 10-15 years environmental laboratory business experience.

17.2 Data Integrity and Ethics

DATA INTEGRITY is the result of the processes that together assure valid data of known and documented quality.

Data integrity and ethics procedures in the laboratory include training, signed and dated integrity documentation for all laboratory employees, periodic in-depth monitoring of data integrity, and documented data integrity procedures.

Policy

The Quality Assurance Manager upholds the spirit and intent by supporting integrity procedures, by enforcing data integrity procedures, and by signing and dating the data integrity procedure training forms.

Data integrity procedures and evidence of inappropriate actions are reviewed annually or through regularly scheduled internal audits, and are updated by management.

The mechanism for confidential reporting of ethics and data integrity issues is (1) unrestricted access to senior management, (2) an assurance that personnel will not be treated unfairly for reporting instances of ethics and data integrity breaches, and (3) anonymous reporting.

Employees are required to understand, through training and review of quality systems documents, that any infractions of the laboratory data integrity procedures will result in a detailed investigation that could lead to very serious consequences such as immediate termination, or civil/criminal prosecution.

Any potential data integrity issue is handled confidentially until a follow-up evaluation, full investigation, or other appropriate actions have been completed and the issues clarified. Inappropriate activities are documented, including disciplinary actions, corrective actions, and notifications of clients, if applicable. These documents are maintained for a minimum of 5 years.

Procedure

Any determination for detailed investigation of data integrity issues must be communicated to senior management. Allegations are investigated and remain confidential to the extent necessary.

Documentation for all investigations that result in findings of inappropriate activity include any disciplinary actions involved, corrective actions taken, and all appropriate notifications of clients.

Data integrity procedures are reviewed annually and are periodically monitored through in-depth data review, records review, or other thorough check processes. Once per quarter, the Quality Assurance Manager will perform and document an in-depth data review. The generated data is manually traced back through all steps of the process and the availability of original data to document each step is confirmed and documented. Records of these reviews will be maintained by the Quality Assurance Manager.

17.3 Data Integrity and Ethics Training

Policy

Data integrity training is provided for all employees initially upon hire and annually thereafter.

Procedure

Attendance at an initial data integrity training (part of new employee orientation) and the annual refresher training is recorded with a signature attendance sheet or other form of documentation that demonstrates all staff have participated and understand the critical need for honesty and full disclosure in all analytical reporting and all aspects of their job functions. Employees are made aware that any violations of the laboratory data integrity procedures shall result in a detailed investigation that could lead possibly lead to termination of employment or civil/criminal prosecution. During the data integrity training, specific examples of breaches of ethical behavior are discussed including improper data manipulations, adjustments of instrument time

clocks, and inappropriate changes in concentrations of standards. The training includes discussion regarding all data integrity procedures, data integrity training documentation, in-depth data monitoring and data integrity procedure documentation. Data integrity training requires emphasis on the importance of proper written narration on the part of the analyst with respect to those cases where analytical data may be useful, but are in one sense or another partially deficient. The data integrity procedures also include written ethics agreements.

Training records regarding data integrity and ethics are signed and dated by the Quality Assurance Manager.

Topics covered are provided in writing to all trainees.

17.4 General Training

Policy

All personnel are appropriately trained and competent in their assigned tasks before they contribute to functions that can affect data quality. It is management's responsibility to assure personnel are trained.

Only trained personnel are authorized by management to perform specific tasks.

Training records are kept on individual training forms in training/personnel files maintained by the Quality Assurance Manager. See Section 2.1 of SOP ENQA03 on Training for Laboratory Personnel.

Procedure

New staff members are given introductory training and orientation upon arrival.

Attendance at training sessions is documented on signature sheets.

The initial training for a new task will contain the following steps:

- All documentation involved with a new and unfamiliar task will be read and understood by the trainee.
- Training will be under the direct supervision of a qualified senior analyst. During the time the analyst is training, the trainee may sign laboratory notebooks or logbooks, but laboratory notebooks must be cosigned by the senior analyst, who is responsible for the data generated.
- The trainee will demonstrate competency in the new task before they can operate independently. The competency for a test method is accomplished by a demonstration of capability as indicated in Section 19. Approval of competency is noted by the initials or signature of the qualified senior analyst on the training form.
- Each step of the training process is documented.

Ongoing training will consist of the following:

- The analyst attests, through signature, that they have read, understood and agreed to perform the latest version of the *Quality Manual* and any method SOP's that the analyst performs.
- Annually, the analyst will show continued proficiency in each method they perform.
- Other training as determined by management.
- Analysts also participate in a safety training program provided by the Safety Officer.
- Proof of acceptable on-going training is documented by the annual demonstrations of capability for each analyst and each method.

SECTION 18 – ACCOMMODATIONS & ENVIRONMENTAL CONDITIONS

POLICY

Laboratory facilities are designed and organized to facilitate testing of environmental samples. Environmental conditions are monitored to ensure that conditions do not invalidate results or adversely affect the required quality of any measurement.

Environmental tests are stopped when the environmental conditions jeopardize the results.

Access to, and use of areas affecting the quality of the environmental tests is controlled by restriction of areas to authorized personnel only. Such areas are posted with signs to indicate restrictions.

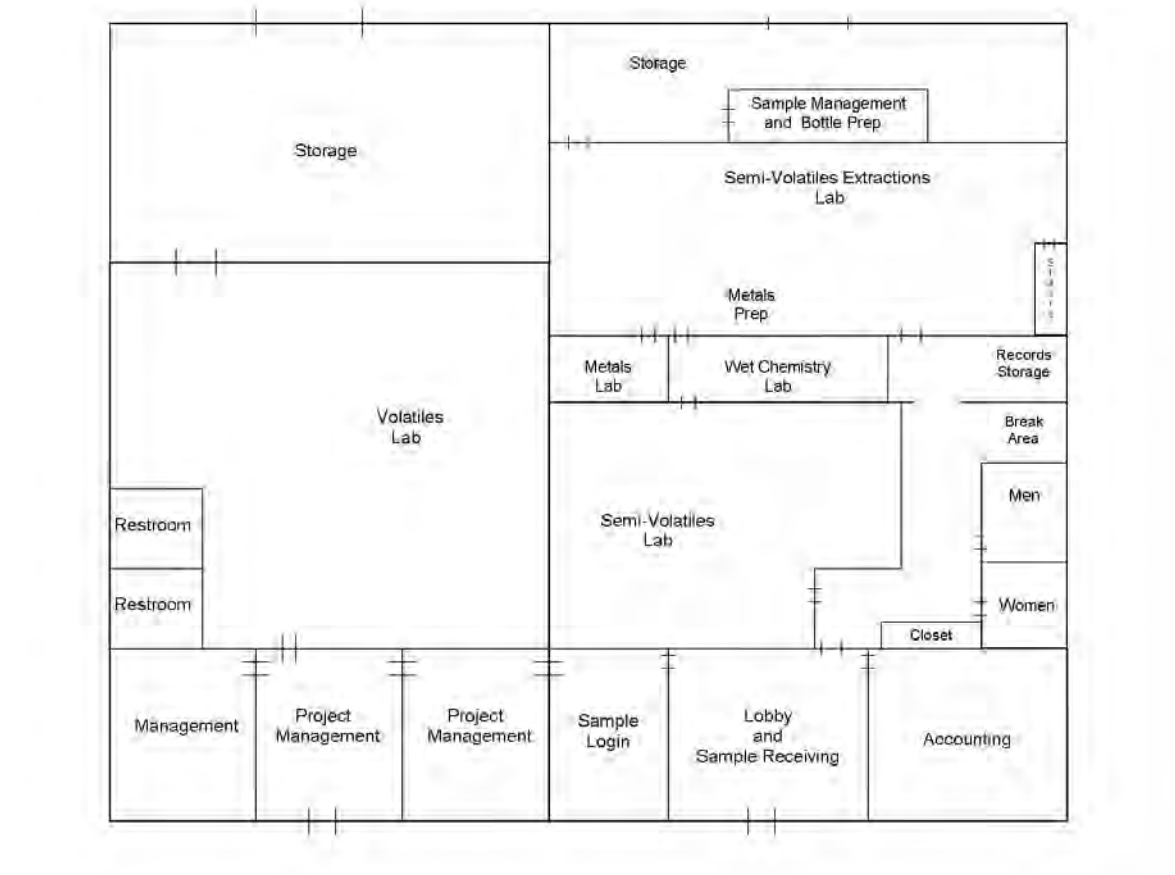
The laboratory work spaces are adequate, and appropriately clean to support environmental testing and ensure an unencumbered work area. Work areas may include: access and entryways to the lab, sample receipt areas, sample storage areas, chemical and waste storage areas, and data handling and storage areas.

PROCEDURE

Laboratory space is arranged to minimize cross-contamination between incompatible areas of the laboratory. If the laboratory environment is required to be controlled by method or regulation, the adherence is recorded.

Good housekeeping practices are used to assure contamination does not affect data quality. If it is believed that any environmental condition is adversely affecting the sample results, an investigation will begin by the Quality Assurance Manager or Laboratory Technical Director to determine the source of the problem. All sample analysis should be stopped until a resolution has been found. The Quality Assurance Manager may determine that a particular environmental condition must be monitored as a result of the investigation. Due attention is given to minimizing any environmental conditions that would adversely affect quality of measurement.

ENVision Laboratories, Inc. occupies 7200 square feet of space as shown in the following floor plan:



SECTION 19 – TEST METHODS AND METHOD VALIDATION

A test method is validated before it is put into use. All methods are published or documented. The laboratory selects appropriate methods that have been published either in international, regional, or national standards. The laboratory only uses methods for environmental testing which meet the needs of the client and which are appropriate for the environmental tests it undertakes. The laboratory ensures it uses the latest valid edition of a method unless it is not appropriate for the data objectives or not possible to do so. When necessary, the method is supplemented with additional details to ensure consistent application. Laboratory-developed or non-standard methods are not used by ENVIsion Laboratories. An in-house method manual is maintained for each test method. The manual consists of copies of published or referenced test methods. In cases where modifications to the published method have been made by the laboratory or where the referenced test method is ambiguous or provides insufficient detail, these changes or clarifications must be clearly described. The in-house method manual is maintained by the QAO and is accessible to all personnel.

When the use of specific methods for a sample analysis are requested or mandated, only those methods shall be used. When the client does not specify the method to be used, the methods shall be fully documented and validated, and be available to the client. The laboratory shall inform the client when the method requested by the client is considered inappropriate or out of date.

19.1 Demonstration of Capability (DOC)

A DEMONSTRATION OF CAPABILITY (DOC) is a procedure to establish the ability of the analyst to generate data of acceptable accuracy and precision.

WORK CELLS consist of analysts with specifically defined tasks who together perform the method. Work cells together meet specified acceptance criteria and demonstrations of capability.

Policy

The laboratory confirms that it is capable of generating data of acceptable accuracy and precision on all methods before employing them.

Procedure

The DOC is documented and the completed forms are kept in the training files for each analyst and are available upon request.

A DOC is performed for each analyte whenever the method, analysts, “work cell” member, analytes, or instrument type is changed. In laboratory areas which use “work cells”, the group as a unit must meet the criteria for DOC.

The Laboratory Technical Director certifies that technical staff members in their area of expertise are trained and authorized to perform all tests.

The procedure for DOC is outlined in SOP ENQA03 Training for Laboratory Personnel, Section 2.2.

19.2 On-Going (or Continued) Proficiency

After the demonstration of capability is completed, on-going proficiency is maintained and demonstrated at least annually through the analysis of either single-blind samples, performing another DOC, or use of four consecutive laboratory control samples compared to pre-determined acceptance limits for precision and accuracy. This is documented in the training file of each analyst by the Quality Assurance Manager.

