

Attachment J
Corrective Action for Solid Waste Management Units

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J. CORRECTIVE ACTION FOR SOLID WASTE MANAGEMENT UNITS

J-1 Solid Waste Management Units

The following solid waste management units (SWMUs) were identified within the Hazardous Waste Management Permit issued by the Indiana Department of Environmental Management (IDEM) in April 2019:

1. Eastside SWMU (ESWMU); and
2. Tin Line Trench SWMU.

RCRA Corrective Action at the ESWMU was implemented in accordance with a *Workplan for In-Place Closure, Eastside SWMU* last revised July 10, 2009 (Workplan) and approved by IDEM with conditions in a letter dated January 22, 2010. In-place closure activities at the ESWMU were undertaken during 2010-2011. IDEM provided a Certification of Completion of Construction Report and Survey Plat in a letter to the permittee dated November 21, 2011. Post-Construction groundwater monitoring was previously conducted in accordance with the Post Operation and Maintenance Plan (Appendix D to Workplan). IDEM approved the completion of groundwater monitoring on August 8, 2018. The permittee will conduct annual inspections of the unit for the remainder of the 30 year post construction period, to confirm the integrity of the cap, in accordance with the inspection plan (Section 2.0 of the Post Operation and Maintenance Plan).

As of October 2023, the permittee is implementing a quarterly groundwater monitoring program in consultation with IDEM at the Tin Line Trench SWMU. Further information concerning the Tin Line Trench SWMU is therefore presented below.

J-1a Characterize the Solid Waste Management Unit

The following sections provide a characterization of the active SWMUs. The active SWMUs are limited to the Eastside SWMU and Tin Line Trench SWMU. The following information is presented:

- Type of each unit;
- Location of each existing or closed unit on a map;
- Dimensions and materials of construction of each unit;

- Dates when the unit was in operation;
- Description of the wastes placed in each unit; and
- Quantity or volume of waste (estimated).

J-1a(1) Eastside SWMU

The Eastside SWMU is located east of Burns Ditch (see **Figure A-2**). This SWMU was identified in late 1990, and reported by the permittee to the USEPA in a letter dated December 17, 1990. A pre-RFI investigation was conducted in 1990 using geophysical methods and test pits. That study qualitatively indicated that the Eastside SWMU appeared to contain approximately 215,000 cubic yards of waste and debris.

Twelve random grab samples of sludge obtained from test pits in the Eastside SWMU in April 1992 were analyzed for total constituent concentrations (metals and organics). Three of the samples were analyzed for toxicity (metals) in accordance with the TCLP. Results show that the Eastside SWMU wastes are very similar to the nonhazardous sludges historically produced by the permittee. None of the samples selected for TCLP analysis were characteristic hazardous wastes.

Based on interpretation of the geophysical data, approximately 115,000 cubic yards of the 215,000 cubic yards of material contained in the Eastside SWMU are sludges. The remaining 100,000 cubic yards of material includes construction debris, such as steel beams, coil banding, concrete, wood, and crushed drums. The debris seems to be located primarily below the sludges. It is expected to have been deposited during the facility construction in the late 1950s and 1960s, based on its composition, its location relative to the sludges, and its proximity to the construction materials staging area that was used during facility construction. Based upon the location of the sludges relative to the construction debris, it appears that the sludges were placed in the Eastside SWMU sometime after completion of plant construction in the early 1960s. No other information is available concerning the dates that sludges were placed in the Eastside SWMU.

Based on the nature of the SWMU materials and data collected during a groundwater investigation at the ESWMU conducted in 2004-2005, as an alternative to implementation of a Corrective Measures Study (CMS), the permittee proposed the implementation of a presumptive remedy in a January 12, 2006 letter to IDEM. In summary, the proposed presumptive remedy consisted of the following:

1. Clean closure removal and consolidation of SWMU materials (for portions of the SWMU overlapping the footprint of the Greenbelt II Landfill – identified as “Stage 2”); and
2. Installation of a low permeability cap (i.e., in-place closure) (for portions of the SWMU north of the Greenbelt II Landfill – identified as “Stage 3”).

Stage 1 of the Eastside SWMU comprised the portion within the footprint of Cell C to the Greenbelt II Landfill that had been previously addressed prior to construction of the cell.

IDEM concurred with the general presumptive remedy proposal as presented in the January 12, 2006 letter from the permittee. IDEM indicated that a detailed Workplan with specifications describing the proposed remedy should be submitted to IDEM for review. In response, a *Workplan for the In-Place Closure* of the Eastside SWMU, dated August 3, 2006 was subsequently submitted to IDEM. IDEM provided comments on the August 2006 Workplan in a letter dated January 2, 2007. The permittee provided a response to IDEM’s January 2, 2007 letter in a letter dated March 8, 2007. The outstanding issues relating to the above Workplan were also discussed during a meeting at IDEM on October 30, 2007. Follow up information in response to discussions during this meeting was presented in a letter from the permittee to IDEM dated December 7, 2007.

