



# REPORT

## COMPLETION REPORT FOR PHASE 1 INTERIM ACTION AT THE FORMER SATRALLOY SITE

Mingo Junction, Ohio

**Submitted To:** Ohio Environmental Protection Agency  
2195 Front Street  
Logan, Ohio 43138

**Submitted By:** Cyprus Amax Mineral Company  
333 N. Central Avenue  
Phoenix, Arizona 85004

**Prepared By:** Golder Associates Inc.  
18300 NE Union Hill Road, Suite 200  
Redmond, WA 98052 USA

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## 1.0 INTRODUCTION

This report documents interim action activities for the Former Satralloy Site (Site) located at 4243 County Road 74 in Mingo Junction, Ohio. The Site includes an abandoned ferro-alloy chromium mill on approximately 333.5 acres of land with large stockpiles of slag. The Site is located in Cross Creek Township, Jefferson County, Ohio, approximately four miles south of Steubenville. The Site is bordered on the north, west, and south by Cross Creek, a perennial stream that empties into the Ohio River. The Site was purchased by Cyprus Amax Minerals Company, Inc. (Cyprus) in May 2010.

### 1.1 Background

The Site contains two production mill buildings, an office building, baghouses, ancillary support buildings, and water and wastewater treatment buildings. The mill produced chromium and ferrochromium from chromium ores by smelting in four electric arc furnaces housed in the two mill buildings. The furnaces were shut down in 1982 when primary ore processing operations ceased.

A Consent Order and Preliminary Injunction (COPI) (State of Ohio, 2010) between Cyprus Amax, Chemetall Foote Corporation, and the State of Ohio to perform a Remedial Investigation / Feasibility Study (RI/FS) for the Site was entered on November 3, 2010. The COPI required certain interim action activities related to baghouse dust and site security.

Some interim action activities were performed in 2010 with prior consultation with the Ohio Environmental Protection Agency (OEPA) before the COPI went into effect. Subsequent interim action activities have been performed in accordance with the Interim Action Workplan (IA Workplan; Golder 2012) approved by the OEPA on April 25, 2013 (Appendix A) and Amendments 1, 2, 3, and 4 (Appendix B) also approved by OEPA (Appendix A). Interim action activities included work in addition to that required by the COPI.

### 1.2 Summary of Interim Action Activities

Interim action activities were performed between May 2010 and August 2017 as follows:

- May and June 2010 – Golder Construction Services – Initial security measures at the Site and initial safety measures for mill buildings.
- June 2013 through July 2014, and August through October 2014 – Golder Associates Inc. (safety oversight and construction management); Neumeyer Environment Services, Inc. (Neumeyer) (Contractor) – Initiation of work per the IA Workplan. Work was suspended in 2014. A safety stand-down occurred between July and August 2014.
- August 2016 to February 2017, and July and August 2017 – Golder Associates Inc. (General Contractor, construction management, safety oversight); NorthStar Demolition and Remediation, L.P. (Contractor, subcontracted to Golder) – Completion of interim action. Work was suspended in February 2017 due to unusually wet and muddy Site conditions, and resumed in July 2017 when Site conditions improved sufficiently.



Interim action work conducted in 2010 was performed in consultation with OEPA prior to the COPI.

The IA Workplan included building demolition. However, building demolition is not required by the COPI and Cyprus has chosen to defer demolition until final remediation.

Activities specified in the IA Workplan (excluding demolition) are:

- Re-establish a rail spur into the Site to support interim actions and future remediation activities. Completion of the rail spur is required before any materials can be shipped off-Site.
- Sample and analyze specified piles (Drawing IAR-210) assumed by OEPA to be potentially subject to hazardous waste regulation (i.e., the “actively managed” piles) to determine which, if any, would be managed as hazardous waste or which contain Asbestos Containing Materials (ACM).
- Establish stockpiles for:
  - Overburden soil from the clean soil Borrow Area.
  - Vegetated soil from clearing and grubbing.
  - Chipped vegetation.
- Remove and dispose ACM within the buildings off-Site. Transite that is part of the buildings remains until demolition.
- Collect baghouse dust and other dust in and around the mill buildings known or suspected to contain elevated concentrations of chromium and/or lead into a single covered and fenced staging area within the Site.
- Dispose of miscellaneous wastes, litter and debris, including abandoned rail ties from former rail spurs, at appropriately permitted off-site facilities. This will include removing exposed debris in the Former Landfill, but will not include excavating into the Former Landfill.
- Repair and/or upgrade Site roads.
- Implement stormwater controls per the approved Storm Water Pollution Prevention Plan.
- Amendment Nos. 1 and 3 to the IA Workplan covered changes to the design and location of the baghouse storage area from that specified in the original Workplan.
- Amendment No. 2 addressed handling of dust on flat roofs.
- Amendment No. 4 added:
  - Removal of PCB-impacted soil and concrete near the Electrical Building.
  - Permitted filling of Waterbodies in the Lowlands - Three waterbodies identified as federally jurisdictional by the U.S. Army Corps of Engineers (Corps) were filled so they will not interfere with future remedial action.



## 2.0 2010 INTERIM ACTIONS

The following interim actions were performed in consultation with OEPA between May 17 and July 23, 2010:

- Instituted security personnel on the Site 24 hours/day, 7 days/week. This security presence continues to date.
- Erected warning/no trespassing signs at 100-foot intervals along the entire Site property line.
- Installed fencing and/or guardrails along the boundary of the plant area adjacent to County Road 74 to inhibit access to the Site.
- Installed guardrails and/or other physical barriers at remote access locations of the Site.
- Installed fencing around Site buildings to control access to the buildings prior to demolition.
- Mitigated selected high-risk conditions in the mill buildings to increase safety for the initial phases of regulated materials abatement and building demolition.

In addition, an isolated wetland in the Lower Rail Spur was filled in March 2012 under an OEPA permit in preparation for rail spur construction.

Prior to beginning site work, Golder:

- Received a preliminary road rating of the bridges into the site from Jefferson County.
- Requested a public utility locate prior to installing fence along County Road 74.
- Obtained Occupancy Permits from the State of Ohio for two construction trailers brought onsite.

### 2.1 Site Perimeter and Interior

- Permanent chain-link fence and steel guard rails were installed around the property boundaries to restrict Site access to motor vehicles, ATVs and pedestrians. Included installation of vehicle gates at the main gates to the support, trailer and parking areas and along the lower railroad spur.
- Installed "No Trespassing" signs on the perimeter fence and on posts installed around the Site.
- Installation of chain-link fence and steel guard rails, and construction fence panels around various locations on the interior of the Site to restrict access to motor vehicles and pedestrians.
- Chain-link fence and construction fence panels to secure Site buildings and limit access into the buildings.
- Installed silt-fence and BMPs around Site wetlands.

### 2.2 Building Interiors

- Accessible building openings were fenced off using orange construction fencing.
- Installed and secured steel plates over openings in the building floors, or fenced off using orange construction fencing.
- Removed or marked low-hanging obstructions with construction fencing, or spray painted to with high-visibility paint.



- Missing hand-rail sections were fenced with construction fencing.
- Missing stairway hand rails throughout the North and South Mill Buildings were replaced with metal chain.

## 2.3 Additional Activities

- Certified land survey of the site boundaries.
- Ditch rework along County Road 74 prior to fence installation.
- Selected clearing to facilitate access to remote Site areas (e.g., for sampling).
- Placement of steel plates over manhole and sump openings around the Site.
- Preparation for future work:
  - Preparation of a primary support area for construction trailers and parking
  - Installation of two 30-foot construction trailers as Site office
  - Arranged 400-amp electrical service
  - Arranged land-line telephone service



### 3.0 2013 - 2014 INTERIM ACTIONS

A Golder team in conjunction with a Cyprus consultant (Soren Suver) comprised the Site management and health and safety team during this mobilization. Neumeyer Environmental Services, Inc. (Neumeyer) of Pittsburgh, Pennsylvania was the primary contractor. Neumeyer used some subcontractors for specialized activities. Mobilization occurred in June 2013 and work progressed until July 2014, when a safety stand-down was initiated. The team remobilized to the Site in August to complete some activities and prepare the Site for shutdown. The following interim actions were performed during this period:

- Reconstructed the rail spur from the Wheeling & Lake Erie Railway mainline onto the Site to re-establish capability for rail transport to and from the Site to support interim action and future remediation activities.
- Sampled and analyzed specified piles assumed by OEPA to be potentially subject to hazardous waste regulation (i.e., the “actively managed” piles) to determine which, if any piles, would be managed as hazardous waste or as ACM. Based on sampling, the piles were determined to be non-hazardous and non-ACM.
- Baghouse dust and other dust in and around the mill buildings was collected, bagged and staged inside the North Mill Building’s High Bay dust staging area.
- The following structures were demolished:
  - Lab Building
  - Slurry plant
  - Wooden cooling water towers
  - Wastewater Treatment Plant
- Disposal of miscellaneous wastes, litter, and debris (including abandoned rail ties from the old rail spur) at the appropriate permitted disposal facilities.
- Surficial debris from the Former Landfill was removed and disposed off-Site.
- Removal and off-site disposal of ACM materials other than transite roofing and siding on the buildings.
- Safety hazards inside of the remaining structures have been mitigated and the exterior surfaces of the structures have been barricaded.
- Site roads were repaired and/or upgraded as needed.

### 3.1 Site Security and Safety Hazard Mitigation

Prior to beginning abatement work, a number of existing safety concerns were addressed at various locations and structures around the Site. Perimeter fencing and guard rails were installed with signage to prevent and deter trespassers. Security staff, which was hired during the 2010 site work, maintained a presence on the Site 24 hour/day, 7 days/week. Security was to man the main Site entrance and to patrol the Site. The security staff were trained and have received annual refresher training on the Site-specific health and safety requirements. New officers added to the security force are given initial Site orientation and health and safety training before beginning security at the Site. The following subsections detail the exterior and interior safety items that were addressed during 2013-2014 work.



### 3.1.1 Exterior Safety Mitigation

During the 2013-2014 phase of work, additional safety hazards were mitigated throughout the Site and on the interiors of the Site buildings. The safety controls included:

- Open holes in the building's perimeter walls were sealed using reinforced plastic sheeting secured by "sandwiching" with a wooden frame on the interior and exterior of the building opening.
- 8-foot tall, chain-link fencing was installed around the perimeter of structures in locations where not previously installed. Where openings existed in the buildings that were below the 8-foot mark, wire-mesh was installed in conjunction with reinforced plastic sheeting.
- Temporary fencing was installed around the perimeter of baghouses once work in these areas was completed to exclude people from passing under the baghouse.
- Jersey barriers were installed along the two outside edges of the rail loading/unloading ramp installed during construction of the new rail siding. A metal swing gate was installed at the top end of the ramp to prevent falls.
- The slag pile to the southeast of the support zone was graded to flatten the side slopes to eliminate a falling hazard.
- Orange construction fencing was installed at various locations around the Site to indicate safety hazards.
- Safety berms were installed along Site access roads and drop-offs.
- 4-foot high chain link fencing was installed around the deep rail culvert inlet/outlet installed at the new rail spur.
- Demolition of small ancillary structures, backfilling of below grade areas and grading to surrounding ground surface to eliminated hazards.
- Removed sections of stairways in the North Mill Building (NMB), South Mill building (SMB) and around the ore-bin rail sections at the NMB and SMB to eliminate the pathways for entry to restricted areas.

### 3.1.2 Interior Safety Mitigation

Existing safety hazards were mitigated throughout the on-Site building interiors. The following controls were installed to address safety concerns in addition to those installed during the 2010 mobilization. They included:

- Open holes in the floors not previous covered were covered with thick plywood or metal plates and/or barricaded with fencing.
- Any missing hand-railing and kick plates not previously fixed were installed.
- A concrete transformer room in the NMB tested positive for PCB's and was barricaded off and hazard warning signs were installed.
- Metal obstructions were removed by cutting or torching and included overhead piping, duct work, metal brackets, and rebar protruding from the ground.
- Buildings were dewatered and controls were installed to prevent water and depositional soils from entering the buildings.



### 3.2 Rail Spur Construction

Upon mobilization to the Site, Neumeyer began work on removing the existing degraded rail spur and re-constructing a new spur into the Site from the W&LE Railway main line. The new rail spur was designed by Vanasse Hangen Brustlin, Inc. (VHB) of Boston, Massachusetts.

Neumeyer performed the subgrade and preparatory earthwork for construction of the new spur which included:

- Clearing and grubbing.
- Excavate, fill, and compact to grade.
- Construct drainage ditches and swales, install drain pipe 18-inch corrugated drain pipe in the ditches.
- Placed, graded, and compacted the rail bed sub ballast (subgrade stone).
- Installed geotextile, geogrid and 12-inches of track ballast (stone) on which to construct the rail spur.

Neumeyer subcontracted with Wintrow Construction Corporation (Wintrow) to install the rail components and to complete construction of the rail spur.

Wintrow completed the following:

- Rail placement, anchoring, and alignment.
- Installation of the #8 switch and rail scale.
- Distributing, regulating, and tamping of ballast to final grade elevations.
- Any repairs or modifications associated with the track.

A final inspection by Vanasse Hangen Brustlin, Inc. (VHB) was completed on May 7, 2014 and a punch list of remaining items was generated. Construction activities were completed by Wintrow in September 2014. A final acceptance letter for the rail spur construction was received from W&LE.

### 3.3 Specified Miscellaneous Soil and Debris Piles

Stockpiles of miscellaneous soil and debris were located around the Site when the 2013-2014 IA Site work began. The OEPA assumed that certain “actively managed” piles were potentially subject to hazardous waste regulation. Although Cyprus disputed that characterization, it agreed, as part of the IA action under this workplan, that the specified “actively managed” piles would be sampled and analyzed to determine which, if any piles, would be managed as hazardous waste or as ACM. Representative composite samples were collected from these piles and analyzed by the Toxicity Characteristic Leaching Procedure (TCLP) for selected metals. In addition, materials in the piles suspected of containing asbestos were sampled and analyzed for asbestos.



The analytical results on “actively managed” pile samples demonstrated that these piles were non-hazardous and did not contain ACM. Therefore, these piles will be managed on-Site.

- North Mill Building Piles - There were two piles that were on or near a concrete slab north of the NMB. These two were tested and determined be non-hazardous. These piles were used as backfill on the east edge of the bag staging area concrete inside the NMB High Bay.
- South Mill Building Pile - There was a large pile of soil inside the SMB. This pile was tested and determined to be non-hazardous. Chromium-containing dust was removed from the surface, placed in super-sacks and staged in the NMB Dust Staging area. The remainder of the pile placed on the south slope outside of the SMB.
- Other Actively Managed Piles - As shown on Drawing IAR-210, there are piles located to the southwest of the South Mill Building where interim action activities were conducted. These piles were left undisturbed in place as is and no activity occurred at the piles.

### 3.4 Site Stockpiles

#### 3.4.1 *Vegetated Soil from Clearing and Grubbing*

Stockpiles of vegetative soil removed during these activities were established east of the NMB as shown on Drawing IAR-220. Soil in this stockpile was used to cover Wetland E during the 2016-2017 IA Site work.

#### 3.4.2 *Chipped Vegetation from Clearing and Cooling Water Tower Wood*

Neumeyer used a large industrial wood chipper to pulverize the various piles of wooden debris generated throughout to 2013-2014 phase of work. Vegetative debris accumulated from clearing and grubbing was stockpiled in the northern parcel of the NMB area between the rail spur and County Road 74. This vegetation was chipped in-place and stockpiled onto underlying geotextile.

Wood construction debris generated during demolition of the Cooling Water Towers was left near the demolition area and was chipped in-place and stockpiled onto underlying geotextile just north of the towers' former foundations. The wood debris from the cooling towers was tested and determined to be not impacted, and was thus left on Site.

Approximately half of the rail ties removed during re-construction of the rail spur were chipped and stockpiled on geotextile east of the rail spur, the remaining ties were removed from the site intact be rail.

### 3.5 Abatement and Disposal

A summary of the disposal of wastes accumulated during the following tasks was previously provided by Neumeyer.

#### 3.5.1 *Baghouse and Mill Building Dust Abatement*

Piles of baghouse dust and dust from within the mill buildings was collected by Neumeyer in bulk or by use of large industrial vacuum units. This dust is known to have, or was suspected to contain elevated levels





of chromium. The dust was placed into either one cubic yard or ten cubic yard super sacks and stacked in the Dust Staging Area inside of the NMB High Bay.

#### 3.5.1.1 South Mill Building & Baghouse #3

Prior to dust removal, the SMB was sealed with plastic sheeting before abatement work began. Two large industrial dust collectors (vacuums) were installed to create negative pressure inside of the building. The dust collector ran during the duration of Neumeyer's work activities to help remove airborne dust particles.

Dust abatement in the SMB progressed from the upper floors downward until reaching the ground floor. A variety of methods were used to remove the dust from the building's surfaces including vacuuming, brushing, scraping chipping and compressed air. Once accumulated, dust was either vacuumed or shoveled into super sacks. The super sacks were then sealed, transported, and stacked in the Dust Staging Area of the NMB High Bay.

Neumeyer used tracked excavators to remove chromium-containing dust from underneath and around Baghouse #3 outside of the northwest corner of the SMB. The excavated material was placed into a roll-off box modified to load ten cubic yard super sacks. Once loaded the super sacks were sealed, transported and stacked in the Dust Staging Area in the NMB.

#### 3.5.1.2 North Mill Building & Baghouses #1 and #2

Neumeyer was unable to seal all the openings in the perimeter walls of the NMB with plastic sheeting. Some holes in the building's exterior could not be safely accessed, so they were not sealed. Up to three large industrial dust collectors (vacuums) were ultimately installed to create negative pressure inside of the NMB. The dust collectors ran during the duration of Neumeyer's work to help remove airborne dust particles. The number of dust collectors was reduced as the need decreased.

A variety of methods were used to remove dust from the NMB's surfaces including brushing, scraping chipping and compressed air. Once accumulated dust was either vacuumed or shoveled into super sacks. The super sacks were then sealed, transported, and stacked in the Dust Staging area in the NMB High Bay.

Dust abatement in the NMB started at the upper floors and progressed downward. Because of the July 2014 safety stand-down, dust abatement was not completed on the northern end of the second or ground floor, but was stopped before completing the second deck.

Neumeyer used tracked excavators to remove chromium-containing dust from underneath and around Baghouses #1 and #2 located outside and west of the NMB. The excavated material was placed into a roll-off box modified to load 10 cubic yard super sacks. Once loaded, the super sacks were sealed, transported, and stacked in the Dust Staging Area in the NMB.



### 3.5.2 Asbestos Containing Materials

Friable and non-friable ACM were present throughout the buildings in different forms, including: pipe insulation, duct insulation, condensate tank insulation, autoclave insulation, fire doors, arc arrestors, window caulk, roof flashing, and other insulating materials.

Asbestos abatement efforts were self-performed by Neumeyer during the 2013-2014 phase of work. Following regulatory notification(s), the abatement work commenced in April 2014 and continued through August 2014 in the lab building, water treatment building, the pump house and the SMB and the NMB.

An initial notification of asbestos abatement (NESHAP notification) was submitted to the OEPA by Neumeyer. Additional revisions to this notification were submitted to account for daily routine work period changes, quantity revisions, and/or time extensions as required.

During abatement activities, when Neumeyer encountered a suspected ACM, it was not sampled but assumed to be asbestos containing and was disposed of as ACM.

Friable ACM was abated using conventional glove-bag or “wrap-and-cut” techniques (for pipe insulation), or general bulk removal under enclosures. Full negative air enclosures were used where appropriate when handling friable asbestos in accordance with the Project Manual and applicable regulations.

Non-friable asbestos in the form of transite, flashing, and other materials (Class I non-regulated) was abated by using amended water to wet the debris and was managed as ACM debris in accordance with applicable NESHAP and OSHA requirements.

ACM abatement activities were monitored by Neumeyer’s competent person to verify that asbestos removal, handling, reporting, and worker safety procedures adhered to applicable Federal, State, and local regulations, the Project Manual and the Asbestos Abatement Plan approved by Cyprus. Upon completion of abatement efforts within a designated area of a building, Golder and Cyprus completed a clearance inspection consisting of visual observations and Neumeyer monitored and sampled the ambient air for air clearance sampling by Phase Contrast Microscopy (PCM). Upon receiving sample results, Golder and Cyprus provided clearance records stating that the areas were free of regulated ACM and that asbestos fibers in the ambient air were not above regulatory requirements or baseline conditions.

Upon removal, ACM wastes were placed in 1 cubic yard super sacks, sealed, labeled, and placed in lined intermodal container for rail shipment for disposal. If the ACM waste was too large to fit into a one cubic yard super sack it was double wrapped and placed directly into a lined intermodal container. Wastes from self-contained ACM removal (i.e., glove bagging or pipe segments) were wrapped in plastic sheeting and placed in the roll-off boxes. Approximately 300 cubic yards (truck yards) of friable and non-friable ACM



were disposed at the Republic Services Landfill, Saulk Trails, Michigan over the course of eight individual shipments.

### **3.5.3 Waste Oil and Anti-Freeze**

#### **3.5.3.1 Non-Hazardous Equipment Oil**

Oil reservoirs were identified in various pieces of equipment throughout the Site, including gear boxes, motors, overhead cranes, and other smaller equipment. During the environmental decommissioning activities, the oil was drained from each machine by Neumeyer until no free-flowing oil was evident. The oil was drained into 5-gallon bucket and then transferred into 55-gallon drums located at the drum staging area. Each piece of equipment that was drained was subsequently tagged by Neumeyer with the date of draining to indicate no remaining liquid oil.

#### **3.5.3.2 Anti-Freeze**

During abatement activities, a process line containing anti-freeze was discovered. Neumeyer drained the line directly into a 55-gallon drum and then placed it into the drum staging area. Neumeyer contracted with Safety Kleen Systems (Safety Kleen) to remove and dispose of used equipment oil and anti-freeze. The waste oil required one shipment, which was transported off-Site to Safety Kleen's facility in Wheeling, West Virginia.

### **3.5.4 Other Regulated Materials**

Typical regulated building materials (commonly classified as "universal waste") were present throughout the buildings on Site. It had been anticipated that more of these materials would have been recovered, but many of the items originally identified in the Regulated Materials Survey (Lawhon 2007) were not found. It is assumed that a portion of these materials were removed from the Site by trespassers before Cyprus obtained ownership of the Site. Thirteen bags of universal waste were stockpiled in the receiving room of the NMB receiving bay (low bay) for future disposition.

#### **3.5.4.1 Fluorescent and Mercury Vapor Light Bulbs**

Light bulbs were present in fixtures throughout the Site; these bulbs were removed by Neumeyer for disposal. Fluorescent bulbs were placed into a box and the mercury vapor bulbs were placed into a 55-gallon drum. The bulbs were removed from Site by Environmental Quality (EQ) and transported to their disposal facility in Belleville, Michigan.

#### **3.5.4.2 Mercury Waste**

Mercury containing devices were present in some of the Site buildings. When Neumeyer encountered a mercury containing device, it was removed and placed in a designated drum at the drum staging area. On one occasion, free standing mercury was discovered on the walkway outside of the northeast corner of the



Administrative Building. In this special circumstance, the mercury was extracted using a HEPA vacuum. Rather than trying to clean the surface of contact, Neumeyer physically removed a 5-foot section of the concrete sidewalk and placed the concrete in the mercury drum for disposal as mercury waste. Two 55-gallon drums with mercury waste were removed from the Site by EQ and transported to its Belleville, Michigan facility.

#### 3.5.4.3 Lead Containing Materials

Lead flashing was discovered on certain structures throughout the Site. Neumeyer personnel were informed of the lead flashing before mobilizing to the site per the requirement of 40 CFR 1926.62. The lead flashing was removed by Neumeyer and placed into a one cubic yard super sack.

#### 3.5.4.4 PCB Light Ballasts

PCB-containing light ballasts were encountered during decommissioning. When ballasts were unable to be identified as “non-PCB containing” they were presumed to contain PCB. Neumeyer removed the PCB laden ballasts and placed them into a 55-gallon drum stored in the drum staging area until disposal. The drum was transported off-Site by EQ to its Belleville, Michigan facility.

### **3.6 Demolition**

Four structures were demolished during the 2013-2014 Site work after receiving environmental clearance from Golder verifying that regulated materials had been removed and verifying that all utilities were disconnected. Neumeyer proceeded to demolish select structures using mechanical (non-explosive) techniques in accordance with the *Project Manual*, City of Mingo Junction Demolition Permit, applicable codes, worker safety requirements, and their pre-work submittals. A general description of the demolition of select structures that was completed during the 2013-2014 work is provided in the following subsections. No building demolition occurred during the 2016-2017 work.

#### **3.6.1 Laboratory Building**

Prior to mobilization, the Laboratory Building burned down, collapsing the building to the ground and destroying the previously inventoried regulated materials. Neumeyer began work by segregating the remaining materials at the Laboratory Building in May 2013. Any ACM that was discovered was handled in accordance with the Project Specifications and Asbestos Abatement Plan and federal and state regulations. As the materials were gathered, they were transported to designated stockpiles pending disposal. Once the building materials had been removed, the remaining building envelope was demolished and backfilled with soil pile from the SMB ground floor. The backfill material was tracked-walked and graded to match the existing ground surface. Grass seed was spread over the area and was covered with straw for stabilization.



### **3.6.2 Slurry Plant and Associated Stack**

Preparation work for the demolition of the stack began with the precutting to cripple the stack in April 2014. The higher portions of the stack were removed using the 75-ton Grove Crane; the lower portions were handled using excavators. Miscellaneous ACM (loose transite pieces) were collected before demolition in accordance with the Project Specifications and Asbestos Abatement Plan. The scrap metal was sized to reduce the length (sizing) using a shear attachment on an excavator. Once sized, the scrap metal was placed in a scrap metal stockpile to the south of the new rail spur. Concrete foundations were broken to 18-inches below grade and then covered with surrounding soil material. The concrete rubble was placed in a site stockpile for future crushing.

### **3.6.3 Wooden Cooling Water Towers**

Demolition of the Wooden Cooling Water Towers was begun by Neumeyer in June 2014 at the southern tower and finished at the northern tower. Four large cooling fan motors, located on the top of the cooling towers structures, were removed and drained of gear oil in accordance with the Project Specifications prior to demolition of the towers. Metal and wood materials were segregated; metal was taken to the on-Site scrap metal stockpile; and wood was chipped near the towers creating a chipped wood stockpile to the north of the former structures. Concrete from the cooling tower foundations, columns and below grade walls were broken up and placed in the below grade depressions resulting from demolition of the foundations.

The two depressions resulting from the demolition of the cooling towers were backfilled with clean soil from the on Site Borrow Area during the 2016-2017 phase of work. The backfill was placed to approximately 3 feet above the surrounding ground surface, and then the surface was graded to drain. The area was stabilized by hydro-seeding on conclusion of the 2017 work.

### **3.6.4 Wastewater Treatment Plant**

The Wastewater Treatment Plant was formerly located on the eastern side of county Road 74 across the road from the main plant. Neumeyer began demolition work in late June 2014 by starting at the northwest corner of the building and working to the south. Three tanks were also a part of the demolition process. Scrap metal from the demolition was transported to the Site scrap stockpile. Clean block and brick from the structure was used to backfill the subfloor area, a treatment basin and a lagoon pit to the north (only to the bottom of the invert elevation). The foundation depression was then backfilled. After grading was completed, the area was seeded, fertilized and covered with straw. An Ohio state inspector visited the demolition site on July 7, 2014 and confirmed that demolition was completed to their standards.

## **3.7 2013-2014 Earthwork and Site Restoration**

Neumeyer completed earthworks and Site restoration (temporary) at the property in areas as indicated by the Project Specifications and in any areas designated by Construction Management. A summary of these



activities is provided in the following subsections. Additional earthworks, site restoration and stabilization was performed during the 2016-2017 IA Site work.

### **3.7.1 Site Roads**

Site roads were maintained by Neumeyer throughout the duration of the 2013-2014 phase of work. Roads that were constrained by overgrowth were widened and made more accessible. Some of the vegetation was left in place alongside of the road but most was taken to the on Site organic stockpile for chipping. Berms were constructed along the outside edge of the Plateau Road (#10) leading to the upper plateau area. During the 2016-2017 Site work additional clearing of encroaching trees and vegetation was removed and the center access road to the plateau was significantly improved by grading and installing surface water runoff controls. During dry conditions, Site roads were watered using the water truck for dust control.

### **3.7.2 Stormwater Controls**

Existing stormwater catch basins, pipes, culverts and related controls were left as-is during the 2013-2014 Site work because these controls may be incorporated into the final surface water management system for the Site. Orange construction fencing was installed around catch basins or drop structures to prevent injury to personnel. Other subsurface utilities such as pipes, electrical conduits, water lines, and the like were left in-place unless they presented an immediate hazard.

### **3.7.3 SMB Slope Erosion**

There was significant erosion to the slope behind and west of the SMB. The eroded soils were washed into the northeast corner of the SMB. This area was labeled as “wash-in soil”. To prevent this from happening again, up-gradient stormwater controls were installed during the 2013-2014 work to direct water to newly created drainage channels along the SMB Lower Access Road (#15) behind the SMB. At the toe of the eroding slope, large concrete blocks were installed and keyed into existing soil. The erosion was repaired by backfilling with soil, gravel, and riprap. The material was compacted in lifts as backfill was placed using a vibrating compactor attached to an excavator. Once the area had been repaired it was covered with a surficial layer of riprap for added protection.

## **3.8 2016-2017 Mobilization**

These were two mobilizations in 2016-2017. This phase of work was begun in August 2016, but was suspended in February 2017 because of unusually wet and muddy Site conditions. Re-mobilization occurred in early July 2017 to complete the scope of work for this phase.

Upon returning to the Site in August 2016 and again in July 2017, the safety measures installed during previous periods of work, were inspected, and where necessary, were repaired and/or reinstalled.



### **3.8.1 Safety**

Site workers including Golder, Petra Safety Solutions (Petra), and NorthStar personnel received Site orientation, Cyprus safety training and reviewed the site-specific Health and Safety Plan (HASP) before performing any work on-Site at the beginning of the initial August 2016 mobilization. On May 16, 2017, prior to the 2017 re-mobilization, a pre-work execution safety risk assessment meeting was attended by the key personnel from Cyprus, Golder, Petra, and NorthStar. This meeting assessed the risks associated with the work activities to be completed on-Site and to determine mitigation measures. Site orientation and review of the Site-specific HASP was again reviewed with the entire crew before resuming Site work during the July 2017 remobilization to the Site. Approximately 26,500 man hours were worked during the 2016-2017 mobilization without a reportable injury.

### **3.8.2 Mobilization**

Mobilization began on August 24, 2016. There were access and bridge load limitations on the roads into the Site during all phases of Site work. Heavy construction equipment, such as tracked excavators, roller-compactors, bull dozers, fork-trucks, etc., and bulk materials, such as concrete drop structures, corrugated metal pipe, impacted soil and concrete, etc., required transport to and from the Site using the Wheeling & Lake Erie Railway (W&LE) mainline and the Site rail spur, which was re-constructed during the 2013-2014 mobilization. In order to transport equipment and supplies to the Site, NorthStar purchased two flatbed railcars and leased a siding to load and unload the rail cars at the W&LE rail yard in Mingo Junction, approximately 3.5 rail miles east of the Site. Rail transport required close coordination with W&LE to arrange track inspections of the rail spur, secure loads then transport by locomotive from the rail yard to and from the Site.

### **3.8.3 Temporary Construction Facilities**

NorthStar utilized temporary construction facilities that would be needed during the 2016-2017 Site work. This included using the existing Administration Building, which was used for office space, crew area, and storage of small equipment and supplies. Prior to use, NorthStar vacuumed, wet washed, and disinfected the interior using a bleach solution. NorthStar installed a new door to replace a badly deteriorated door at the southwest corner of the Administration Building. NorthStar did not use the existing Pump House as a temporary facility.

Upon initial mobilization to the Site, NorthStar mowed and weed-wacked the grass and vegetation in the Support Area, the west side of the Administration Building, the contractor parking lot, and the area between the property fence line and County Road 74. Mowing of these areas was performed approximately once a month during the growing season to keep the vegetation height less than 6 inches. At the end of the 2016-2017 mobilization, one construction trailer was demobilized from the Site.





### 3.9 Abatement of Asbestos Containing Materials

Asbestos abatement during this phase of work consisted of abatement of friable asbestos in the Electrical Building and wrapping and disposal of bundles of transite panels from inside the Maintenance Bay of the NMB; these panels were removed, but not disposed of during the Neumeyer phase of IA work.

A State of Ohio Department of Health inspector, Allan Richards, made a Site visit on November 17, 2016 to review that the documents required for asbestos abatement were on-Site and in good order. The findings of his report were that all required documents were on-Site, except one site worker needed a physician's opinion that he was cleared to perform asbestos abatement. That documentation was subsequently provided to the inspector.