19.3 Initial Test Method Evaluation

For chemical analyses, the INITIAL TEST METHOD EVALUATION involves the determination of the Limit of Detection (LOD), confirmation of the Limit of Quantitation (LOQ), an evaluation of precision and bias, and an evaluation of the selectivity of the method.

19.3.1 Limit of Detection (LOD)

The LIMIT OF DETECTION (LOD) is an estimate of the minimum amount of a substance that an analytical process can reliably detect. An LOD is analyte-and matrix specific and may be laboratory-dependent.

19.3.2 Limit of Quantitation (LOQ)

The LIMIT OF QUANTITATION (LOQ) is an estimate of the minimum amount of a substance that can be reported with a specified degree of confidence.

Policy

If an LOD study is not performed, concentrations less that the Limit of Quantitation are not reported. If results are not reported outside of the calibration range (low), the LOD determination is not required.

The lowest calibration standard is equal to the LOQ.

The LOQ will always be greater than the LOD.

Procedure

LODs are determined from a quality system matrix using all sample processing steps, and are verified annually or when there is a change in the test method or instruments affects sensitivity. There is no annual requirement for determination of the LOD. However, the confirmation must be repeated annually. The initial LOD must be confirmed by qualitative analysis of a sample spiked at no more than 2-3x the LOD. A successful confirmation is the detection of a signal response that is greater than background. If a response is not detected, the analyst must double the concentration and repeat the process. The LOD is the value of the concentration at which a signal is detected. All steps of the analytical process must be included in the LOD determination and confirmation. This confirmation takes into account any analyte losses during sample preparation and prevents the use of an LOD that is

unrealistically low. The LOD must be determined for every piece of equipment used for that analysis.

The most common method for determination of the LOD is the MDL procedure found in 40 CFR 136, Appendix B. Generally, MDLs are determined by analyzing replicate (usually seven) samples of a working standard that has passed through all sample processing procedures specific to a matrix (filtration, extraction, etc.), as defined in the method. The MDL is calculated from the standard deviation of these replicate results as described in Part 1030 E of Standard Methods for the Examination of Water and Wastewater, 18th Edition (1992) and 40 CFR Part 136, Appendix B. This amounts to multiplying the obtained standard deviation by a dimensionless confidence interval factor, which is 3.14 for a collection of seven samples.

At no time will data be reported below the LOD.

The LOQ is typically determined by use of the lowest calibration standard. The LOQ is verified using a quality systems matrix sample spiked at 1-2 times the determined LOQ that returns a concentration within the acceptance criteria for accuracy, according to the requirements of the method or client data quality objectives.

19.3.3 Precision and Bias

PRECISION is the degree to which a set of observations or measurements of the same property, obtained under similar conditions, conform to themselves. Precision is usually expressed as standard deviation, variance, or range, in either absolute or relative terms.

BIAS is the systematic error that contributes to the difference between the mean of a significant number of test results and the accepted reference value.

Policy

Precision and bias are determined for standard and non-standard methods.

Procedure

Precision and bias are determined for standard methods through the performance of a DOC.

Precision and bias using non-standard, modified standard or laboratory-developed methods are compared to the criteria established by the client (when requested), the method, or the laboratory.

Precision is assessed through the calculation of relative percent difference (RPD) and relative standard deviation (RSD) for replicate samples. Laboratory precision is assessed through the analysis of a sample/sample duplicate pair or the analysis of matrix spike/matrix spike duplicate (MS/MSD).

Laboratory accuracy is determined through the analysis of quality control check samples, laboratory control samples (LCS), surrogate compound spikes and MS/MSD pairs.

Control charts are useful in following trends in analytical precision, accuracy, and identifying problem occurrences. In general, a parameter of known value is measured periodically during a sample set, and its measured value is compared with its theoretical value. From a number of such measurements, the standard deviation, SD, can be calculated. Acceptance windows for this measurement can then be set, typically ± 3 SD. Data can then be plotted on a graph with the measured value on the Y-axis and the sample sequence on the X-axis. The acceptance windows are shown on the graph as dotted lines extending from the Y-axis representing Y± 3 SD, when Y is the mean of several measurements.

19.3.4 Selectivity

SELECTIVITY is the capability of a test method or instrument to respond to a target substance or constituent in the presence of non-target substances (EPA-QAD).

The laboratory evaluates selectivity through retention time requirements defined in the test method SOPs.

19.4 Estimation of Uncertainty

ESTIMATION OF UNCERTAINTY consists of the sum (combining the components) of the uncertainties of the numerous steps of the analytical process, including, but not limited to, sample plan variability, spatial and temporal sample variation, sample heterogeneity, calibration/calibration check variability, extraction variability, and weighing variability.

Procedure

The use of the LCS data incorporates all variables over which the laboratory exercises control.

When requested by a client, the uncertainty is calculated using the average and standard deviation of the current LCS database expressed as twice the relative standard deviation. This provides the uncertainty at the 95% confidence level. This calculation is shown in the example below:

LCS average = 92.5%
LCS Std Dev = 5.7

Uncertainty = +/- (2)(5.7)/92.5 = +/- 12.3%

19.5 Laboratory-Developed or Non-Standard Method Validation

Laboratory developed, modified standard methods, and non-standard methods are not performed or utilized by ENVision Laboratories.

19.6 Control of Data

Policy

All calculations and all relevant data are subject to appropriate checks in a systematic manner.

Commercial off-the-shelf software (e. g. word processing, database and statistical programs) used within the designed application range is considered sufficiently validated when in-house programming is not used.

Procedure

The laboratory assures that computers and software are protected, maintained, and secure through measures such as documentation, locked access, and control of the laboratory environment. See Computer System SOP ENQA08.

The laboratory has procedures to insure that reported data are free from transcription and calculation errors. See Section 23.8 for procedures of data review.

The laboratory has procedures that all quality control measures are reviewed and evaluated before data are reported. See Section 23.8 for procedures of data review.

The laboratory has procedures to address manual calculations, including manual integrations. See ENVision SOP ENQA02 Manual Integration Procedures.

The laboratory assures that computers, user-developed computer software, automated equipment, or microprocessors used for the acquisition, processing, recording, reporting, storage, or retrieval of environmental test data are:

a) documented in sufficient detail and validated as being adequate for use;
b) protected for integrity and confidentiality of data entry or collection, data storage, data transmission and data processing;
c) maintained to ensure proper functioning and are provided with the environmental and operating conditions necessary to maintain the integrity of environmental test data; and
d) held secure including the prevention of unauthorized access to, and the unauthorized amendment of, computer records.
e) backed up on a regular basis to ensure storage space for newly acquired data.

SECTION 20 – EQUIPMENT

20.1 General Equipment Requirements

Policy

The laboratory provides all the necessary equipment required for the correct performance of the scope of environmental testing presented in this *Quality Manual*.

All equipment and software used for testing and sampling is capable of achieving the accuracy required and complies with the specifications of the environmental test method as specified in the laboratory SOP.

The laboratory has procedures for safe handling, transport, storage, use and planned maintenance of measuring equipment to ensure proper functioning and in order to prevent contamination or deterioration.

Procedure

Equipment is operated only by authorized personnel.

Up-to-date instructions on the use and maintenance of equipment (including any relevant manuals provided by the manufacturer of the equipment) are readily available for use by laboratory personnel.

All equipment is calibrated or checked before being placed into use to ensure that it meets laboratory specifications and the relevant standard specifications.

Test equipment, including hardware and software, are safeguarded from adjustments which would invalidate the test results measures by limiting access to the equipment and using password protection where possible.

Equipment that has been subject to overloading, mishandling, given suspect results, or been shown to be defective or outside specifications is taken out of service, isolated to prevent its use, or clearly labeled as being out of service until it has been shown to function properly. If it is shown that previous tests are affected, then procedures for non-conforming work are followed.

When equipment is needed for a test that is outside of permanent control of the laboratory, the lab ensures the equipment meets the requirements of this manual prior to its use by inspecting or otherwise testing it.

Each item of equipment and the software used for testing and significant to the results is uniquely identified and records of equipment and software are maintained. This information includes the following:

a) identity of the equipment and its software;
b) manufacturer's name, type identification, serial number or other unique identifier;
c) checks that equipment complies with specifications of applicable tests;
d) current location;
e) manufacturer's instructions, if available, or a reference to their location;
f) dates, results and copies of reports and certificates of all calibrations, adjustments, acceptance criteria, and the due date of next calibration;
g) maintenance plan where appropriate, and maintenance carried out to date; documentation on all routine and non-routine maintenance activities and reference material verifications;
h) any damage, malfunction, modification or repair to the equipment;

i) date received and date placed into service (if available); and

j) condition when received, if available (new, used, reconditioned).

See Appendix 1 for list of all Instrument/Equipment.

20.2 Support Equipment

SUPPORT EQUIPMENT includes, but is not limited to: balances, ovens, refrigerators, freezers, incubators, water baths, temperature measuring devices, volumetric dispensing devices, and thermal/pressure sample preparation devices.

Policy

All support equipment is maintained in proper working order and records are kept of all repair and maintenance activities, including service calls.

Procedure

All raw data records are retained to document equipment performance. These records include logbooks, data sheets, or equipment computer files.

All support equipment is calibrated or verified annually over the entire range of use using NIST traceable references where available. A NIST reference thermometer should be re-calibrated or replace every 5 years. The results of the calibration of support equipment must be within specifications or (1) the equipment is removed from service until repaired, or (2) records are maintained of correction factors to correct all measurements.

Support equipment such as balances, ovens, refrigerators, freezers, and water baths are checked with a NIST traceable reference if available, each day the equipment is used, to ensure they are operating within the expected range for the application for which the equipment is to be used.

Mechanical volumetric dispensing equipment, including burettes (except Class A glassware) are checked for accuracy quarterly.

Glass micro-liter syringes have a certificate attesting to the established accuracy. If the general certificate of accuracy from the manufacturer of the glass micro-liter syringes is not available, the accuracy of the syringe is demonstrated upon receipt (See SOP EN01) and documented.

20.2.1 Support Equipment Maintenance

Regular maintenance of support equipment, such as balances and fume hoods is conducted at least annually.

Maintenance on other support equipment, such as ovens, refrigerators, and thermometers is conducted on an as needed basis.

Records of maintenance to support equipment are documented in Instrument Maintenance Logs. Each piece of support equipment does not necessarily have its own logbook. Maintenance logbooks may be shared with equipment that is housed in the same laboratory area.

20.2.2 Support Equipment Calibration

Calibration requirements for analytical support equipment are found in the table below. For analytical instrumentation, the calibration requirements are found in the test method SOP's.

Table 20.2 - 2 Calibration And Maintenance

Instrument	Activity	Frequency	Documentation
Balance	1. Clean 2. Check alignment 3. Service Contract	1. Before use 2. Before use 3. Annual	Worksheet/log book Post annual service date on balance
ASTM Class 1Weights	1. Only use for the intended purpose 2. Use plastic forceps to handle 3. Keep in case 4. Re-calibrate	Once every 5 years	Keep certificate
Thermometers: glass	Check at the temperature used, against a reference NIST certified thermometer	1. Annual for glass and electronic	Calibration factor and date of calibration on thermometer and worksheet/log book
pH electrometers	Calibration: 1. pH buffer aliquot are used only once 2. Buffers used for calibration will bracket the pH of the media, reagent, or sample tested.	Before use	Worksheet/log book
pH probe	Maintenance: Use manufacturer's specifications	As needed	Worksheet/log book
Refrigerators	1. Thermometers are immersed in liquid to the appropriate immersion line 2. The thermometers are graduated in increments of 1°C or less	Temperatures are recorded each day in use	Worksheet/log book

20.3 Analytical Equipment

20.3.1 Maintenance for Analytical Equipment

Policy

All equipment is properly maintained, inspected, and cleaned.