IDEM responded to the December 2007 letter in a letter to the permittee dated June 2, 2008. The outstanding issues relating to the Workplan were discussed during a meeting at IDEM’s offices on August 13, 2008. Follow up information in response to discussions during this meeting was presented in a letter from the permittee to IDEM dated August 29, 2008.

IDEM provided a response to the August 29, 2008 letter in a letter dated October 14, 2008. Pursuant to IDEM’s October 14, 2008 letter, a revised Workplan dated December 12, 2008 was submitted by the permittee. This version of the Workplan incorporated the technical comments included within correspondences exchanged between IDEM and the permittee since submission of the original Workplan in August 2006. IDEM’s response to the December 12, 2008 letter from the permittee was dated March 23, 2009. In response to IDEM’s March 23, 2009 letter, the outstanding issues relating to the Workplan were discussed during a meeting at IDEM’s offices on May 5, 2009. A revised version of the Workplan dated July 10, 2009 was subsequently submitted to IDEM by the permittee.

Various points pertaining to the groundwater monitoring plan included in the Post Construction Plan in the July 2009 Workplan were discussed with IDEM during a teleconference on August 11, 2009. IDEM provided a Draft Letter approving the July 10, 2009 Workplan with various conditions and modifications in an email to the permittee dated September 10, 2009. The permittee provided a response to IDEM's Draft Approval in an email dated September 18, 2009.

IDEM approved the July 2009 Workplan with conditions in a letter to the permittee dated January 22, 2010. Following receipt of IDEM's approval, the permittee initiated the steps necessary to procure a qualified contractor for implementation of the activities described in the IDEM-approved Workplan. This process included the preparation and issuance of Specifications and Bid Documents to several qualified contractors during the Spring of 2010. A contractor was selected in June 2010.

The construction activities at the Eastside SWMU were initiated in August 2010. The final cover layer installed over the Stage 3 portion of the ESWMU is comprised of the following (from top to bottom):

- 6 inch topsoil layer (for support of vegetation);
- 30 inches of granulated slag;
- 8 oz. geotextile;
- 30 mil PVC geomembrane; and
- 12 inches of granulated slag subbase.

After attaining the final waste grades in accordance with the above Workplan, the contractor proceeded with the installation of the 12 inch subbase layer of granulated slag over the Stage 3 Area during September-October 2010. The installation of the 30 mil PVC liner and overlying 8 ounce geotextile was initiated in early November 2010 and was completed by the middle of November. Various IDEM technical staff visited the project site on November 3, 2010. IDEM conducted another inspection on November 15, 2010. No violations were found during the above inspections.

As areas of the SWMU received the liner and geotextile layer, the overlying layer of protective granulated slag was placed. Placement of granulated slag was terminated for the winter in mid-December 2010. Upon suspension of the hauling of granulated slag, the PVC liner/geotextile

had been covered with a minimum of 1-2 feet of granulated slag over the entire footprint of Stage 3. The remainder of the upper layer of granulated slag was installed in March 2011 and the topsoil was placed in March-April 2011.

After the placement of the topsoil layer, a vegetative support system was installed. As part of the seeding process, a straw (hay) material was applied initially across the SWMU crown and slopes. Subsequently, a hydro-seeding process was performed in accordance with the specifications contained in the Workplan. By June 2011, the vegetation had taken root and was well established.

The construction activities were documented in a Certification of Completion of Construction Report, dated August 11, 2011. This certification report was approved in a letter from IDEM to the permittee dated November 21, 2011. Post-construction groundwater monitoring was performed from 2011 to 2018. IDEM approved the completion of post-construction groundwater monitoring in a letter dated August 8, 2018. Annual inspections of the cap installed over the Eastside SWMU are being implemented in accordance with the Post Operation and Maintenance Plan.

J-1a(2) Tin Line Trench SWMU

In response to an incident during the Spring of 2017 that resulted in NPDES exceedances for hexavalent and total chromium at a NPDES-permitted outfall to Burns Ditch, the IDEM has inquired with USS about the possibility that the incident also resulted in other releases to the environment. Applicable information concerning the NPDES exceedances was forwarded by USS to IDEM in a letter dated May 25, 2017 and a follow-up email dated June 13, 2017. IDEM also visited the Midwest Plant on June 21, 2017 to view the area that is believed to be the source of the possible release. The site visit focused on the area of the Plant that included a portion of the previously identified Tin Line Trench SWMU. The Tin Line Trench SWMU is a subgrade containment trench located within a courtyard east of the Electrolytic Tin Line (see **Figure J-1**).