#### 3.9.1 Electrical Building ACM Abatement

ACM abatement was performed inside the Electrical Building during the 2016-2017 mobilization. A regulated materials survey performed in August and December 2006 by Lawhon & Associates, Inc. (Lawhon 2007) indicated that friable asbestos dust was present throughout the Electrical Building and was assumed to be on all surfaces in the building. The building had been secured to prevent unauthorized entry until NorthStar began abatement work on inside.

Prior to any work inside the Electric Building, NorthStar sealed the exterior openings and the roof polyethylene sheeting and tape/adhesive spray to install critical barriers. These barriers installed on exterior openings including doorways, non-fixed windows, roof and siding penetrations, doors, drains, ducts, grills, skylights, etc.

An attached wood framed, three-stage decontamination unit was constructed at one of the two doors on the first floor of the building. The decontamination unit consisted of a clean-room (for changing street clothes), shower room (for personal decontamination), and equipment room (contaminated area) for storage of equipment. An attached wood framed waste, load-out unit, consisting of two separate chambers, was constructed at the other first-level door. The load-out unit was used to remove ACM from the building.

A negative air blower was installed in a rollup door opening on the second floor of the building to maintain negative pressure inside the building. The blower utilized High Efficiency Particulate Air (HEPA) filters. The air filtration units were continuously operated from the time the critical barrier construction was complete through receipt of final clearance air testing results. The blower maintained a minimum of four air exchanges per hour within the enclosed building.

Hand-wet removal methods and double bagged or double wrapped (with polyethylene sheeting) were used for ACM abatement. Following gross-removal of debris, surfaces in the building interior were cleaned





utilizing wet-methods, scraping, and wire brushing. Dry dusting/sweeping was not used in the Electric Building.

ACM abatement was performed in accordance with the specifications and federal, state, and local regulations. NorthStar abated ACM and removed all trash and debris from the building interior. The ACM and debris was placed in one cubic yard super sacks and shipped for disposal at the ACM permitted Advanced Disposal Services Greentree Landfill in Kersey, Pennsylvania.

Upon completion of abatement, a visual clearance inspection was conducted by the Petra/Golder Health and Safety Officer, a Certified Industrial Hygienist (CIH) and a CIH from Koch Environmental Health, Inc. (KEHI), subcontracted to NorthStar. KEHI also performed clearance air sampling which confirmed that abatement had been completed. A visual Inspection was also performed signed by NorthStar Project Manager and the Golder Construction Manager.

Once cleanup and ACM abatement was completed in the Electrical Building and clearance air sampling was complete with favorable results, the personal protective equipment (PPE) requirements to enter the Electrical Building were downgraded to Level D.

### **3.9.2 ACM Abatement in the NMB Maintenance Bay**

Approximately five bundles of non-friable transite (ACM) panels and six 1-cubic yard super sacks of mixed ACM waste were removed from the NMB Maintenance Bay and disposed of with other ACM from the Site. The panels had been removed during the 2013-2014 Site work but were not disposed of at that time. Although the transite panels had been previously double wrapped and labeled, NorthStar double rewrapped with 12-millimeter thick polyethylene sheeting and relabeled the bundles. The bundles and super sacks were labeled as ACM with permanent markings. The ACM from the NMB Maintenance Bay was transported for disposal at Advanced Disposal Services, Greentree Landfill in Kersey, Pennsylvania, a facility permitted to accept friable and non-friable ACM.

### **3.10 Abatement of Other Regulated Materials**

During the 2016-2017 mobilization, NorthStar and Golder inspected the interior of the NMB, SMB, and the Administration Building for regulated materials not removed during the 2013-2014 mobilization. NorthStar also performed a check of accessible equipment inside the NMB and SMB structures to drain any residual oil from the equipment. There were no transformers in either the NMB or SMB. The equipment check produced approximately 5-gallons of residual oil from accessible equipment. One 5-gallon bucket of oil and one 5-gallon bucket of oily rags were disposed of as PCB containing materials by Safety-Kleen Systems, Inc., a subcontractor to NorthStar, at the Spring Grove Resource Recovery, Inc., Cincinnati, Ohio facility on February 20, 2017.



High intensity light ballasts were removed from the Maintenance Bay of the NMB that were not removed by Neumeyer during 2013-2014. The ballasts were drummed and disposed of by NorthStar at the Rocky Mountain Recycling facility in Denver, Colorado.

Potentially regulated materials removed during the 2016-2017 site work for off-site disposal included:

- High Intensity Lamp ballasts (42 non-PCB containing), disposed of at Rocky Mountain Recycling, Commerce City, Colorado on October 19, 2017 at a facility approved by Cyprus.
- Equipment Oils (treated as PCB containing), approximately 5 gallons, treated as PCB containing, along with a 5-gallon bucket of oily rags used while draining oil, disposed of at Safety-Kleen at the Spring Grove Resource Recovery, Inc., Cincinnati, Ohio facility on February 20, 2017.

### 3.11 Chromium-containing Dust

At the beginning of IA work during 2013-2014 chromium-containing dust was present in both mill buildings. Removal of chromium-containing dust from the interior of the SMB was completed during the 2013-2014 mobilization and had begun, but was not completed in the NMB. The 2016-2017 scope for work included completing a limited amount of cleaning of the NMB.

Three areas of cleanup of chromium-containing dust in the NMB were included in the 2016-2017 mobilization. These areas included:

- Upper floors
- Interior silos
- Ground floor dust stockpiles

#### 3.11.1 NMB Upper Floors

Removal of chromium-containing dust from the upper floors of the NMB was started but not completed by Neumeyer during the 2013-2014 phase of work. The scope of work during the 2016-2017 mobilization was to remove chromium-containing dust from readily accessible areas of the upper floors of the NMB without the use of lifts, scaffolding, or ladders.

Dry physical methods were used to remove visible, chromium-containing dust. This included using industrial vacuum cleaners with High-Efficiency Particle Absorbing (HEPA) filters, and to a lesser extent sweeping, and wiping with rags.

NorthStar completed cleaning dust from the mezzanine (conveyor room floor), second floor, and stairways of the NMB. Removal of chromium-containing dust from the upper-most (3<sup>rd</sup>) floor, portions of the lower concrete floors, and the stairway at the northeastern corner of the building, which are directly exposed to the underside of the NMB roof, roof trusses and/or roof window cupolas was deleted from the scope of work



because ongoing dislodgement of accreted dust from the underside of the roof continuously falls to the floors below. This would re-impact these areas.

The dust removed from upper floors was loaded into super sacks, transported to the NMB High Bay and stacked in the Dust Staging area.

Cleanup was visually verified by the Golder Construction Manager (CM) and NorthStar Project Manager (PM). A *Certificate of Visual Inspection* was signed by NorthStar PM and Golder CM.

### 3.11.2 NMB Silos

Chromium-containing dust was removed from the interior of four silos inside the NMB. Chromium-containing dust had caked in the lower portion of the silos with varying volumes. NorthStar used hand tools, HEPA vacuums, long rods and heavily weighted ropes to dislodge the caked dust from the inside the silos. The silos were accessed from both bottom and top entry points. No one entered the confined space of the silos for cleaning. Fall protection was worn when working at the top of the silos. The dust removed from the silos was loaded into super sacks using hand shovels and a skid steer. The sacks were transported to the NMB High Bay and stacked in the Dust Staging area. The conveyor room and the remainder of the mezzanine were cleaned of dust once the silo cleaning had been completed.

Cleanup was visually verified by the Golder CM and NorthStar PM and a *Certificate of Visual Inspection* was signed by both NorthStar and Golder.

### 3.12 NMB Dust Stockpiles

Three piles of bulk chromium-containing dust and debris were located on the ground floor of the NMB Casting Bay, which Neumeyer did not finish removing during the 2013-2014 stage of work. Removal and bagging of this dust was included in the scope of work for the 2016-2017 phase. One relatively large pile of dust and debris was located at the southern end of the building; two smaller piles of primarily dust were located near the northern end of the building.

The dust piles were scooped up using a front-end loader or a skid steer equipped with a bucket and end dumped into a fabricated super-sack loading hopper to fill super sacks with dust. Large debris, bricks, rebar and other debris was removed from the dust before being loaded into the super sacks. The dust was loaded into either a 1-cubic yard or 10-cubic yard super-sack. Once filled, the sacks transported to the dust staging area in the NMB High Bay, measured to determine the volume, labeled, and stacked in the staging area. Approximately 548 cubic yards of dust was removed from the NMB ground floor during the 2016-2017 construction season.

Cleanup was visually verified by the Golder CM and NorthStar PM and a *Certificate of Visual Inspection* was signed by NorthStar and Golder.



### 3.13 NMB Clearance Air Sampling

Once removal of chromium-containing dust was completed in the NMB, clearance air sampling was performed by the Golder/Petra CIH. The results indicated that an overall PPE down grade was achieved. Prior to cleanup and clearance air sampling, Level C PPE was required to enter the NMB. Once the cleaning and clearance air sampling were complete, with favorable results, the PPE requirements to enter the NMB were downgraded to Level D.

### 3.14 Removal of PCB-Impacted Soil and Concrete Foundations

Soils and concrete impacted by polychlorinated biphenyls (PCBs) were found in areas of the decommissioned Electrical Switchyard, removal of the impacted materials was beneficial to achieving the requirements of the COPI. Removal and off-site disposal of PCB-impacted material was added to the IA Workplan under Amendment 4. The work was conducted pursuant to the *Workplan & Notification for Self-Implementing PCB Cleanup – Former Satralloy Site* (Golder 2016), which was approved by United States Environmental Protection Agency (USEPA) on May 26, 2016. The PCB cleanup activities are summarized below; a more detailed description of the activities, and results thereof, are presented in a separate report submitted to USEPA and OEPA titled *Cleanup Completion Summary Report for Self-Implementing PCB Cleanup Former Satralloy Site* (Golder 2017).

Concrete sampling conducted in September 2014 and soil sampling done in June and August 2015 indicated that PCB impacted soil and concrete foundations were present at the northwestern end of the Electrical Switchyard. The location of the PCB cleanup was confined to a relatively small area (approximately 1,400 square feet) of the switchyard, where electrical transformers were formerly located. These transformers were removed by the (USEPA) as part of a Site-wide PCB removal action in the 1990s. The objective of the self-implementing cleanup was to remove PCB-impacted soil and concrete with total PCB concentrations exceeding 2 mg/kg for soil.

The soil sampling conducted in the switchyard in 2015 indicated a limited area exceeded the US EPA cleanup level of 50 mg/kg (ppm) surrounded by a larger area where PCB concentrations were less than the 50 mg/kg cleanup level. Concrete transformer foundations in the switchyard were also found to contain surficial PCB concentrations <50 mg/kg. PCB-impacted soil was categorized into two groups: one with PCB concentrations >50 mg/kg were designated as Level A for disposal at a Toxic Substances Control Act (TSCA) facility permitted to receive PCB waste; and another group with PCB concentrations below 50 mg/kg were designated as Level B for disposal as non-hazardous waste.

Excavation areas were delineated on the construction drawings based on the Level A and Level B categories. The boundaries of the two areas were surveyed in the field in preparation of excavation, which was begun on October 26, 2016 and completed on December 29, 2016.



NorthStar established separate excavation grids within the Level A and Level B areas for sequencing, soil tracking, waste characterization sampling, and disposal. The excavation grids had a maximum of 10 cubic yards of excavated soil per grid.

After excavation was completed, Golder performed verification sampling of the excavation bottom and sidewall to verify that the cleanup level of  $< 2$  mg/kg had been achieved. Verification sampling was performed in grids conforming to 40 CFR § 761.283; composited in accordance with 40 CFR § 761.289 and collected using a device that conforms to the specifications in § 761.286.

Verification samples were shipped by overnight air to TestAmerica in North Canton, OH under standard chain-of-custody protocols. If a verification sample exceeded the cleanup criteria, additional excavation was performed in that area and verification sampling was repeated. Four rounds of excavation and verification sampling were required to achieve the Site clean-up criteria.

NorthStar placed excavated soils directly into double-thickness, lined super sacks of approximately 1-cubic yard capacity during excavation. Individual bags were labeled with a unique identification number corresponding to the grid and a bag number dug from that grid. Once the super sacks were filled, they were sealed, labeled, measured to determine the volume and staged for waste characterization sampling. The soil placed in sacks from individual grids was treated as one group for waste characterization sampling, disposal and documentation. This information was recorded on tracking log sheets.

The filled sacks were staged on reinforced, 10-millimeter plastic sheeting and covered with heavy (14 millimeter) polyethylene tarps for waste characterization and profile sampling. A composite sample was collected from each group of sacks from individual excavation grids. The waste characterization samples were submitted to the TestAmerica-Pittsburgh, PA laboratory under standard chain-of-custody protocols. The soils with total PCBs  $> 50$  mg/kg were designated as Level A soils and soil with total PCBs  $< 50$  mg/kg were designated as Level B. The sample results represented all the sacks in each grid and all the sacks from the grid were treated as one group.

Once all the bags were sampled and characterized, they were loaded and secured on flat-bed rail cars for transport to disposal. The filled sacks were transferred from the rail cars into box trucks at the W&LE Mingo Junction rail yard for truck transport to the disposal facility. Trucking for disposal was begun on January 12, 2017 and completed on February 6, 2017.

The soils designated as Level A were disposed of at Wayne Disposal, Inc. of Belleville, Michigan a Resource Conservation and Recovery Act (RCRA) permitted hazardous waste disposal facility permitted to receive PCB impacted waste. This facility was formally known as the Environmental Quality (EQ) Company. Handling, storage, transport, disposal, documentation, and other requirements conformed to the TSCA and implementing guidance for PCBs.



The Level B soils were located below and surrounding the Level A soils. Although Level B soils were characterized as non-hazardous, they were also disposed of at Wayne Disposal due to scheduling and coordination issues with the Greentree Landfill. Concrete foundation debris, which was characterized as non-hazardous, was also disposed of at Wayne Disposal.

After excavation was complete and verification samples indicated that the cleanup criteria had been achieved, the cleanup excavation was backfilled with soil from the on-Site Borrow Area and compacted to a firm and unyielding condition.

### 3.15 Wetlands Fill and Stormwater Piping

The U.S. Army Corps of Engineers (Corps), Pittsburgh District Office authorized placement of fill materials in certain streams and wetlands on the site authorized pursuant to Clean Water Act Section 404 Nationwide Permit No. 38 (NWP 38). The proposed filling of wetlands was presented in a Preconstruction Notification (PCN) submitted to the Corps in June 2015 and updated in February 2016. This work consisted of storm drain pipe and filling of three wetlands on the Site:

- Wetland D
- Wetland E
- Wetland K

Wetlands D and E convey surface water from the south-central portion of the former mill area through an existing discharge to Cross Creek. Wetlands E drains to Wetland D through a 36-inch corrugated metal pipe (CMP) storm drain. Water from Wetland D flows to a drop structure, through an existing culvert under County Road 74 and the discharges into Cross Creek.

Wetland K was an isolated open channel wetland stream located on the hillside north of the NMB. Prior to filling, the wetland drained into an existing headwall structure on the upstream of a 36-inch CMP that extends several hundred feet to the southeast, where it passes under County Road 74 and discharges into Cross Creek.

#### 3.15.1 Wetland D

A condition of the NWP 38 for filling Wetland D included preserving (i.e., not filling) the downgradient 0.021-acre portion of the wetland. Filling of the wetland was limited to the portion up-gradient of the preserved wetland. Installing stormwater piping and filling the wetland involved clearing existing vegetation and excavating accumulated sediments to establish the gradient for the new 36-inch diameter CMP. The CMP was installed in the cleared segment and connecting the upstream end to a new culvert installed up-gradient to Wetland E. The downstream end of the new culvert installed in Wetland D daylights approximately 10-feet upstream of the preserved portion of wetland.



The wetland fill activities involved placing clean fill (from the onsite Borrow Area), compacting and grading the surface and hydro-seeding to stabilize the fill. The fill placed in Wetland D was graded to mound over the length of the newly installed 36-inch CMP with a minimum cover of 30-inches. The side slopes of the fill were graded to flatter than 4 horizontal to 1 vertical (4H:1V). After grading the Wetland D fill area was hydro-seeded.

The approved design drawings and specifications including removing an existing drop structure (catch basin CB-Q) at the down-gradient end of Wetland D and replacing it with a new one. However, NorthStar was able to clean and reuse the existing structure, thus reducing construction impacts to the preserved portion of Wetland D.

### **3.15.2 36-inch By-pass Pipe**

The original specifications called for the cleaning and reuse of the existing 36-inch CMP storm drain pipe from an existing headwall (NW-N) at the upstream end of Wetland D, up-gradient to an existing drop structure (CB-J) at the new culvert installed in Wetland E. Because of cleaning complications and coordination issues related to cleaning of the existing CMP, NorthStar elected to install new 36-inch CMP to by-pass the existing pipe.

The intention of the specifications was to connect the new 36-inch by-pass pipe to existing drop structure CB-J, but because that structure was in such poor condition, the structure was demolished and removed. The new 36-inch by-pass pipe was installed into new catch basin CB-AE, as were the other new CMPs installed in both segments of Wetland E.

The soil excavated for installation of the 36-inch by-pass pipe was reused for backfill of the pipe. Excess soil was placed in the nearby former Cooling Tower depressions, which were demolished during the 2013-2014 phase of work.

Catch basin CB-M outlet was connected to the new 36-inch bypass pipe using a wye connector. The existing 36-inch pipe upstream of CB-M was abandoned in place. Catch basin CB-L was originally believed to be installed in-line with the existing 36-inch CMP, but field verification of existing conditions indicated that this catch basin was off-set approximately 15-feet south of the existing 36-inch pipe. Review of historical drawings of the catch basin indicated that the outlet of CB-L was connected to the existing 36-inch CMP with a wye connection. Examination inside CB-L indicated it was full of water and the connection to the existing 36-inch pipe was completely plugged. CB-L and the connection to the existing pipe was left as found.

The alignment of the by-pass pipe was along the southern half of the Center Access Road, south of the Pump House, between the Main Plant Road (#5) and the Cooling Tower Road (#18). The pipe trench





backfill was compacted with a sheep's foot roller compactor and the Center Access Road was reconstructed on the section.

### **3.15.3 Wetland E**

Wetland E was comprised of two segments, north and south, that were both connected to catch basin CB-AE at the upstream end of the 36-inch by-pass pipe. Both segments of the Wetland E pipe were installed in the wetlands along the base of relatively steep slopes to the west. The south section is comprised of 8-inch diameter perforated CMP pipe that was installed in the former wetland. A 90° riser was installed just inside of the northwest end of the SMB to collect stormwater washed into the northeastern corner of the building from the slope to the west. The wash-in is discussed in Section 5.3 above. Catch basin CB-AB was installed in the approximate middle of the south segment of the new Wetland E pipe. This catch basin was installed to collect surface water flow from the SMB wash-out area discussed in Section 5.3. The downstream (north) end of this segment was connected to catch basin CB-AE.

The north segment of the new Wetland E storm pipe is comprised of 18-inch perforated CMP. The upstream end of this segment starts near a crib-wall at the southwest corner of the NMB. Catch basin CB-D was installed approximately 15 feet downstream from the upstream end of this pipe segment. Non-standard catch basin CB-H was removed during installation of the new pipe on north segment of Wetland E.

Fill placed in Wetland E was obtained from the Borrow Area. The wetland fill was graded to slope gently away from the adjacent steep slope along the western side. The fill was placed in a wedge and compacted using a sheep's foot compactor to a firm and unyielding condition. After placement was complete the fill segments were hydro-seeded.

### **3.15.4 Wetland K**

Wetland K is an isolated wetland stream located on a slope north of the NMB. A new 30-inch CMP culvert was connected to an existing culvert at the upstream head of the wetland. The new CMP was installed in the former stream channel, which was excavated for pipe installation from the existing culvert down slope to an existing culvert near the North Access Road. A new catch basin CB-W and the new CMP were connected to the existing 36-inch culvert that flows several hundred feet to Cross Creek. The new CMP was backfilled using soil excavated for pipe installation and no soil was imported from the Borrow Area. After finish grading, the steeper slopes were stabilized using straw net and the entire disturbed area was hydro-seeded.

### **3.15.5 New Stormwater System Components**

In addition to installing storm drain CMP in Wetlands D and E, new stormwater components were installed upstream of the north segment of Wetland E. The extension of the stormwater system was intended to





replace an old non-functioning porting of the storm system to collect stormwater runoff and convey it through Wetlands E and D pipe to the discharge downstream of Wetland D.

Catch basin CB-A was installed to replace an old non-standard catch basin at the southwestern corner of the NMB on the east side of the NMB Lower Baghouse Road (#7). An 18-inch CMP was installed from catch basin CB-A to catch basin CB-C, which was installed at the top of the steep slope above the north section of Wetland E. An 18-inch CMP was installed down the slope to connect catch basin CB-C to CB-D at the end of the north segment of the Wetland E. Soil excavated to install the catch basins and piping above Wetland E was re-used to backfill around the catch basins CB-A, CB-C, and the pipe trench.

Steel or iron covers were to be installed on existing manholes in the mill area. NorthStar had an off-Site metal shop fabricate steel covers for the existing structures on Site that were to be kept in service. The covers included installing 5-feet x 5-feet, black epoxy painted, steel covers for catch basins #24 (IAR-220) and CB-59 (CB-Q on IAR-260). The intent was to repair and reuse catch basin CB-22 (CB-J on drawing IAR-260), but the structure was in such poor condition that the structure was demolished and removed. NorthStar subcontracted this same shop to fabricate round, 36-inch diameter, open grate, black epoxy painted steel covers for manholes #7, #8, and #23 (see Drawings for locations).

### **3.15.6 Borrow Area**

A Borrow Area, on the slope between the NMB and SMB, was designated as a source for soil to be used for wetland in-fill. Development of the Borrow Area began during the 2016-2017 mobilization and only to the extent necessary as source of fill during this phase of IA work. Development began at the southern end at the intersection of the Center Access Road (Road #4) and the Cooing Tower Road (Road #18). As borrow was used, development progressed upslope to the east and to the north. After the use of the Borrow Area was complete, the surface was graded to a slope to match the adjacent topography and at slope flatter than 4H:1V. After re-grading, the Borrow Area was hydro-seeded.

### **3.15.7 Vegetation Clearing**

Vegetation was cleared during Access Road maintenance and repair, wetland fill preparation, development of the Borrow Area and clearing of an emergency helicopter landing area at the southern end of the Support zone. The vegetative debris was transported to a chipping area east of the SMB to be chipped. NorthStar used a Vermeer BC1000XL, trailer mounted chipper for chipping. NorthStar used the supplier of the chipper to train laborers in proper use of the chipper. The chipped vegetation was left in stockpiles at the Site.



### 3.16 Repair and Maintenance of Site Access Roads

Repair and maintenance of site roads began soon after the 2016-2017 mobilization and was generally sequenced along with the work areas as work progressed. Repair and maintenance included clearing grass and vegetation from the existing road surfaces where necessary; clearing overhanging and side trees and vegetation to widen the roads to a minimum 10-foot width and 20-foot height; provide access for a 4-wheel drive vehicle, at a minimum. The intent of the work performed was to stabilize the site roads, reduce erosion and provide 4-wheel drive vehicle access to the various areas of the site.

Slag was used as a granular surface layer on the Center Access Road from the Gate 3 Road (#3) to the NMB Ore Access Road (#8). Slag was used for road repair where slag was already present.

Maintenance and repair activities included:

- Grading the roadway surfaces.
- Filling ruts and potholes.
- Maintaining and constructing water-bars.
- Constructing roadside drainage ditches.
- Placing slag and borrow soil to improve the road driving surface and provide positive surface water drainage at selected areas.

Two site roads proved to be particularly prone to washout and erosion and required significant repair and maintenance efforts throughout construction.

These roads included:

- The Center Access Road (#4)/Plateau Road (#10) from the Cooling Tower Road (#18) in the mill building area to the top of the plateau.
- The North Access Road (#6) along Wetland K.

Safety berms were constructed along the side of elevated roads where a vehicle roll-over hazard existed or where a vehicle leaving the roadway would accelerate down slope. The safety berms were constructed to the mid-axle height of a full-sized 4-wheel drive vehicle - the largest self-propelled mobile equipment that will travel the roadways at the time of this phase of work. New safety berms were constructed at five locations.

The new safety berm locations included (refer to drawing IAR-200):

- The outboard edge of the North Access Road (#6) from the NMB Lower Baghouse Road (#7) up to the Landfill Access Road (#9).
- The inboard edge of the North Access Road (#6) along the southern edge of Wetland K.



- The north side of the lower Center Access Road (#4), south of the Pump House and the Cooling Tower depressions, from the Main Plant Road (#5) to the Cooling Tower Road (#18).
- Along the upslope (western) end of the Borrow Area.
- At the top of the slope at the newly installed catch basins CB-C and CB-D (Drawing IAR-260).

### 3.17 Equipment Decontamination

Decontamination of equipment, including heavy construction equipment, was performed by pressure washing using a hand-held wand with water pumped from Cross Creek. Heavy equipment, which was to be shipped off-Site by rail, was decontaminated at a decontamination pad constructed by NorthStar at the downslope end of the rail spur loading ramp near the north end of the NMB. Smaller equipment, which was to be removed from the Site by surface roads, was pressure washed at the decontamination pad located at the entrance of the support area using the same method as above. Wash water associated with the decontamination was contained in the decontamination pads and allowed to infiltrate into the ground in accordance with prior approval obtained from OEPA.

### 3.18 Design and Scope Changes

- Cleaning of the Existing 36-inch CMP – The scope-of-work specified that the existing 36-inch corrugated metal pipe (CMP) from drop structure (CB-J) to an existing headwall (HW-N) was to be cleaned and remain in service. Due to the perceived coordination, time, difficulty of cleaning, etc. cleaning of the existing 36-inch pipe was deleted from the scope of work. As an alternative NorthStar proposed and received approval to install a 36-inch By-pass pipe.
- Installation of 36-inch By-pass Pipe – NorthStar installed a 36-inch By-pass as an alternative to cleaning the existing 36-inch pipe, listed above.
- Flat Roof Dust Removal – Removal of Flat Roof Chromium-containing dust was deleted from the scope-of-work. Investigation of the flat roof at the NMB High Bay and Low Bay and the flat roof at the SMB indicated at no dust accumulation prone to blowing or washing away was present.
- Outdoor Dust Storage Area – Construction of the outdoor dust storage area was deleted from the scope of work because of a lack of material present on the flat roofs.
- NMB High Bay Roof Repair – Repair of the flat roof of the NMB High Bay was deleted from the scope of work because of:
  - The hazardous nature of working from heights in high-reach man lifts
  - The difficulty of locating areas of leakage
  - The possibility that the attempted repairs would cause more damage to the roof than what could be repaired and if left alone, and
  - Continued deterioration of the roof would produce additional leaks.

As an alternative to repairing the roof, 15-millimeter polyethylene plastic sheeting was placed over the dust sacks staged inside the High Bay and were secured with ropes and sand bags to reduce exposure to rain water leaking in from the roof.



- Helicopter Landing Area - Clearing trees and shrubs to create a safe emergency helicopter landing area at the southern side of the Support zone parallel to Wetland D fill was added to the scope-of-work. The cleared vegetation was transported to the chipping area and chipped.
- Support Area Permanent Fence - At the end of the 2016-2017 phase of work, a permanent fence was installed on the west and north side of the Contractor Operation Area A at the northwest corner of the support zone. The original orange construction fence there was prone to be blown over and wasn't adequate for long term fencing. NorthStar installed galvanized 4-inch x 4-inch square, galvanized mesh goat fence, T-posts and a 50-inch high x double 10-foot wide utility tube gate providing a 20-foot wide opening to the decontamination pad in the support area.



## 4.0 PERMITS

### 4.1 Stormwater

Construction work in Ohio is governed by Ohio's Construction Stormwater General Permit (OHC000003) (CGP). Cyprus submitted a Notice of Intent for Coverage under the CGP to the Ohio Environmental Protection Agency (Ohio EPA) on February 10, 2010. The Construction Storm Water Pollution Prevention Plan (SWP3) was prepared in accordance with the CGP and submitted to OEPA and approved on July 24, 2012. The Site received approval for coverage under the GCP on July 25, 2012.

During the Interim Action activities, monitoring and implementing requirements of the Construction SWP3 were implemented.

The CGP required specific activities to be performed and documented. These included:

- Notice of Intent for coverage under the CGP.
- Train Site workers on the SWP3 requirements.
- Install and maintain storm water controls Best Management Practices (BMPs) in accordance with the SWP3.
- Conduct and document inspections, weekly and after storm events >1/2-inch in a 24-hour period.
- Collect SWP3 storm water samples, when required, and maintain documentation.
- Maintain a clean and orderly Site.

The abatement/demolition/earthworks contractors were responsible for implementation the SWP3 and installing and maintaining BMPs. Neumeyer was responsible during the 2013-2014 work, and NorthStar during the 2016-2017 Site work.

#### 4.1.1 Work and Disturbed Areas

Specific Work Areas were designated on the Site for purposes of complying with the GCP. "Disturbed Areas" would be created when activities in Work Areas, such as grading, excavating, grubbing and/or filling, were performed. An area was considered "disturbed" from the time a "shovel hit the ground" until the soils in the area were stabilized as outlined in the Construction SWP3. Two types of Disturbed Areas were established: >14 days and <15 days. A Disturbed Area was no longer considered disturbed when final stabilization measures were implemented.

Work and Disturbed areas are shown on Drawing IAR-220. BMP and drainage facilities are shown on drawing IAR-225.



#### 4.1.2 Stormwater Controls

Stormwater controls were installed to improve stormwater flow during construction activities, improve performance of existing controls, and to improve overall stormwater flow across the Plant Area of the Site. Temporary storm water controls were installed and BMPs implemented during IA activities.

The Construction SWP3 identified work areas on the Site and area that were going to be disturbed by IA construction activities. When a Disturbed Area was disturbed for >14 days, stormwater controls designed for that Disturbed Area were installed in accordance with the specification outlined in the Construction SWP3. Stormwater controls were generally not installed for that were going to be disturbed <15 days. If a work area was to be disturbed >14 days, storm water controls were installed. During the 2016-2017 phase of work, stormwater controls were generally installed before an area was disturbed because most of the areas were expected to be disturbed >14 days. Examples of stormwater controls installed at the Site included:

- Grading and/or compacting land
- Culverts
- Swales
- Diversion berms
- Rip rap and weirs
- Seed and straw matting
- Silt fence, hay bales, and erosion wattles.

Upon completion and final stabilization of a disturbed area, temporary stormwater controls, such as silt fencing and straw bales, were removed except where the hydro-seeded areas became established. More permanent controls, such as berms and swales, were left in place.

#### 4.2 Disturbed Areas

During IA activities, “disturbed areas” were created. To comply with the Construction SWP3, disturbed areas would either be restored or have additional stormwater controls installed depending on the duration of the disturbance. After IA activities were completed in a work area the Disturbed areas were stabilized by grading, seeding (if applicable), and spreading straw or straw matting.

The work areas disturbed and restored during the 2013-2014 site work included:

- Baghouse area #1, #2, and #3
- R1 Area Soil Stockpile
- Slope south of the SMB
- Laboratory Building area



- Former Wastewater Treatment Plant area
- Various locations at the former landfill area
- New Rail Spur and adjacent areas
- Underground Storage Tank area
- Cooling Water Tower foundations area.

In preparation for the temporary shut-down in February 2017, straw dams, diversion berms, and diversion ditches were used to stabilize disturbed areas. Straw netting and plastic sheeting was placed on steeper slopes to stabilize these disturbed areas.

The work areas disturbed and restored during the 2016-2017 site work included:

- Wetland D
- Borrow Area
- Wetland E
- Electrical Switchyard Soil Removal Area (PCB Cleanup)
- Wetland K
- 36-inch By-pass pipe from Wetland E to Wetland D

#### **4.2.1 Disturbed Area Monitoring**

Disturbed Areas were monitored throughout the Interim Action activities to evaluate whether installation of stormwater controls would be installed, repaired or replaced. Once a work area became disturbed, a Disturbed Area Inspection Log was begun and the start date of the Disturbed Area was recorded. When an area was determined it would be disturbed for >14 days, the stormwater controls as outlined in the Construction SWP3 were installed. If stormwater controls did not appear to be adequate during storm events, additional controls were installed. Once completed and the final stabilization control was in place, the end date was recorded on the log and temporary stormwater controls were removed or left in place to allow stabilization controls (hydro-seed) become established.

Golder performed monthly BMP inspections when there was no construction activity at the Site during the temporary shutdown between March through June 2017.

#### **4.2.2 Stormwater Monitoring**

Stormwater monitoring was required to be conducted when Disturbed Areas were “Active” (i.e., disturbed longer than 30 days). Disturbed Areas (listed above) were monitored independently to evaluate whether stormwater controls selected for that Disturbed Area were effective. Stormwater samples were collected of the runoff from an Active Disturbed Areas during the second 30-day period after the disturbance was initiated. During the 2016-2017 period of site work, stormwater samples were collected at Wetland D and



Wetland K during qualifying storm events. Stormwater samples were collected and analyzed in accordance with the procedures outlined in the Site's Construction SWP3.