Procedure

Maintenance of analytical instruments and other equipment may include regularly scheduled preventive maintenance or maintenance on an as-needed basis due to instrument malfunction and is documented in Instrument Maintenance Logs, which become part of the laboratory's permanent records.

For each instrument, every maintenance event is documented in a logbook that is specific to the instrument. Logbooks delineate between routine and non-routine maintenance activities. Instruments with multiple daily routine maintenance checks maintain both routine and non-routine maintenance logbooks. Each instrument maintenance logbook should contain the following:

- The name of the item of equipment
- The manufacturer's name and equipment serial number
- Checks that equipment complies with the specification
- Date equipment received and date placed in service
- Equipment location, if appropriate
- Condition when received (ie. new or used)
- History of any damage, malfunction, modification or repair
- Details of the Maintenance Plan and maintenance carried out to date and planned for the future

Each log entry includes the following:

- Dates and names of staff involved
- A description of the work, including problems encountered and their solutions
- Part numbers and/or serial numbers of major replacement components

Table 20.3-1 Analytical Equipment Maintenance

Instrument	Procedure	Frequency
Hewlett Packard GC/MS	Ion gauge tube degassing	As required
	Pump oil-level check	Monthly
	Pump oil changing	Semi-annually
	Analyzer bake-out	As required
	Analyzer cleaning	As required
	Resolution adjustment	As required
	COMPUTER SYSTEM AND PRINTER:	
	Air filter cleaning	As required
	Change data system air filter	As required
	Printer head carriage lubrication	As required
	Paper sprocket cleaning	As required
	Drive belt lubrication	As required
Gas Chromatograph	Compare standard response to previous day or since last initial calibration	Daily
	Check carrier gas flow rate in column	Daily via use of known compound retention
	Check temp. of detector, inlet, column oven	Daily
	Septum replacement	As required
	Glass wool replacement	As required
	Check system for gas leaks with SNOOP	W/cylinder change as required
	Check for loose/fray wires and insulation	Monthly
	Bake injector/column	As required
	Change/remove sections of guard column	As required
	Replace connectors/liners	As required
	Change/replace column(s)	As required
Flame Ionization Detector (FID)	Detector cleaning	As required
Photoionization Detector (PID)	Change O-rings	As required
	Clean lamp window	As required
Balances	Weight check	Daily, when used
	Clean pan and check if level	Daily, when needed
	Field service	At least annually
Deionized/Distilled Water	Monitor for VOA's	Daily
	Replace filter	As Needed
Drying Ovens	Temperature monitoring	Daily
	Temperature adjustments	As required
Refrigerators/ Freezers	Temperature monitoring	Daily
	Temperature adjustment	As required
	Defrosting/cleaning	As required
Vacuum Pumps/ Air Compressor	Drained	As required
	Belts checked	As required
	Lubricated	As required
pH/Specific Ion Meter	Calibration/check slope	Daily, when used
	Clean electrode	As required
Centrifuge	Check brushes and bearings	Every 6 months or as needed
Water Baths	Temperature Monitoring	Daily
	Water replaced or added	As required

20.3.2 Initial Instrument Calibration

Initial instrument calibration and continuing instrument calibration verification are an important part of ensuring data of known and documented quality. If more stringent calibration requirements are included in a mandated method or by regulation, those calibration requirements override any requirements outlined here or in laboratory SOPs. Generally, instrument calibrations are provided in test methods.

Policy

All initial instrument calibrations are verified with a standard obtained from a second source traceable to a national standard when commercially available. If a second source is not available, a standard prepared from a separate lot may be used as long as the manufacturer can demonstrate the lot was prepared independently from other lots purchased.

Any samples that are analyzed after an unacceptable initial calibration are re-analyzed or the data are reported with qualifiers, appropriate to the scope of the unacceptable condition.

Quantitation is always determined from the initial calibration unless the test method or applicable regulations require quantitation from the continuing calibration.

The lowest calibration standard is the lowest concentration for which quantitative results can be reported without qualification. The lowest calibration standard is equal to the Limit of Quantitation and is greater than the limit of detection.

The highest calibration standard is the highest concentration for which quantitative results can be reported.

Data reported that are greater than the highest calibration standard without dilution are considered to be an estimate and are reported with a flag and explained in the “Comments” section at the back of the analytical report.

Procedure

Initial instrument calibration includes calculations, integrations, acceptance criteria, and associated statistics referenced in the test method SOP.

Sufficient raw data records are collected to allow reconstruction of the initial instrument calibration. These include, at a minimum, calibration date, test method, instrument, analysis date, analyte names, analysts signature or initials, concentration and response, calibration curve or response factor, or unique equation or coefficient used to reduce instrument responses to concentration.
Calibration date and expiration date (when recalibration is due) is recorded for equipment requiring calibration, where practicable.

Acceptance criteria are listed in individual test method SOPs.

Corrective actions are performed when the initial calibration results are outside acceptance criteria. Calibration points are not dropped from the middle of the curve

unless the cause is determined and documented. If the cause cannot be determined, the calibration curve is re-prepared. If the low or high calibration point is dropped from the curve, the working curve is adjusted and sample results outside the curve are qualified.

Results that are less than the lower calibration standard are considered to have increased uncertainty, and are either reported with a qualifier code or explained in the case narrative.

Results that are greater than the highest calibration standard are either diluted to within the calibration range, or considered to be an estimate; and are reported with a qualifier code and explained in the case narrative.

For instrumentation where single point calibration is recommended by manufacturer's instructions, such as with some ICP and ICP/MS technologies (with a zero and single point calibration), the following apply:

a) For single point plus zero blank calibrations, the zero point and the single point standard are analyzed prior to the analysis of samples, and the linear range of the instrument established by analyzing a series of standards, one of which is at the lowest quantitation level.
b) Zero blank and single point calibration standards are analyzed with each analytical batch for methods where they are specified.
c) A standard corresponding to the limit of quantitation is analyzed with each analytical batch and must meet established acceptance criteria when using single point plus zero blank calibrations.
d) The linearity of single point plus zero blank calibrations is verified at a frequency established by the method or the manufacturer.

20.3.3 Continuing Instrument Calibration

Policy

The validity of the initial calibration is verified prior to sample analysis by use of a continuing instrument calibration verification (CCV) standard.

Corrective action is initiated for continuing instrument calibration verification results that are outside of acceptance criteria.

Procedure

Continuing instrument calibration verification is performed at the beginning and end of each analytical batch, except for instances when an internal standard is used. For methods employing internal standards, only one verification is performed at the beginning of the analytical batch.

Continuing instrument calibration verification is performed whenever it is expected that the analytical system may be out of calibration or might not meet verification acceptance criteria.

Continuing instrument calibration verification is performed when the time period for calibration or the most recent calibration verification has expired.

Continuing instrument calibration verification is performed for all analytical systems that have a calibration verification requirement.

Calibration is verified for each compound, element, or other discrete chemical species.

The calculations and associated statistics for continuing instrument calibration are included or referenced in the test method SOP.

Sufficient raw data records are retained to allow reconstruction of the continuing instrument calibration verification. Continuing instrument calibration verification records connect the continuing verification date to the initial instrument calibration.

Acceptance criteria for calibration are method specific and contained in the individual test method SOPs. Sample analyses must not occur until the analytical system is calibrated or calibration verified. If samples are analyzed using a system on which the calibration is not verified, the results are flagged.

20.3.4 Unacceptable Continuing Instrument Calibration Verifications

If routine corrective action for continuing instrument calibration verification fails to produce a second consecutive (immediate) calibration verification within acceptance criteria, then a new calibration is performed or acceptable performance is demonstrated after corrective action with two consecutive calibration verifications.

For any samples analyzed on a system with an unacceptable calibration, some results may be useable if qualified and under the following conditions:

a) If the acceptance criteria are exceeded high (high bias) and the associated samples are below detection, then those sample results that are non-detects may be reported as non-detects.

b) If the acceptance criteria are exceeded low (low bias) and there are samples that exceed the maximum regulatory limit, then those exceeding the regulatory limit may be reported.

SECTION 21 – MEASUREMENT TRACEABILITY

Measurement quality assurance comes in part from traceability of standards to certified materials.

POLICY

All equipment used that affects the quality of test results are calibrated prior being put into service and on a continuing basis. These calibrations are traceable to national standards of measurement where available.

Measurements from laboratory equipment provide the uncertainty required by test method or client.

If traceability of measurements to SI units is not possible or not relevant, evidence for correlation of results through interlaboratory comparisons, proficiency testing, or independent analysis is provided.

PROCEDURE

All equipment that affects the quality of test results are calibrated according to the minimum frequency suggested by the manufacturer, by regulation, by method, or as needed.

Clients can verify that required uncertainty is achieved by reviewing the internal quality control data, if requested.

21.1 Reference Standards

REFERENCE STANDARDS are standards of the highest quality available at a given location, from which measurements are derived.

Policy

Reference Standards, such as ASTM Class 1 weights, are used for calibration only and for no other purpose unless it is shown that their performance as reference standards will not be invalidated.

Procedure

Reference standards, such as ASTM Class 1 weights, are calibrated by an entity that can provide traceability to national or international standards.
The following reference standards are sent out to be calibrated to a national standard:

a) Class 1 weights are sent out for calibration every year.
b) Reference thermometers are sent out for calibration every year.

21.2 Reference Materials

REFERENCE MATERIALS are substances that have concentrations that are sufficiently well established to use for calibration or as a frame of reference.

Policy

Reference materials, where commercially available, are traceable to national standards of measurement, or to Certified Reference Materials, usually by a Certificate of Analysis.

Internal reference materials, such as working standards or intermediate stock solutions, are checked as far as technically and economically possible.

Procedure

Purchased Reference Materials require a Certificate of Analysis where available. Otherwise, purchased reference materials are verified by application to a certified reference material, interlaboratory comparison, and/or demonstration of capability.

Internal Reference Materials, such as working standards and intermediate stock solutions, are checked with second source standard verification and proficiency tests.

a) Internal thermometers are checked annually against the NIST certified reference thermometer.
b) Working class weights are checked against Class 1 weights annually.

21.3 Transport and Storage of Reference Standards and Materials

Policy

The laboratory handles and transports reference standards and materials in a way that protects their integrity.

Procedure

Reference standard and material integrity is protected by separation from incompatible materials and/or minimizing exposure to degrading environments or materials.

Reference standards and materials are stored according to manufacturer's recommendations and separately from working standards or samples.

21.4 Labeling of Reference Standards, Reagents, and Materials

Policy

Reference standards and materials are tracked from purchase, receipt, and storage through disposal.

Expiration dates must be monitored to ensure the reference standard or material's integrity is maintained.

Reagent quality is verified upon receipt and prior to use

Procedure

Records for all standards, reagents, reference materials, and media include:

1. the manufacturer/vendor name (or traceability to purchased stocks or neat compounds)
2. the manufacturer's Certificate of Analysis or purity (if supplied)
3. the date of receipt
4. reference to the method of preparation
5. date of preparation
6. recommended storage conditions
7. the expiration date after which the material shall not be used unless its reliability is verified by the laboratory. It may be documented elsewhere if referenced.
8. preparer's initials (if prepared)

In methods where the purity of reagents is not specified, analytical reaqent grade is used. If the purity is specified, that is the minimum acceptable grade. Purity is verified and documented according to Section 9, Purchasing, Services, and Supplies.