The source of the NPDES exceedances was believed to be a failure in the expansion joint of a process wastewater line that conveys chromium rinse water from the tin and chrome electroplating operations to the Chrome Treatment Plant (CTP). The rinse water that was released from the process wastewater line was collected in the concrete-lined containment trench. The bottom of a portion of the containment trench includes a protrusion from an

underlying pipe that runs perpendicular to the trench. A breach in the crown of the underlying pipe allowed rinse water originating from the faulty expansion joint to enter the pipe, which conveys non-chromium process wastewater to the Final Treatment Plant (FTP) located along Burns Ditch. The FTP is not configured to treat chromium, which ultimately resulted in the exceedance at the Outfall to Burns Ditch.

A letter from IDEM to USS dated June 29, 2017 indicated that during the above site visit, IDEM observed various cracks, gaps, and damaged areas in the concrete walls and base of the utility containment trench, which may have resulted in a release of hazardous constituents to the underlying soil and groundwater. IDEM's June 29, 2017 letter indicated that USS must demonstrate via sampling (soil and/or groundwater), that a release to the environment has not occurred from the Tin Line Trench SWMU. A Workplan was requested within 45 days of receipt of the June 29, 2017 letter to demonstrate no release to the environment has occurred which presents an unacceptable risk to human health or the environment from the affected portion of the Tin Line Trench SWMU.

A Workplan was submitted to IDEM on August 21, 2017 and subsequently revised on November 6, 2017. Groundwater samples were collected in accordance with the Workplan in February 2018. The results indicated concentrations of hexavalent chromium exceeding the IDEM screening level contained in the Remediation Closure Guide (RCG). Although groundwater on the USS property is not utilized as a source of drinking water (in accordance with a prior Environmental Restrictive Covenant recorded for the property), consistent with current USEPA policy, the only groundwater screening levels included in the RCG are tap water (i.e., residential) values. Given the above Environmental Restrictive Covenant, IDEM's surface water standards for hexavalent chromium in the Great Lakes System may also be applicable.

In response to the above concentrations of hexavalent chromium identified in the groundwater, the permittee anticipated the implementation of supplemental investigation activities, in consultation with IDEM. An Addendum to the Sampling Workplan, dated April 23, 2018 was approved by IDEM in a letter dated May 24, 2018. On October 31, 2018, USS submitted the *Results From TLT-7 Verification Sampling/Request for No Further Action Status Report*, which documented the results from three groundwater sampling events conducted in February, June, and October 2018, and included a No Further Action (NFA) request. Groundwater samples were collected from four monitoring well locations (TLT-3, TLT-7, TLT-8, and TLT-9) and two

underdrain systems for analysis of hexavalent chromium. In a response letter dated December 28, 2018, IDEM requested that USS conduct quarterly groundwater sampling at the above locations for a minimum of one year to demonstrate that concentrations are attenuating below applicable standards in support of a NFA request for the unit.

In response to the above letter from IDEM, quarterly groundwater monitoring was performed during 2019. Quarterly groundwater monitoring also was performed in 2020, 2021, and 2022. USS has previously transmitted results to IDEM from quarterly groundwater monitoring performed from 2019-2022 in four separate submittals as follows:

- Results from 2019 Quarterly Sampling Report, dated January 9, 2020;
- Results from 2020 Quarterly Sampling Report, dated January 11, 2021;
- Results from 2021 Quarterly Sampling Report, dated January 14, 2022; and
- Results from the 2022 Quarterly Sampling Report, dated January 31, 2023.

Each of the above reports concluded with a recommendation to continue quarterly groundwater sampling of the above sampling locations for an additional year. The groundwater sampling activities are ongoing as of October 2023.

J-1b No Solid Waste Management Units

Solid Waste Management Units have been identified at the facility as described above. Therefore, this section is not applicable to this permit.

J-2 Releases

J-2a Characterize Releases

J-2a(1) Eastside SWMU

As discussed above, the ESWMU has been closed in-place through the construction of a cap over the SWMU materials. Post-construction groundwater data was sufficient to demonstrate no ongoing releases are occurring from the SWMU and groundwater monitoring has been terminated.