#### **4.2.3 Construction SWP3 Amendments**

Two amendments to the Construction SWP3 were prepared to address revisions to the SWP3 during the 2013-2014 Site work. Amendment 3 was prepared prior to work during the 2016-2017 construction work to account for changes to the SWP3 for this time period.

#### **4.2.4 Inspections, Training and Recordkeeping**

##### **4.2.4.1 Training**

All personnel working at the Site were trained on the requirement of the Construction SWP3 with emphasis placed on installing and maintaining BMPs and ensuring that personnel do not damage stormwater controls nor introduce pollutants into the storm system or waters of the Site. Training was conducted for the contractor crews during both the 2013-2014 and 2016-2017 site construction periods.

##### **4.2.4.2 Inspections**

Inspections of the Disturbed Areas and stormwater controls were conducted on a weekly basis and within 24 hours of a storm event that produced  $> \frac{1}{2}$  inch of rain in a 24-hour period. An inspection form and checklist were completed for each inspection. Each inspection was recorded on the *Satralloy Construction SWP3 Activities Log*.

##### **4.2.4.3 Recordkeeping**

During the Interim Actions, a copy of the Construction SWP3 and associated records were maintained at the Site and a copy of the records remain at the site after demobilization. These documents will be maintained for 3 years after the end date of the construction. In addition, once the Notice of Termination is submitted to OEPA, the Owner will maintain a record summarizing the SWP3, its implementation and its compliance with the CGP.

#### **4.3 Air Permits**

Two Air Pollution Control Permit-to-Install and Operate (PTIO) permits were issued to Cyprus for Site work. These permits have conditions and restrictions. Permit P0113889 was issued for fugitive dust from unpaved roadways and parking areas associated with Site activities and material handling. The permit became effective on April 26, 2013 and expires on April 26, 2023. Using a water truck to apply water to the Site roads and work areas, fugitive dust was mitigated.

Permit P0114196 was issued on June 28, 2013 for a 400 TPH (ton per hour) crusher with load-in, Grizzly screener and conveyor (expiration date also April 26, 2023). A crusher was not installed or operated and monitoring was not implemented.





#### **4.3.1 Control Measures**

Control measures were implemented at the site to prevent visible emissions (except for 3 minutes during any 60-minute observation period). Roadways, parking areas, and work areas where work was being conducted were watered to control fugitive particulate emissions (dust).

#### **4.3.2 Monitoring**

During Site work, inspections of the Site roads and parking area in use were conducted at least daily in accordance with the permit. Roadway segments on the site included plant access roads, work areas, rail spur and the parking lot. Inspections consisted of visual observations of the work areas and confirming that proper dust control (i.e., appropriate watering) was implemented and were documented on daily dust monitoring forms. Daily recordkeeping included the date, general Site conditions, weather, precipitation and dust control measure applied, if needed.

Water for dust control was pumped from Cross Creek and the volume of water pumped was recorded daily. The maximum allowable withdrawal rate from Cross Creek water was 100,000 gallons per day. At no time during pumping of water from the creek did the volume approach the maximum allowable volume.

#### **4.3.3 Recordkeeping**

The PTIO and associated inspection records were maintained at the Site for the duration of the Interim Action work. All the records required by this permit, will be maintained for 5 years from the date the record was created. These records will be maintained by Cyprus at the Site.

#### **4.3.4 Reporting**

An Annual Permit Evaluation Report (PER) was submitted to the Ohio EPA through the Ohio EPA's eBusiness Center. Copies of these reports and their submittal confirmation information are on file.

During Site work the contractor monitored and improved existing stormwater controls and constructed additional controls as needed. Generally, the following controls were used to manage stormwater:

- Grading to drain
- New catch basins and storm water piping
- Culverts
- Swales
- Water bars
- Diversion berms
- Straw net
- Plastic sheeting
- Silt fence, hay bales, straw wattles and sand tubes.



#### 4.4 Perimeter Air Monitoring

Perimeter air quality monitoring was performed to monitor Site generated airborne dust of regulated material dust limits, if any. Perimeter air monitoring was performed during both the 2013-2014 and 2016-2017 periods of site work as described in the *Perimeter Air Monitoring Workplan* (Appendix B of the IA Workplan).

Four semi-permanent stations were installed at select locations around the site including:

- In the grass at the eastern end of the Support Area
- At the top of the Plateau Access road on the plateau
- To the west of the rail spur switch, and
- At the southern end of the Site

Prior to beginning work, baseline readings were completed over four 8-hour days during periods of non-activity. Once Site work was begun, perimeter air monitoring was performed on a weekly basis. A final round of perimeter air monitoring was performed on the last day onsite during the 2016-2017 work phase, immediately before site demobilization was completed. After the final round of air monitoring of the 2016-2017 work, the air sampling instruments and solar panels were removed from the four monitoring stations and stored onsite for future use.



## 5.0 AS-BUILT SURVEY

At the completion of the Site work, Rettew Associates, Inc. (surveyor of record) of Lancaster, Pennsylvania performed an as-built survey of the wetland fills, the Borrow Area and other graded areas. The survey results were used to update the construction drawing set provided with this report.



## 6.0 CLOSURE

We trust that this report meets your needs. If you have questions or comments, please contact us at (425) 883-0777. We appreciate the opportunity to provide our services for this project.

### GOLDER ASSOCIATES INC.

Michael S. Lumpkin  
Senior Project Engineering Geologist

John Wise  
Senior Consultant

Lee K. Holder, PE  
Project Manager

MSL/JW/LKH/tp



## 7.0 REFERENCES

Golder Associates Inc. (Golder). 2012. *Interim Action Workplan for the Former Satralloy Site, Jefferson County, Ohio*. November 15, 2012.

Golder Associates Inc. (Golder). 2016. *Workplan & Notification for Self-Implementing PCB Cleanup – Former Satralloy Site*. May 2016.

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Lawhon and Associates (Lawhon). 2007. *Regulated Materials Survey: Specified Buildings – Former Satralloy Site, Jefferson County, Ohio*. Lawhon & Associates, Inc. May 18, 2007.

State of Ohio. 2010. *Consent Order for Preliminary Injunction to Conduct a Remedial Investigation and Feasibility Study and to Pay Response Costs*. November 3, 2010.

## TABLE

**Table 1: Waste Disposal Summary**

Disposal Date	Transport Method	Manifest No.	Materials	Total Wt (pounds)	Landfill Facility
<b>2013-2014 Work Period</b>					
06/12/14	Rail	14017849	Baghouse Filter Bags/Lime	24,500	ADS - Arbor Hills Landfill
06/12/14	Rail	14017850	Baghouse Filter Bags/Lime	26,100	ADS - Arbor Hills Landfill
06/12/14	Rail	14017851	Baghouse Filter Bags/Lime	32,500	ADS - Arbor Hills Landfill
06/12/14	Rail	13017676	C&D/PPE	15,300	ADS - Arbor Hills Landfill
06/12/14	Rail	13017677	C&D/PPE	11,800	ADS - Arbor Hills Landfill
06/12/14	Rail	13017678	C&D/PPE	16,000	ADS - Arbor Hills Landfill
06/12/14	Rail	13017679	C&D/PPE	17,500	ADS - Arbor Hills Landfill
06/12/14	Rail	13017682	C&D/PPE	15,500	ADS - Arbor Hills Landfill
06/12/14	Rail	13017683	C&D/PPE	14,500	ADS - Arbor Hills Landfill
10/10/14	Rail	13017738	C&D/PPE	24,800	ADS - Arbor Hills Landfill
10/10/14	Rail	13017739	C&D/PPE	18,900	ADS - Arbor Hills Landfill
10/10/14	Rail	13017740	C&D/PPE	19,300	ADS - Arbor Hills Landfill
06/12/14	Rail	13017741	C&D/PPE	28,100	ADS - Arbor Hills Landfill
06/12/14	Rail	13017742	C&D/PPE	11,800	ADS - Arbor Hills Landfill
06/12/14	Rail	13017743	C&D/PPE	26,500	ADS - Arbor Hills Landfill
06/12/14	Rail	13017744	C&D/PPE	26,400	ADS - Arbor Hills Landfill
06/12/14	Rail	13017745	C&D/PPE	2,200	ADS - Arbor Hills Landfill
06/12/14	Rail	13017746	C&D/PPE	9,300	ADS - Arbor Hills Landfill
06/12/14	Rail	13017747	C&D/PPE	15,800	ADS - Arbor Hills Landfill
06/12/14	Rail	13017748	C&D/PPE	16,900	ADS - Arbor Hills Landfill
06/12/14	Rail	13017749	C&D/PPE	12,300	ADS - Arbor Hills Landfill
06/12/14	Rail	14017828	Railroad Ties & Carbon Anode Rods	31,800	ADS - Arbor Hills Landfill
06/12/14	Rail	14017829	Railroad Ties & Carbon Anode Rods	32,300	ADS - Arbor Hills Landfill
06/12/14	Rail	14017830	Railroad Ties & Carbon Anode Rods	36,580	ADS - Arbor Hills Landfill
06/12/14	Rail	14017831	Railroad Ties & Carbon Anode Rods	35,860	ADS - Arbor Hills Landfill
06/12/14	Rail	14017832	Railroad Ties & Carbon Anode Rods	35,600	ADS - Arbor Hills Landfill
06/12/14	Rail	14017833	Railroad Ties & Carbon Anode Rods	34,500	ADS - Arbor Hills Landfill
06/12/14	Rail	14017834	Railroad Ties & Carbon Anode Rods	37,500	ADS - Arbor Hills Landfill
06/12/14	Rail	14017835	Railroad Ties & Carbon Anode Rods	33,880	ADS - Arbor Hills Landfill
06/12/14	Rail	14017836	Railroad Ties & Carbon Anode Rods	35,140	ADS - Arbor Hills Landfill
06/12/14	Rail	14017838	Railroad Ties & Carbon Anode Rods	21,300	ADS - Arbor Hills Landfill
06/12/14	Rail	14017839	Railroad Ties & Carbon Anode Rods	21,300	ADS - Arbor Hills Landfill

**Table 1: Waste Disposal Summary**

Disposal Date	Transport Method	Manifest No.	Materials	Total Wt (pounds)	Landfill Facility
06/12/14	Rail	14017840	Railroad Ties & Carbon Anode Rods	22,800	ADS - Arbor Hills Landfill
06/12/14	Rail	14017841	Railroad Ties & Carbon Anode Rods	22,300	ADS - Arbor Hills Landfill
10/10/14	Rail	14017813	Railroad Ties & Carbon Anode Rods	1,700	ADS - Arbor Hills Landfill
10/10/14	Rail	14017814	Railroad Ties & Carbon Anode Rods	23,900	ADS - Arbor Hills Landfill
10/10/14	Rail	14017815	Railroad Ties & Carbon Anode Rods	15,700	ADS - Arbor Hills Landfill
10/10/14	Rail	14017816	Railroad Ties & Carbon Anode Rods	17,800	ADS - Arbor Hills Landfill
10/10/14	Rail	14017817	Railroad Ties & Carbon Anode Rods	26,100	ADS - Arbor Hills Landfill
10/10/14	Rail	14017818	Railroad Ties & Carbon Anode Rods	14,800	ADS - Arbor Hills Landfill
10/10/14	Rail	14017819	Railroad Ties & Carbon Anode Rods	14,000	ADS - Arbor Hills Landfill
10/10/14	Rail	14017820	Railroad Ties & Carbon Anode Rods	17,800	ADS - Arbor Hills Landfill
10/10/14	Rail	14017821	Railroad Ties & Carbon Anode Rods	13,500	ADS - Arbor Hills Landfill
10/10/14	Rail	14017822	Railroad Ties & Carbon Anode Rods	21,000	ADS - Arbor Hills Landfill
10/10/14	Rail	14017823	Railroad Ties & Carbon Anode Rods	14,500	ADS - Arbor Hills Landfill
10/10/14	Rail	14017824	Railroad Ties & Carbon Anode Rods	16,200	ADS - Arbor Hills Landfill
10/10/14	Rail	14017825	Railroad Ties & Carbon Anode Rods	18,500	ADS - Arbor Hills Landfill
10/10/14	Rail	14017826	Railroad Ties & Carbon Anode Rods	22,700	ADS - Arbor Hills Landfill
10/10/14	Rail	14017827	Railroad Ties & Carbon Anode Rods	17,700	ADS - Arbor Hills Landfill
10/10/14	Rail	866126	Non-friable Asbestos	11,800	ADS - Arbor Hills Landfill
10/10/14	Rail	866165	Non-friable Asbestos	17,500	ADS - Arbor Hills Landfill
10/10/14	Rail	866489	Non-friable Asbestos	17,500	ADS - Arbor Hills Landfill
07/11/14	Truck	0122072769 JKK	Non-Regulated Liquid (Grease, Resin)	400	EQ Detroit, Inc
07/11/14	Truck	0122072770 JKK	Universal Waste - Electric Lamps	125	EQ Detroit, Inc
07/11/14	Truck	0122072771 JKK	Mercury Impacted Debris	800	EQ Detroit, Inc
07/11/14	Truck	0122072772 JKK	PCB Ballast	363	EQ Detroit, Inc
07/09/14	Truck	64261530	Used Oil to recycling (Drums)	8 <sup>1</sup>	Safety-Kleen
07/10/14	Truck	63453488	Oily water - Drums	3 <sup>1</sup>	Spring Grove Resource Recovery
07/10/14	Truck	64262501	Waste Oil - Drum (gallons)	200	Safety-Kleen
07/10/14	Truck	64262501	Anit-freeze - Drum	1 <sup>1</sup>	Clean Harbors Recycling
07/10/14	Truck	64262501	Empty drums with residual oil	8 <sup>1</sup>	Safety-Kleen
09/08/14	Truck	12345	Debris with <10% PCBs	110	Spring Grove Resource Recovery
09/08/14	Truck	54321	Empty Aerosol Cans	50	Spring Grove Resource Recovery
09/08/14	Truck	54321	Oily Sludge	500	Spring Grove Resource Recovery
11/13/14	Truck	07958	Grease (Mobilux) 3 drums	525	Spring Grove Resource Recovery



**Table 1: Waste Disposal Summary**

Disposal Date	Transport Method	Manifest No.	Materials	Total Wt (pounds)	Landfill Facility
<b>2016-2017 Work Period</b>					
01/13/17	Truck	5675335 SKS	PCB Soils <50 gm/g/kg	34,600	US Ecology Wayne Disposal
01/13/17	Truck	5675337 SKS	PCB Soils <50 gm/g/kg	32,480	US Ecology Wayne Disposal
01/13/17	Truck	5675338 SKS	PCB Soils <50 gm/g/kg	39,460	US Ecology Wayne Disposal
01/20/17	Truck	5675343 SKS	PCB Soils <50 gm/g/kg	38,240	US Ecology Wayne Disposal
01/20/17	Truck	5675344 SKS	PCB Soils >50 mg/kg	39,260	US Ecology Wayne Disposal
01/23/17	Truck	5675341 SKS	PCB Soils >50 mg/kg	32,020	US Ecology Wayne Disposal
01/23/17	Truck	5675341 SKS	PCB Soils <50 gm/g/kg	7,380	US Ecology Wayne Disposal
01/25/17	Truck	5675339 SKS	PCB Soils <50 gm/g/kg	43,660	US Ecology Wayne Disposal
01/25/17	Truck	5675346 SKS	PCB Soils <50 gm/g/kg	42,380	US Ecology Wayne Disposal
01/25/17	Truck	5675348 SKS	PCB Soils <50 gm/g/kg	38,280	US Ecology Wayne Disposal
02/03/17	Truck	5675356 SKS	PCB Soils <50 gm/g/kg	21,500	US Ecology Wayne Disposal
02/03/17	Truck	5675363 SKS	PCB Concete	42,600	US Ecology Wayne Disposal
02/03/17	Truck	5765364 SKS	PCB Poly (PCB Staging area)	400	US Ecology Wayne Disposal
02/03/17	Truck	5765364 SKS	PCB Concrete	19,340	US Ecology Wayne Disposal
02/06/17	Truck	16299019 JJK	PCB Poly (used for staging at Mingo)	25	US Ecology Wayne Disposal
02/06/17	Truck	16299019 JJK	PPE (crushed drum from PCB Area)	100	US Ecology Wayne Disposal
02/06/17	Truck	16299021 JJK	PCB Concrete	12,260	US Ecology Wayne Disposal
01/30/17	Truck	00567362 SKS	Friable ACM Debris & Transite Panel Bundles (9)	14,900	ADS - Greentree Landfill
01/31/17	Truck	00567360 SKS	Friable ACM Debris & Transite Panel Bundles (5)	13,400	ADS - Greentree Landfill
10/19/17	Truck	10056006	Non-PCB Light Ballasts	48	Rcock Mountain Recycling

Notes:

<sup>1</sup> Drums

**AS-BUILT DRAWING SET**



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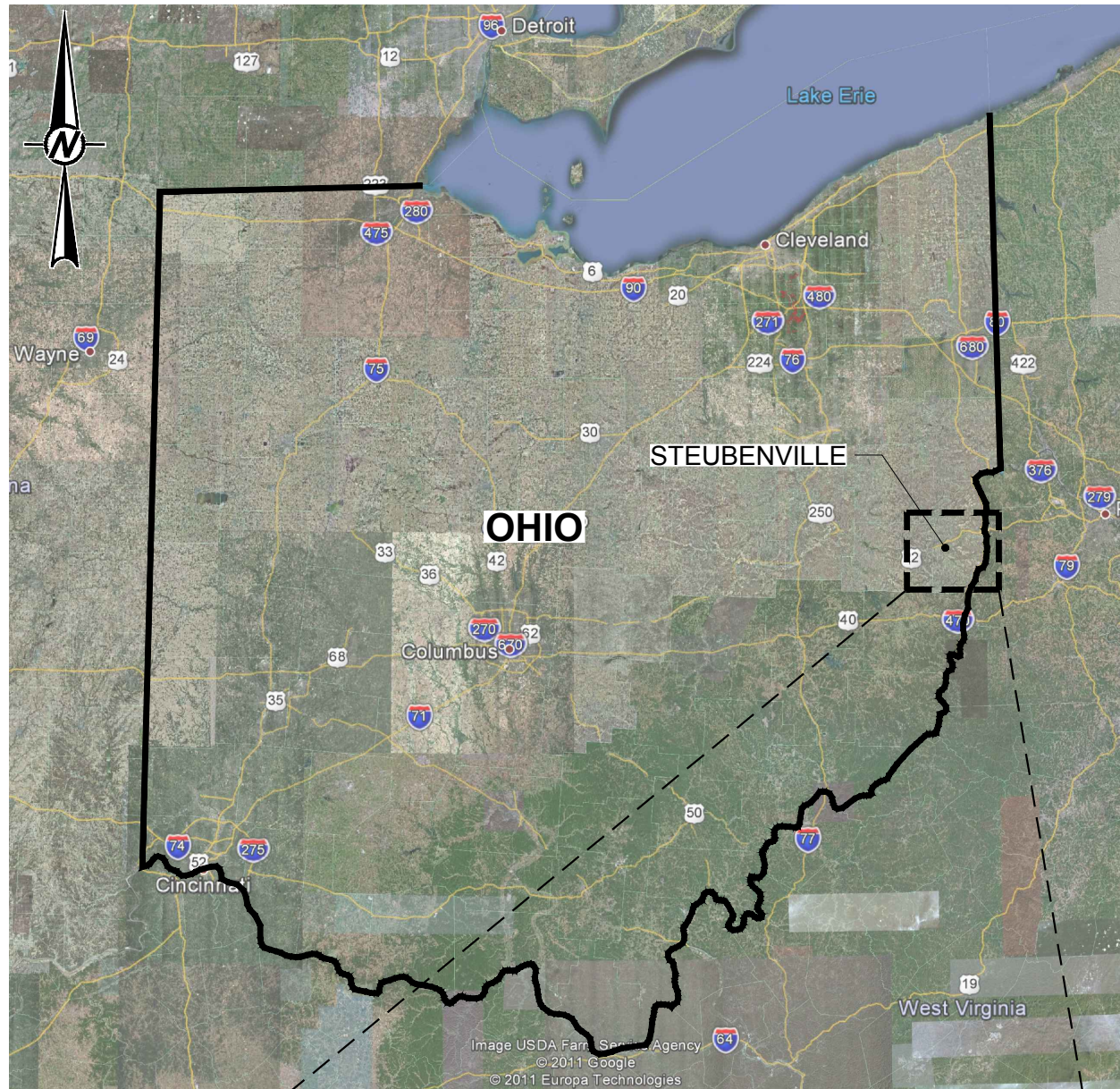
CYPRUS AMAX MINERALS COMPANY

FORMER SATRALLOY SITE

STAGE 1 INTERIM ACTION

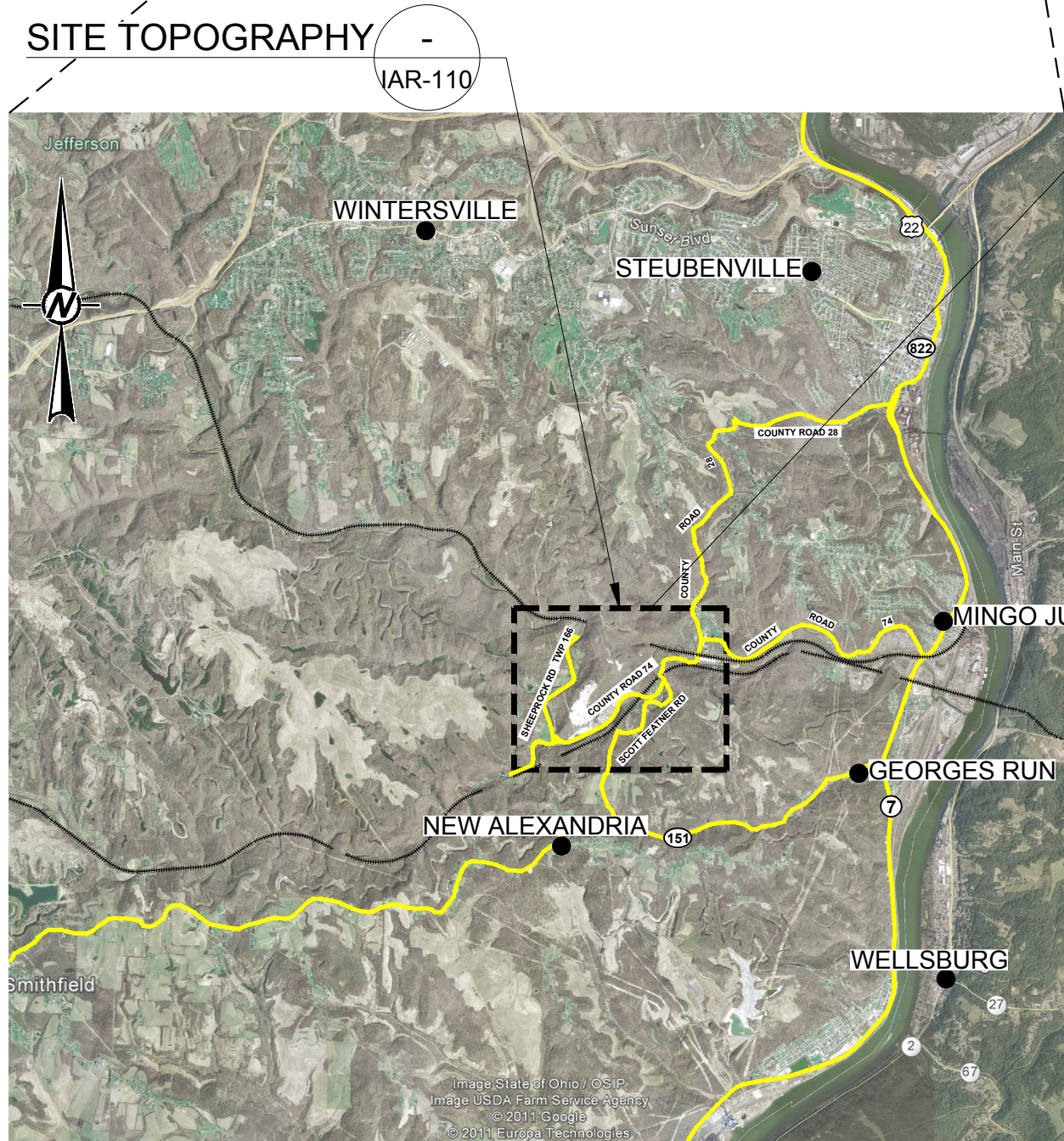
JEFFERSON COUNTY, OHIO

OCTOBER 2017



LOCATION MAP

NOT TO SCALE




VICINITY MAP

NOT TO SCALE

PROJECT SITE

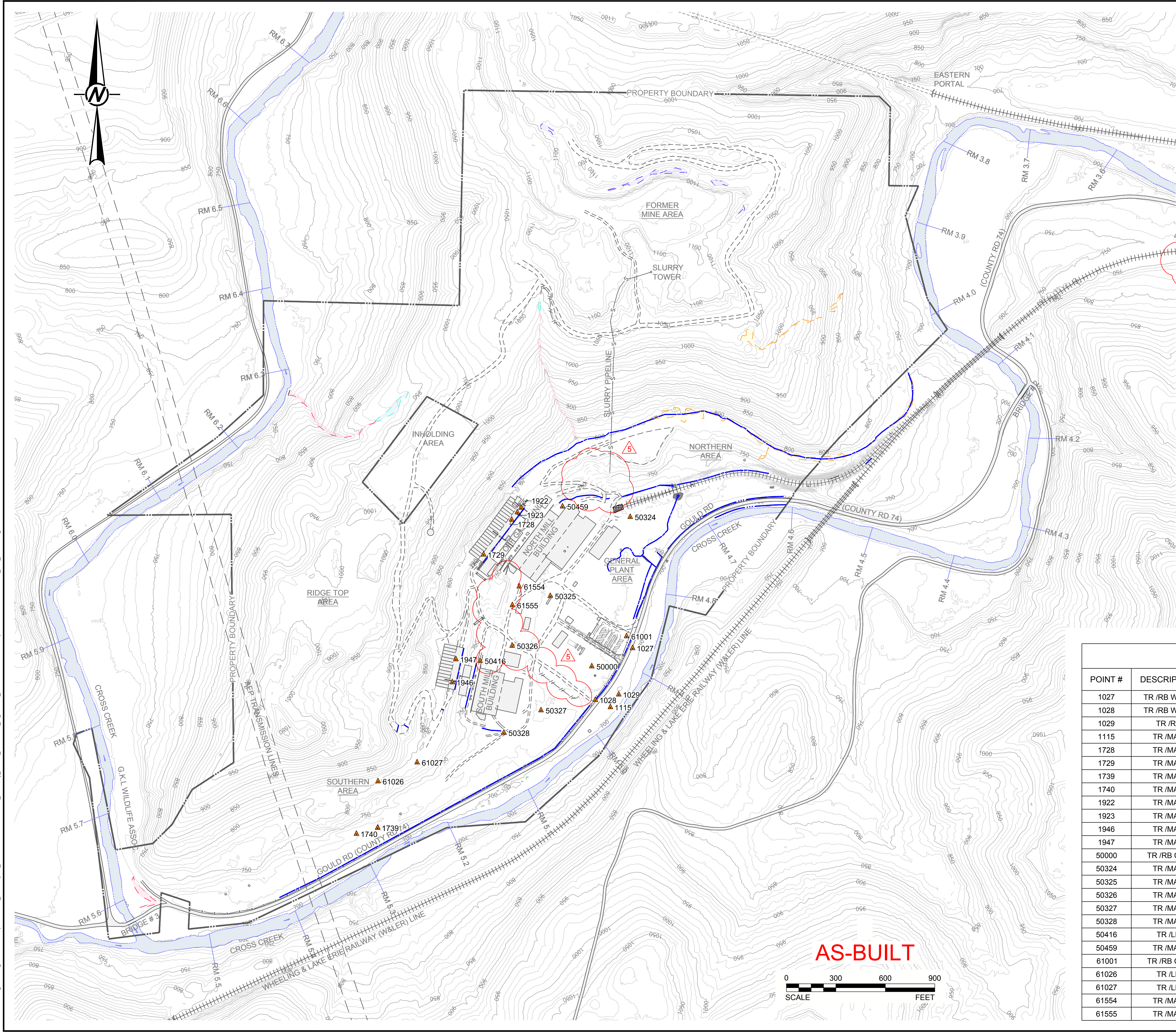
Sheet List Table	
Sheet Number	Sheet Title
IAR-100	COVER SHEET
IAR-105	OVERALL SITE GENERAL ARRANGEMENT AND SURVEY CONTROL
IAR-110	GROUNDWATER MONITORING WELLS
IAR-115	FACILITIES LAYOUT PLANT AREA
IAR-120	SUPPORT AREA
IAR-121	SUPPORT AREA UTILITIES NOTES
IAR-122	EXISTING ELECTRICAL SERVICE
IAR-200	ACCESS ROAD MAINTENANCE
IAR-210	FLAT ROOF DUST REMOVAL
IAR-220	BMP AND DRAINAGE FACILITIES MAINTENANCE
IAR-225	WORK AND DISTURBED AREAS
IAR-250	BORROW AREA PLAN
IAR-260	WETLANDS D AND E INFILLING PLAN
IAR-262	WETLAND K INFILLING PLAN
IAR-270	DUST STAGING AREA PLAN
IAR-275	DUST STAGING AREA SECTION AND ELEVATION
IAR-280	MISCELLANEOUS DETAILS (1 OF 2)
IAR-285	MISCELLANEOUS DETAILS (2 OF 2)

AS-BUILT

PROJECT		CLIENT		CONSULTANT																																																		
FORMER SATRALLOY SITE STAGE 1 INTERIM ACTION		CYPRUS AMAX MINERALS COMPANY		<div>REDMOND 18300 NE UNION HILL ROAD REDMOND, WA U.S.A. [+1] (425) 883-0777 www.golder.com</div> <div></div>																																																		
TITLE		COVER SHEET																																																				
PROJECT NO.		1239330901		PHASE 310																																																		
REV.	5	1 of 17	FIGURE IAR-100																																																			
<table><tr><td>5</td><td>2017-10-23</td><td>AS-BUILT</td><td>FSS</td><td>REDMOND</td><td>JDW</td><td>LKH</td></tr><tr><td>4</td><td>2016-09-07</td><td>SURVEY CONTROL POINTS ADDED</td><td>FSS</td><td>REDMOND</td><td>JDW</td><td>LKH</td></tr><tr><td>3</td><td>2016-08-03</td><td>ISSUED FOR ADDENDUM 5</td><td>FSS</td><td>REDMOND</td><td>JDW</td><td>LKH</td></tr><tr><td>2</td><td>2016-03-25</td><td>ISSUED FOR STAGE 1 REBID</td><td>FSS</td><td>REDMOND</td><td>JDW</td><td>LKH</td></tr><tr><td>1</td><td>2016-01-21</td><td>ISSUED FOR ADDENDUM 1</td><td>JDW</td><td>REDMOND</td><td>FSS</td><td>LKH</td></tr><tr><td>0</td><td>2015-11-23</td><td>ISSUED FOR STAGE 1 BID</td><td>JDW</td><td>REDMOND</td><td>FSS</td><td>LKH</td></tr><tr><td>REV.</td><td>YYYY-MM-DD</td><td>DESCRIPTION</td><td>DESIGNED</td><td>PREPARED</td><td>REVIEWED</td><td>APPROVED</td></tr></table>						5	2017-10-23	AS-BUILT	FSS	REDMOND	JDW	LKH	4	2016-09-07	SURVEY CONTROL POINTS ADDED	FSS	REDMOND	JDW	LKH	3	2016-08-03	ISSUED FOR ADDENDUM 5	FSS	REDMOND	JDW	LKH	2	2016-03-25	ISSUED FOR STAGE 1 REBID	FSS	REDMOND	JDW	LKH	1	2016-01-21	ISSUED FOR ADDENDUM 1	JDW	REDMOND	FSS	LKH	0	2015-11-23	ISSUED FOR STAGE 1 BID	JDW	REDMOND	FSS	LKH	REV.	YYYY-MM-DD	DESCRIPTION	DESIGNED	PREPARED	REVIEWED	APPROVED
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REV.	YYYY-MM-DD	DESCRIPTION	DESIGNED	PREPARED	REVIEWED	APPROVED																																																



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- NOTES:**
- BASE TOPOGRAPHY DATED 2003 PROVIDED BY JEFFERSON COUNTY, OHIO, ENGINEER'S OFFICE.
    - HORIZONTAL DATUM: OHIO NORTH ZONE NAD 83 - STATE PLANE U.S. SURVEY FEET.
    - VERTICAL DATUM: NAVD 88 (EST. 1991).
    - CONTOUR INTERVAL: 10 FT.ADDITIONAL TOPOGRAPHY BASED ON FIELD OBSERVATIONS AND MEASUREMENTS.
  - PROPERTY BOUNDARY BY BONAR SURVEYING, BERGHOLZ, OHIO, DATED OCTOBER 17, 2006.
  - WETLANDS DELINEATION PERFORMED IN APRIL 2013 AND PROVIDED BY WESTLAND RESOURCES, INC. WETLAND DELINEATIONS ARE PRELIMINARY SUBJECT TO CORPS AND OEPA APPROVAL.
  - THE RIVER MILE MARKERS SHOWN FOR CROSS CREEK HEREON WERE VIA A GEODATABASE AVAILABLE ON THE OHIO STATE DNR WEBSITE, JUNE 2012.
  - SITE ADDRESS:  
4243 COUNTY ROAD 74  
MINGO JUNCTION, OH 43938
  - AS-BUILT TOPOGRAPHY AND LOCATIONS BASED ON SURVEY PROVIDED BY RETTEW, DATED AUGUST 30, 2017, AND FIELD MEASUREMENTS BY NORTHSTAR DEMOLITION AND REMEDIATION, LP PERSONNEL.