For original containers, if an expiration date is provided by the manufacturer or vendor it shall be recorded on the container. If an expiration date is not provided by the manufacturer or vendor, it is not required.

All containers of prepared standards and reference materials have a preparation date and unique identifier. See the appropriate laboratory standard notebook for assigning proper standard identifier.

Standard preparation records are kept in laboratory notebooks and indicate traceability to purchased stocks or neat compounds, reference to the method of preparation, date of preparation, expiration date, and preparer's initials.

Prepared reagents are verified to meet the requirements of the test method through internal Quality Control measures and blank analysis.

SECTION 22 – SAMPLE MANAGEMENT

22.1 Sample Receipt

Policy

Laboratory management is responsible for ensuring that all sample acceptance criteria are verified and that samples are logged into the sample tracking system and properly labeled and stored.

Procedure

When samples are received at the laboratory, their condition is documented, they are given unique identifiers, and they are logged into the sample tracking system.

22.2 Sample Acceptance

Policy

The laboratory has a sample acceptance policy stated in SOP ENSPL01 Attachment #4 and posted in the sample receiving area that specifies the minimum conditions a sample must meet on receipt. If these conditions are not met, the client is contacted prior to any further processing.

Procedure

The sample acceptance policy is available to sample collection personnel, and emphasizes the need for use of water resistant ink, use of appropriate containers, adherence to holding times, sample volume requirements, and what to do with compromised samples.

The following checks need to be made and documented on the COC at the time of acceptance of the samples (refer to SOP ENSPL01: Sample Management for more detailed information):

The Sample Custodian or designee will record the temperature of the temperature blank, if provided (this should consist of a small plastic bottle of water that accompanies the samples). Temperature is determined using a non-invasive infrared thermometer gun which is recertified annually by the manufacturer for accuracy. (The QA Coordinator will retain all records of certification of thermometer gun.)

Clients should be notified if samples are delivered and have not had the cooling process started. Samples should be received at a temperature of 4+/- 2 degrees C or within +/- 2 degrees C of required temperature specified by the method. Samples that are hand delivered to the laboratory on the same day that they are collected may not meet these criteria. In these cases, the samples shall be considered acceptable if there is evidence that the chilling process has begun such as arrival on ice. Thermal preservation is not required in the field if the samples are received and refrigerated at the laboratory within fifteen minutes of collection.

Each container should have a label with an identifier matching that on the chain of custody. Labels should be water resistant and marked with indelible ink.
Note condition of sample containers (intact, cracked or broken).
Check for proper container type and preservation.
Check volatile organics samples for headspace.
Check for proper amount of sample for the analyses required.
Check that samples have not exceeded holding times.

If the checks performed upon sample receipt indicate the criteria are not met, then 1) the sample is rejected as agreed with the client, 2) the decision to proceed is documented and agreed upon with the client, 3) the condition is noted on the Chain of Custody form and/or lab receipt documents, or 4) the data are qualified in the report.

22.3 Sample Identification

Policy

Samples, including subsamples, extracts, and digestates, are uniquely identified in a permanent chronological record (electronic database) to prevent mix-up and to document receipt of all sample containers.

Procedure

Samples are assigned sequential numbers that reference more detailed information kept in the Lims Login database. The sample number is generated by using the last number of the year the sample was received followed by the number of sample it is for the year. For example, sample 6-100 is the one hundredth sample received in the year 2006. Each project is also given a number to identify the project. The project number is assigned by using the year the project was received and the number of project it is for the year. For example, project 2006-30 is the thirtieth project received in the year 2006. For each sample that is received with multiple sample bottles, an identifying letter (a, b, c, etc.) is included on the label. This unique identifier follows the sample and subsequent extracts or digestates through the entire analytical process.

The following information is collected in the Lims Login database:

a) Client or project name
b) Date and time of sampling
c) Date and time of receipt at lab
d) Unique laboratory identification number
e) Unique field identification number
f) Initials of recorder
g) Analyses requested
h) Comments regarding rejection (if any).

22.4 Sample Storage

To avoid deterioration, loss or damage to the sample during storage, handling and preparation storage conditions are monitored for any required criteria, verified, and the verification recorded in logbooks. This includes temperature monitoring and holding times.

Samples are held secure, as required. Samples are stored apart from standards, reagents, food or potentially contaminating sources, and such that cross-contamination is minimized. All portions of samples, including extracts, digestates, leachates, or any product of the sample is maintained according to the required conditions.

22.5 Sample Disposal

After completion of all analyses, samples are routinely retained in a storage area at ambient temperature for approximately thirty additional days, after which they are discarded. Special arrangements are sometimes made to retain samples under refrigeration for an extended period of time on a project-specific basis.

Samples are disposed of according to Federal, State and local regulations. Procedures are available in SOP ENSPL02 for the disposal of samples, digestates, leachates, and extracts.

22.6 Sample Transport

Samples that are transported under the responsibility of the laboratory, where necessary, are done so safely and according to storage conditions. This includes moving bottles within the laboratory. Specific safety operations are addressed outside of this document.

SECTION 23 – QUALITY OF TEST RESULTS

23.1 Essential Quality Control Procedures

Policy

All essential quality control elements are collected and assessed on a continuing basis.

The qualities of test results are recorded in such a way that trends are detectable, and where practicable, are statistically evaluated.

For test methods that do not provide acceptance criteria for an essential quality control element or where no regulatory criteria exist, acceptance criteria are developed. Control limits are developed using the mean, plus or minus 3 standard deviations; or static limits such as ± 15 percent. In-house established limits are maintained by the Quality Assurance Manager.

The quality control procedures specified in test methods are followed by laboratory personnel. The most stringent of control procedures is used in cases where multiple controls are offered. If it is not clear which is the most stringent, that mandated by test method or regulation is followed.

Procedure

To monitor the validity of environmental tests performed, review includes any one or combination of the techniques below:

a) use of certified reference materials and/or internal quality control using secondary reference materials;
b) participation in proficiency testing programs;
c) replicate testing using the same or different methods;
d) retesting of retained samples; and/or
e) correlation of results for different characteristics of a sample.

Written procedures to monitor quality controls including acceptance criteria, are located in the test method SOPs, except where noted, and include such procedures as:

a) use of laboratory control samples and blanks to serve as positive and negative controls for chemistry methods;
b) use of laboratory control samples to monitor test variability of laboratory results;
c) use of calibrations, continuing calibrations, certified reference materials and/or PT samples to monitor accuracy of the test method;
d) measures to monitor test method capability, such as limit of detection, limit of quantitation, and/or range of test applicability, such as linearity;
e) use of regression analysis, internal/external standards, or statistical analysis to reduce raw data to final results;
f) use of reagents and standards of appropriate quality;
g) procedures to ensure the selectivity of the test method;

h) measures to assure constant and consistent test conditions, such as temperature, humidity, rotation speed, etc., when required by test method;

23.2 Internal Quality Control Practices

Analytical data generated with QC samples that fall within prescribed acceptance limits indicate the test method is IN CONTROL.

QC samples that fall outside QC limits indicate the test method is OUT OF CONTROL (non-conforming) and that corrective action is required or that the data are qualified.

Policy

Detailed QC procedures and QC limits are included in test method standard operating procedures (SOPs), or where unspecified in the SOPs, are detailed elsewhere.

All QC measures are assessed and evaluated on an on-going basis, so that trends are detected.

Procedure

The following general controls are used:

Positive and Negative Controls such as:

a) Blanks (negative)
b) Laboratory control sample (positive)

Selectivity is assured through:

a) absolute and relative retention times in chromatographic analyses;
b) two-column confirmation when using non-specific detectors;
c) use of acceptance criteria for mass-spectral tuning (found in test method SOPs);
d) use of the correct method according to its scope assessed during method validation

Consistency, Variability, Repeatability, and Accuracy are assured through:

a) proper installation and operation of instruments according to manufacturer's recommendations or according to the processes used during method validation;
b) monitoring extraction efficiency through surrogates and matrix spikes
c) selection and use of reagents and standards of appropriate quality; and
d) cleaning glassware appropriate to the level required by the analysis. Cleaning procedures not provided in test method SOPs are provided in a separate SOP EN36.
e) following SOPs and documenting any deviation, assessing for impact, and treating data appropriately;
f) testing to define the variability and/or repeatability of the laboratory results, such as replicates;

g) use of measures to assure the accuracy of the test method, including calibration and/or continuing calibrations, use of certified reference materials, proficiency test samples, or other measures;

Acceptance or rejection criteria are created according to laboratory policy where no method or regulatory criteria exist. Acceptance criteria define the boundary for the appropriate response from laboratory personnel, such as corrective action, reporting with qualifiers, reanalysis, review, and others.

Test Method Capability is assured through:

a) establishment of the limit of detection where appropriate;

b) establishment of the limit of quantitation or reporting level; and/or

c) establishment of the range of applicability such as linearity;

Data reduction is assured to be accurate by:

a) selection of appropriate formulae to reduce raw data to final results such as regression;

b) periodic review of data reduction processes to assure applicability;

c) data reduction and statistical interpretations specified by each test method.

See Appendix 2 for the key elements of a quality control system for a laboratory performing chemistry testing.

23.3 Method Blanks

Policy

The Method Blank is used to assess the samples in the preparation batch for possible contamination during the preparation and processing steps. The Method Blank consists of a quality system matrix (ie. DI Water) that is similar to the associated samples and is known to be free of the analytes of concern. Contaminated blanks are identified according to the acceptance limits in the test method SOPs or laboratory documentation.

Samples associated with a contaminated blank are evaluated as to the appropriate corrective action for the samples (e.g. reprocessing or data qualifying codes). The corrective action is documented.

Procedure

The Method Blank is processed along with and under the same conditions as the associated samples to include all steps of the analytical process.

The laboratory identifies a blank as contaminated when analyte results are greater than the reporting limit AND greater than 1/10 of that found in any sample, or where the contamination affects the sample results according to test method requirements or client objectives.

When a blank is determined to be contaminated, the cause must be investigated and measures taken to minimize or eliminate the problem.

Data that are unaffected by the blank contamination (non-detects or other analytes) are reported unqualified.

Sample data that are suspect due to the presence of a contaminated blank are reanalyzed or qualified.

23.4 Laboratory Control Samples

LABORATORY CONTROL SAMPLES (LCS) are prepared from analyte free water, and spiked with verified and known amounts of analytes for the purpose of establishing precision or bias measurements.

Policy

Laboratory control samples are analyzed at a frequency mandated by method, regulation, or client request, whichever is more stringent.

Procedure

The results of laboratory control samples (LCS) are calculated in percent recovery or other appropriate statistical technique that allows comparison to established acceptance criteria. Any affected samples associated with an out of control LCS are reprocessed for re-analysis of the results reported with appropriate flags/qualifiers.

LCS recovery is calculated as follows:

$$\% \text{ Recovery} = \frac{SSC}{SA} \times 100$$

Where: SSC = Measured concentration of the spiked standard
SA = Spike concentration added to the sample

The individual LCS is compared to the acceptance criteria as published in the mandated test method, or where there are no established criteria, the laboratory established limits. For those methods with extremely long lists of analytes, a representative number may be chosen to report. For methods that include 1-10 targets, spike LCS with all components. For methods that include more than 20 targets, spike LCS with at least 16 compounds with a full list LCS performed once over a 2 year period.