J-2a(2) Tin Line Trench SWMU

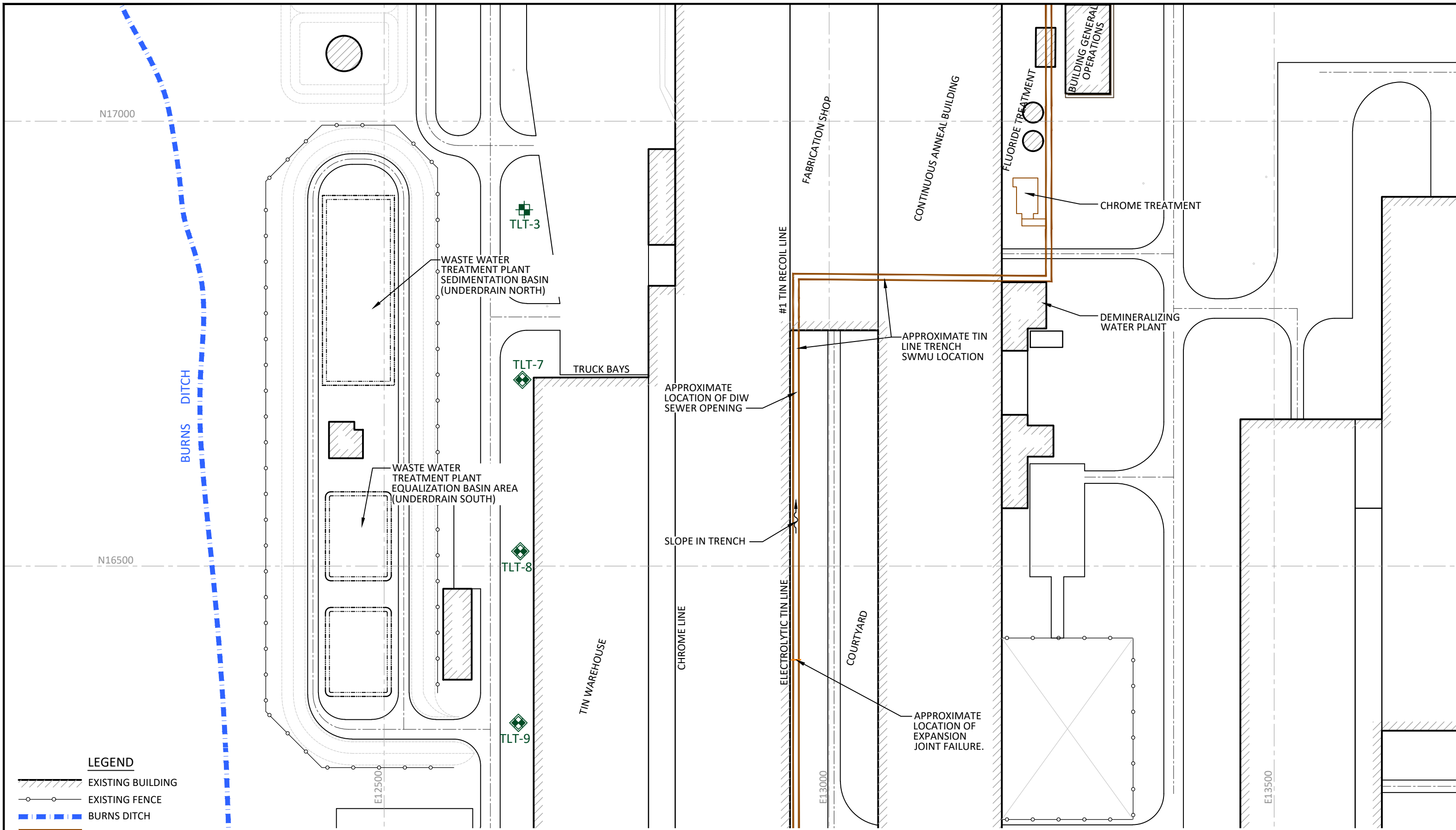
The source of the chromium that resulted in the above referenced NPDES exceedances is believed to be a process wastewater line that conveys chromium rinse water from the tin and chrome electroplating operations to the Chrome Treatment Plant. The downgradient groundwater samples regularly collected at the Tin Line Trench SWMU from 2019-2022 demonstrate attenuation of hexavalent chromium to concentrations below the Great Lakes Initiative surface water standard in site groundwater prior to reaching the downgradient property boundary.

J-2b No Releases


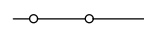




Future data collected from the Tin Line Trench SWMU in accordance with the above Workplan approved by IDEM will be used to evaluate whether releases have occurred.

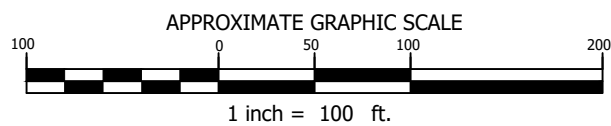
Attachment J – Corrective Action for Solid Waste Management Units

FIGURES



LEGEND

-  EXISTING BUILDING
-  EXISTING FENCE
-  BURNS DITCH
-  TIN LINE TRENCH
-  TLT-1 EXISTING TEMPORARY MONITORING WELL LOCATION (MARCH 2006)
-  TLT-7 TEMPORARY MONITORING WELL LOCATION (FEBRUARY 2018)



PREPARED FOR:
UNITED STATES STEEL



SWMU LOCATION MAP

UNITED STATES STEEL - MIDWEST PLANT
PORTAGE, IN

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