- LEGEND:**
- EXISTING PROPERTY BOUNDARY (SEE NOTE 2)
  - EXISTING ON-SITE ACCESS ROAD
  - EXISTING COUNTY ROAD (PAVED)
  - EXISTING RAILROAD
  - EXISTING SLURRY PIPELINE
  - CROSS CREEK
  - EXISTING FACILITY
  - MAJOR DRAINAGE DITCH
  - 1729 SURVEY CONTROL POINT
- WETLAND LEGEND:**  
(SEE NOTE 3)
- INTERMITTENT JURISDICTIONAL WATERS OF US [CORPS]
  - PERENNIAL JURISDICTIONAL WATERS OF US [CORPS]
  - ISOLATED WETLANDS (OEPA JURISDICTION)
  - OPEN WATER (NON-JURISDICTIONAL)

SURVEY CONTROL POINT TABLE				
POINT #	DESCRIPTION	NORTHING	EASTING	ELEVATION
1027	TR /RB WCAP	239406.574	2479098.144	705.275
1028	TR /RB WCAP	239092.404	2478872.137	708.124
1029	TR /RB	239125.337	2479014.147	706.526
1115	TR /MAG	239048.275	2478963.481	706.392
1728	TR /MAG	240185.546	2478364.515	777.616
1729	TR /MAG	239973.789	2478194.014	777.849
1739	TR /MAG	238316.928	2477552.17	730.215
1740	TR /MAG	238280.342	2477423.257	721.667
1922	TR /MAG	240257.589	2478421.656	777.985
1923	TR /MAG	240229.963	2478399.108	777.854
1946	TR /MAG	239199.46	2478004.745	778.16
1947	TR /MAG	239338.8	2478026.337	777.625
50000	TR /RB CAP	239296.142	2478850.68	711.357
50324	TR /MAG	240202.071	2479083.23	719.998
50325	TR /MAG	239722.536	2478598.584	719.762
50326	TR /MAG	239420.692	2478367.623	726.62
50327	TR /MAG	239029.531	2478542.373	718.984
50328	TR /MAG	238893.426	2478317.255	724.522
50416	TR /LN	239329.583	2478172.73	746.479
50459	TR /MAG	240265.632	2478672.829	729.11
61001	TR /RB CAP	239478.267	2479061.632	707.065
61026	TR /LN	238599.139	2477553.961	800.77
61027	TR /LN	238713.55	2477791.098	794.525
61554	TR /MAG	239779.925	2478410.473	727.395
61555	TR /MAG	239666.879	2478368.978	727.563

PROJECT

FORMER SATRALLOY SITE

STAGE 1 INTERIM ACTION

CONSULTANT

REDMOND

18300 NE UNION HILL ROAD

REDMOND, WA

U.S.A.

[+1] (425) 883.0777

www.golder.com

OVERALL SITE GENERAL ARRANGEMENT

AND SURVEY CONTROL

PROJECT NO.

1239330901

PHASE

310

CLIENT

CYPRUS AMAX MINERALS COMPANY

REV.

5

2 of 17

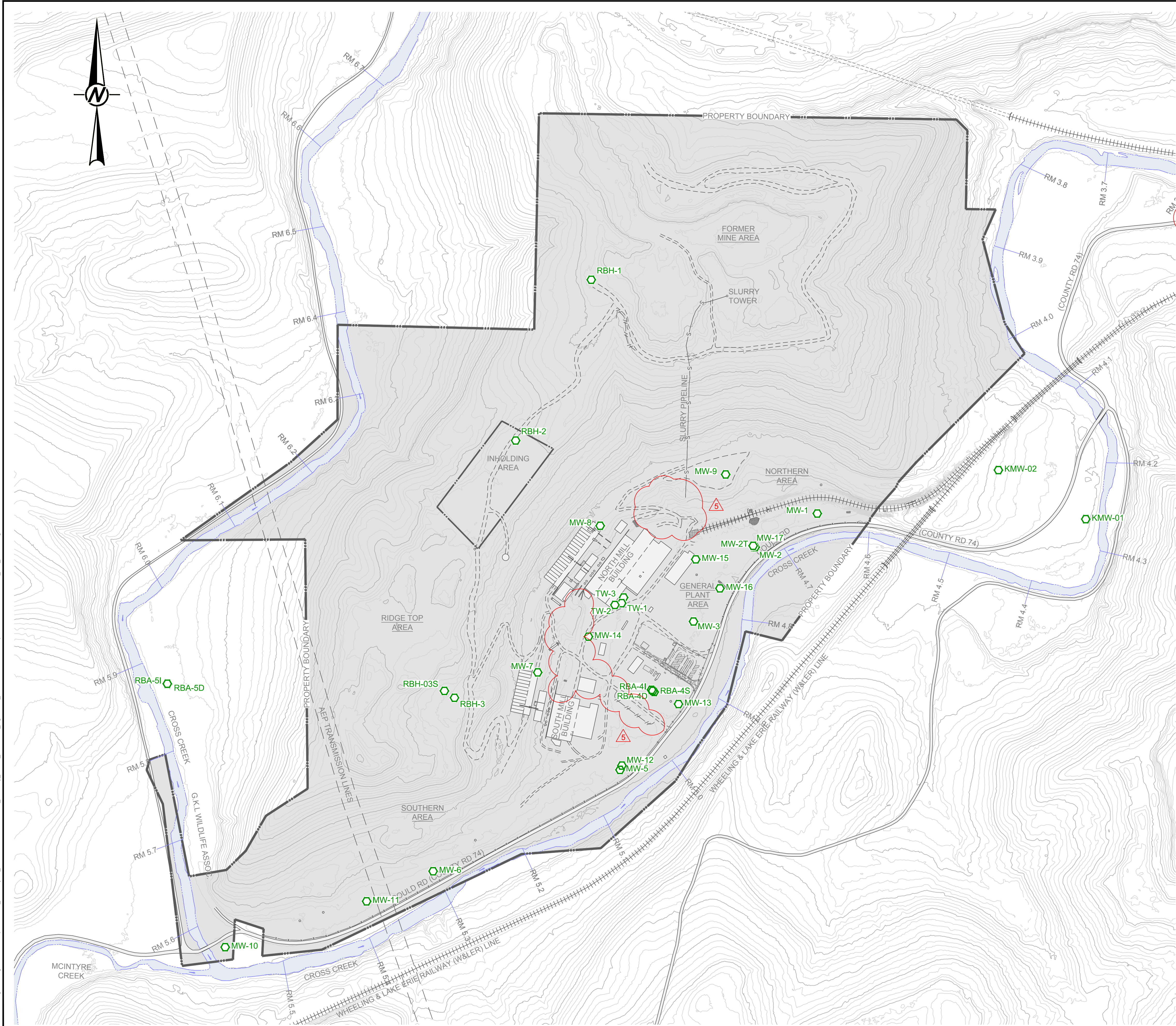
FIGURE

1AR-105

5	2017-10-23	AS-BUILT	FSS	REDMOND	JDW	LKH
4	2016-09-07	SURVEY CONTROL POINTS ADDED	FSS	REDMOND	JDW	LKH
3	2016-08-03	ISSUED FOR ADDENDUM 5	FSS	REDMOND	JDW	LKH
2	2016-03-25	ISSUED FOR STAGE 1 REBID	FSS	REDMOND	JDW	LKH
1	2016-01-21	ISSUED FOR ADDENDUM 1	JDW	REDMOND	FSS	LKH
0	2015-11-23	ISSUED FOR STAGE 1 BID	JDW	REDMOND	FSS	LKH
REV.	YYYY-MM-DD	DESCRIPTION	DESIGNED	PREPARED	REVIEWED	APPROVED



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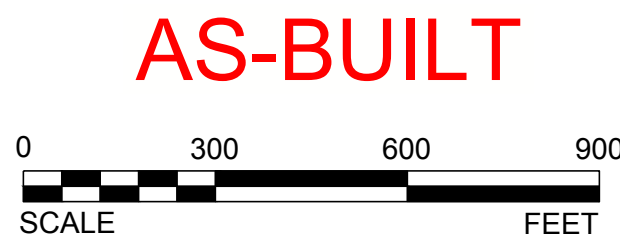


NOTES:

- BASE TOPOGRAPHY DATED 2003 PROVIDED BY JEFFERSON COUNTY, OHIO, ENGINEER'S OFFICE.
  - HORIZONTAL DATUM: OHIO NORTH ZONE NAD 83 - STATE PLANE U.S. SURVEY FEET.
  - VERTICAL DATUM: NAVD 88 (EST. 1991).
  - CONTOUR INTERVAL: 10 FT.ADDITIONAL TOPOGRAPHY BASED ON FIELD OBSERVATIONS AND MEASUREMENTS.
- PROPERTY BOUNDARY BY BONAR SURVEYING, BERGHOLZ, OHIO, DATED OCTOBER 17, 2006.
- THE RIVER MILE MARKERS SHOWN FOR CROSS CREEK HEREON WERE VIA A GEODATABASE AVAILABLE ON THE OHIO STATE DNR WEBSITE, JUNE 2012.
- SITE ADDRESS:  
4243 COUNTY ROAD 74  
MINGO JUNCTION, OH 43938
- AS-BUILT TOPOGRAPHY AND LOCATIONS BASED ON SURVEY PROVIDED BY RETTEW, DATED AUGUST 30, 2017, AND FIELD MEASUREMENTS BY NORTHSTAR DEMOLITION AND REMEDIATION, LP PERSONNEL.

LEGEND:

- EXISTING PROPERTY BOUNDARY (SEE NOTE 2)
- EXISTING ON-SITE ACCESS ROAD
- EXISTING COUNTY ROAD (PAVED)
- EXISTING RAILROAD
- EXISTING SLURRY PIPELINE
- CROSS CREEK
- EXISTING FACILITY
- FORMER SATRALLOY SITE
- DRAINAGE DITCH
- GROUNDWATER MONITORING WELL

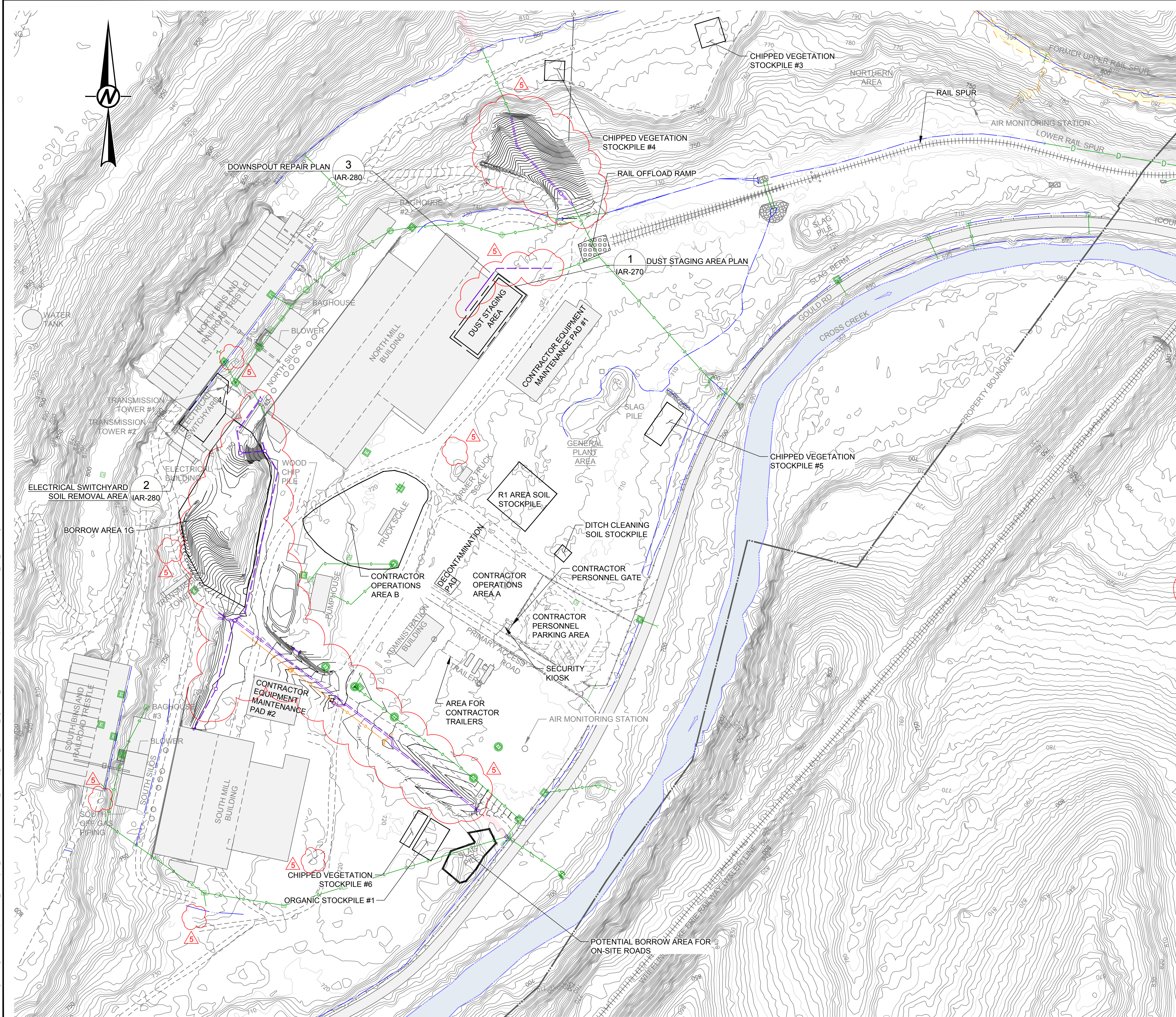


PROJECT		CLIENT		CONSULTANT	
FORMER SATRALLOY SITE		CYPRUS AMAX MINERALS COMPANY		REDMOND 18300 NE UNION HILL ROAD REDMOND, WA U.S.A. [+1] (425) 883-0777 www.golder.com	
STAGE 1 INTERIM ACTION		GROUNDWATER MONITORING WELLS		PROJECT NO. 1239330901	
				PHASE 310	
				REV. 5	
				FIGURE IAR-110	
				REV. 5	
				3 of 17	
				DESIGNED PREPARED REVIEWED APPROVED	
				FSS FSS JDW JDW	
				REDMOND REDMOND REDMOND REDMOND	
				LKH LKH LKH LKH	
				AS-BUILT ISSUED FOR STAGE 1 REBID ISSUED FOR ADDENDUM 1 ISSUED FOR STAGE 1 BID	
				2017-10-23 2016-03-25 2016-01-21 2015-11-23	
				5 2 1 0	
				REV. YYY-MM-DD	

1 in IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI D



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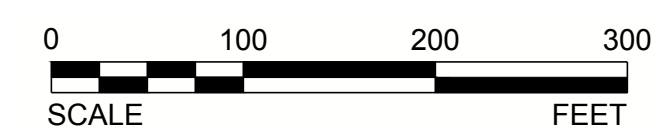


- NOTES:**
1. BASE TOPOGRAPHY DATED 2003 PROVIDED BY JEFFERSON COUNTY, OHIO, ENGINEER'S OFFICE.  
1.a. HORIZONTAL DATUM: OHIO NORTH ZONE NAD 83 - STATE PLANE U.S. SURVEY FEET.  
1.b. VERTICAL DATUM: NAVD 88 (EST. 1991).  
1.c. CONTOUR INTERVAL: 2 FT.  
ADDITIONAL TOPOGRAPHY BASED ON FIELD OBSERVATIONS AND MEASUREMENTS.
  2. PROPERTY BOUNDARY BY BONAR SURVEYING, BERGHOLZ, OHIO, DATED OCTOBER 17, 2006.
  3. CONTRACTOR FACILITIES LOCATION AND LAYOUT MAY BE ADJUSTED TO ACCOMMODATE PROPOSED OPERATIONS. SUBJECT TO PRIOR WRITTEN APPROVAL BY THE CONSTRUCTION MANAGER.
  4. WETLANDS DELINEATION PERFORMED IN APRIL 2013 AND PROVIDED BY WESTLAND RESOURCES, INC. WETLAND DELINEATIONS ARE PRELIMINARY SUBJECT TO CORPS AND OEPA APPROVAL.
  5. AS-BUILT TOPOGRAPHY AND LOCATIONS BASED ON SURVEY PROVIDED BY RETTEW, DATED AUGUST 30, 2017, AND FIELD MEASUREMENTS BY NORTHSTAR DEMOLITION AND REMEDIATION, LP PERSONNEL.

- LEGEND:**
- EXISTING PROPERTY BOUNDARY (SEE NOTE 2)
  - EXISTING ON-SITE ACCESS ROAD
  - EXISTING COUNTY ROAD (PAVED)
  - EXISTING RAILROAD
  - EXISTING SLURRY PIPELINE
  - EXISTING SILT FENCE
  - EXISTING FENCE
  - OVERHEAD ELECTRIC
  - EXISTING UNDERGROUND DRAINAGE PIPE
  - EXISTING CULVERT / DRAIN PIPE DISCHARGE
  - EXISTING MANHOLE (UNVERIFIED)
  - EXISTING MANHOLE (VERIFIED)
  - EXISTING CATCH BASIN (UNVERIFIED)
  - EXISTING CATCH BASIN (VERIFIED)
  - EXISTING HEADWALL
  - DRAINAGE PIPE ABANDONED-IN-PLACE
  - CATCH BASIN ABANDONED-IN-PLACE
  - AS-BUILT DRAINAGE PIPE (APPROX)
  - AS-BUILT INLET
  - AIR MONITORING STATION
  - EXISTING GROUNDWATER WELL
  - DRAINAGE DITCH
  - CROSS CREEK
  - EXISTING FACILITY
  - RAIL OFFLOAD RAMP

- WETLAND LEGEND:**  
(SEE NOTE 4)
- INTERMITTENT JURISDICTIONAL WATERS OF US [CORPS]
  - PERENNIAL JURISDICTIONAL WATERS OF US [CORPS]
  - ISOLATED WETLANDS (OEPA JURISDICTION)
  - OPEN WATER (NON-JURISDICTIONAL)

**AS-BUILT**



PROJECT

FORMER SATRALLOY SITE

STAGE 1 INTERIM ACTION

CLIENT

CYPRUS AMAX MINERALS COMPANY

TITLE

FACILITIES LAYOUT PLANT AREA

CONSULTANT

REDMOND  
18300 NE UNION HILL ROAD  
REDMOND, WA  
U.S.A.  
(+1) (425) 883-0777  
www.golder.com

PROJECT NO.

1239330901

PHASE

310

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM ANSI D

116

REV.

5

4 of 17

FIGURE

IAR-115

5

2017-10-23

AS-BUILT

FSS

REDMOND

JDW

LKH

3

2016-08-03

ISSUED FOR ADDENDUM 5

FSS

REDMOND

JDW

LKH

2

2016-03-25

ISSUED FOR STAGE 1 REBID

FSS

REDMOND

JDW

LKH

1

2016-01-21

ISSUED FOR ADDENDUM 1

JDW

REDMOND

FSS

LKH

0

2015-11-23

ISSUED FOR STAGE 1 BID

JDW

REDMOND

FSS

LKH

REV.

YYYY-MM-DD

DESCRIPTION

DESIGNED

PREPARED

REVIEWED

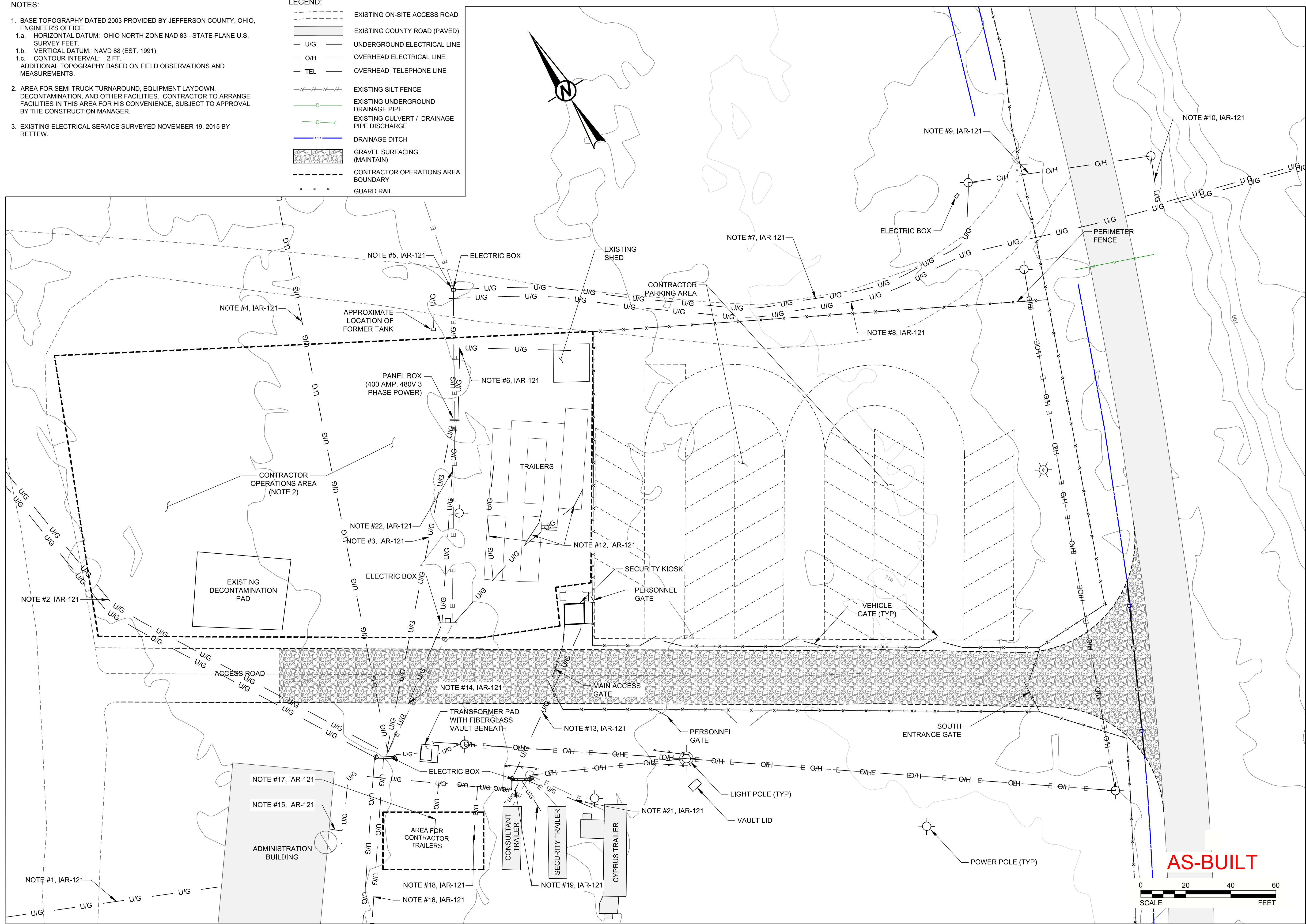
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- NOTES:
1. BASE TOPOGRAPHY DATED 2003 PROVIDED BY JEFFERSON COUNTY, OHIO, ENGINEER'S OFFICE.  
1.a. HORIZONTAL DATUM: OHIO NORTH ZONE NAD 83 - STATE PLANE U.S. SURVEY FEET.  
1.b. VERTICAL DATUM: NAVD 88 (EST. 1991).  
1.c. CONTOUR INTERVAL: 2 FT.  
ADDITIONAL TOPOGRAPHY BASED ON FIELD OBSERVATIONS AND MEASUREMENTS.
  2. AREA FOR SEMI TRUCK TURNAROUND, EQUIPMENT LAYDOWN, DECONTAMINATION, AND OTHER FACILITIES. CONTRACTOR TO ARRANGE FACILITIES IN THIS AREA FOR HIS CONVENIENCE, SUBJECT TO APPROVAL BY THE CONSTRUCTION MANAGER.
  3. EXISTING ELECTRICAL SERVICE SURVEYED NOVEMBER 19, 2015 BY RETTEW.

- LEGEND:
- EXISTING ON-SITE ACCESS ROAD
  - EXISTING COUNTY ROAD (PAVED)
  - U/G UNDERGROUND ELECTRICAL LINE
  - O/H OVERHEAD ELECTRICAL LINE
  - TEL OVERHEAD TELEPHONE LINE
  - EXISTING SILT FENCE
  - EXISTING UNDERGROUND DRAINAGE PIPE
  - EXISTING CULVERT / DRAINAGE PIPE DISCHARGE
  - DRAINAGE DITCH
  - GRAVEL SURFACING (MAINTAIN)
  - CONTRACTOR OPERATIONS AREA BOUNDARY
  - GUARD RAIL



REV.	YYYY-MM-DD	DESCRIPTION	DESIGNED	PREPARED	REVIEWED	APPROVED
5	2017-10-23	AS-BUILT	FSS	REDMOND	JDW	LKH
3	2016-08-03	ISSUED FOR ADDENDUM 5	FSS	REDMOND	JDW	LKH
2	2016-03-25	ISSUED FOR STAGE 1 REBID	FSS	REDMOND	JDW	LKH
1	2016-01-21	ISSUED FOR ADDENDUM 1	JDW	REDMOND	FSS	LKH
0	2015-11-23	ISSUED FOR STAGE 1 BID	JDW	REDMOND	FSS	LKH

CLIENT	CYPRUS AMAX MINERALS COMPANY
CONSULTANT	REDMOND 18300 NE UNION HILL ROAD REDMOND, WA U.S.A. [+1] (425) 883-0777 www.golder.com
PROJECT	FORMER SATRALLOY SITE STAGE 1 INTERIM ACTION
TITLE	SUPPORT AREA
PROJECT NO.	1239330901
PHASE	310
FIGURE	IAR-120



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- NOTE(S)**
- THIS LINE IS A 2-INCH CONDUIT BURIED APPROXIMATELY 2 FEET DEEP WITH CAUTION TAPE AT A DEPTH OF 1 FOOT.
  - THERE ARE A TOTAL OF FOUR 3-INCH CONDUITS WITH 1200 AMP LIVE POWER WIRES INSIDE. FOUR #500 MCM CABLES PER CONDUIT.
  - THIS IS A SET OF FOUR CONDUITS RUNNING FROM THE MAIN BREAKER AREA. THESE CONDUITS ARE APPROXIMATELY 2 FEET DEEP WITH CAUTION TAPE AT A DEPTH OF 1 FOOT. THREE OF THE CONDUITS ARE 1-INCH AND ONE IS 2-INCH.
  - THERE ARE TWO 2-INCH CONDUITS ALONG THIS LINE THAT CONVEY 480 VOLT POWER TO THE RAIL SCALE AND OVERHEAD LIGHTS IN THE RAIL LOADING /UNLOADING AREA. ONE CONDUIT HAS CABLE IN IT AND THE OTHER IS A SPARE FOR OPTIONAL FIBER OPTIC CABLE FOR REMOTE READING OF THE RAIL SCALE DATA. CONDUITS ARE 2 FEET DEEP WITH CAUTION TAPE AT A DEPTH OF 1 FOOT.
  - THIS IS A PULL BOX FOR CABLE THAT GOES TO CROSS CREEK TO POWER A SUMP PUMP THAT WAS USED IN PHASE 1 REMEDIATION.
  - THIS LINE IS A 2-INCH CONDUIT BURIED APPROXIMATELY 2 FEET DEEP WITH CAUTION TAPE AT A DEPTH OF 1 FOOT, WHICH PROVIDES POWER TO THE FORMER FUEL STORAGE AREA.
  - THIS LINE REPRESENTS THE GENERAL LOCATION (NOT SURVEYED) OF 2-INCH CONDUIT BURIED APPROXIMATELY 2 FEET DEEP WITH CAUTION TAPE AT A DEPTH OF 1 FOOT. THIS CONDUIT IS BURIED ALONG THE TOE OF THE BERM THAT RUNS ALONG THE NORTHERN EDGE OF THE FORMER ENTRY ROAD.
  - THIS LINE REPRESENTS THE GENERAL LOCATION (NOT SURVEYED) OF A 3-INCH BURIED CONDUIT THAT CONVEYED WATER FROM CROSS CREEK TO THE BAKER TANK.
  - THIS SECTION IS AN OVERHEAD LINE ABOVE COUNTY ROAD 74.
  - THIS LINE REPRESENTS A 2-INCH BURIED CONDUIT THAT IS APPROXIMATELY 22 FEET LONG AND RUNS APPROXIMATELY 15 FEET IN FRONT OF DRAINAGE OUTLET CULVERT PIPE #6. THE CONDUIT THEN FOLLOWS THE FEEDWATER PIPE TO THE FORMER SUMP PUMP LOCATED IN CROSS CREEK THAT PROVIDED NON-POTABLE WATER DURING PHASE 1 REMEDIATION.
  - RESERVED
  - THESE THREE LINES RUNNING TO THE FORMER TRAILER LOCATIONS ARE 2-INCH CONDUITS WITH 3 - #2 CONDUCTOR CABLES AND 1 - #6 GROUND WIRE IN EACH CONDUIT. CONDUITS ARE BURIED APPROXIMATELY 2 FEET DEEP WITH CAUTION TAPE AT A DEPTH OF 1 FOOT.

- ONE 1.5-INCH CONDUIT WITH 3 - #8 CONDUCTOR CABLES AND 1 - #4 GROUND WIRE. ONE 1.5-INCH CONDUIT WITH 4 - CAT5E CABLES. CONDUIT IS BURIED APPROXIMATELY 2 FEET DEEP WITH CAUTION TAPE AT A DEPTH OF 1 FOOT.
- ONE 3-INCH CONDUIT BURIED APPROXIMATELY 2 FEET DEEP WITH CAUTION TAPE AT A DEPTH OF 1 FOOT.
- ONE 2-INCH CONDUIT WITH 3 - #2 CONDUCTOR CABLES AND 1- #8 GROUND WIRE. CONDUIT IS BURIED APPROXIMATELY 1 FOOT DEEP WITH CAUTION TAPE ABOVE.
- FOUR 3-INCH CONDUITS THAT ARE EMPTY.
- ONE 2-INCH CONDUIT WITH 3 - #3/0 CONDUCTOR CABLES AND 1 - #4 GROUND WIRE. CONDUIT 1 FOOT DEEP WITH CAUTION TAPE ABOVE.
- ONE 2-INCH CONDUIT WITH 3 - #3/0 CONDUCTOR CABLES AND 1 - #4 GROUND WIRE. CONDUIT IS BURIED APPROXIMATELY 1 FOOT DEEP WITH CAUTION TAPE ABOVE.
- CONDUIT INSTALLED PRIOR TO PHASE 1 REMEDIATION. TYPE OF WIRE UNKNOWN. CONDUIT IS 1.5-INCH AND BURIED A FEW INCHES DEEP WITH NO CAUTION TAPE ABOVE IT.
- RESERVED

- ONE 2-INCH CONDUIT WITH 3 - #3/0 CONDUCTOR CABLES AND 1 - #4 GROUND WIRE. ONE 1.5-INCH CONDUIT WITH 4 - CAT5E CABLES. CONDUIT IS BURIED APPROXIMATELY 1 FOOT DEEP WITH CAUTION TAPE ABOVE.
- THIS IS A SET OF FOUR CONDUITS LEADING INTO THE PANEL BOX. ONE 1-INCH CONDUIT WITH 2 - #12 CONDUCTOR CABLES AND 1 - #12 GROUND WIRE. ONE 2-INCH CONDUIT WITH 2 - #12 CONDUCTOR CABLES AND 1 - #12 GROUND WIRE.