Samples analyzed along with an LCS determined to be “out of control” are considered suspect and the samples may need reprocessed and reanalyzed. If the LCS has a high bias and the samples associated are non-detect, the results can be reported with a data qualifier. If the LCS has a low bias and the samples associated have detections above regulatory limits, the results can be reported with a data qualifier. If neither criteria applies and there is not sufficient sample volume remaining for reanalysis, the original data is reported with appropriate data qualifiers.

23.5 Matrix Spikes and Matrix Spike Duplicates

MATRIX SPIKES (MS and MSD) are environmental samples fortified with a known amount of analyte to help assess the affect of the matrix on method performance. The results from matrix spike/matrix spike duplicate (MS/MSD) pairs are used to assess the effect of sample matrix on precision and accuracy of analytical results.

Policy

The MS/MSD results are used to help assess the effect of the sample matrix on method performance.

Procedure

The laboratory procedure for MS/MSD includes spiking appropriate analytes at appropriate concentrations, calculating percent recoveries and relative percent difference (RPD), and evaluating and reporting the results.

Matrix spike recovery is calculated as follows:

$$\% \text{ Recovery} = \frac{(SSC - SC)}{SA} \times 100$$

Where: SSC = Measured concentration of the spiked sample
SC = Measured concentration of the unspiked sample
SA = Spike concentration added to the sample

A matrix spike (and a matrix spike duplicate, if necessary) is analyzed with each batch of twenty or fewer samples per matrix per sample preparation method. Where there are no established criteria, the laboratory uses in-house established limits as the control limits for MS/MSD. For MS/MSD results outside established criteria corrective action is documented or the data reported with appropriate data qualifying codes.

For those methods with extremely long lists of analytes, a representative number may be chosen to report. For methods that include 1-10 targets, spike MS/MSD with all components. For methods that include more than 20 targets, spike MS/MSD with at least 16 compounds with a full list MS/MSD performed once over a 2 year period.

23.6 Surrogate Spikes

SURROGATES are substances with chemical properties and behaviors similar to the analytes of interest used to assess extraction or preparation method performance in individual samples.

Policy

Surrogates are added to all samples (in test methods where surrogate use is appropriate) prior to sample preparation or extraction.

Procedure

Surrogate recovery results are compared to the acceptance criteria as published in the mandated test method.

Where there are no established criteria, the laboratory uses in-house established limits as surrogate control limits.

For surrogate results outside established criteria, data are evaluated to determine the impact. Corrective actions include reanalysis or data qualifying as appropriate.

23.7 Proficiency Test Samples or Interlaboratory Comparisons

Policy

The laboratory participates in proficiency test samples (PT) annually.

The laboratory institutes corrective action procedures for failed PT samples.

The laboratory does not share PT samples with other laboratories, does not sub-contract PT samples to (or receive PT samples from) other laboratories, does not communicate with other laboratories regarding current PT sample results, and does not attempt to obtain the assigned value of any PT sample from the PT provider.

Procedure

Proficiency Testing (PT) samples are treated as typical samples in the normal production process where possible, including the same analysts, preparation, digestion, extraction, calibration, quality control and acceptance criteria, sequence of analytical steps, number of replicates, and sample log-in. PT samples are diluted as instructed by PT provider and becomes the environmental sample. PT samples are not analyzed multiple times unless routine environmental samples are analyzed multiple times.

The working range of the calibration under which the PT sample is analyzed shall be the same range as used for routine samples. A result above or equal to the lowest calibration standard will be reported as the resultant value. A result below the lowest calibration standard will be reported as less than the value of the lowest calibration standard. For instruments (such as ICP) that employ standardization with a zero point or single point calibration, the lab will use the normal laboratory determined reporting limits for reporting the PT results.

Laboratories must obtain **ALL** PT samples from and report PT results to the PT Provider. The laboratory will notify the PT Provider if a PT sample is being used for corrective action purposes.

Corrective action procedures are followed for unacceptable PT results to determine the cause of the failure. The requirements for corrective action and documentation of the corrective action are described in Section 13 of the QA Manual.

All records necessary for historical reconstruction of the analysis and reporting of analytical results of the PT samples will be retained by the laboratory and/or Quality Assurance Manager for 5 years. The records include a copy of the reporting forms used to report the analytical results, either written forms or online data entry summaries.

23.8 Data Review

Policy

The laboratory reviews all data generated in the laboratory for compliance with method, laboratory and, where appropriate, client requirements.

Procedure

Initially, the analyst reviews data for acceptability of quality control measures and accuracy of the final result(s). After the initial review, a second reviewer considers all manual transfers and calculations of data in detail and spot checks all electronic transfers of data. All data review is documented by the reviewer's signature or initials and date being indicated on the data package. Final reports are compared to raw data either directly or through several reviewed steps. Project Managers review final reports against historical data and perform final review of Quality Control parameters before releasing the report.

SECTION 24 – REPORTING OF RESULTS

POLICY

The result of each test carried out is reported accurately, clearly, unambiguously, and objectively and complies with all specific instructions contained in the test method.

Data are reported without qualification if they are greater than the lowest calibration standard, lower than the highest calibration standard, and without compromised sample or method integrity.

24.1 Test Reports

Policy

The report format has been designed to accommodate each type of test performed and to minimize the potential for misunderstanding or misuse.

Procedure

Each test report generated contains the following information (unless not required by the client):

a) a title, Analytical Report;
b) the name and address of the laboratory, the location of the laboratory if different from the address, and the phone number and name of a contact person;
c) unique identification of the test report, such as a project number, on each page and a pagination system that ensures that each page is recognized as part of the test report and a clear identification of the end of the report, such as page 3 of 10;
d) the name and address of the client if applicable;
e) the identification of the test method used;
f) an unambiguous identification of the sample(s), including the client identification code;
g) the date of sample receipt when it is critical to the validity and application of the results, date and time of sample collection, dates the tests were performed, the time of sample preparation and analysis if the required holding time for either activity is less than or equal to 72 hours;
h) reference to the sampling plan and procedures used by the laboratory where these are relevant to the validity or application of the results;

i) the test results with failures identified, calibration range exceedances noted, units of measurement, an indication of whether results are calculated on a dry weight or wet weight basis

j) the name, function, and signature or an equivalent electronic identification of the person authorizing the test report, and the date of issue;

k) a statement to the effect that the results relate only to the samples;

l) at the laboratory's discretion, a statement that the report shall not be reproduced except in full without written approval of the laboratory;

24.2 Supplemental Test Report Information

When necessary for interpretation of the results or when requested by the client, test reports include the following additional information:

a) deviations from, additions to, or exclusions from the test method, information on specific test conditions, such as environmental conditions, and any non-standard conditions that may have affected the quality of the results, and any information on the use and definitions of data qualifiers;

b) Level package data as requested by IDEM

c) where applicable and when requested by the client, a statement on the estimated uncertainty of the measurement;

d) where appropriate and needed, opinions and interpretations

   a. When opinions and interpretations are included, the basis upon which the opinions and interpretations are documented. Opinions and interpretations are clearly marked as such in the test report.

e) additional information which may be required by specific methods or client;

f) qualification of results with values outside the working range.

24.3 Environmental Testing Obtained from Subcontractors

Test results obtained from test performed by subcontractors are clearly identified on the test report by subcontractor name. The test results from subcontractors are reported in writing or electronically.

24.4 Electronic Transmission of Results

All test results transmitted by telephone, fax, e-mail, or other electronic means comply with the requirements of this *Quality Manual* and associated procedures to protect the confidentiality and proprietary rights of the client.

24.5 Amendments to Test Reports

Policy

Material amendments to a test report after it has been issued are made only in the form of another document or data transfer. All supplemental reports meet all the requirements for the initial report and the requirements of this *Quality Manual*.

Procedure

Amended test reports are titled, “Revised report” or an equivalent form of wording to assure they can be differentiated from other test reports.

When it is necessary to issue a complete new report, the new report is uniquely identified and contains a reference to the original that it replaces.

SECTION 25 – APPENDICES

Appendix 1:

Instrument/Equipment	**Manufacturer**
5890 Series II GC with FID, 7673 Auto sampler	Hewlett-Packard
5890 Series II GC with 5971 MSD, 7673A Auto sampler	Hewlett-Packard
5890 Series II GC with FID, LSC 2000, 5100 Auto sampler	Hewlett-Packard, Tekmar, EST
5890 Series II GC with 5972 MSD, 7673 Auto sampler	Hewlett-Packard
5890 Series II GC with 5972 MSD, LSC 3000 (2 systems)	Hewlett-Packard
8100 Auto sampler (2 systems)	Tekmar, EST
ICAP 61E Trace Analyzer with TJA Autosampler	Thermo Jarrell Ash
FIMS 100 Mercury Analyzer with AS90 Plus Autosampler	Perkin-Elmer
AR50 pH/Ion Meter	Accumet
XL 2020 Sonicator	Misonix
05-015-50 Laboratory Oven	Cole-Parmer
Lab-Line L-C Oven	Thermo Scientific
Analytical Balance Model D160	Denver Instruments
Scout Pro Top Loading Balance (3)	OHAUS
Isotemp Water Baths (4)	Fisher Scientific
Dynac Centrifuge	Clay Adams
Reverse Osmosis Water Purification System	RainSoft, Inc.
1173PD Recirculating Chiller (2)	VWR
miniMOD Block Digestion System	CPI
6-position TCLP tumbler	Environmental Express
6890 GC/MS 5973 MSD Encon Concentrator Centurion Auto sampler	Agilent

Appendix 2:

Instrument Specific Quality Control Requirements

Analysis Group	QC Check	Frequency Performed	Quality Assurance Target	Range
Volatile Organics GC/MS	Method Blank	Initially & every 12 hours		
	System Performance Check (BFB)	Initially & every 12 hours		mid
	Continuing Calibration Standards	Initially & every 12 hours	A	mid
	Matrix Spike/Matrix Spike Duplicate (MS/MSD)	Minimum 5% of samples	A,P	mid
	Surrogates, Internal Std.	Every sample	A	mid
	Performance Test Sample (PT)	Semi-annually	A	low-high
	MDL or LOD verification	Annually	A, P	low
	Second Source Check Std.	After each calibration curve	A	low

Analysis Group	QC Check	Frequency Performed	Quality Assurance Target	Range
Semivolatile Organics GC/MS	Method Blank	One per batch of 20 or fewer samples		
	Laboratory Control Sample (LCS/LCSD)	One set per batch of 20 or fewer samples	A,P	
	Continuing Calibration Standards.	Initially & every 12 hours	A	mid
	System Performance Check (DFTPP)	Initially & every 12 hours		
	Matrix Spike/Matrix Spike Duplicate (MS/MSD)	One set per batch of 20 or fewer samples	A	mid
	Surrogates, Internal Std.	All samples	A	
	MDL or LOD verification	Annually	A, P	low
	Performance Test Sample (PT)	Semi-annually	A	low-high
	Second Source Standard Check	After each calibration curve	A	mid

Analysis Group	QC Check	Frequency Performed	Quality Assurance Target	Range
TPH (GC)	Method Blank	One per batch of 20 or fewer samples		
	Laboratory Control Sample (LCS/LCSD)	One set per batch of 20 or fewer samples	A,P	mid
	Continuing Calibration Standards.	Initially & every 12 hours	A	mid
	Retention Time Standard	Beginning and end of each run		
	Matrix Spike/Matrix Spike Duplicate (MS/MSD)	One set per batch of 20 or fewer samples	A,P	mid
	Surrogates	All samples	A	
	MDL or LOD verification	Annually	A, P	low
	Performance Test Sample (PT)	Semi-annually	A	low-high
	Second Source Standard Check	After each calibration curve	A	mid