PROJECT  
FORMER SATRALLOY SITE  
STAGE 1 INTERIM ACTION

CLIENT  
CYPRUS AMAX MINERALS COMPANY

TITLE  
SUPPORT AREA UTILITIES NOTES

PROJECT NO.  
1239330901

PHASE  
310

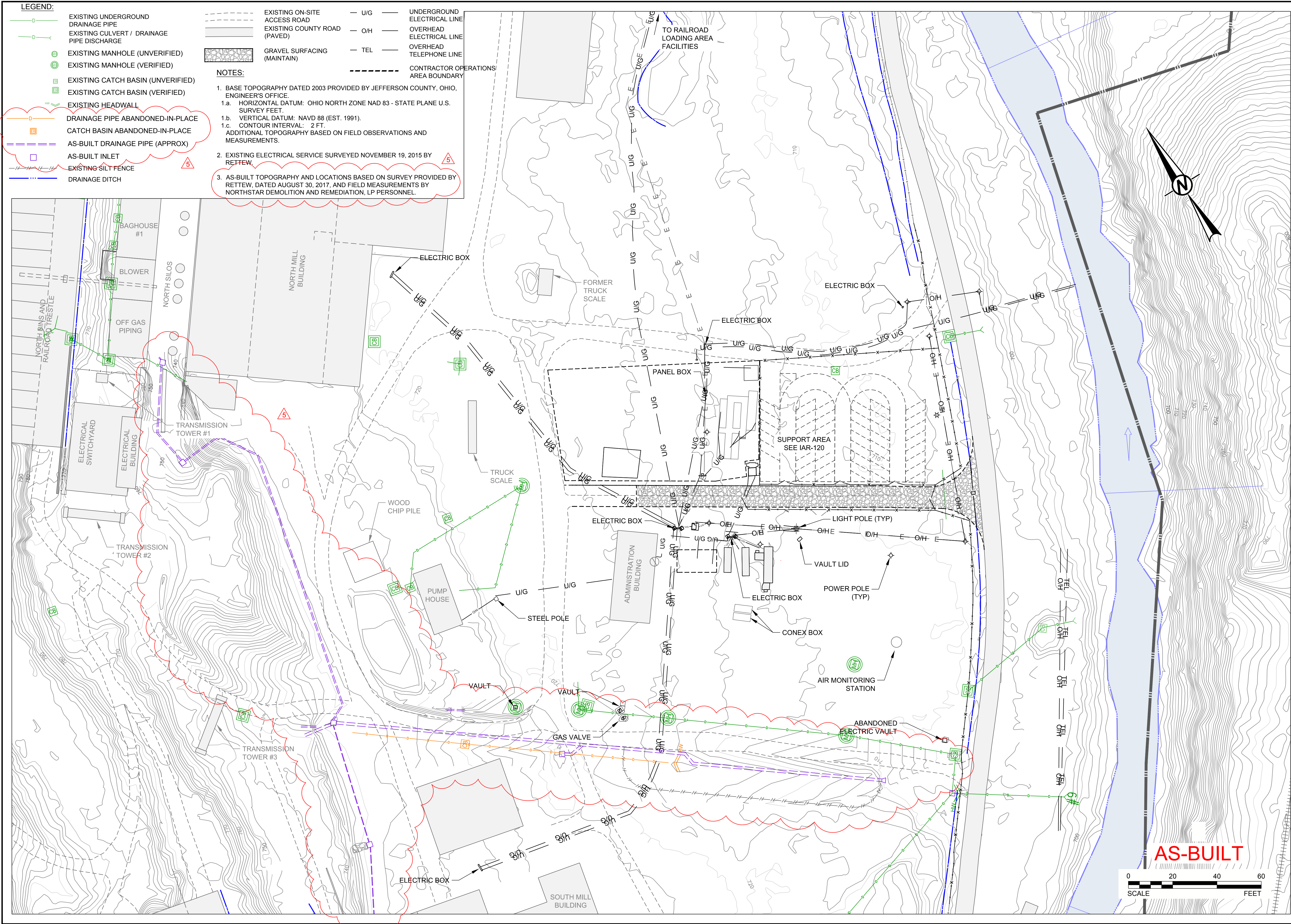
CONSULTANT  
REDMOND  
18300 NE UNION HILL ROAD  
REDMOND, WA  
U.S.A.  
[+1] (425) 883-0777  
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5	2017-10-23	AS-BUILT	FSS	REDMOND	JDW	LKH
3	2016-08-03	ISSUED FOR ADDENDUM 5	FSS	REDMOND	JDW	LKH
REV.	YYYY-MM-DD	DESCRIPTION	DESIGNED	PREPARED	REVIEWED	APPROVED



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CLIENT  
CYPRUS AMAX MINERALS COMPANY

PROJECT  
FORMER SATRALLOY SITE  
STAGE 1 INTERIM ACTION

TITLE  
EXISTING ELECTRICAL SERVICE

PROJECT NO.  
1239330901

PHASE  
310

CONSULTANT

REDMOND  
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REDMOND, WA  
U.S.A.  
[+1] (425) 883-0777  
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REV.

6 of 17

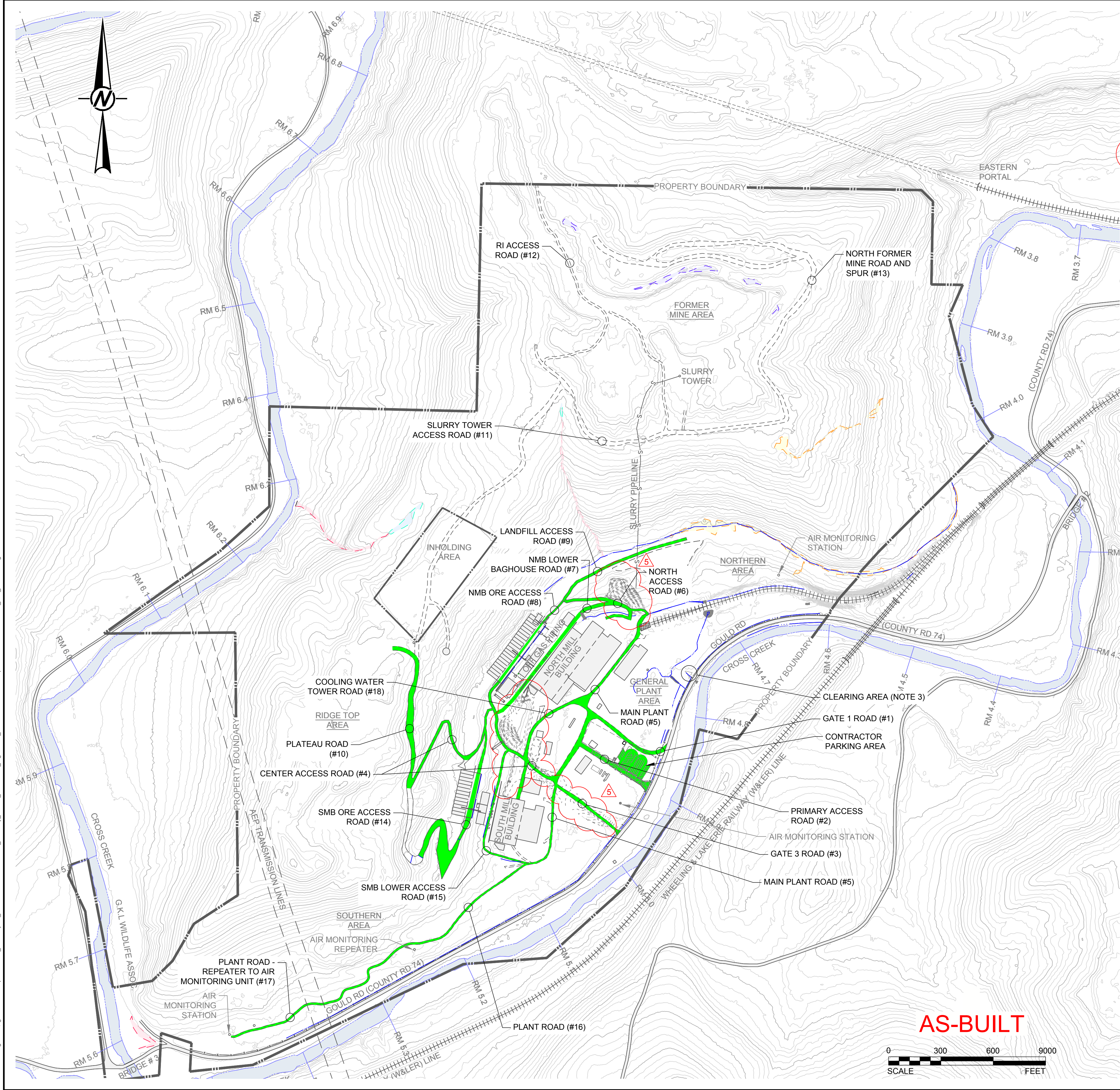
FIGURE

IAR-122

REV.	YYYY-MM-DD	DESCRIPTION	DESIGNED	PREPARED	REVIEWED	APPROVED
5	2017-10-23	AS-BUILT	FSS	REDMOND	JDW	LKH
3	2016-08-03	ISSUED FOR ADDENDUM 5	FSS	REDMOND	JDW	LKH
2	2016-03-25	ISSUED FOR STAGE 1 REBID	FSS	REDMOND	JDW	LKH
1	2016-01-21	ISSUED FOR ADDENDUM 1	JDW	REDMOND	FSS	LKH



Path: \\redmond\geomatics\fraser\former\_satralloy\interim\action\310\_Figures\02\_PRODUCTION\DWG\1\_Satralloy\_101.dwg, File Name: 1239330901\_310\_CE-001.dwg



NOTES:

- BASE TOPOGRAPHY DATED 2003 PROVIDED BY JEFFERSON COUNTY, OHIO, ENGINEER'S OFFICE.
  - HORIZONTAL DATUM: OHIO NORTH ZONE NAD 83 - STATE PLANE U.S. SURVEY FEET.
  - VERTICAL DATUM: NAVD 88 (EST. 1991).
  - CONTOUR INTERVAL: 10 FT.ADDITIONAL TOPOGRAPHY BASED ON FIELD OBSERVATIONS AND MEASUREMENTS.
- PROPERTY BOUNDARY BY BONAR SURVEYING, BERGHOLZ, OHIO, DATED OCTOBER 17, 2006.
- CLEAR VEGETATION BETWEEN HEADWALLS AND 30 FEET TO EITHER SIDE, AS MEASURED PARALLEL TO COUNTY ROAD 74. DO NOT GRUB OR OTHERWISE DISTURB GROUND IN ANY WAY. STOCKPILE VEGETATION IN DESIGNATED AREAS.
- AS-BUILT TOPOGRAPHY AND LOCATIONS BASED ON SURVEY PROVIDED BY RETTEW, DATED AUGUST 30, 2017, AND FIELD MEASUREMENTS BY NORTHSTAR DEMOLITION AND REMEDIATION, LP PERSONNEL.

LEGEND:

---	SLURRY TOWER ACCESS ROAD TO BE MAINTAINED	---	DRAINAGE DITCH
---	EXISTING PROPERTY BOUNDARY (SEE NOTE 2)	█	SITE ROAD TO BE MAINTAINED
---	EXISTING COUNTY ROAD (PAVED)	---	INTERMITTENT JURISDICTIONAL WATERS OF US [CORPS]
+	EXISTING RAILROAD	---	PERENNIAL JURISDICTIONAL WATERS OF US [CORPS]
---	EXISTING SLURRY PIPELINE	---	ISOLATED WETLANDS (OEPA JURISDICTION)
---	CROSS CREEK	---	OPEN WATER (NON-JURISDICTIONAL)
---	EXISTING FACILITY		

ROAD NO.	DESIGNATION	STAGE 1 MAINTENANCE REQUIREMENTS
1	GATE 1 ROAD	AT THE SOUTH END OF THE ROAD (NEAR THE GATE), THE DITCH ON THE NORTH SIDE SHALL BE MAINTAINED TO ENSURE DISCHARGE INTO THE DITCH THAT CONVEYS WATER TO CATCH BASIN #5. MAINTAIN THE DRAINAGE ON THE SOUTH SIDE OF THIS ROAD TO CB-6.
2	PRIMARY ACCESS ROAD	THIS IS THE MAIN ROAD INTO THE PLANT. ANY LOW SPOTS SHALL BE FILLED SO THAT THE ROAD STAYS FREE OF RUTS AND POTHOLES. LOW SPOTS THAT DEVELOP IN THE PARKING LOT SHALL BE FILLED WITH GRAVEL AND COMPACTED.
3	GATE 3 ROAD	THIS IS THE ALTERNATE ACCESS ROAD. IT SHALL BE GRADED (BACK BLADED) TO REMOVE VEGETATION AND ANY RUTTING DEEPER THAN 2 INCHES.
4	CENTER ACCESS ROAD	THIS IS THE MAIN ROAD TO THE PLATEAU. ASSOCIATED DRAINAGE DITCHES SHALL BE MAINTAINED TO PREVENT OVERFLOW. ANY RUTTING CAUSED BY STORMWATER RUNOFF SHALL BE SMOOTHED OUT. THE EXISTING SAFETY BERMS ON THIS ROAD SHALL BE MAINTAINED. ADD AND/OR MAINTAIN WATER BARS TO REDUCE RUTTING IN ROAD.
5	MAIN PLANT ROAD	THIS IS THE ROAD STARTING AT THE RAILROAD LOADING RAMP AND RUNNING IN FRONT OF BOTH MILL BUILDINGS. IT SHALL HAVE GRADE MAINTAINED TO CONVEY PRECIPITATION INTO THE ASSOCIATED DITCHES AND RUNOFF AREAS.
6	NORTH ACCESS ROAD	THIS IS ROAD RUNS FROM THE RAILROAD LOADING RAMP TO THE NMB - ORE ACCESS ROAD. ASSOCIATED DRAINAGE DITCHES SHALL BE MAINTAINED TO PREVENT OVERFLOW. ANY RUTTING CAUSED BY STORMWATER RUNOFF SHALL BE SMOOTHED OUT.
7	NMB - LOWER BAGHOUSE ROAD	THIS IS THE ROAD THAT RUNS BEHIND NMB AND UNDER THE BAGHOUSES. THE ASSOCIATED SIDE DITCHES (WHICH MAY APPEAR MORE LIKE SWALES AND LOW POINTS) SHALL BE CLEANED AND MADE CONTIGUOUS, WITH POSITIVE DRAINAGE AT ALL LOCATIONS. RUTS IN THE ROAD SHALL BE SMOOTHED OUT.
8	NMB - ORE ACCESS ROAD	MOST OF THIS ROAD CONSISTS OF THE CONCRETE APRON IN FRONT OF THE BINS; HOWEVER, THE AREAS LEADING INTO AND OUT OF THE CONCRETE SECTION ARE GRAVEL AND SHALL BE GRADED TO PROVIDE POSITIVE STORMWATER DRAINAGE INTO THE ADJACENT DITCHES. THE DITCHES ALONG THE CONCRETE APRON SHALL BE CLEANED AND CLEANED OF ALL DEBRIS AND MUD SO THAT THE DRAINS ARE EXPOSED. THE CULVERT ON THE EAST SIDE OF THIS ROAD SHALL HAVE THE (NORTH) INLET AREA CLEANED AND RESHAPED AS NECESSARY TO PROVIDE UNIMPED FLOW.
9	LANDFILL ACCESS ROAD	THIS IS ROAD THAT RUNS FROM THE NMB ORE ACCESS ROAD TO THE LANDFILL. ASSOCIATED DRAINAGE DITCHES SHALL BE MAINTAINED TO PREVENT OVERFLOW. ANY RUTTING CAUSED BY STORM WATER RUNOFF SHALL BE SMOOTHED OUT.
10	PLATEAU ROAD	MAINTAIN BERMS AND DITCHES ALONG THIS ROAD TO PREVENT SURFACE WATER RUNOFF FROM CROSSING OR RUNNING DOWN THE CENTER OF THE ROAD.
11	SLURRY TOWER ACCESS ROAD	NOT IN SCOPE
12	RI ACCESS ROAD	NOT IN SCOPE
13	NORTH FORMER MINE ROAD AND SPUR	NOT IN SCOPE
14	SMB ORE ACCESS ROAD	MOST OF THIS ROAD CONSISTS OF THE CONCRETE APRON IN FRONT OF THE BINS; HOWEVER, THE AREAS LEADING INTO AND OUT OF THE CONCRETE SECTION ARE GRAVEL AND SHALL BE GRADED TO PROVIDE POSITIVE STORMWATER DRAINAGE INTO THE ADJACENT DITCHES. THE DITCHES ALONG THE CONCRETE APRON SHALL BE CLEANED AND CLEANED OF ALL DEBRIS AND MUD SO THAT THE DRAINS ARE EXPOSED. THE PORTION OF THE ROAD THAT EXITS OFF THE WEST SIDE OF THE CONCRETE APRON AND RUNS UP TO THE DIVERSION DITCH SHALL BE MAINTAINED SO THAT IT CAN BE SAFELY TRAVERSED BY A 4-WHEEL-DRIVE PICKUP TRUCK.
15	SMB LOWER ACCESS ROAD	THIS IS THE ROAD THAT RUNS BEHIND SMB AND UNDER THE BAGHOUSES. THIS ROAD ALSO LEADS FROM THE CENTER ACCESS ROAD TO THE FORMER LAB BUILDING. THE ASSOCIATED SIDE DITCHES (WHICH MAY APPEAR MORE LIKE SWALES AND LOW POINTS) SHALL BE CLEANED AND MADE CONTIGUOUS, WITH POSITIVE DRAINAGE AT ALL LOCATIONS. RUTS IN THE ROAD SHALL BE SMOOTHED OUT. THERE ARE SEVERAL WATER BARS THAT SHALL BE MAINTAINED.
16	PLANT ROAD	THIS ROAD RUNS THROUGH A FLAT OPEN AREA. IT DOES NOT HAVE A DEFINED CROWN OR SIDE DITCHES. MAINTAIN GRADE AS NECESSARY SO THAT STORMWATER RUNS OFF AND RUTS DO NOT DEVELOP.
17	PLANT ROAD - REPEATER TO AIR MONITORING UNIT	THIS ROAD RUNS THROUGH A SLAG DEPOSIT FOR HALF ITS LENGTH. THE ROAD SHALL BE MAINTAINED AND GRADED TO PREVENT RUTTING FROM STORMWATER AND SO THAT IT CAN BE SAFELY TRAVERSED BY A 4-WHEEL-DRIVE PICKUP TRUCK.
18	ROAD TO COOLING WATER TOWER	THIS ROAD RUNS THROUGH A FLAT OPEN AREA BETWEEN THE CENTER ACCESS ROAD AND THE MAIN PLANT ROAD. IT DOES NOT HAVE A DEFINED CROWN OR SIDE DITCHES. MAINTAIN GRADE AS NECESSARY SO THAT STORM WATER RUNS OFF AND RUTS DO NOT DEVELOP.

CLIENT  
CYPRUS AMAX MINERALS COMPANY

PROJECT  
FORMER SATRALLOY SITE  
STAGE 1 INTERIM ACTION

REV. 5

TITLE  
ACCESS ROAD MAINTENANCE

CONSULTANT

REDMOND  
18300 NE UNION HILL ROAD  
REDMOND, WA  
U.S.A.  
[+1] (425) 883-0777  
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PHASE  
310

PROJECT NO.  
1239330901

DESIGNED  
FSS

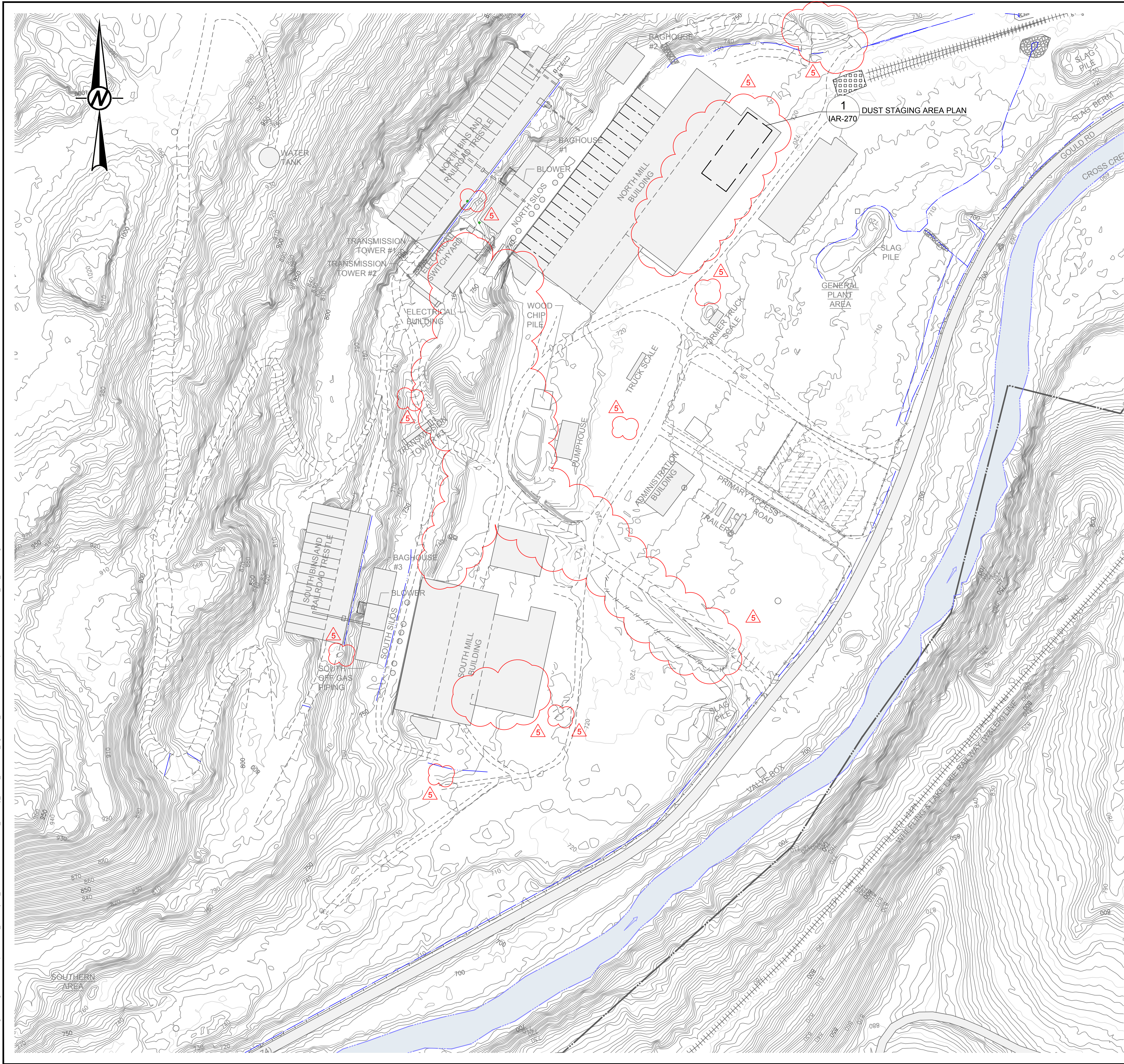
REVIEWED  
FSS

APPROVED  
FSS

7 of 17

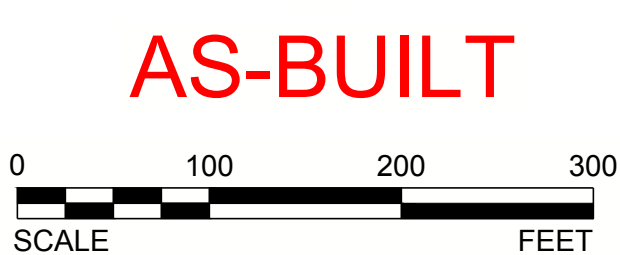
FIGURE  
IAR-200





**LEGEND:**

	EXISTING PROPERTY BOUNDARY (SEE NOTE 2)
	EXISTING ON-SITE ACCESS ROAD
	EXISTING COUNTY ROAD (PAVED)
	EXISTING RAILROAD
	EXISTING GROUNDWATER WELL
	AIR MONITORING STATION OR REPEATER
	CROSS CREEK
	DRAINAGE DITCH
	EXISTING FACILITY
	FLAT ROOF DUST REMOVAL AREA DUST REMOVAL WAS NOT PERFORMED UNDER THIS CONTRACT



PROJECT

FORMER SATRALLOY SITE

STAGE 1 INTERIM ACTION

CLIENT

CYPRUS AMAX MINERALS COMPANY

REV.

5

8 of 17

FIGURE

IAR-210

TITLE

FLAT ROOF DUST REMOVAL

CONSULTANT

REDMOND  
18300 NE UNION HILL ROAD  
REDMOND, WA  
U.S.A.  
Golder Associates  
[+1] (425) 883-0777  
www.golder.com

PROJECT NO.

1239330901

PHASE

310

5

2017-10-23

AS-BUILT

FSS

REDMOND

JDW

LKH

3

2016-08-03

ISSUED FOR ADDENDUM 5

FSS

REDMOND

JDW

LKH

2

2016-03-25

ISSUED FOR STAGE 1 REBID

FSS

REDMOND

JDW

LKH

1

2016-01-21

ISSUED FOR ADDENDUM 1

JDW

REDMOND

FSS

LKH

0

2015-11-23

ISSUED FOR STAGE 1 BID

JDW

REDMOND

FSS

LKH

REV.

YYYY-MM-DD

DESCRIPTION

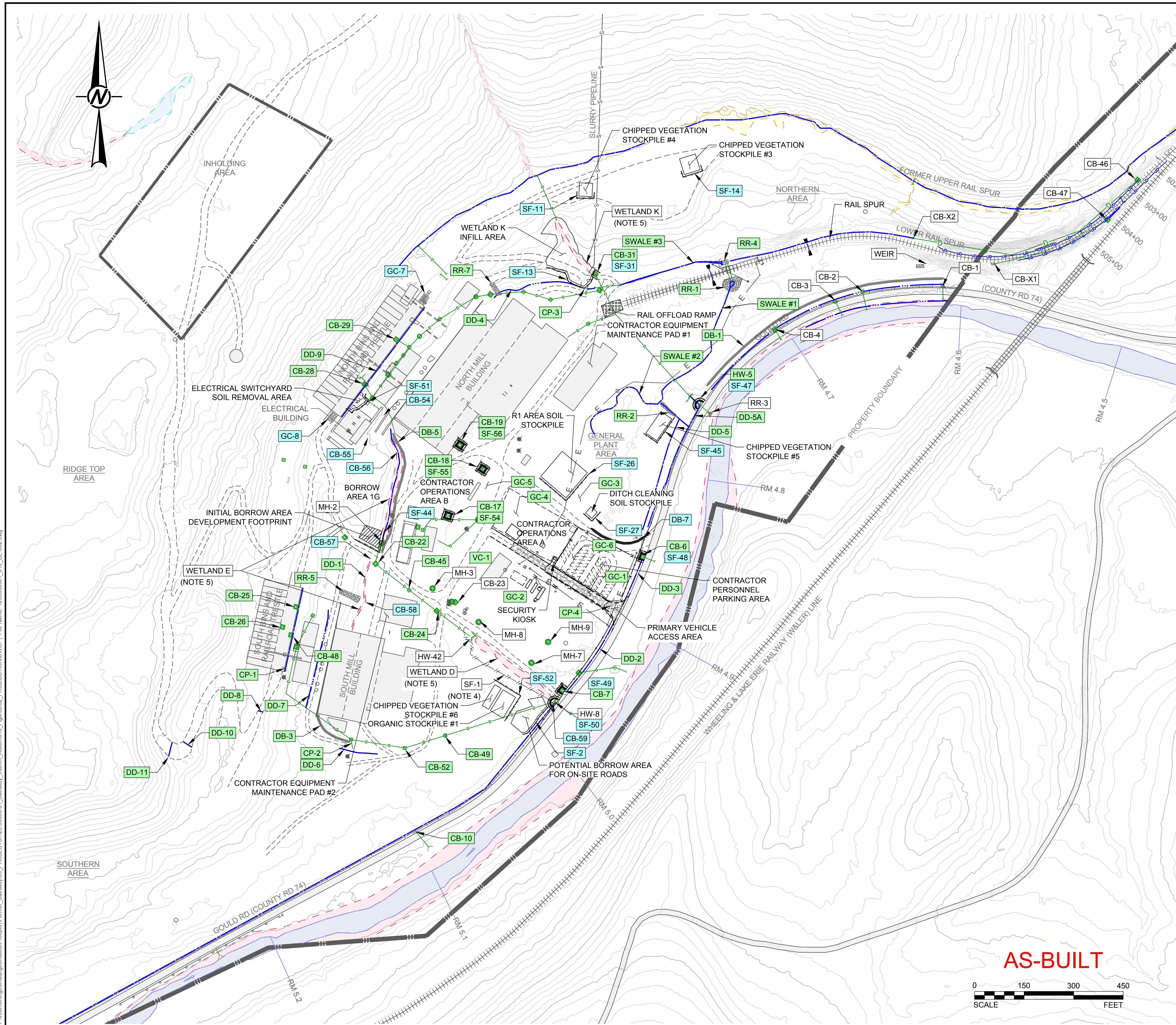
DESIGNED

PREPARED

REVIEWED

APPROVED





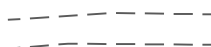


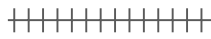
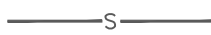










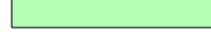


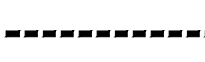
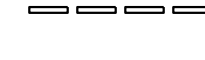



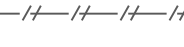
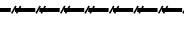






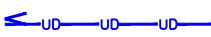

NOTES:

1. BASE TOPOGRAPHY DATED 2003 PROVIDED BY JEFFERSON COUNTY, OHIO, ENGINEER'S OFFICE.
  - a. HORIZONTAL DATUM: OHIO NORTH ZONE NAD 83 - STATE PLANE U.S. SURVEY FEET.
  - b. VERTICAL DATUM: NAVD 88 (EST. 1991).
  - c. CONTOUR INTERVAL: 2 FT.
2. ADDITIONAL TOPOGRAPHY BASED ON FIELD OBSERVATIONS AND MEASUREMENTS.
3. PROPERTY BOUNDARY BY BONAR SURVEYING, BERGHOLZ, OHIO, DATED OCTOBER 17, 2006.
4. RESERVED.
5. REMOVE SF-1 AS REQUIRED FOR WETLANDS D INFILLING.
6. INSTALL AND MAINTAIN BMPS IN ACCORDANCE WITH THE DRAWINGS AND THE CONSTRUCTION SWPPP.
7. THIS DRAWING SHOWS CONDITIONS PRIOR TO IMPLEMENTATION OF STAGE 1 INTERIM ACTION ACTIVITIES ONLY. THE INTENT OF THIS DRAWING WAS TO GUIDE ACTIVITIES DURING STAGE 1 INTERIM ACTION AND CONSEQUENTLY AS-BUILT CONDITIONS ARE NOT MEANINGFUL. THIS SHEET IS RETAINED IN THIS DRAWING PACKAGE FOR REFERENCE ONLY.

**BMP KEY:**

- CB - CATCH BASIN  
 GC - GRAVEL COVER  
 DB - DIVERSION BERM  
 DD - DIVERSION DITCH  
 VC - VEGETATION COVER  
 SW - STORM WATER SAMPLE  
 ST - SAND TUBE  
 SF - SILT FENCE  
 RR - RIP RAP  
 CP - CULVERT PIPE

**LEGEND:**

- |   |   |
|---|---|
|    | SLURRY TOWER ACCESS ROAD<br>TO BE MAINTAINED    |
|    | EXISTING PROPERTY BOUNDARY<br>(SEE NOTE 2)      |
|    | EXISTING COUNTY ROAD (PAVED)                    |
|    | EXISTING RAILROAD                               |
|    | EXISTING SLURRY PIPELINE                        |
|  | CROSS CREEK                                     |
|  | EXISTING FACILITY                               |
|  | EXISTING CULVERT / DRAINAGE PIPE DISCHARGE      |
|  | EXISTING MANHOLE (UNVERIFIED)                   |
|  | EXISTING MANHOLE (VERIFIED)                     |
|  | EXISTING CATCH BASIN (UNVERIFIED)               |
|  | EXISTING CATCH BASIN (VERIFIED)                 |
|  | EXISTING HEADWALL                               |
|  | EXISTING FIRE HYDRANT                           |
|  | EXISTING GROUNDWATER WELL                       |
|  | DRAINAGE DITCH                                  |
|  | DRAINAGE SWALE (WITH FLOW DIRECTION)            |
|  | BMP OR DRAINAGE FEATURE                         |
|  | EXISTING FEATURE - TO BE MAINTAINED             |
|  | NEW FEATURE - TO BE INSTALLED AND<br>MAINTAINED |
|  | PROPOSED CATCH BASIN                            |
|  | PROPOSED CMP DRAINAGE PIPE                      |
|  | TUBE SAND BERM                                  |
|  | EXISTING DIVERSION BERM                         |
|  | DIVERSION BERM                                  |
|  | WATER BAR                                       |
|  | EXISTING SILT FENCE                             |
|  | SILT FENCE                                      |
|  | REINFORCED SILT FENCE                           |
|  | STRAW BALE BARRIER WITH SILT FENCE              |
|  | DRAINAGE DITCH (WITH FLOW DIRECTION)            |
|  | UNDERDRAIN                                      |
|  | HEADWALL AND UNDERDRAIN CROSSING                |

REV.	YYYY-MM-DD	DESCRIPTION	DESIGNED	PREPARED	REVIEWED	APPROVED
5	2017-10-23	AS-BUILT	FSS	REDMOND	JDW	LKH
3	2016-08-03	ISSUED FOR ADDENDUM 5	FSS	REDMOND	JDW	LKH
2	2016-03-25	ISSUED FOR STAGE 1 REBID	FSS	REDMOND	JDW	LKH
1	2016-01-21	ISSUED FOR ADDENDUM 1	JDW	REDMOND	FSS	LKH
0	2015-11-23	ISSUED FOR STAGE 1 BID	JDW	REDMOND	FSS	LKH

CLIENT  
CYPRUS AMAX MINERALS COMPANY

CONSULTANT

 **Goldner  
Associates**

REDMOND  
18300 NE UNION HILL ROAD  
REDMOND, WA  
U.S.A.  
[+1] (425) 883-0777  
[www.goldner.com](http://www.goldner.com)

TITLE  
**BMP AND DRAINAGE FACILITIES  
MAINTENANCE**

PROJECT NO.	PHASE
1239330901	310

REV. 5 9 of 17 FIGURE IAR-220

1 in  
IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI D

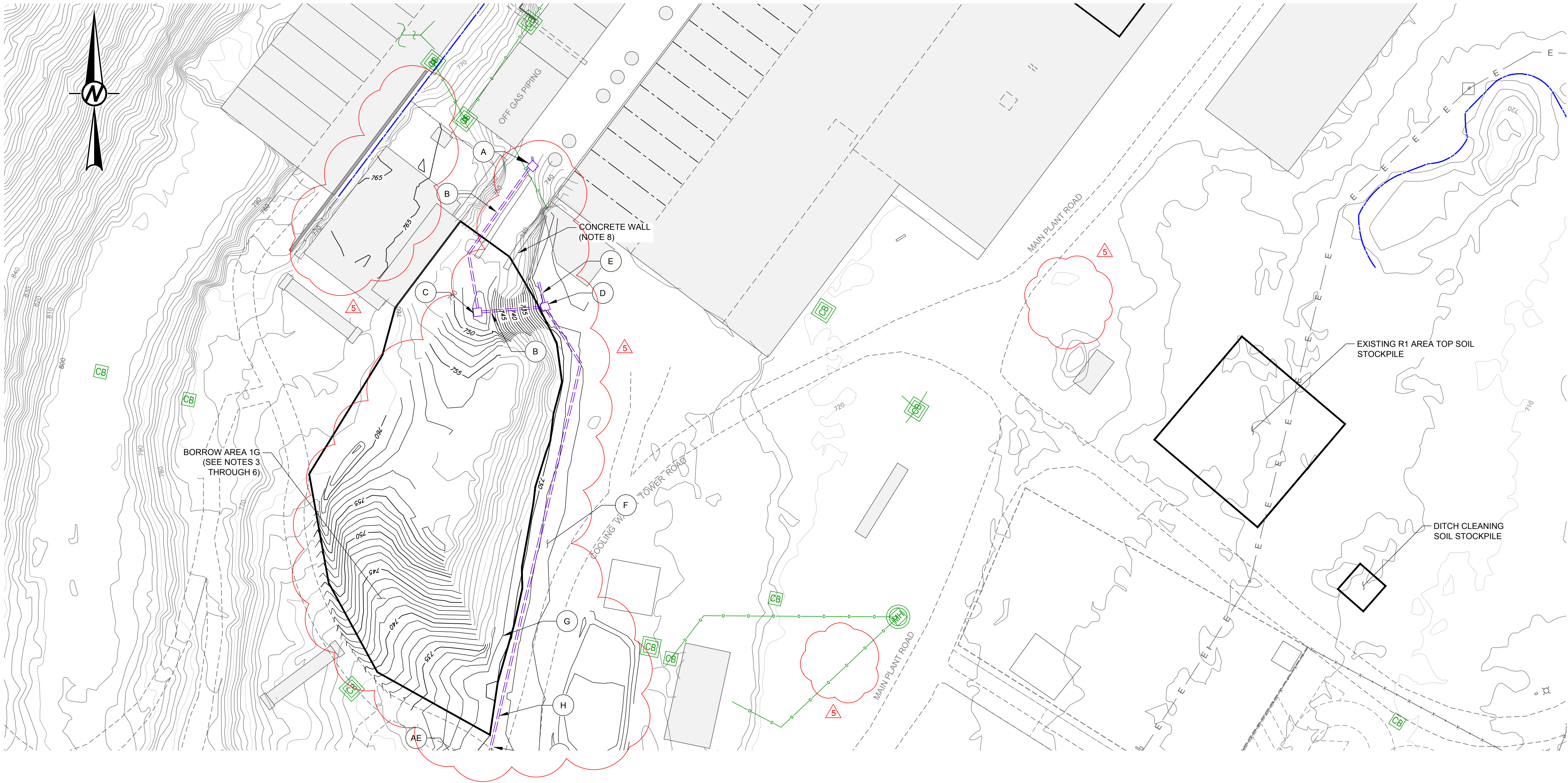
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Path: \\redmond\genetec\jennetia\Frapport\Former\_Satralloy\09\_PROJECT\5123-90309-01\_Satralloy\_Interim\_Action\310\_Figures\02\_PRODUCTION\DWG\1\_File Name: 1239330901\_310\_IAR19.dwg



NOTES:

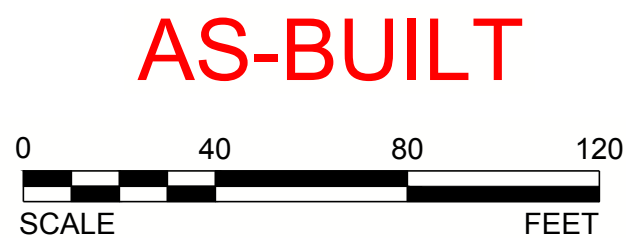
- BASE TOPOGRAPHY DATED 2003, PROVIDED BY JEFFERSON COUNTY, OHIO, ENGINEER'S OFFICE.  
1.a. HORIZONTAL DATUM: OHIO NORTH ZONE NAD 83 - STATE PLANE U.S. SURVEY FEET.  
1.b. VERTICAL DATUM: NAVD 88 (EST. 1991).  
1.c. CONTOUR INTERVAL: 2 FT.  
ADDITIONAL TOPOGRAPHY BASED ON FIELD OBSERVATIONS AND MEASUREMENTS.
- PROPERTY BOUNDARY BY BONAR SURVEYING, BERGHOLZ, OHIO, DATED OCTOBER 17, 2006.
- DEVELOP BORROW AREA FROM SOUTH END. DO NOT REMOVE CRIB WALL STRUCTURE UNLESS APPROVED OR DIRECTED IN ADVANCE BY THE CONSTRUCTION MANAGER.
- CHIP AND PLACE VEGETATION IN CHIPPED VEGETATION STOCKPILES.
- REMOVE UPPER 1 FOOT OF SOIL AND STOCKPILE AT CONVENIENT LOCATION APPROVED BY CONSTRUCTION MANAGER FOR LATER REUSE AS TOPSOIL.
- RECONTOUR BORROW AREA AT END OF PROJECT SO THAT ALL EXCAVATED SLOPES ARE 1H:1V OR FLATTER AND TO PROVIDE POSITIVE SURFACE WATER DRAINAGE AT ALL LOCATIONS.
- [RESERVED].
- MAINTAIN FALL PROTECTION CAPABILITY IF PART OF WALL IS REMOVED TO ALLOW OTHER ACTIVITIES. CHAIN LINK FENCE USED FOR FALL PROTECTION SHALL BE A MINIMUM OF 6 FEET HIGH AND SHALL CONFORM TO THE REQUIREMENTS OF THE CHAIN LINK FENCE MANUFACTURERS INSTITUTE.
- AS-BUILT TOPOGRAPHY AND LOCATIONS BASED ON SURVEY PROVIDED BY RETTEW, DATED AUGUST 30, 2017, AND FIELD MEASUREMENTS BY NORTHSTAR DEMOLITION AND REMEDIATION, LP PERSONNEL.

LEGEND:

- |  |  |
|--|--|
|  | EXISTING PROPERTY BOUNDARY (SEE NOTE 2)    |
|  | EXISTING ON-SITE ACCESS ROAD               |
|  | EXISTING COUNTY ROAD (PAVED)               |
|  | EXISTING RAILROAD                          |
|  | EXISTING SLURRY PIPELINE                   |
|  | EXISTING UNDERGROUND DRAINAGE PIPE         |
|  | EXISTING CULVERT / DRAINAGE PIPE DISCHARGE |
|  | EXISTING MANHOLE (UNVERIFIED)              |
|  | EXISTING MANHOLE (VERIFIED)                |
|  | EXISTING CATCH BASIN (UNVERIFIED)          |
|  | EXISTING CATCH BASIN (VERIFIED)            |
|  | AS-BUILT DRAINAGE PIPE (APPROX)            |
|  | AS-BUILT INLET                             |

- |  |                     |
|--|---------------------|
|  | DRAINAGE DITCH      |
|  | EXISTING FACILITY   |
|  | EXISTING FENCE      |
|  | EXISTING SILT FENCE |
|  | BORROW AREA         |

- |  |                        |
|--|------------------------|
|  | AS-BUILT MAJOR CONTOUR |
|  | AS-BUILT MINOR CONTOUR |



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CYPRUS AMAX MINERALS COMPANY

REDMOND  
18300 NE UNION HILL ROAD  
REDMOND, WA  
U.S.A.  
[+1] (425) 883-0777  
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PROJECT  
FORMER SATRALLOY SITE  
STAGE 1 INTERIM ACTION

TITLE  
BORROW AREA PLAN

PHASE  
310

PROJECT NO.  
1239330901

REV.  
5

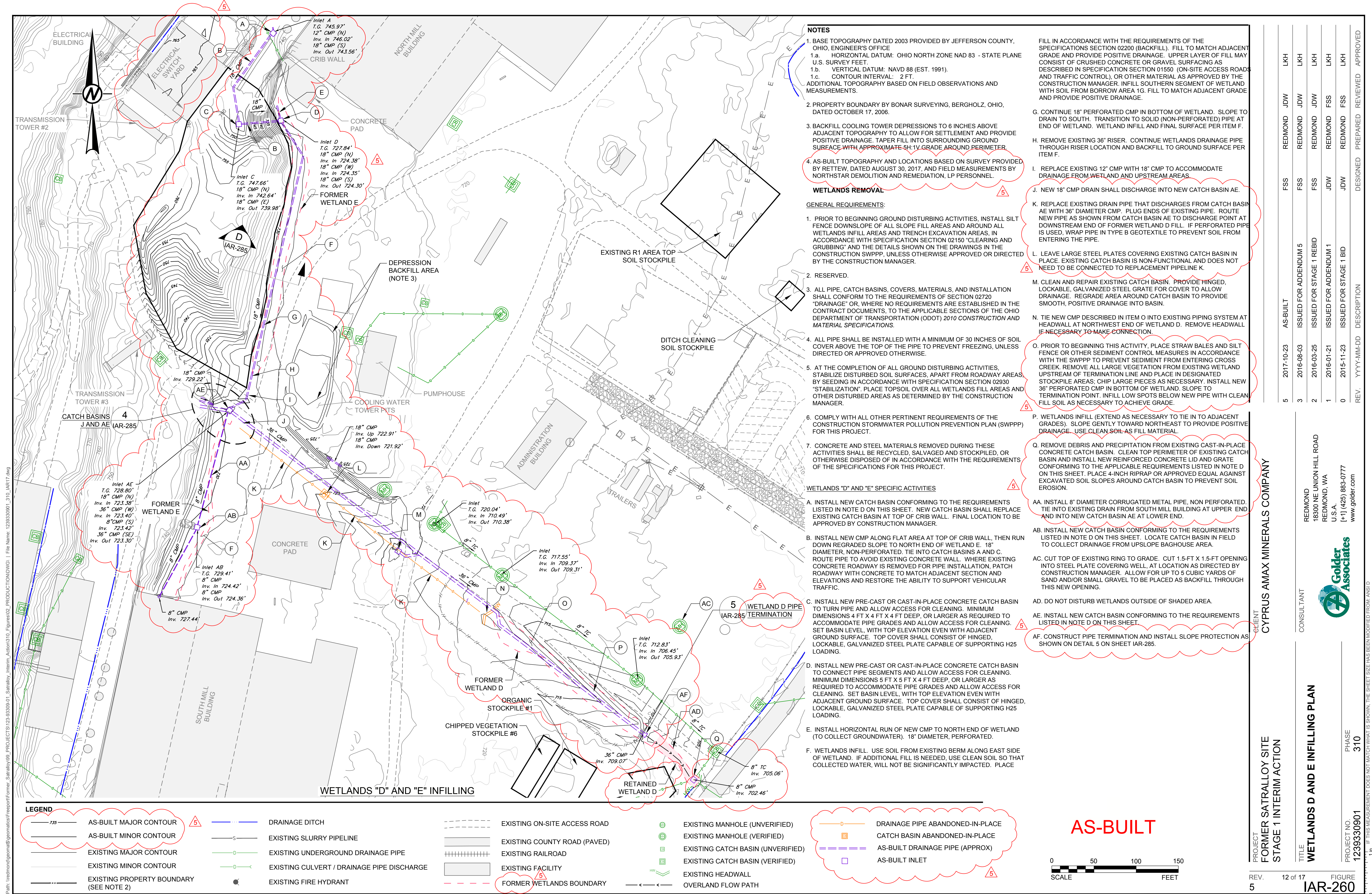
11 of 17

FIGURE

IAR-250

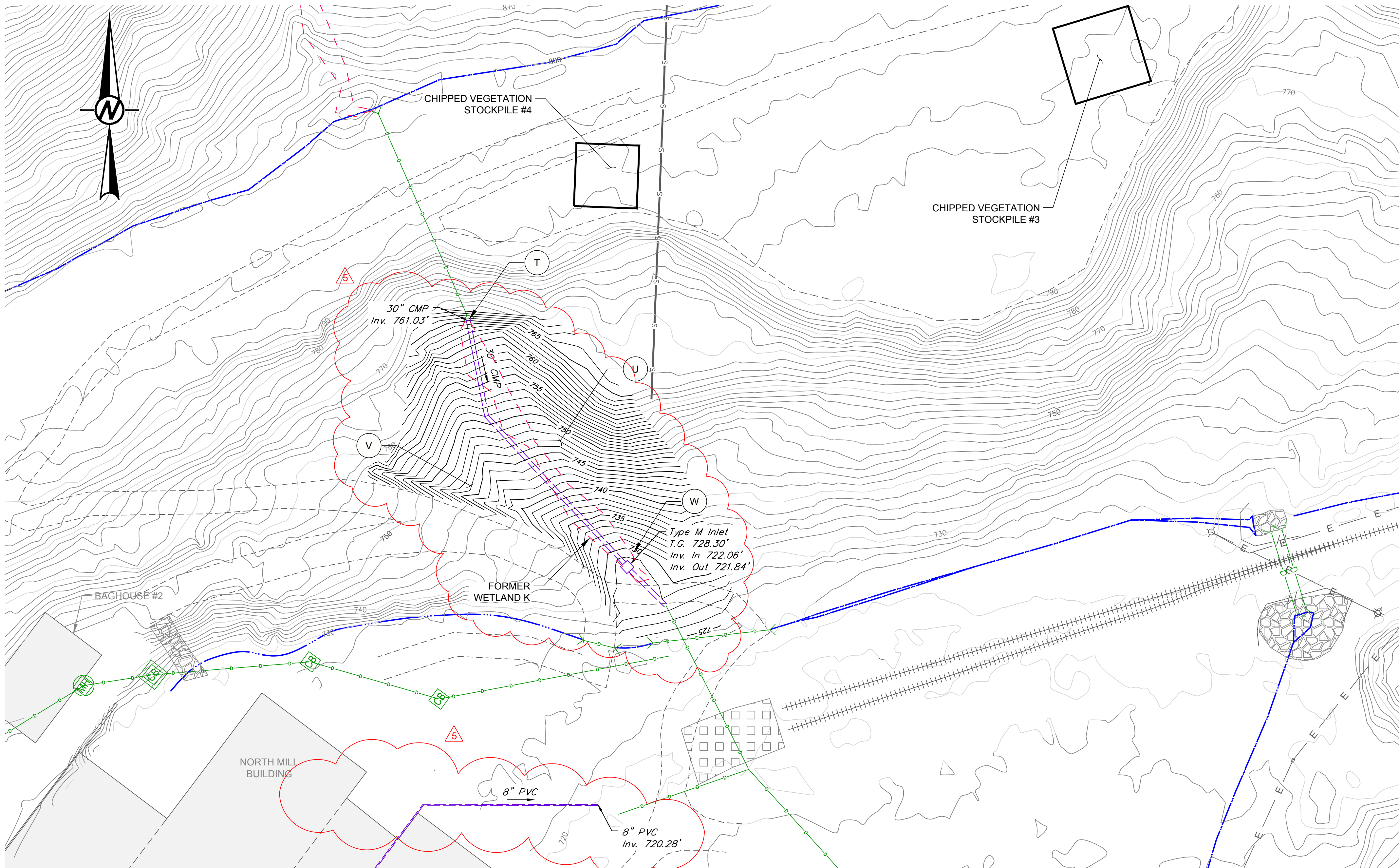
REV.	YYYY-MM-DD	DESCRIPTION	DESIGNED	PREPARED	REVIEWED	APPROVED
5	2017-10-23	AS-BUILT	FSS	REDMOND	JDW	LKH
2	2016-03-25	ISSUED FOR STAGE 1 REBID	FSS	REDMOND	JDW	LKH
1	2016-01-21	ISSUED FOR ADDENDUM 1	JDW	REDMOND	FSS	LKH
0	2015-11-23	ISSUED FOR STAGE 1 BID	JDW	REDMOND	FSS	LKH







Path: \\redmond\genetics\geomatics\Figures\02\_PRODUCTION\DWG\1\_Satralloy\_Interim\_Action\310\_Figures\02\_PRODUCTION\DWG\1 File Name: 1239330901\_310\_001.dwg



WETLAND "K" INFILLING

NOTES

1. BASE TOPOGRAPHY DATED 2003 PROVIDED BY JEFFERSON COUNTY, OHIO, ENGINEER'S OFFICE.
  - 1.a. HORIZONTAL DATUM: OHIO NORTH ZONE NAD 83 - STATE PLANE U.S. SURVEY FEET.
  - 1.b. VERTICAL DATUM: NAVD 88 (EST. 1991).
  - 1.c. CONTOUR INTERVAL: 2 FT.
2. ADDITIONAL TOPOGRAPHY BASED ON FIELD OBSERVATIONS AND MEASUREMENTS.

2. PROPERTY BOUNDARY BY BONAR SURVEYING, BERGHOLZ, OHIO, DATED OCTOBER 17, 2006.

3. AS-BUILT TOPOGRAPHY AND LOCATIONS BASED ON SURVEY PROVIDED BY RETTEW, DATED AUGUST 30, 2017, AND FIELD MEASUREMENTS BY NORTHSTAR DEMOLITION AND REMEDIATION, LP PERSONNEL.

WETLANDS REMOVAL

GENERAL REQUIREMENTS:

1. PRIOR TO BEGINNING GROUND DISTURBING ACTIVITIES, INSTALL SILT FENCE DOWNSLOPE OF ALL SLOPE FILL AREAS AND AROUND ALL WETLANDS INFILL AREAS AND TRENCH EXCAVATION AREAS, IN ACCORDANCE WITH SPECIFICATION SECTION 02150 "CLEARING AND GRUBBING" AND THE DETAILS SHOWN ON THE DRAWINGS IN THE CONSTRUCTION SWPPP, UNLESS OTHERWISE APPROVED OR DIRECTED BY THE CONSTRUCTION MANAGER.
2. RESERVED.
3. ALL PIPE, CATCH BASINS, COVERS, MATERIALS, AND INSTALLATION SHALL CONFORM TO THE REQUIREMENTS OF SECTION 02720 "DRAINAGE" OR, WHERE NO REQUIREMENTS ARE ESTABLISHED IN THE CONTRACT DOCUMENTS, TO THE APPLICABLE SECTIONS OF THE OHIO DEPARTMENT OF TRANSPORTATION (ODOT) 2010 CONSTRUCTION AND MATERIAL SPECIFICATIONS.
4. ALL PIPE SHALL BE INSTALLED WITH A MINIMUM OF 30 INCHES OF SOIL COVER ABOVE THE TOP OF THE PIPE TO PREVENT FREEZING.
5. AT THE COMPLETION OF ALL GROUND DISTURBING ACTIVITIES, STABILIZE DISTURBED SOIL SURFACES, APART FROM ROADWAY AREAS, BY SEEDING IN ACCORDANCE WITH SPECIFICATION SECTION 02930 "STABILIZATION". PLACE TOPSOIL OVER ALL WETLANDS FILL AREAS AND OTHER DISTURBED AREAS AS DETERMINED BY THE CONSTRUCTION MANAGER.

6. COMPLY WITH ALL OTHER PERTINENT REQUIREMENTS OF THE CONSTRUCTION STORMWATER POLLUTION PREVENTION PLAN (SWPPP) FOR THIS PROJECT.

7. CONCRETE AND STEEL MATERIALS REMOVED DURING THESE ACTIVITIES SHALL BE RECYCLED, SALVAGED AND STOCKPILED, OR OTHERWISE DISPOSED OF IN ACCORDANCE WITH THE REQUIREMENTS OF THE SPECIFICATIONS FOR THIS PROJECT.

WETLAND "K" SPECIFIC ACTIVITIES

- T. TIE IN NEW CORRUGATED METAL PIPE (CMP) TO EXISTING CMP CULVERT AT DOWNSLOPE END. 30" DIAMETER.
- U. REMOVE ALL LARGE VEGETATION FROM EXISTING WETLAND AND PLACE IN DESIGNATED STOCKPILE AREAS; CHIP LARGE PIECES AS NECESSARY. DO NOT GRUB. INSTALL NEW 30" PERFORATED CMP IN BOTTOM OF WETLAND. SLOPE TO DRAIN TO CATCH BASIN AT SOUTHEAST END OF WETLAND. PLACE NEW PIPE AS CLOSE TO THE BOTTOM OF WETLAND AS POSSIBLE, SUBJECT TO PROVIDING UNIFORM SUPPORT AND SLOPE, TO PROVIDE A SUFFICIENT THICKNESS OF COVER TO SUPPORT FUTURE HAUL TRUCK TRAFFIC; INFILL LOW SPOTS BELOW NEW PIPE WITH CLEAN SOIL AS NECESSARY TO ACHIEVE GRADE AND SUPPORT PIPE. TRANSITION TO SOLID (NON-PERFORATED) PIPE AT END OF WETLAND.
- V. WETLANDS INFILL. PROVIDE POSITIVE SHEET FLOW DRAINAGE AT ALL POINTS. USE CLEAN SOIL AS FILL MATERIAL. ADJUST GRADES IN FIELD AS NECESSARY TO SUIT ACTUAL CONDITIONS.
- W. INSTALL NEW CONCRETE CATCH BASIN. MINIMUM DIMENSIONS 5 FT X 5 FT X 4 FT DEEP, OR LARGER AS REQUIRED TO ACCOMMODATE PIPE GRADES. SET BASIN LEVEL, WITH TOP ELEVATION EVEN WITH ADJACENT GROUND SURFACE. TOP COVER SHALL CONSIST OF HINGED, LOCKABLE, GALVANIZED STEEL GRATE, TO ALLOW OVERFLOW IF DOWNSTREAM DRAINAGE BECOMES BLOCKED.

LEGEND

- AS-BUILT MAJOR CONTOUR
- AS-BUILT MINOR CONTOUR
- EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- EXISTING PROPERTY BOUNDARY (SEE NOTE 2)
- EXISTING DRAINAGE DITCH
- EXISTING SLURRY PIPELINE
- EXISTING UNDERGROUND DRAINAGE PIPE
- EXISTING CULVERT / DRAINAGE PIPE DISCHARGE
- EXISTING MANHOLE (UNVERIFIED)
- EXISTING MANHOLE (VERIFIED)
- EXISTING CATCH BASIN (UNVERIFIED)
- EXISTING CATCH BASIN (VERIFIED)
- AS-BUILT DRAINAGE PIPE (APPROX)
- AS-BUILT INLET
- EXISTING FIRE HYDRANT
- EXISTING ON-SITE ACCESS ROAD
- EXISTING COUNTY ROAD (PAVED)
- EXISTING RAILROAD
- EXISTING FACILITY
- FORMER WETLANDS BOUNDARY
- RAIL OFFLOAD RAMP

AS-BUILT



REV. 5

13 of 17

FIGURE

IAR-262

CLIENT  
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PROJECT  
FORMER SATRALLOY SITE  
STAGE 1 INTERIM ACTION

TITLE  
WETLAND K INFILLING PLAN

PROJECT NO.  
1239330901

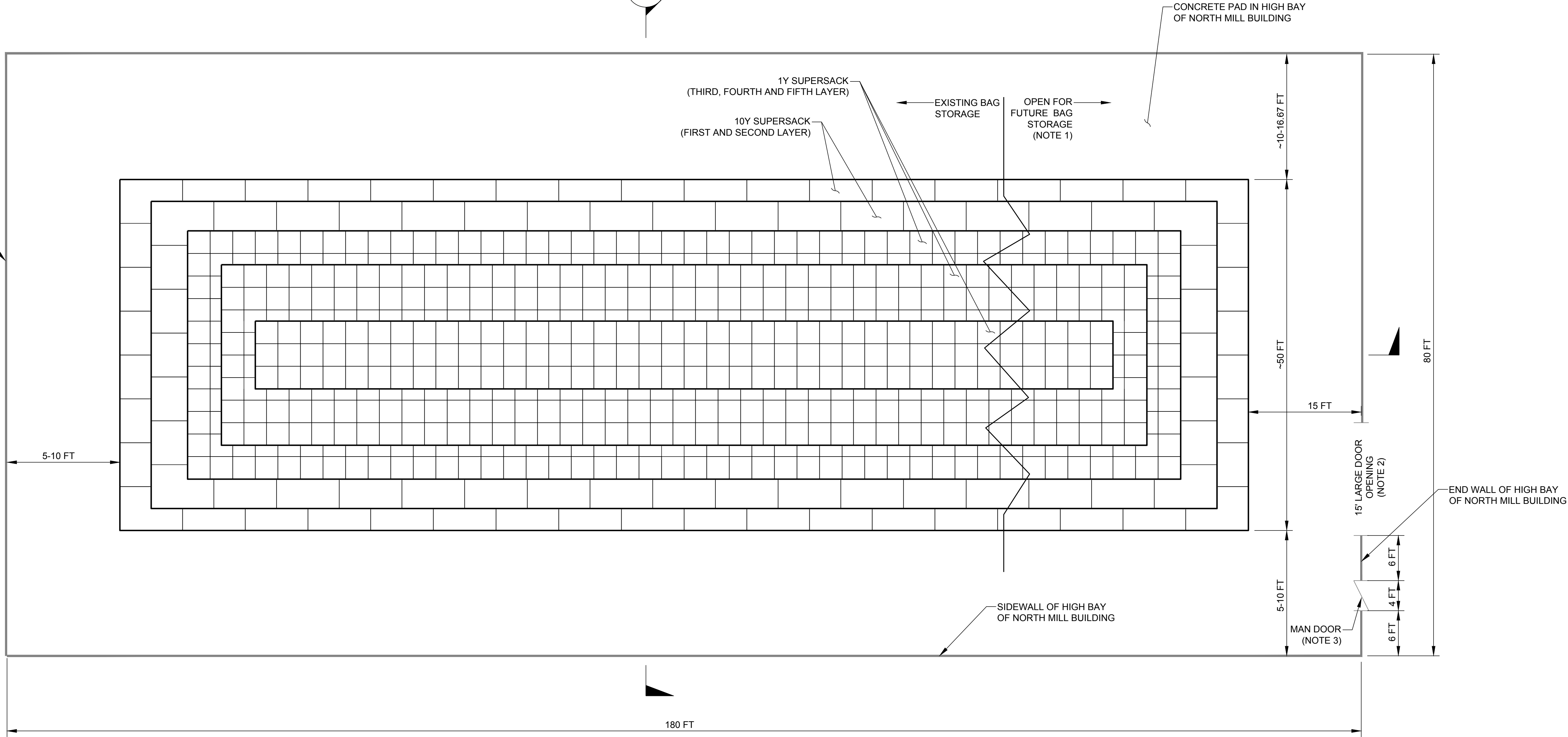
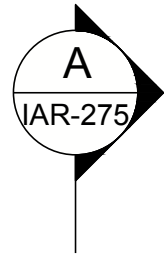
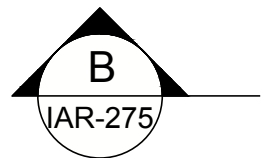
PHASE  
310

REV.	YYYY-MM-DD	DESCRIPTION	DESIGNED	PREPARED	REVIEWED	APPROVED
5	2017-10-23	AS-BUILT	FSS	REDMOND	JDW	LKH
2	2016-03-25	ISSUED FOR STAGE 1 REBID	FSS	REDMOND	JDW	LKH
1	2016-01-21	ISSUED FOR ADDENDUM 1	JDW	REDMOND	FSS	LKH
0	2015-11-23	ISSUED FOR STAGE 1 BID	JDW	REDMOND	FSS	LKH



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TEMORARY PARTITION  
WALL BETWEEN HIGH  
BAY AND LOW BAY AREAS



#### NOTES

1. PLACE NEW BAGS IN CONTINUATION OF EXISTING STACKING PATTERN. DO NOT SHORT-STACK BAGS. PRESERVE FLOOR SPACE AT THE EAST END OF THE STAGING AREA TO THE EXTENT POSSIBLE.
2. INSTALL NEW TEMPORARY DOOR TO REPLACE EXISTING. SIMILAR TYPE AND DESIGN.
3. REPAIR MAN DOOR TO OPEN AND CLOSE WITH EASE.
4. PLACE BAGS CONTAINING DUST, DEBRIS, SOIL, AND OTHER MATERIALS REMOVED FROM THE NORTH MILL BUILDING AT END OF EXISTING STACK AS DESCRIBED IN NOTE 1. DO NOT STACK LARGE BAGS MORE THAN 3 LAYERS HIGH UNLESS APPROVED OTHERWISE BY THE CONSTRUCTION MANAGER.
5. COVER STACK WITH MINIMUM 6-MIL POLYETHYLENE SHEET OR APPROVED EQUAL TO PREVENT RAIN WATER FROM CONTACTING THE BAGS. JOIN SHEETS USING POLYETHYLENE ZIP TIES OR OTHER APPROVED METHOD.