Analysis Group	QC Check	Frequency Performed	Quality Assurance Target	Range
ICP	Instrument Blank	Initial, every run		
	Initial Calibration Blank	Initial, every run		
	Initial Calibration Verification (ICV)	After each calibration curve	A	mid-high
	Interference Check Sample (ICS)	Beginning and end of each run		high
	Continuing Calibration Blank (CCB)	Initially and every 10 samples		
	Continuing Calibration Verification (CCV)	Initially and every 10 samples	A	mid-high
	Preparation Blank	One per batch of 20 or fewer samples		
	Laboratory Control Sample (LCS)	One per batch of 20 or fewer samples	A	mid
	Matrix Spike/Matrix Spike Duplicate (MS/MSD)	One set per batch of 20 or fewer	A,P	mid
	Performance Test Sample (PT)	Semi-annually	A	low-high

A= Accuracy
P=Precision

Appendix 3

Non-conformance/Corrective Action Report
ENVision Laboratories, Inc. (page 1 of 2)

CA#_____

1. Identification of Non-conformance

Non-conformance: _____

Identified by: _____

How Identified: _____

Non-conformance Accepted? Y N Corrective Action Required? Y N

Responsible for Corrective Action: _____

2. Investigation

Employees Assisting:_____

Root Cause (circle):

Missed Holding Time	QC Failure
Data Entry Error	Calculation Error
Sample Prep. Error	Login/Labeling Error
Mis-identified Compound	Laboratory Contamination
Other _____	

Potential Solutions: (1) _____

(2) _____

(3) _____

Selected Solution: _____

Deadline for Investigation: _____

Non-conformance/Corrective Action Report
ENVision Laboratories, Inc. (page of 2 of 2)

CA# _____

3. Implementation of Solution

Responsible for implementation of Solution:_____

Resources Needed for Implementation of Solution:_____

Deadline for Implementation of Solution:_____

4. Monitoring of Effectiveness of Solution

Process for Evaluation:_____

Date of Review:_____

Signature/Date:_____

5. Closure of CAR

Approvals:

Lab Manager (if applicable)	Date
Quality Assurance Manager	Date
Laboratory Technical Director	Date

Appendix 4

Compressed Gas Order Form

ORDER DATE: ORDERED BY:

VENDOR used:

Gas Type	Quantity Ordered
UHP Helium	
UHP Hydrogen	
UHP Nitrogen	
Breathing Air	
Zero Air	
Liquid Argon	

Appendix 5

Bottle Order Form

ORDER DATE: ORDERED BY:

circle VENDOR used:

Item Description	# of cases ordered
4 oz jars	
1 liter amber glass	
40 mL vial w/HCL pres.	
40 mL vial w/ no pres.	
1 liter plastic	
500ml plastic	
250ml plastic	
T-Handles	
Tared vials w/stir bar	

APPENDIX H

HEALTH AND SAFETY PLAN

HEALTH AND SAFETY PLAN

Health and Safety Officer

Kent Shadley, CHMM of Alliance Environmental Group, Inc. is the project manager and the site health and safety officer responsible for directing drilling activities and groundwater and soil sampling. The alternate is Nathan Steury, ASP.

Drilling contractors and subcontractors will be responsible for designating their own health and safety officer.

Known Hazards and Risk Evaluation Associated with Site Activities

This site, as with any active automobile dealership, will have inherent hazards that are associated with each activity. Special precautions for moving vehicles will be required at this site.

The contaminant for which this Health and Safety Plan is valid consists of petroleum (gasoline and oil), the common commercial distillates of petroleum and chlorinated degreasing solvents.

Project activities are expected to occur throughout the year, therefore; extreme ambient temperatures may present a hazard.

Pre-preserved sampling containers will be used for this project. Preservatives used include hydrochloric acid and nitric acid.

Physical Injury

Exercise extreme caution when working near entry, exit and access roads to the site. Wear bright colored clothing and cordon off excavation area with orange safety fence and/or caution tape around open excavations to prevent accidental entry into a hazard area.

Contact with Petroleum Liquid or Degreasing Solvents

Use appropriate personal protective equipment.
Upgrade personal protective equipment according to established procedures.
Perform air monitoring in the breathing zones.
Follow decontamination procedures.

Flammability

Eliminate potential sources of combustibility and ignition.
Prevent discharge of static electricity.
Shut down any equipment that may produce flames or sparks when vapors are present at levels which exceed 10% of LEL.
Prevent accumulation of vapors at or below ground level if possible.

Contact with Contaminated Soils/Water

Wear appropriate PPE
Do not kneel on ground
Do not walk through petroleum stained soils/water
Follow decontamination procedures

Heat Stress

Increase liquid consumption
Increase number of breaks

Exposure to Cold

Prevent frostbite, keep extremities warm
Take periodic brakes to warm
Wear dry clothes, especially hat and gloves

Contact with Acids

Wear nitrile gloves when handling sampling containers
Keep sampling containers upright at all times
Open sampling containers away from face and breathing zone
Carefully fill sampling containers to avoid acid splash or spills
Avoid breathing any acid gas generated by reactions with water while filling sample containers

Personal Precautions

Hands should be thoroughly washed upon completion of work.

Direct skin contact with contaminated or suspected contaminated surfaces should be avoided. Whenever possible, do not walk through puddles, discolored soils, kneel on the ground, lean, sit or place equipment on drums or containers holding contaminated waste.

Medicines and alcohol can accelerate the effects from exposure to toxic chemicals. Prescribed drugs should not be taken where the potential exists for adsorption, inhalation, or ingestion is a potential unless authorized by a physician. Consumption of alcoholic beverages is not permitted.

All personnel must be familiar with the standard operating safety procedure and any additional instructions and information and adhere to the Site Safety Plan.

Personnel should be aware of symptoms of toxic chemical exposure and for heat and cold stress.

All operational personnel participating should participate in routine health and safety education and training programs. These programs, directed by the Health and Safety Officer, are designated to provide employees with knowledge of

hazardous materials, health and safety hazard potentials, and compliance with federal OSHA 29 CFR 1910.120(e) training.

List of Personnel and Areas of Responsibility

The following personnel have defined areas of responsibility for this project:

Kent Shadley, CHMM – Principal
Joe Gordon, CHMM – Director of Operations, Senior Geologist
Michael Ardis – Technician, groundwater sampling and data collection
Tyler Stubbs – Technician, groundwater sampling and data collection

Level of Personal Protection

Personal protection: D

Field activities will be performed in Level D personal protective equipment (PPE).

Persons will not be allowed within a 20 foot radius of the work area without the appropriate protective gear. Within the work area radius, Level D protection will be required. In this context, Level D consists of chemical resistant gloves and steel-toe, steel-shank boots, high visibility safety vest and hard hat.

Surveillance Frequency

A preliminary survey of existing air quality conditions prior to the start of work and the preliminary survey will be used to determine any baseline levels.

An ongoing evaluation of on-site atmospheric conditions, which will involve the monitoring of air quality immediately around excavation area, and the PID will also be used to periodically monitor vapor concentrations within excavation.

Decontamination Procedures

Dedicated equipment – The following items are dedicated to a single task and shall not be reused: bailers, twine, low flow bladders, tubing and sample containers. Bailers, twine, bladders and tubing shall be disposed as solid waste. Sample containers shall be disposed by the laboratory.

Reusable equipment – Reusable equipment shall be decontaminated after contact with groundwater by rinsing with tap water. A trisodium phosphate detergent solution followed by a tap water rinse will be used after contact with contaminated soil. Reusable equipment which may require decontamination includes, but is not limited to: water level meters and wrenches. Rinse and wash water are not expected to be hazardous and require no specialized disposal procedures. Wash water and rinse water generated on-site should be placed in containers of purge water.

Site Access Control Measures

If the designated person(s) is not on-site, field personnel will coordinate on-site control. No persons will be allowed to interfere with the field crew unless notified of the potential hazards and outfitted with proper protective gear.

The work area will consist of an area immediately surrounding each monitoring well and extending five feet from any service vehicle in three directions not including the adtivc work space (such as pick-up truck tailgate). The work area at the rear of the drill rig containing the majority of the work activities will consist of an area from the truck and extending a minimum of 10 feet from the vehicle. The work areas will be demarcated with traffic cones to alert vehicle traffic of the restrictions.

No separate exclusion or contamination reduction zone has been established. The on-site personnel will establish both of there boundaries, if necessary.

- **Site Emergency Procedures, 329 IAC 9-5-7(f)(1)(D)(vi)**

All site personnel will evaluate the presence of petroleum in the environment will monitor for the following symptoms:

Symptoms including irritation of eyes, skin and respiratory tract and other abnormal changes in attitude of the workers on site could indicate inhalation of excessive petroleum vapors. The person should be removed from the site and transported to the hospital for observation.

Communications

Communications on-site will be primarily voice and hand signaling. The standard hand signals will be used in case of an emergency:

Hand gripping throat	Out of air/can't breathe
Grip partner's wrist or both hands around waist	Leave area immediately
Hands on top of head	Need assistance
Thumbs up	OK
Thumbs down	No

Accident or Injury: In the event of an accident or injury on the site, the following procedures will be implemented.

Project Manager Will Assess Injury and the Nature of the Injury. First aid will be given as appropriate. Medical attention will be summoned, if necessary.

Accident-- the nature of the accident will be assessed and either emergency assistance will be summoned, or the situation rectified and work continued. The nearest hospital is Community North Hospital.

Directions to Hospital:
Leaving the site, turn nwest (left) on US 421. Shadeland Avenue. Remain on US 421 for 12.4 miles to Gordon Road in Monticello. Turn west (left) on Gordon Road, travel west for 1.1 mile to Sixth Street. Turn north (right) on Sixth Street to IU Health White Memorial Hospital and proceed to the Emergency Room.

Address: **IU Health White Memorial Hospital**
720 South Sixth Street
Monticello, Indiana 46256

A List of Emergency Phone Numbers

Fire	Delphi Tri-Township Fire Department	911
Police	Delphi Police Department	911
Ambulance	Delphi Tri-Township Fire Department	911
Hospital	White Memorial Hospital	(574) 583-7111

A List of Personnel Training, Qualifications, and Certifications

Copies of resumes, certifications and training certificates for project personnel are maintained by Alliance Environmental Group. All personnel working on this site shall have OHSA 40 hour Hazardous Waste Site Operations training.

A Description of How the Plan Will Meet EPA Regulations Concerning Health and Safety

All operational personnel participating in environmentally related site activities should participate in routine health and safety education and training programs, which are intended to meet U.S. EPA and OSHA regulations concerning health and safety. These programs are designated to provide employees with knowledge of hazardous materials, health and safety hazard potentials, and compliance with OSHA training required at 29 CFR 1910.120(e).

If site conditions should change, or the activities this health and safety plan was developed for should change, this plan will be revised accordingly.

APPENDIX I

ENVIRONMENTAL RESTRICTIVE COVENANT

2024001148 GMIS $25.00
5/3/2024 11:25:53 AM 11 PGS
Penny J. Titus
CARROLL County Recorder, IN
Recorded as Presented

Environmental Restrictive Covenant

THIS ENVIRONMENTAL RESTRICTIVE COVENANT ("Covenant") is made this 24 day of April, 2024, by DW Mann Realty, LLC, 110 S. Center Street, Flora, Indiana 46929 (together with all successors and assignees, collectively "Owner").

WHEREAS: Owner is the fee owner of certain real estate in the County of Carroll, Indiana, which is located at 1648 US 421, Delphi, Indiana 46923 and more particularly described in the attached Exhibit "A" ("Real Estate"), which is hereby incorporated and made a part hereof. This Real Estate was acquired by deeds on September 1, 2015 and recorded on September 3, 2015, as Deed Records 2015003321 and 2015003322, in the Office of the Recorder of Carroll County, Indiana. The Real Estate has also been identified by the county as parcel identification numbers 08-05-25-000-033.000-006, 08-05-25-000-032.000-006 and 08-05-25-000-076.000-006 and is hereinafter referred to as the "Affected Area." The Affected Area, to which the restrictions in this Covenant apply, is depicted on the figure which is attached as Exhibit "B." The restrictions are not applicable to any portion of the Real Estate beyond the Affected Area.

WHEREAS: Response Action was implemented in accordance with IC 13-25-5 with and/or other applicable Indiana law as a result of a release of hazardous waste and/or hazardous substances relating to the former Dick Krieg Motors. The incident number assigned by the Indiana Department of Environmental Management ("Department" or "IDEM") for the release is VRP #6160805.

WHEREAS: Certain contaminants of concern ("COCs") remain in the groundwater of the Real Estate following completion of the response actions. The Department has determined that the COCs will not pose an unacceptable risk to human health at the remaining concentrations, provided that the Owner implements and complies with the land use restrictions as required herein. These COCs are benzene, 1,2,4-trimethylbenzene and naphthalene.

WHEREAS: Environmental investigation reports and other related documents are hereby incorporated by reference and may be examined at the offices of the Department, which is located in the Indiana Government Center North building at 100 N. Senate Avenue, Indianapolis, Indiana. The documents may also be viewed electronically in the Department's Virtual File Cabinet by accessing the Department's Web Site (currently www.in.gov/idem/). The Real Estate is also depicted as a polygon on IDEM's GIS webviewer (currently https://on.in.gov/ideminteractivemap).

NOW THEREFORE, Owner subjects the Affected Area within the Real Estate to the following restrictions and provisions, which shall be binding on the current Owner and all future Owners:

I. RESTRICTIONS

1. Restrictions. The Owner:

   (a) Shall not use or allow the use of the Affected Area for residential purposes, including, but not limited to, daily childcare facilities or educational facilities for children (e.g., daycare centers or K-12 schools).

   (b) Groundwater may be extracted for potable use from the existing private water well identified by GPS coordinates and depicted in Exhibit "B". If the existing well were to fall into disrepair, a replacement in the same location, or within the Affected Area, and depth (or farther from the contaminant plume) may be permissible, provided that well construction plans are submitted to IDEM for review and approval prior to installation, and a confirmation groundwater sample is collected and analyzed for the COCs after installation and prior to potable use. This restriction does not apply to any private water well on the Real Estate outside of the Affected Area.

II. GENERAL PROVISIONS

2. Restrictions to Run with the Land. The restrictions and other requirements described in this Covenant, which are only applicable to the Affected Area, shall run with the land and be binding upon, and inure to the benefit of the Owner of the Real Estate which encompasses the Affected Area and the Owner's successors, assignees, heirs and lessees and their authorized agents, employees, contractors, representatives, agents, lessees, licensees, invitees, guests, or persons acting under their direction or control (hereinafter "Related Parties") and shall continue as a servitude running in perpetuity with the Affected Area.No transfer, mortgage, lease, license, easement, or other conveyance of any interest in or right to occupancy in all or any part of the Real Estate by any person shall affect the restrictions set forth herein. This Covenant is imposed upon the entire Real Estate unless expressly stated as applicable only to a specific portion thereof.

3. Binding upon Future Owners. By taking title to an interest in or occupancy of the Affected Area within the Real Estate, any subsequent Owner or Related Party agrees to comply with all of the restrictions set forth in paragraph 1 above and with all other terms of this Covenant.

4. Access for Department. The Owner shall grant to the Department and its designated representatives the right to enter upon the Real Estate at reasonable times for the purpose of monitoring compliance with this Covenant as applicable to the Affected Area and ensuring its protectiveness; this right includes the right to take samples and inspect records.

5. Written Notice of the Presence of Contamination. Owner agrees to include in any instrument conveying any interest in any portion of the Real Estate, including but not limited to deeds, leases and subleases (excluding mortgages, liens, similar financing interests, and other non-possessory encumbrances), the following notice provision (with blanks to be filled in):

NOTICE: THE INTEREST CONVEYED HEREBY IS SUBJECT TO AN ENVIRONMENTAL RESTRICTIVE COVENANT, DATED_____ 20__, RECORDED IN THE OFFICE OF THE RECORDER OF CARROLL COUNTY ON _____, 20__, INSTRUMENT NUMBER (or other identifying reference) _____ IN FAVOR OF AND ENFORCEABLE BY THE INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT.

6. Notice to Department of the Conveyance of Property. Owner agrees to provide notice to the Department of any conveyance (voluntary or involuntary) of any ownership interest in the Real Estate (excluding mortgages, liens, similar financing interests, and other non-possessory encumbrances). Owner must provide the Department with the notice within thirty (30) days of the conveyance and: (a) include a certified copy of the instrument conveying any interest in any portion of the Real Estate, and (b) if it has been recorded, its recording reference, and (c) the name and business address of the transferee.

7. Indiana Law. This Covenant shall be governed by, and shall be construed and enforced according to, the laws of the State of Indiana.

III. ENFORCEMENT

8. Enforcement. Pursuant to IC 13-14-2-6 and other applicable law, the Department may proceed in court by appropriate action to enforce this Covenant. Damages alone are insufficient to compensate IDEM if any owner of the Real Estate or its Related Parties breach this Covenant or otherwise default hereunder. As a result, if any owner of the Real Estate, or any owner's Related Parties, breach this Covenant or otherwise default hereunder, IDEM shall have the right to request specific performance and/or immediate injunctive relief to enforce this Covenant in addition to any other remedies it may have at law or at equity. Owner agrees that the provisions of this Covenant are enforceable and agrees not to challenge the provisions or the appropriate court's jurisdiction.

IV. TERM, MODIFICATION AND TERMINATION

9. Term. The restrictions shall apply until the Department determines that the contaminants of concern no longer present an unacceptable risk to the public health, safety, or welfare, or to the environment.

10. Modification and Termination. This Covenant shall not be amended, modified, or terminated without the Department's prior written approval. Within thirty (30) days of executing an amendment, modification, or termination of the Covenant, Owner shall record such amendment, modification, or termination with the Office of the Recorder of Carroll County and within thirty (30) days after recording, provide a true copy of the recorded amendment, modification, or termination to the Department. In accordance with 329 IAC 1-2-7 and IC 13-14-2-9(d), the applicant shall reimburse the department for the administrative and personnel expense incurred by the department in evaluating a proposed modification or termination of a restrictive covenant under this rule.

V. MISCELLANEOUS

11. Waiver. No failure on the part of the Department at any time to require performance by any person of any term of this Covenant shall be taken or held to be a waiver of such term or in any way affect the Department's right to enforce such term, and no waiver on the part of the Department of any term hereof shall be taken or held to be a waiver of any other term hereof or the breach thereof.

12. Conflict of and Compliance with Laws. If any provision of this Covenant is also the subject of any law or regulation established by any federal, state, or local government, the strictest standard or requirement shall apply. Compliance with this Covenant does not relieve the Owner of its obligation to comply with any other applicable laws.

13. Change in Law, Policy or Regulation. The parties intend that this Covenant shall not be rendered unenforceable if Indiana's laws, regulations, guidance, or remediation policies (including those concerning environmental restrictive covenants, or institutional or engineering controls) change as to form or content. If necessary to enforce this Covenant, the parties agree to amend this Covenant to conform to any such change. All statutory references include any successor provisions.

14. Notices. Any notice, demand, request, consent, approval or communication that either party desires or is required to give to the other pursuant to this Covenant shall be in writing and shall either be served personally or sent by first class mail, postage prepaid, addressed as follows:

    To Owner:
    Dave Mann
    DW Mann Realty, LLC
    1648 W US Hwy 421, Delphi, IN 46923

    To Department:

    IDEM, Office of Land Quality
    100 N. Senate Avenue
    IGCN 1101
    Indianapolis, IN 46204-2251
    Attn: Institutional Control Group

    An Owner may change its address or the individual to whose attention a notice is to be sent by giving written notice via certified mail.

15. Severability. If any portion of this Covenant or other term set forth herein is determined by a court of competent jurisdiction to be invalid for any reason, the surviving portions or terms of this Covenant shall remain in full force and effect as if such portion found invalid had not been included herein.

16. Authority to Execute and Record. The undersigned person executing this Covenant represents that he or she is the current fee Owner of the Real Estate or is the authorized representative of the Owner, and further represents and certifies that he or she is duly authorized and fully empowered to execute and record, or have recorded, this Covenant.

Owner hereby attests to the accuracy of the statements in this document and all attachments.

IN WITNESS WHEREOF, DW Mann Realty, LLC the said Owner of the Real Estate described above has caused this Environmental Restrictive Covenant to be executed on this _____ day of April, 2024.

Dave Mann, President

Printed Name of Signatory

STATE OF Indiana)
) SS:
COUNTY OF Carroll)

Before me, the undersigned, a Notary Public in and for said County and State, personally appeared Dave Mann , the President of the Owner, _____, who acknowledged the execution of the foregoing instrument for and on behalf of said entity.

Witness my hand and Notarial Seal this 24th day of April, 2024.

Anita L Whitacre
Notary Public, State of Indiana
Howard County
Commission Number NP0754315
My Commission Expires
February 01, 2032

Anita L Whitacre, Notary Public

Residing in Indiana County, Howard

My Commission Expires:
February 01, 2032

This instrument prepared by:
Glenn D. Bowman, Esq., Member, Stoll Keenon Ogden PLLC

I affirm, under the penalties for perjury, that I have taken reasonable care to redact each Social Security number in this document, unless required by law:
Glenn D. Bowman, Esq., Member, Stoll Keenon Ogden PLLC, 334 N Senate Avenue, Indianapolis, IN 46204

EXHIBIT A

LEGAL DESCRIPTION OF REAL ESTATE

State Property Key:

08-05-25-000-032.000-006
08-05-25-000-076.000-006
08-06-30-000-242.000-006
08-06-30-000-243.000-006
08-06-30-000-244.000-006
08-06-30-000-245.000-006
08-06-30-000-246.000-006
08-06-30-000-248.000-006
08-06-30-000-249.000-006
08-06-30-000-250.000-006
08-06-30-000-251.000-006
08-06-30-000-252.000-006
08-06-30-000-289.000-006
08-06-30-000-290.000-006
08-06-30-000-291.000-006

Tract A

A part of the Northwest Quarter (1/4) of Section Thirty (30), in Township Twenty-five (25) North, and Range Two (2) West, being more particularly described as follows: Beginning at the Southeast corner of a tract of 1.03 acres conveyed by Grantor to Grantee by Warranty Deed dated May 13, 1991, and recorded January 15, 1993, at Deed Record 160, Page 34 in the Office of the Recorder of Carroll County, Indiana, which beginning point is located by beginning at the Southwest corner of Lot 278 in Dunlap, Finch and Daugherty Addition to Delphi, Indiana, and running thence due East (assumed bearing) along the South line of said addition 61.10 feet; thence South 1 degree 00 minute West 253.00 feet; thence South 89 degrees 45 minutes East 349.70 feet; thence South 16 degrees 22 minutes 30 seconds West 52.04 feet to the beginning point of this description; thence North 89 degrees 45 minutes West 427.00 feet thence South 1 degree 00 minutes West 80.06 feet to a pipe with cap; thence South 89 degrees 42 minutes 47 seconds East 347.00 feet; and thence Northeast 120.00 feet, more or less, to the beginning point, containing .7113 of an acre, more or less.