SCALE 1" = 8'

1  
VAR-115 VAR-210

0 8 16 24  
SCALE FEET

AS-BUILT

REV.  
5

14 of 17

FIGURE

IAR-270

CLIENT  
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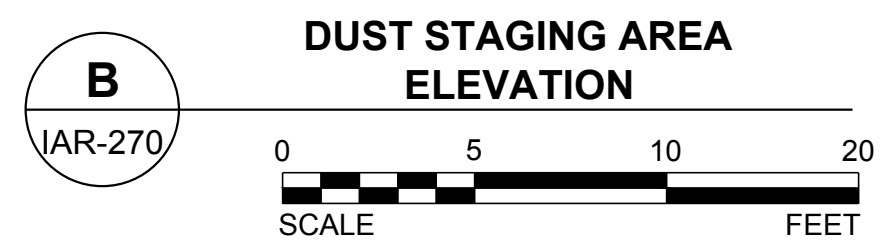
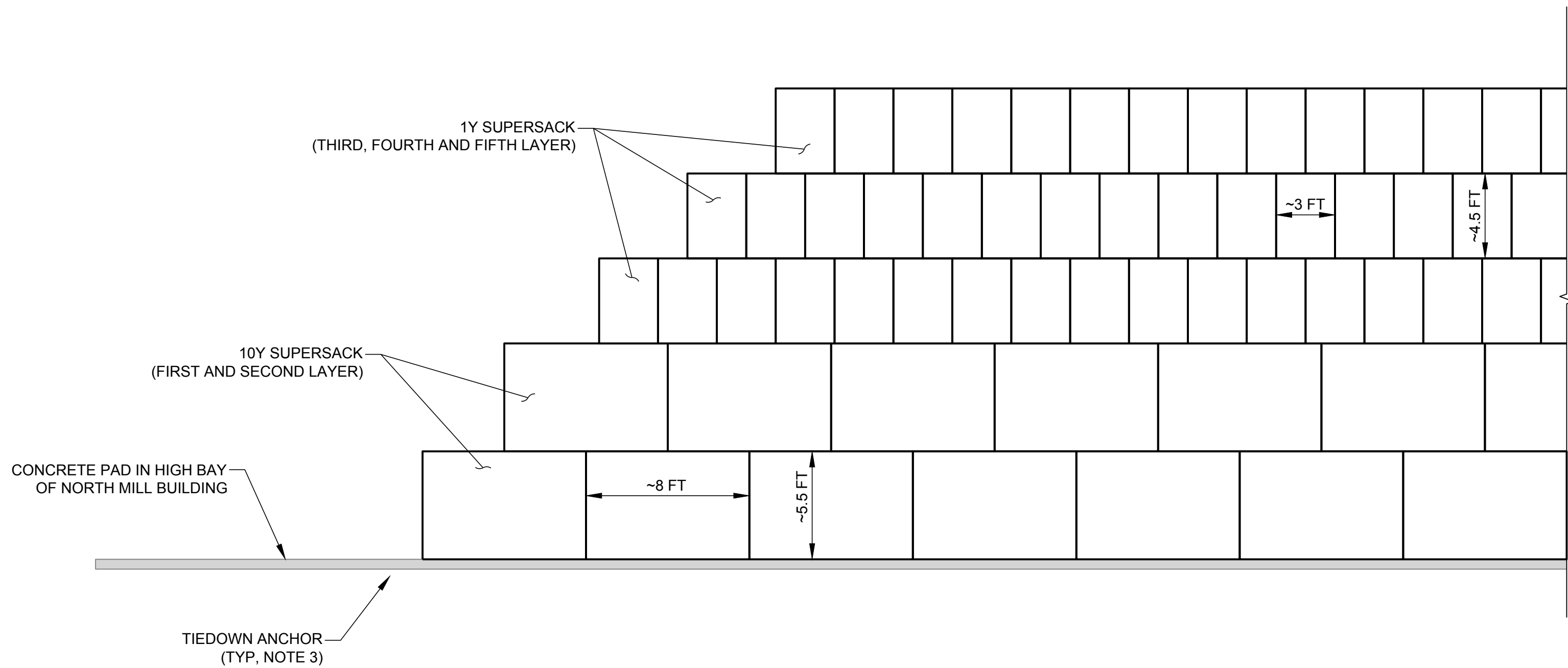
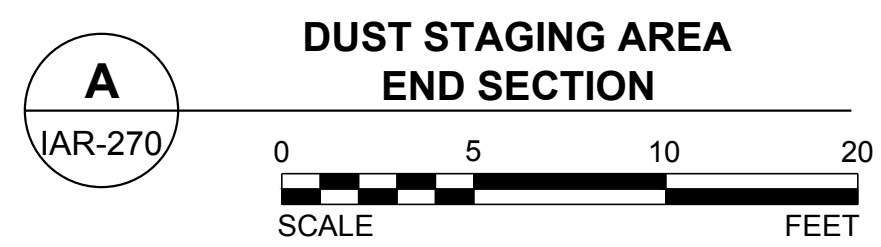
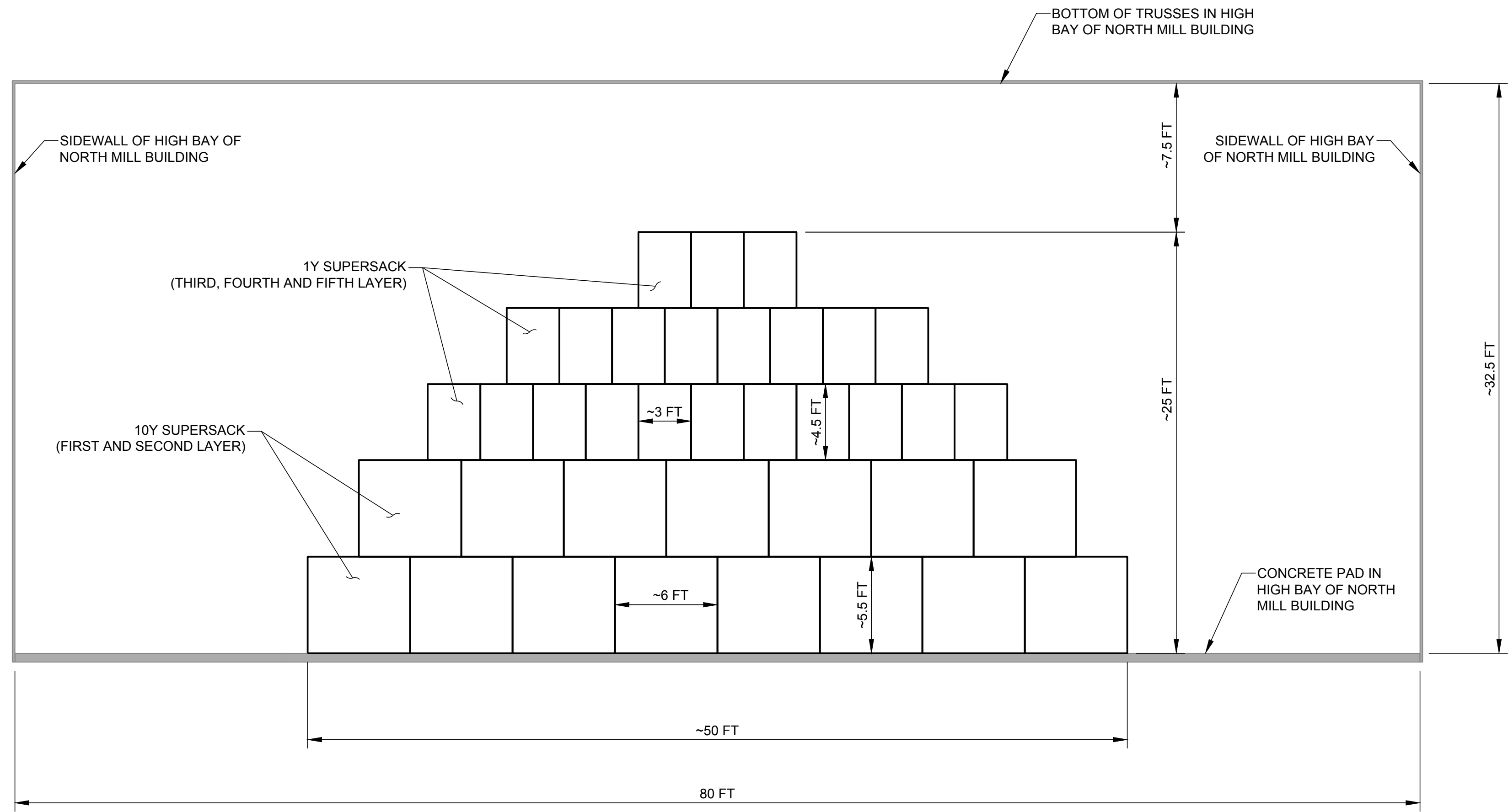
PROJECT  
FORMER SATRALLOY SITE  
STAGE 1 INTERIM ACTION

TITLE  
DUST STAGING AREA PLAN


PROJECT NO.  
1239330901

PHASE  
310

REV.	YYYY-MM-DD	DESCRIPTION	DESIGNED	PREPARED	REVIEWED	APPROVED
5	2017-10-23	AS-BUILT	FSS	REDMOND JDW	LKH	
3	2016-08-03	ISSUED FOR ADDENDUM 5	FSS	REDMOND JDW	LKH	
2	2016-03-25	ISSUED FOR STAGE 1 REBID	FSS	REDMOND JDW	LKH	
1	2016-01-21	ISSUED FOR ADDENDUM 1	JDW	REDMOND FSS	LKH	
0	2015-11-23	ISSUED FOR STAGE 1 BID	JDW	REDMOND FSS	LKH	

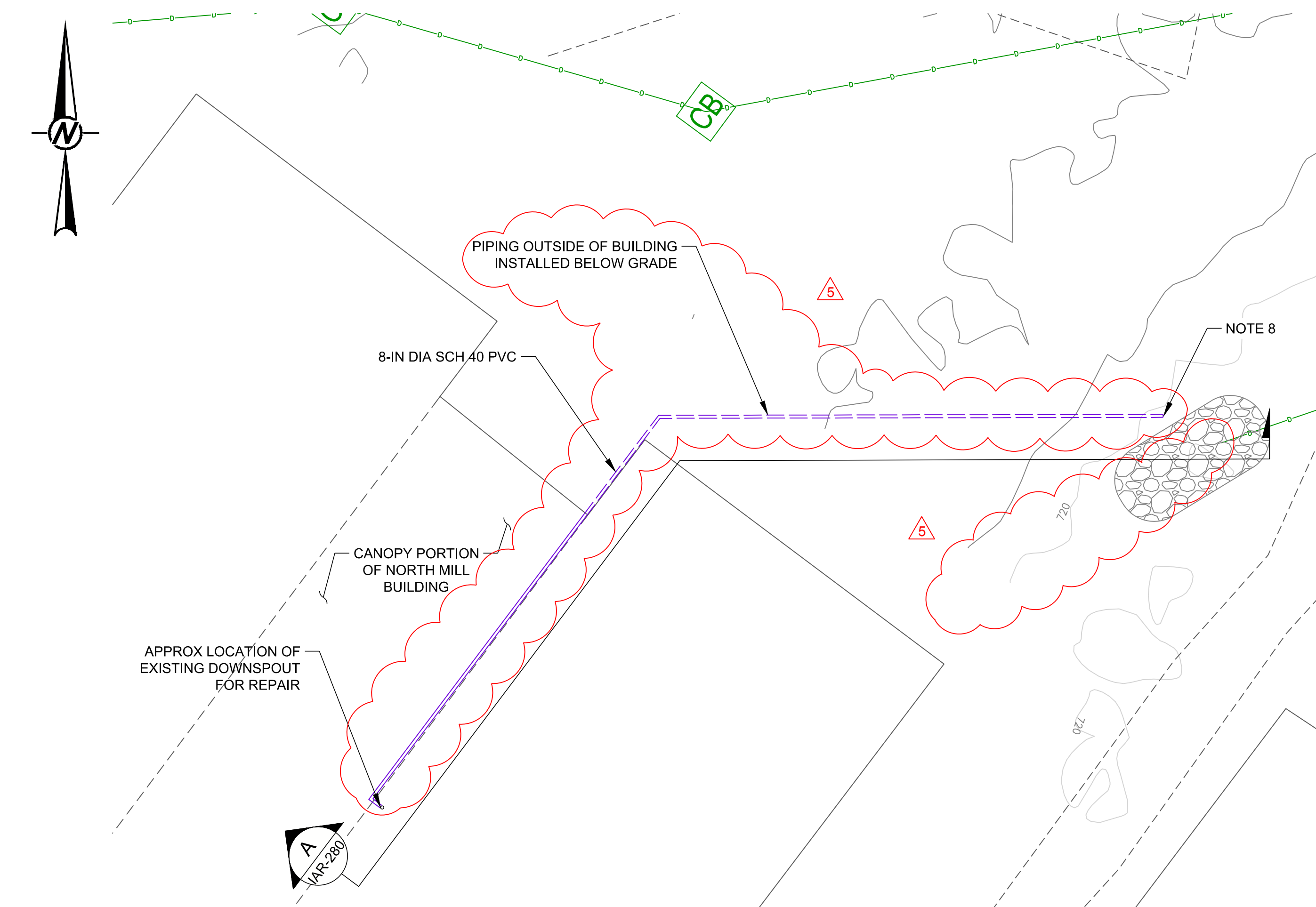


## AS-BUILT

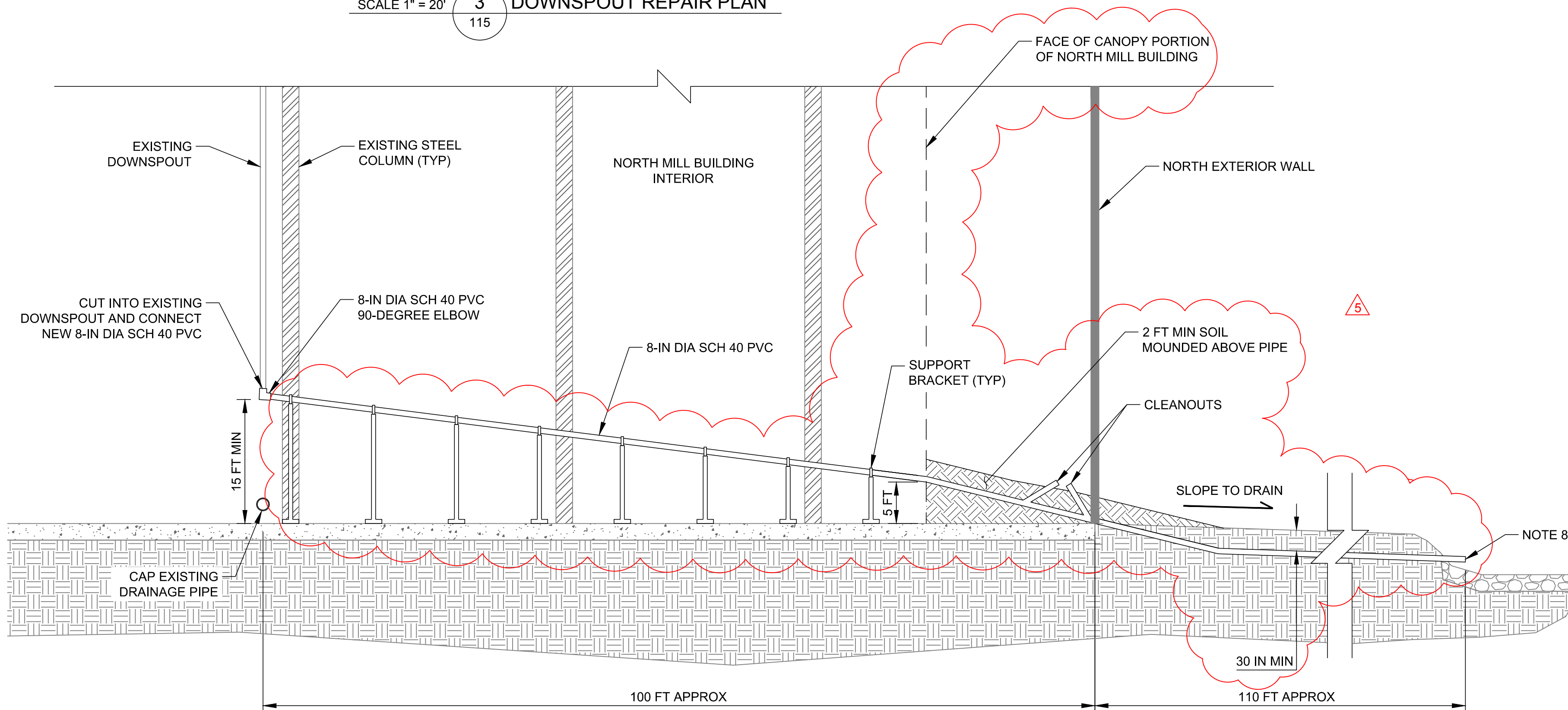
<b>PROJECT</b> <b>FORMER SATRALLOY SITE</b> <b>STAGE 1 INTERIM ACTION</b>		<b>CLIENT</b> <b>CYPRUS AMAX MINERALS COMPANY</b>	
<b>TITLE</b> <b>DUST STAGING AREA SECTION AND ELEVATION</b>		<b>CONSULTANT</b> <div style="text-align: center;">    <b>Golder Associates</b> </div> <div> REDMOND  18300 NE UNION HILL ROAD  REDMOND, WA  U.S.A.  [+1] (425) 883-0777  www.golder.com </div>	
<b>PROJECT NO.</b> <b>1239330901</b>	<b>PHASE</b> <b>310</b>		
<b>REV.</b> <b>15 of 17</b> <b>FIGURE</b> <b>5</b> <b>IAR-275</b>			



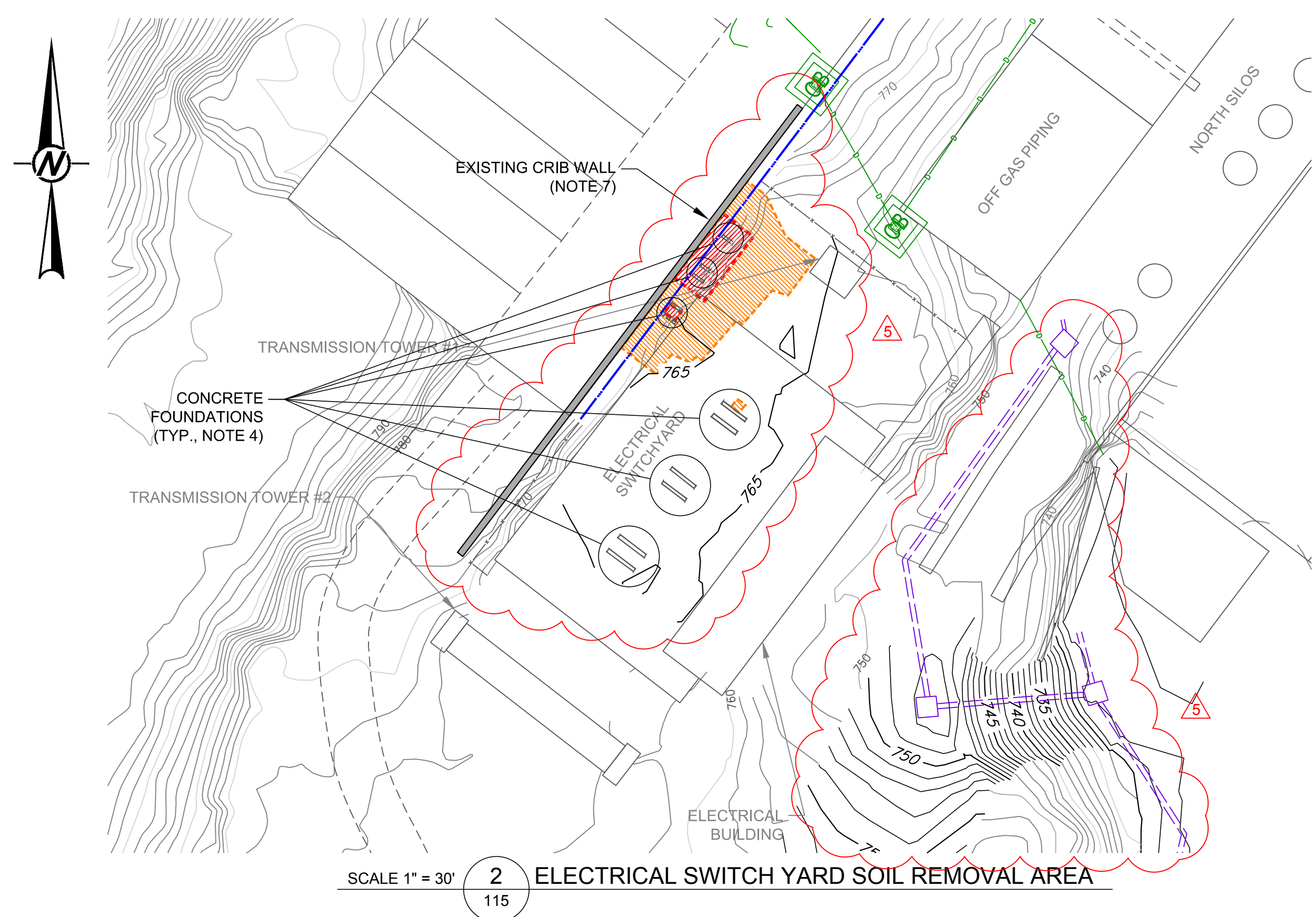
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SCALE 1" = 20'  
3  
115  
DOWNSPOUT REPAIR PLAN



SCALE 1" = 10'  
A  
280  
DOWNSPOUT REPAIR ELEVATION



SCALE 1" = 30'  
2  
115  
ELECTRICAL SWITCH YARD SOIL REMOVAL AREA

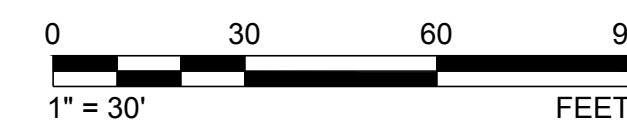
#### NOTES

1. REMOVE SOIL TO A DEPTH OF 1 FOOT BELOW EXISTING GROUND SURFACE OR AS DIRECTED BY THE CONSTRUCTION MANAGER/SEE PCB REMOVAL REPORT FOR DETAILS OF DEPTH AND SEQUENCE OF REMOVAL.
2. REMOVE SOIL TO A DEPTH OF 1.5 FEET BELOW EXISTING GROUND SURFACE IN LEVEL B REMOVAL AREA AND 0.5 FEET BELOW EXCAVATED SURFACE IN LEVEL A REMOVAL AREA, OR AS DIRECTED BY THE CONSTRUCTION MANAGER/SEE PCB REMOVAL REPORT FOR DETAILS OF DEPTH AND SEQUENCE OF REMOVAL.
3. RESERVED.
4. REMOVE ALL CONCRETE TRANSFORMER FOUNDATIONS AND PEDESTALS, INCLUDING BELOW-GRADE PORTIONS, IN ELECTRICAL SWITCHYARD. HOWEVER, MASS CONCRETE BLOCKS AT DEPTH HAVE BEEN LEFT IN PLACE.
5. REMOVE ALL CONCRETE TRANSFORMER FOUNDATIONS AND PEDESTALS, INCLUDING BELOW-GRADE PORTIONS, FROM LEVEL A AND LEVEL B SOIL REMOVAL AREAS.
6. RESERVED.
7. WITHIN 24 HOURS OF SOIL REMOVAL, BACKFILL EXCAVATED SOIL AREA AT BASE OF CRIB WALL WITH CLEAN SOIL TO A DISTANCE OF AT LEAST 6 FEET FROM THE BASE OF THE CRIB WALL TO PROVIDE SUPPORT TO WALL. BACKFILL ADJACENT TO TRANSMISSION TOWER #1 FOOTINGS SIMILARLY. COMPLETE BACKFILLING OF EXCAVATED SOIL AREA TO PRE-REMOVAL GRADES AFTER CONFIRMATORY TESTING HAS INDICATED THAT NO ADDITIONAL SOIL REMOVAL IS NECESSARY.
8. DISCHARGE INTO EXISTING RIPRAP-LINED DRAINAGE AREA.
9. RESERVED.
10. AS-BUILT TOPOGRAPHY AND LOCATIONS BASED ON SURVEY PROVIDED BY RETTEW, DATED AUGUST 30, 2017, AND FIELD MEASUREMENTS BY NORTHSTAR DEMOLITION AND REMEDIATION, LP PERSONNEL.

#### LEGEND

- LEVEL A SOIL REMOVAL AREA (NOTES 1, 5, 7)
- LEVEL B SOIL REMOVAL AREA (NOTES 2, 5, 7)
- EXISTING DRAINAGE DITCH
- STORM PIPELINE
- CATCH BASIN
- AS-BUILT DRAINAGE PIPE (APPROX)
- AS-BUILT INLET
- ROAD LINE
- 10 FOOT CONTOURS
- 2 FOOT CONTOURS
- AS-BUILT MAJOR CONTOUR
- AS-BUILT MINOR CONTOUR

AS-BUILT



REV.	YYYY-MM-DD	DESCRIPTION	DESIGNED	PREPARED	REVIEWED	APPROVED
5	2017-10-23	AS-BUILT	FSS	REDMOND	JDW	LKH
3	2016-08-03	ISSUED FOR ADDENDUM 5	FSS	REDMOND	JDW	LKH
2	2016-03-25	ISSUED FOR STAGE 1 REBID	FSS	REDMOND	JDW	LKH
1	2016-01-21	ISSUED FOR ADDENDUM 1	JDW	REDMOND	FSS	LKH
0	2015-11-23	ISSUED FOR STAGE 1 BID	JDW	REDMOND	FSS	LKH

PROJECT  
FORMER SATRALLOY SITE  
STAGE 1 INTERIM ACTION

CLIENT  
CYPRUS AMAX MINERALS COMPANY

TITLE  
MISCELLANEOUS DETAILS (1 OF 2)

PROJECT NO.  
1239330901

PHASE  
310

REV.  
5

16 of 17

FIGURE  
IAR-280

CONSULTANT  
Golder Associates

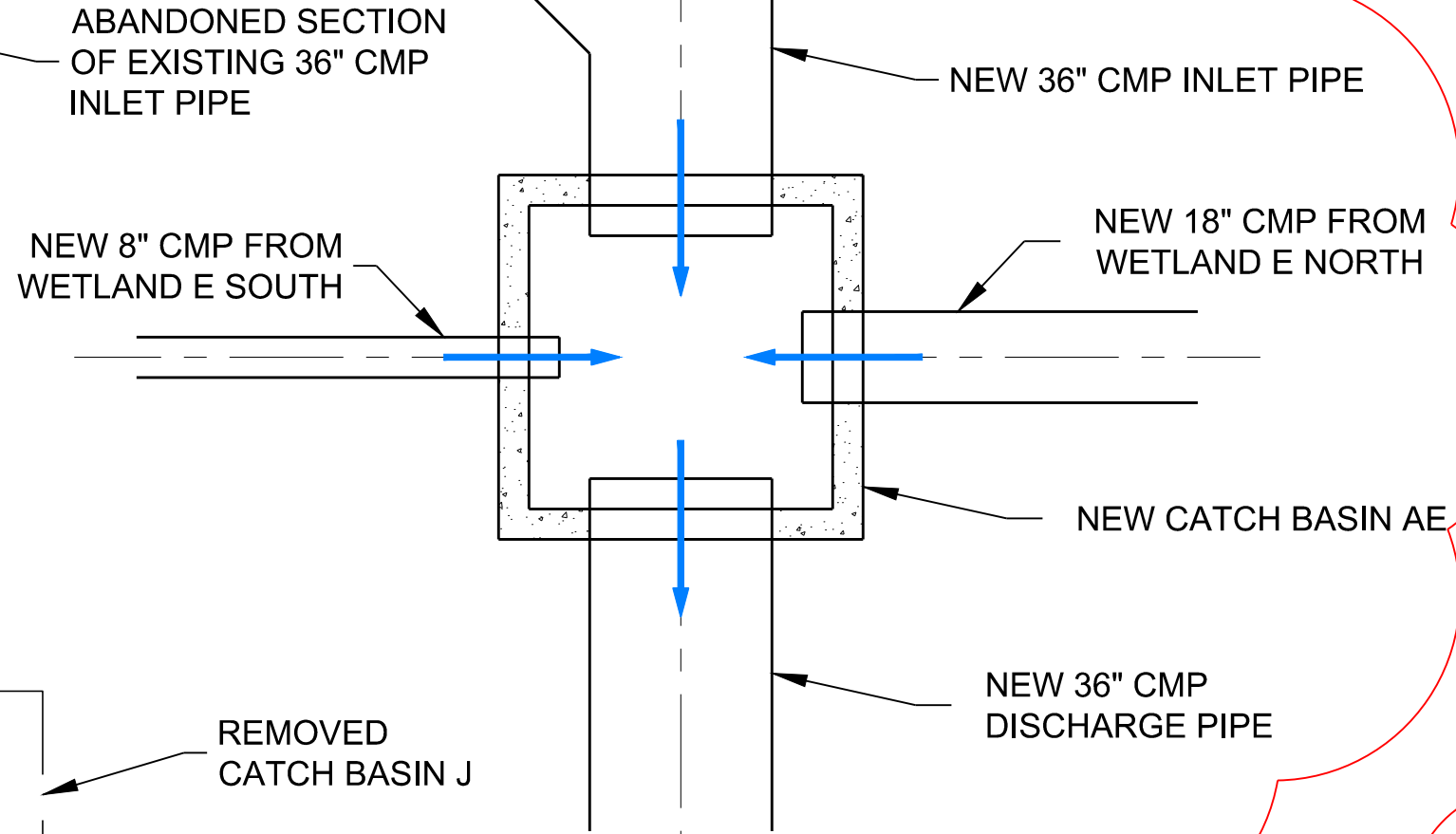
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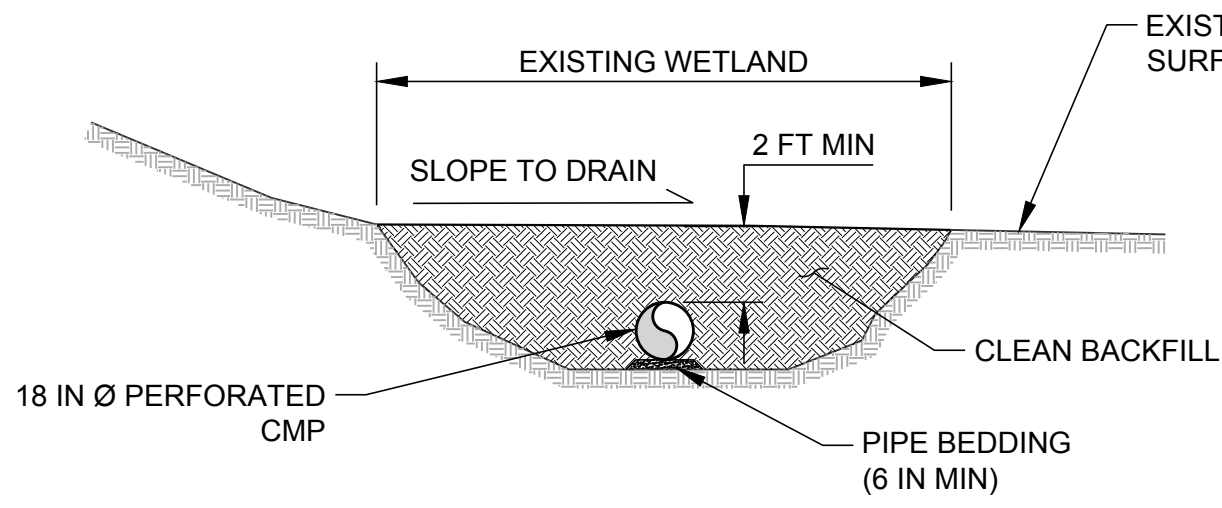
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- NOTES
1. RESERVED.
  2. RESERVED.
  3. RESERVED.