And

A part of the Northwest Quarter (1/4) of Section Thirty (30), in Township Twenty-five (25) North, and Range Two (2) West, being more particularly described as follows: Beginning at the Southwest corner of Lot 278 in Dunlap, Finch, and Daugherty Addition to Delphi, Indiana, and running thence due East (assumed bearing) along the South line of said addition 61.10 feet; thence South 1 degree 00 minutes West 253.00 feet; thence South 89 degree 45 minutes East 349.70 feet; thence South 16 degrees 22 minutes 30 seconds West 52.04 feet; thence North 89 degrees 45 minutes West 427.00 feet; thence North 1 degree 00 minutes East 302.60 feet to the

South line of Dunlap, Finch and Daugherty Addition; thence due East along said South line 30.00 feet to the place of beginning, containing 1.03 acres.

And

Lots numbered Two Hundred Seventy-eight (278), Two Hundred Seventy-nine (279), Two Hundred Eighty (280), Two Hundred Eighty-one (281), and Two Hundred Eighty-two (282) in Dunlap, Finch and Daugherty's Addition to the Town of West Delphi.

And

A part of Dunlap, Finch and Daugherty's Addition to the West Delphi, Indiana, containing, Lot Number 277, part of Lots Numbers 268, 274, 275, 276 and part of 9th Street, more particularly described as follows: Beginning at the Southwest corner of Lot Number 277 in the above mentioned Addition and running thence North 186.80 feet to the South right-of-way line of that highway designated as U.S. Highway Number 421 and Indiana State Road Number 39 and 18: thence following said right -of-way line South 47 degrees East 260.27 feet; thence leaving said right-of-way line and running South 41 degrees 30 minutes West 10.33 feet; thence West 182 feet to the place of beginning, containing .42 of an acre, more or less.

And

A tract of land situated in Dunlap, Finch and Daugherty's Addition to West Delphi, Indiana being part of Lot 268 in said Addition and described as follows: Beginning at a point 12 feet East of the Southwest corner of Lot 268 as originally platted in the above mentioned Addition and running thence North 41 degrees 31 minutes East 10.33 feet to the right-of-way line of U.S. Highway 421, thence following said right-of-way line South 47 degrees East 11.50 feet; thence leaving said right-of-way line and running West 15.30 feet to the place of beginning, containing .002 of an acre, more or less.

And

Lots Number Two Hundred Sixty-nine (269) and Two Hundred Seventy (270) in Dunlap, Finch and Daugherty's Addition to the Town of West Delphi.

State Property Key:

08-08-25-000-033.000-006
08-05-25-000-034.000-006

Tract B

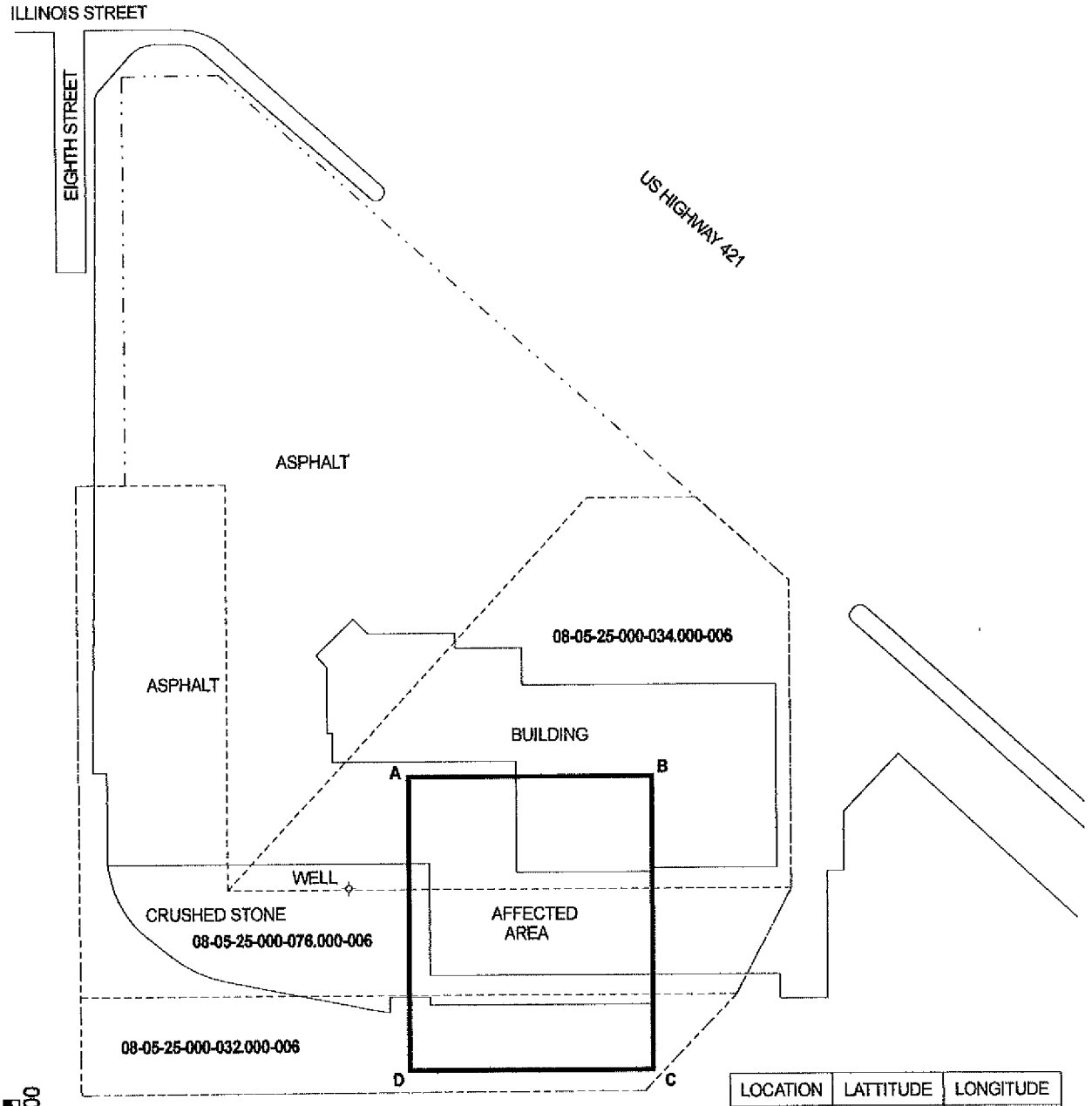
A part of the Northwest Quarter (1/4) of Section 30, Township 25 North, Range 2 West, described as follows: Beginning at a point on the South boundary line of Dunlap, Finch and Daugherty's Addition to the Town of West Delphi, distant one chain and 91 ½ links West from the Southeast corner of the Plat of said Addition; and running thence West with said boundary line 5.33 chains; thence South 3.75 chains; thence East 5.33 chains; thence North 3.75 chains to the place of beginning. Containing 2 acres, more or less.

Also:

Beginning at the Southwest corner of Lot 277 in Dunlap, Finch, and Daugherty's Addition to the Town of West Delphi; thence West 12 feet to the Southeast corner of Lot 278 in said Addition; thence North on the Est line of Lots 278, 279, 280, 281 and 282 in said Addition to the South line of the right of way for U.S. Highway 421: thence Southeast on the said South line to the West line of Lot 274 in said Addition; thence South on the West line of Lots 274, 275, 276 and 277 to the place of beginning.

EXHIBIT B

AFFECTED AREA



LOCATION	LATTITUDE	LONGITUDE
A	40.58743	-86.68859
B	40.58743	-86.68803
C	40.58696	-86.68803
D	40.58696	-86.68859
WELL	40.58721	-86.688714

ALLIANCE Environmental Group, Inc.

EXHIBIT B
AFFECTED AREA AND PARCELS
DICK KRIEG MOTORS
1648 WEST US 421, DELPHI, INDIANA

APPENDIX J

RWP LETTER

ALLIANCE
Environmental Group, Inc.
THE ENVIRONMENTAL SOLUTION

[Date]

[Affected party name]
[Address]
Delphi, Indiana 46923

RE: NOTICE OF REMEDIAL WORK PLAN COMMENT PERIOD
DICK KRIEG MOTORS
1648 WEST US 421
DELPHI, CARROLL COUNTY, INDIANA
VRP # 6160805

Dear [Affected party name]:

This notice is being provided to inform you of the presence of a site in your neighborhood that has been accepted into Indiana Department of Environmental Management's (IDEM) Voluntary Remediation Program. This notice is a requirement of a Community Relations Plan, which has been developed by the Applicant and is a component of the Remediation Work Plan that is available for review online at IDEM's Virtual File Cabinet and at the repository listed below. The Community Relations Plan includes provisions for notifying all neighboring property owners and occupants, neighborhood organizations and other local entities. For additional information about the Community Relations Plan and the Remediation Work Plan please review the documents in the repository or contact the IDEM Project manager at (317) 234-9731.

The Dick Krieg Motors site, now operating as Mann Chevrolet, has a small, limited area of groundwater contamination, as documented in the Remediation Work Plan, which is confined to the site itself. Dick Krieg Motors intends to complete closure of the site via and Environmental Restrictive Covenant and a Certificate of Completion issued by IDEM.

This Remediation Work Plan is subject to a 30 day public comment period. The public comment period closes on [date]. Please address your comments to me at the address below, or via email at kshadley@aegindy.com.

A copy of the Remediation Work Plan is available for review using the Virtual File Cabinet. The Remediation Work Plan may also be reviewed at the Delphi Public Library, 222 East Main Street, Delphi, Indiana.

Sincerely,

Kent Shadley, CHMM
Vice President, Field Services

6330 EAST 75H STREET, SUITE 152, INDIANAPOLIS, INDIANA 46250
TEL (317) 865-3400 • FAX (317) 865-3401
https://aegindy.com

APPENDIX K

REFEREENCES

References

Bedrock Aquifer Systems of Carroll County, Indiana by Robert A. Scott, Indiana Department of Natural Resources, Division of Water, Resource Assessment Section, February 2009

Unconsolidated Aquifer Systems of Carroll County, Indiana by Robert K. Scott, Indiana Department of Natural Resources, Division of Water, Resource Assessment Section, February 2009

Soil Survey of Carroll County, Indiana, United States Depart of agriculture, Soil Conservation Service, January, 1991

Phase I Environmental Site Assessment, Dick Krieg Motors, Delphi, Indiana, Alliance Environmental Group, Inc., project number 15-0107-E, dated July 31, 2015

Phase II Subsurface Investigation Report, Dick Krieg Motors, Alliance Environmental Group, Inc., project number 15-0068-E, dated August 26, 2015

Voluntary Remediation Program Investigation, Dick Krieg Motors, Alliance Environmental Group, Inc., project number 17-0083-E, dated June 8, 2018

Quarterly Monitoring Reports, Dick Krieg Motors, Alliance environmental Group, Inc., project number 17-0083-E, dated April 27, 2021; October 14, 2021; April 24, 2022; April 25, 2022; June 16, 2023 and September 7, 2023

Bedrock Monitoring Well Investigation, Dick Krieg Motors, Alliance Environmental Group, Inc., project number 17-0083-E, dated April 28, 2020

Additional Bedrock Monitoring Well Installation, Dick Krieg Motors, Alliance Environmental Group, Inc., project number 17-0083-E, dated June 8, 2022