SCALE 1" = 3' 4 CATCH BASINS J AND AE  
IAR-260



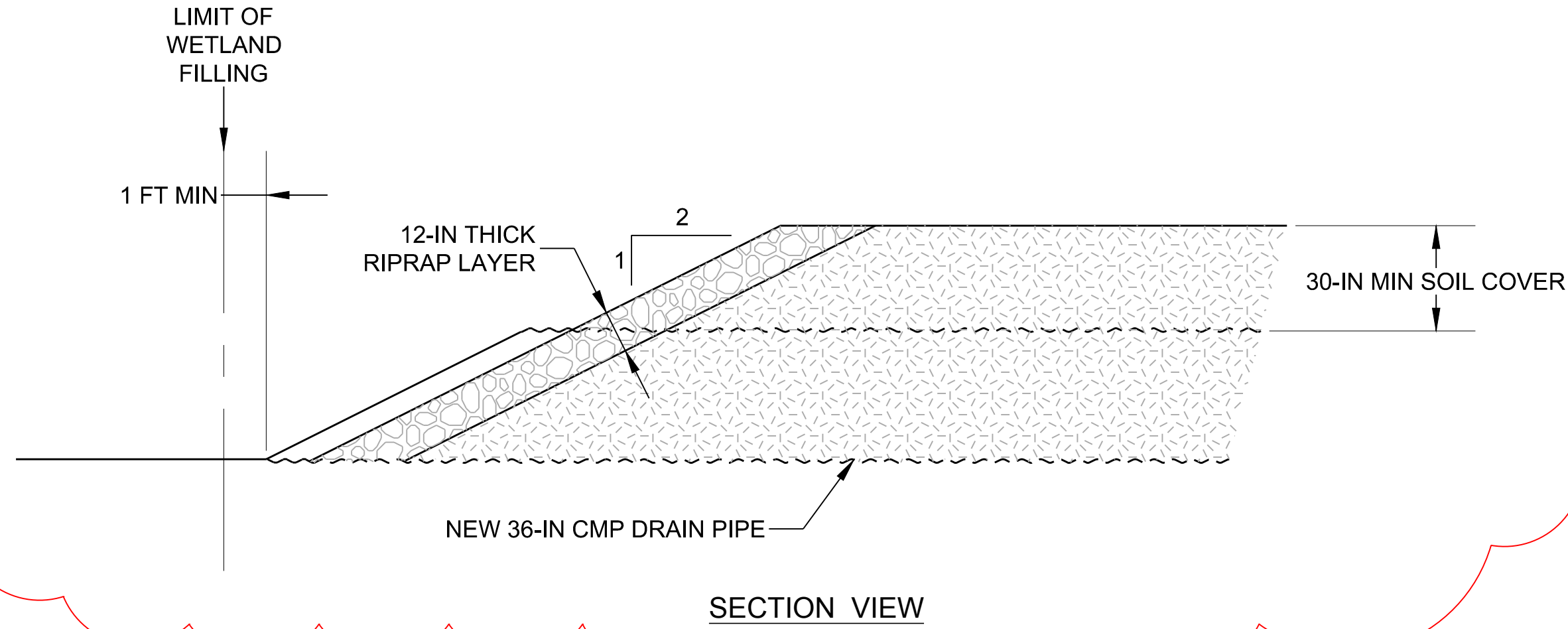
CONNECT TO EXISTING 36" CMP INLET PIPE



SCALE: NOT TO SCALE D WETLAND E INFILLING  
IAR-260

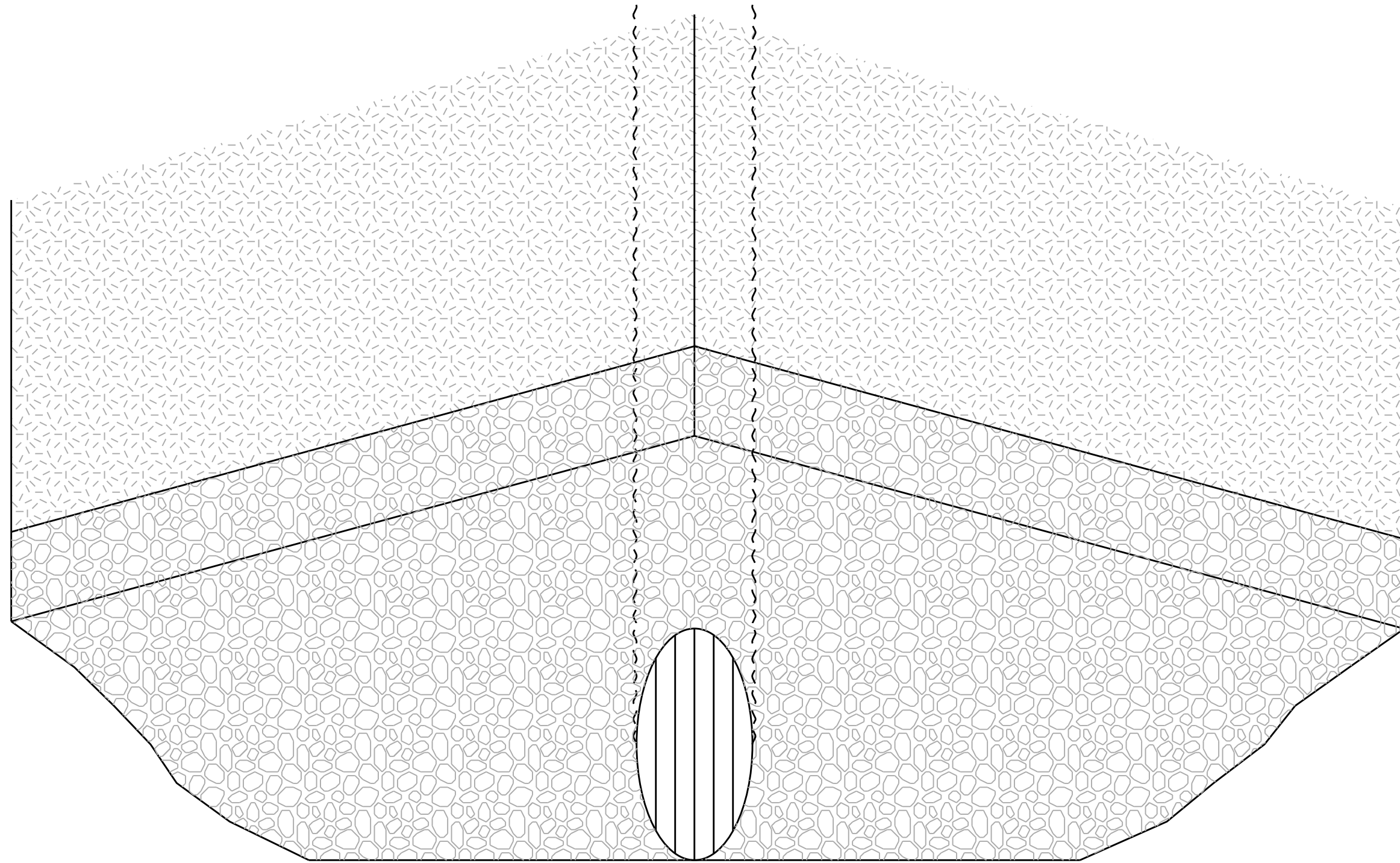


LIMIT OF WETLAND FILLING



SCALE 1" = 3' 5 WETLAND D PIPE TERMINATION  
IAR-260

ELEVATION VIEW



PLAN VIEW

1/2-IN STEEL BARS @ 6-IN C-C GALVANIZED

AS-BUILT

PROJECT FORMER SATRALLOY SITE  
STAGE 1 INTERIM ACTION

CLIENT CYPRUS AMAX MINERALS COMPANY

TITLE MISCELLANEOUS DETAILS (2 OF 2)

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PROJECT NO. 1239330901  
PHASE 310

REV.	YYYY-MM-DD	DESCRIPTION	DESIGNED	PREPARED	REVIEWED	APPROVED
5	2017-10-23	AS-BUILT	FSS	REDMOND	JDW	LKH
3	2016-08-03	ISSUED FOR ADDENDUM 5	FSS	REDMOND	JDW	LKH
2	2016-03-25	ISSUED FOR STAGE 1 REBID	FSS	REDMOND	JDW	LKH
1	2016-01-21	ISSUED FOR ADDENDUM 1	JDW	REDMOND	FSS	LKH

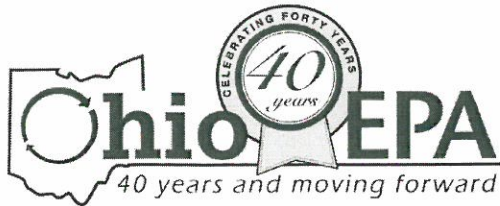
REV. 5

17 of 17

FIGURE IAR-285

1 in IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI D

**APPENDIX A**  
**INTERIM ACTION WORKPLAN APPROVALS**



John R. Kasich, Governor  
Mary Taylor, Lt. Governor  
Scott J. Nally, Director

April 25, 2013

**JEFFERSON COUNTY  
SATRALLOY  
CORRESPONDENCE FILE**

Barb Nielsen  
Manager, Remediation Division  
Freeport McMoRan Copper & Gold, Inc.  
333 North Central Avenue  
Phoenix, AZ 85004

**RE: Former Satralloy Site, Conditional Approval of Interim Action Work Plan**

Dear Ms. Nielsen,

Ohio EPA has reviewed the revised draft *Interim Action Work Plan for the Former Satralloy Site, Jefferson County, Ohio* submittals prepared by Golder Associates, Inc., dated November 15, 2012, and received in Ohio EPA's office on November 16, 2012. Ohio EPA approves the submitted work plan subject to incorporation of the conditions provided in the attachment.

Our goal with this letter is to finalize the last remaining details concerning the IA Work Plan such that this and other required work can proceed at the Site.

If you have any questions, or require clarification, please feel free to contact me at your convenience.

Sincerely,

Michael D. Sherron  
Site Coordinator  
[Michael.Sherron@epa.state.oh.us](mailto:Michael.Sherron@epa.state.oh.us)  
740-380-5251

April 25, 2013

## **Interim Action Work Plan – Conditions for Approval**

With respect to the responses provided to Ohio EPA in the November 15, 2012, Response to Comments letter from Gallagher & Kennedy, on behalf of Cyprus Amax (G&K Letter), Ohio EPA provides the following comments and conditions.

### **GENERAL COMMENTS ON THE INTERIM ACTION WORK PLAN**

#### **GENERAL COMMENT A**

Ohio EPA has reviewed the responses to General Comment A and has determined that the following conditions are necessary for approval of the Interim Action Work Plan.

##### Condition 1

###### Prevent Migration of Baghouse Dust Pile Materials to Surface Water: Cover

Within thirty (30) days of the date of this approval, Cyprus Amax shall cover (with heavy tarps) baghouse dust piles 1, 3, 6, 7 and 8 (North Mill Building) and baghouse dust piles 4 and 5 (South Mill Building), as depicted in drawing IAR210. These piles shall remain covered until they are addressed in a more permanent manner as outlined in the IA Work Plan.

##### Condition 2

###### Prevent Migration of Crushed Concrete Pile Materials to Surface Water: QC Sampling

Cyprus Amax has made good faith efforts to determine decontamination methods as indicated in the approved concrete test cleaning protocol and test cleaning report included as appendices to the IA Work Plan. The RCRA metals results in the concrete test cleaning report did not include any levels above TCLP hazardous waste limits in any of the concrete cleaning test samples.

Ohio EPA notes that the Cleaning Procedures in Appendix D, 3.1(A) of the IA Work Plan states, "Inclusion of this Specification of a cleaning method does not guarantee that the method will achieve environmental clearance and/or release." Given this statement, Ohio EPA maintains a concern with regard to the future usage and placement of the crushed concrete material. Additionally, assuming an exemption is issued by the Director allowing the crushed concrete material to be used in a manner akin to Clean Hard Fill, this material could be placed anywhere on the site. Therefore, Cyprus will be expected to conduct sampling and laboratory analyses in the areas where this material is placed in the future. These areas will be incorporated into the future Remedial Investigation as areas that need to be accounted for in the site-wide risk analysis.



### Condition 3

#### Obtain exemptions pursuant to ORC 3734.02(G) and 3714.04(A)

Material resulting from the site building demolition activities would not meet the OAC 3745-400-01(E) and (F) definitions of clean hard fill (CHF) or construction and demolition debris (C&DD). The CHF definition specifically states that it does not include "materials contaminated with hazardous wastes, solid wastes, or infectious wastes." The C&DD definition does not include materials identified or listed as solid wastes, hazardous wastes, or infectious wastes. To the extent that a C&DD material is commingled with solid or hazardous wastes, it is no longer considered C&DD.

Therefore, placement of the crushed concrete on site would require the issuance of an exemption. The standards for exemptions under ORC 3734.02(G) (solid waste) and 3714.04(A) (construction and demolition debris) are virtually the same. Provided that Conditions 1 and 2 above and the exemption standards are met, Ohio EPA staff would be willing to recommend to the Director issuance of the necessary exemptions.

### **GENERAL COMMENTS B AND C**

The responses to General Comments B and C are acceptable.

### **SPECIFIC COMMENTS ON THE INTERIM ACTION WORK PLAN**

The responses to Specific Comments 1, 5, 6, 9 and 10 are acceptable. With regard to Specific Comment 10, provide the details of the treatment process for the recycling of the dust suppression waste water when it becomes available.

### **SPECIFIC COMMENTS ON THE INTERIM ACTION WORK PLAN**

Specific Comment 2: Chromium compounds are included on the State and Federal hazardous / toxic air pollutants lists (CAA Section 112(b) and OAC rule 3745-114-01).

Air emissions from fugitive dust generation (*i.e.*, roadways, demolition, crushing or screening of concrete, etc.) are regulated unless an exemption has been identified in the rules of the Ohio Administrative Code. Also note that Ohio EPA may require an otherwise non-permitted source of fugitive dust to employ control measures or obtain installation and operating permits if such source is creating an air pollution nuisance (see OAC rules 3745-17-08(A)(2) and 3745-15-07).

At Ohio EPA's request, Cyprus Amax evaluated potential emissions of fugitive dust that may be associated with IA Work Plan activities to be conducted at the Site. Cyprus Amax consulted in detail with Ohio EPA DAPC Southeast District Office and Central Office with respect to its proposed approach to quantifying and evaluating the emissions from these activities, and the measures necessary to ensure that the emissions units will be operated in accordance with all applicable requirements.



Based on the information contained in the IA Work Plan, Ohio EPA concurs that the proposed **building demolition** activities include appropriate fugitive dust control measures, in accordance with the requirements for an asbestos abatement project. Ohio EPA agrees further that no air pollution permit is required for the building demolition aspect of the IA Work Plan activities.

Cyprus Amax provided detailed emission calculations, descriptions of control measures, results of air dispersion modeling, and a screening-level risk assessment study to Ohio EPA, DAPC for vehicle traffic and associated fugitive dust emissions from **roadways and parking areas** at their proposed maximum operating conditions. DAPC has reviewed these documents and found the proposed control measures (watering to maintain a 95% overall control efficiency) to meet all applicable requirements, including the site-specific limit contained in OAC rule 3745-17-13(B)(1), which states unpaved roadway visible particulate emissions (PE) shall not exceed 3 minutes in any 60 minute observation period. Cyprus Amax will, however, be required to apply for and obtain an air permit-to-install and operate (PTIO) for the fugitive dust emissions from the roadways and parking areas, and will need to conduct its IA activities in accordance with the requirements contained in such PTIO.

Cyprus Amax has also provided detailed emission calculations, descriptions of control measures (wetting of material prior to crusher load-in, use of crusher spray bars at all times during crusher operation and control of material handling/transfer point fugitive emissions, which may include watering and/or covering of conveyors, etc.), results of air dispersion modeling, and a screening-level risk assessment to Ohio EPA DAPC for **concrete crushing** (and associated transfer operations) and associated fugitive dust emissions at the maximum proposed operating conditions (crushing no more than 1,200 tons of concrete per day and operating no more than 5 days a week for 10 hours a day). DAPC has reviewed these documents and found the proposed control measures to meet all applicable requirements. Consistent with the discussions between Cyprus Amax and Ohio EPA DAPC, however, Cyprus Amax will need to pursue one of the following three options for the temporary, portable operation dedicated to crushing the concrete that will be accumulated as a result of the IA Work Plan activities:

- submit a PTIO application for a proposed crusher; obtain a PTIO; operate the crusher in accordance with the PTIO; or
- use a portable crusher that is already permitted for operation in Ohio and operate the unit in accordance with its PTIO; or
- use a crusher that has a rated capacity of no more than 150 tons per hour, and maintain appropriate daily records to demonstrate that the emissions unit has actual emissions of less than 10 pounds per day, in accordance with the Ohio “de minimis” rule (OAC rule 3745-15-05).

Any relaxations to the proposed control measures and/or operating restrictions contained in the emissions calculations and modeling information submitted to DAPC will require reevaluation of potential particulate and chromium emissions and dispersion modeling by DAPC.

Specific Comment 3 (Section 6.0, Management of “Actively Managed” Piles) and Specific Comment 8 (Appendix F, Section 2.2 Storage Duration) are addressed in Condition 3 of the General Comments.

Specific Comments 4 and 7: Specific Comments 4 and 7 are addressed in Conditions 1 and 2 of the General Comments.

**From:** Sherron, Michael [mailto:Michael.Sherron@epa.state.oh.us]  
**Sent:** Friday, May 24, 2013 12:54 PM  
**To:** Nielsen, Barbara  
**Cc:** Sherron, Michael; Navarre, Mark; Hagen, Erik  
**Subject:** Satralloy - IA Work Plan Modification - Baghouse Dust Staging Area

Barb,

Ohio EPA received Cyprus Amax's May 13, 2013, request for a modification to the IA Work Plan for the Former Satralloy Site on May 15, 2013. The May 13 letter requests to relocate the baghouse dust staging area from the concrete floor of the shipping area in the North Mill Building to a concrete pad between the North Mill Building and County Road 74.

Ohio EPA approves this request.

Please let me know if you have any questions.

Mike

**Michael D. Sherron, Site Coordinator**  
**Ohio EPA** | Division of Environmental Response and Revitalization  
Southeast District Office  
2195 East Front Street, Logan, Ohio 43138

Ph: 740-380-5251  
Fax: 740-385-6490  
[Michael.Sherron@epa.state.oh.us](mailto:Michael.Sherron@epa.state.oh.us)



John R. Kasich, Governor  
Mary Taylor, Lt. Governor  
Craig W. Butler, Director

May 1, 2014

Ms. Barbara Nielson  
Manager, Remediation Division  
Freeport-McMoRan Copper & Gold, Inc.  
On Behalf of Cyprus Amax Minerals Company  
333 N. Central Avenue  
Phoenix, AZ 85004

RE: Revised Amendment Number 2 of the Interim Action Work Plan for the Former Satralloy Site.

Ms. Nielson,

Ohio EPA received a revised Amendment Number 2 of the Interim Action work Plan for the Former Satralloy Site (Site) on March 24, 2014. This original Amendment requested approval to remove saturated dust from building roofs that will be decommissioned as approved in the Interim Action Work Plan. The dusts would be removed from building roofs and then placed in a designated, unlined area for dewatering. Eventually, the area would be evaluated during the facility's Remedial Investigation/Feasibility Study (RI/FS).

In my March 6, 2014 correspondence, I commented on this Amendment requesting clarification on the origin and management of these newly discovered materials. For the most part, your explanation and other information provided sufficient answers to my comments. However, I also questioned why these water saturated dusts from the roofs are being treated differently from other dusts removed from the building during decommissioning. As you know, other dusts are being removed and stored in sacks as a requirement of the Interim Action Work Plan (IAWP). At the Site, the Director also issued an exemption order pursuant to Ohio Revised Code section 3734.02(G) (.02(G) Exemption). Generally, this .02(G) Exemption allows wastes at the Site to be managed in accordance with US EPA's Area of Contamination Policy, pursuant to certain conditions. While the exemption allows great flexibility in how wastes that potentially exhibit hazardous waste characteristics are managed, the exemption terminates when the interim action and the RI/FS is completed.

The revised Amendment indicated that a waste characterization approach was unnecessary as you felt the .02(G) Exemption for wastes to be handled in an Area of Contamination was sufficient to approve of the request. While it is unknown at this time whether the wastes in question exhibit hazardous waste characteristics, the methods of moving and storing the material comply with the IAWP. Therefore, I approve the revised Amendment Number 2 to the IAWP dated March 24, 2014 with the following provisions:

- Monthly inspections of the containment area will be made to determine if maintenance of the berm is needed or if wind blown dispersal of the dust is occurring and must be contained.
- The dust will be evaluated in accordance with and as necessary to implement the remedy selected for the Site.

Thank you for your efforts in making these revisions.

Sincerely

A handwritten signature in cursive script that reads "Erik Hagen".

Erik Hagen, Ph.D.

Site Coordinator

Ohio EPA, Division of Environmental Response and Revitalization



John R. Kasich, Governor  
Mary Taylor, Lt. Governor  
Craig W. Butler, Interim Director

March 6, 2014

Ms. Barbara Nielson  
Manager, Remediation Division  
Freeport-McMoRan Copper & Gold, Inc.  
On Behalf of Cyprus Amax Minerals Company  
333 N. Central Avenue  
Phoenix, AZ 85004

**RE: Request for Approval of Amendment No. 3 to the Interim Action Workplan Former Satralloy Site**

Ms. Nielson,

I received Amendment No. 3 to the Interim Action Workplan for the former Satralloy Site (Site) on March 4, 2014. This Amendment requested a change to the approved design for the construction of the Baghouse Dust Staging Area. The Amendment proposed moving the staging area inside the North Mill Building and to place one cubic yard sacks into 10 cubic yard sacks thereby providing both cover and containment. The Amendment included two revised engineering drawing (IAR-255 and IAR-257) which would replace the approved design drawings in the Interim Action Workplan.

I have reviewed your request and I do not have any comments. Therefore, I approve the requested amendments which are now incorporated into the Interim Action Workplan.

Sincerely

Erik Hagen, Ph.D.  
Site Coordinator  
Ohio EPA, Division of Environmental Response and Revitalization

cc. Edwin Gortner, Manager, SEDO DERR

ec. Michael Sherron, SEDO DERR  
Melody Stewart, SEDO DERR





John R. Kasich, Governor  
Mary Taylor, Lt. Governor  
Craig W. Butler, Director

November 30, 2015

**RE: Satra Concentrate Steubenville  
Investigation Report  
Remedial Response  
Jefferson County  
441001068009**

Barbara Nielsen, Project Manager  
Cyprus Amax Minerals Company  
333 N. Central Avenue  
Phoenix, AZ 85004

Lee Holder, Project Manager  
Golder Associates Inc.  
18300 NE Union Hill Road  
Redmond, Washington 98052

**Subject: Addendum No. 4 to the former Satralloy Site; Interim Action Schedule**

Dear Ms. Nielsen and Mr. Holder,

Ohio EPA has completed the review of the November 12, 2015 submittal titled Addendum No. 4 to the Interim Action Work Plan. Addendum No. 4 describes additional work pursuant to the requirements of the Consent Order for Preliminary Injunction (COPI) Section VI (Interim Action) 13 (d) and Section XII (Review of Submittals). All work plans, reports, or other items required to be submitted to Ohio EPA under this COPI, including any approved additional Work, shall, upon approval by Ohio EPA, be deemed to be incorporated in the made enforceable part of the COPI." As noted in the November 12 correspondence, the additional work consists of:

- PCB soil and concrete removal – Recent data indicate the polychlorinated biphenyls (PCBs) have been found near the electrical building at the site. Concrete and soil with PCB concentrations exceeding or equal 2 mg/kg will be removed for off-site disposal in accordance with applicable regulations.
- Filling of Waterbodies in the Lowlands – Three waterbodies identified as federally jurisdictional by the U.S. Army Corps of Engineers (Corps), consisting of one wetland and two manmade ditches in the plant area of the site, will be filled as not to interfere with future remedial action. Because the area is less than 0.1 acre per waterbody, mitigation will not be required. A Preconstruction Notification has been submitted to the Corps for coverage of this work under

Satra Concentrate Steubenville

November 30, 2015

Page 2

Clean Water Act Section 404 Nationwide Permit No.38, Cleanup of Hazardous Waste. Work will not commence until the work coverage is authorized by the Corps.

Ohio EPA approves of the additional work for PCB removal in soils and on the concrete pad as noted in bullet one in accordance with Section XII, Review of Submittals, of the November 2010 COPI. Please provide a schedule for PCB removal in soils and the concrete pad once it has been finalized for Ohio EPA to incorporate into the appropriate work plan and the COPI.

Regarding the work that is described in bullet two, filling in of waterbodies in the Lowlands, Ohio EPA understands that the work has yet to be authorized by the Corps. While Ohio EPA acknowledges the need to complete the work as described above, to prevent interference with future remediation, approval or authorization is completed by the Corps not Ohio EPA. Thus, once the Corps authorizes the work of filling in of waterbodies pursuant to the Clean Water Act Section 404, Nation Wide Permit No.38, please submit a schedule to Ohio EPA for completion of the work.

If you have any questions regarding this correspondence, please do not hesitate to contact me at 740-380-5289 or [maria.galanti@epa.ohio.gov](mailto:maria.galanti@epa.ohio.gov).

Sincerely,



Maria Galanti

Site Coordinator

Division of Environmental Response and Revitalization

MG/cb

cc: John Rochotte, Supervisor, DERR-SEDO  
Lisa Shook, DERR-CO  
Brian Tucker, DERR-CO  
Rachel Taulbee, DSW-SEDO



**APPENDIX B**  
**INTERIM ACTION WORKPLAN AMENDMENTS**



May 13, 2013

Project No. 053-1695.210

Mike Sherron  
Ohio Environmental Protection Agency  
Southeast District Office  
Division of Environmental Response and Revitalization (DERR)  
2195 Front Street  
Logan, OH 43138

**RE: INTERIM ACTION WORKPLAN  
FORMER SATRALLOY SITE (JEFFERSON COUNTY, OHIO)**

Dear Mr. Sherron:

On behalf of Cyprus Amax Minerals Company, this letter proposes a change to the Interim Action Workplan approved by the Ohio Environmental Protection Agency. The interim action contractor suggested that the location of the baghouse dust staging area be moved from the concrete floor of the North Mill Building to the concrete pad adjacent to the North Mill Building. This change would allow the demolition to be performed without two mobilizations, and would decrease the possibility of damage to the staging area during demolition activities. There would be no change to the approved design of the staging area, and appropriate stormwater controls would protect the staging area from stormwater flowing into the staging area.

The proposed change is shown on the attached revised drawing IAR-520.

We request OEPA approval of this change, to be reflected in the final Interim Action Workplan.

Sincerely,

**GOLDER ASSOCIATES INC.**

A handwritten signature in black ink, appearing to read 'Lee K. Holder'.

Lee K. Holder, PE  
Associate Engineer, Project Manager

cc Barbara Nielsen, Cyprus Amax Minerals Company  
J. S. Curry, Gallagher & Kennedy P.A.  
J. D. Lynch, Gallagher & Kennedy P.A.

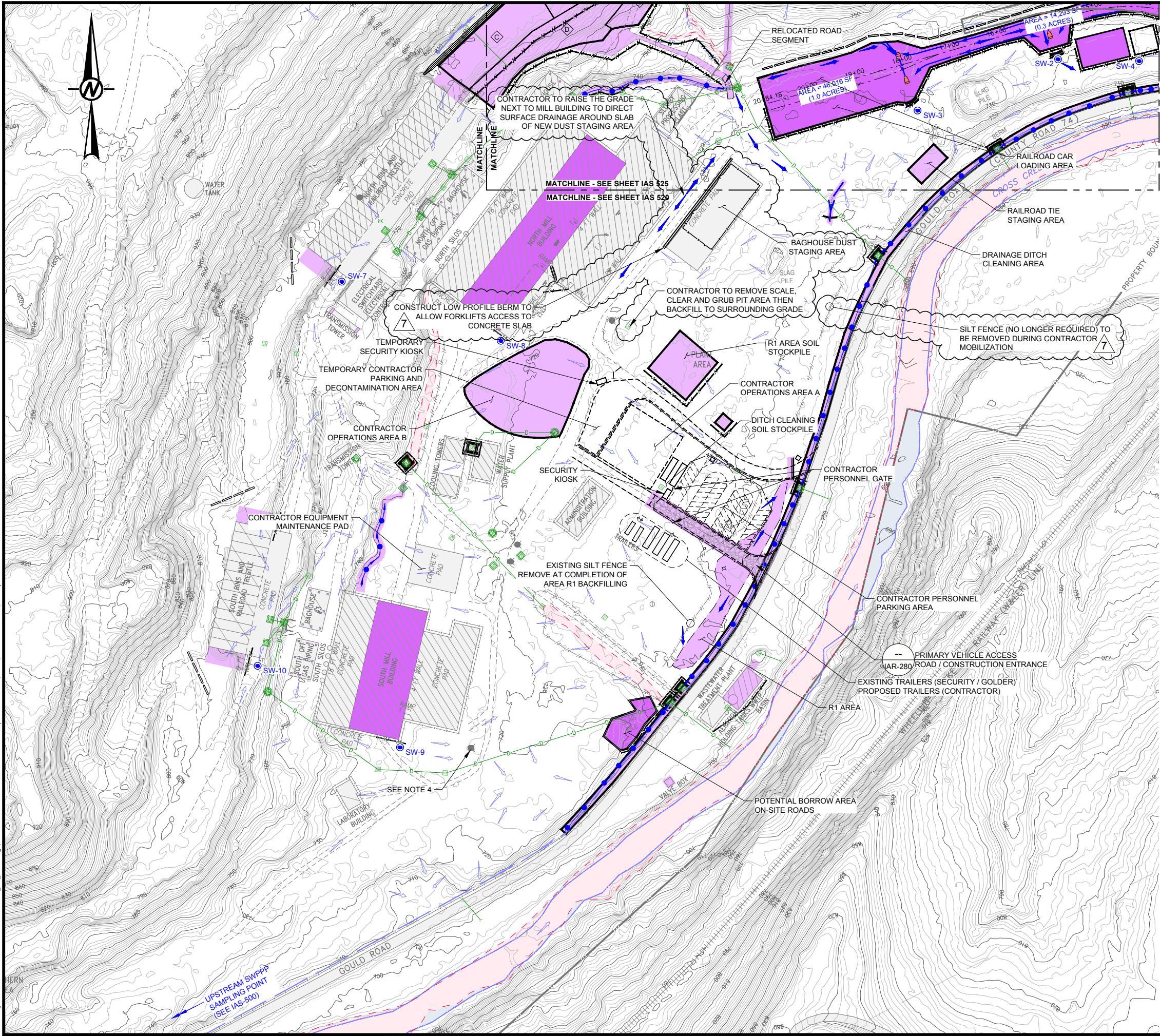
Attachment: Drawing IAR-520

LKH/sb





K:\CAD\Projects\2005\0531695410\RA-SW\PP\053-1695-410\_IRA23.dwg | IAS-520 STORMWATER BMPs PLANT AREA | Mod: 05/10/2013, 11:17 | Plotted: 05/10/2013, 11:36 | SSrmons



**NOTES:**

1. BASE TOPOGRAPHY DATED 2003 PROVIDED BY JEFFERSON COUNTY, OHIO, ENGINEERS OFFICE.  
1.a. HORIZONTAL DATUM: OHIO NORTH ZONE NAD 83 - STATE PLANE U.S. SURVEY FOOT.  
1.b. VERTICAL DATUM: NAVD 88 (EST. 191).  
1.c. CONTOUR INTERVAL: 2FT.
2. PROPERTY BOUNDARY BY BONAR SURVEYING, BERGHOLZ, OHIO, DATED OCTOBER 17, 2008.
3. WETLAND DELINEATION PROVIDED BY WESTLAND RESOURCES, INC., ON DRAWING DATED MAY 30, 2007.
4. CONTRACTOR TO REPAIR DITCH AND BERM EROSION BY CLEARING AND CLEANING LITTER AND DEBRIS FROM EXISTING DITCH THEN PULL AWAY SOILS THAT HAVE FILLED DITCH TO REESTABLISH ORIGINAL DRAIN FLOW. PLACE EXCESS SOIL REMOVED FROM DITCHED IN OPEN AREA IMMEDIATELY TO THE NORTHEAST OF THE TEMPORARY ROAD OR AS DIRECTED BY THE CONSTRUCTION MANAGER.

**WETLAND LEGEND:**  
(SEE NOTE 3)

- INTERMITTENT JURISDICTIONAL WATERS OF US [CORPS]
- PERENNIAL JURISDICTIONAL WATERS OF US [CORPS]
- ISOLATED WETLANDS (OEPA JURISDICTION)
- OPEN WATER (NON-JURISDICTIONAL)

**LEGEND:**

- EXISTING PROPERTY BOUNDARY (SEE NOTE 2)
- EXISTING ON-SITE ACCESS ROAD
- EXISTING COUNTY ROAD (PAVED)
- EXISTING RAILROAD
- FUTURE RAILROAD SPUR CENTERLINE AND STATIONING (TO BE CONSTRUCTED)
- EXISTING FACILITY (TO BE DEMOLISHED)
- EXISTING SLURRY PIPELINE
- EXISTING UNDERGROUND DRAINAGE PIPE
- EXISTING CULVERT / DRAINAGE PIPE DISCHARGE
- EXISTING MANHOLE (UNVERIFIED)
- EXISTING MANHOLE (VERIFIED)
- EXISTING CATCH BASIN (UNVERIFIED)
- EXISTING CATCH BASIN (VERIFIED)
- EXISTING FIRE HYDRANT
- EXISTING GROUNDWATER WELL
- CROSS CREEK
- EXISTING DRAINAGE DITCH
- EXISTING DRAINAGE DITCH (TO BE REPAIRED) (SEE NOTE 4)
- DRAINAGE SWALE (WITH FLOW DIRECTION)
- SAND TUBE BERM
- EXISTING DIVERSION BERM (TO BE REPAIRED)
- DIVERSION BERM
- CULVERT / DRAINAGE PIPE DISCHARGE
- EXISTING SILT FENCE
- SILT FENCE
- REINFORCED SILT FENCE
- STRAWBALE BARRIER WITH SILT FENCE
- PRE-INTERIM ACTION STORMWATER FLOW DIRECTION
- POST-INTERIM ACTION STORMWATER FLOW DIRECTION
- DISTURBED AREA STORMWATER SAMPLE LOCATION
- DISTURBED AREA (<15 DAYS)
- DISTURBED AREA (>14 DAYS)

**ISSUED FOR BIDDING**

**SCALE**

0 100 200 300  
FEET

**Gold Associates**

GOLDER ASSOCIATES INC. SUITE 200  
REDMOND, WASHINGTON USA 98052  
TEL: (425) 885-0777  
FAX: (425) 885-5688

REV	DATE	DES	REV	DESCRIPTION	CHK	RW
7	05-09-13	FSS	POST IAMP APPROVAL CHANGES	SES	JDW	
6	02-25-13	FSS	ISSUED FOR BIDDING	SES	JDW	
5	(TBD)	FSS	ISSUED FOR BIDDING	SES	JDW	
4	(TBD)	FSS	ISSUED FOR FINAL DRAWING REVIEW	SES	JDW	
3	(TBD)	FSS	ISSUED FOR BID UPDATE	NED	JDW	
2	4-23-12	FSS	DRAFT INTERIM ACTION WORK PLAN	NED	JDW	
1	1-16-12	FSS	ISSUED FOR BID UPDATE	NED	JDW	
0	12-30-11	FSS	SITE MEETING	NED	JDW	
		DES	REVISION	CADD	CHK	RW

**PROJECT**

FORMER SATRALLOY SITE  
STORMWATER POLLUTION  
PREVENTION PLAN

**TITLE**

STORMWATER FLOWS,  
CONTROLS, AND  
SAMPLE LOCATIONS  
PLANT AREA

**PROJECT** No. 053-1695-410

**SHEET**

IAS-520





Cyprus Amax Minerals Company  
333 North Central Avenue  
Phoenix, Arizona 85004

February 28, 2014

Erik Hagen  
Site Coordinator  
Ohio Environmental Protection Agency  
50 West Town Street, Suite 700  
Columbus, Ohio

**RE: Request for Confirmation of this Amendment Number 2 of the  
Interim Action Work Plan for the Former Satralloy Site**

Mr. Hagen:

Cyprus Amax Mineral Company (“CAMC”) hereby proposes to amend (Amendment Number 2) the Interim Action Work Plan for the Former Satralloy Site (the “Site”) in accordance with paragraph 13.d of Section VI (Interim Action) and Section XII (Review of Submittals) of the Consent Order for Preliminary Injunction (“COPI”) that was entered into by the parties. Pursuant to paragraph 32 of Section XII (Review of Submittals), “All work plans, reports, or other items required to be submitted to Ohio EPA under this COPI, including any approved additional Work, shall, upon approval by Ohio EPA, be deemed to be incorporated in and made an enforceable part of this COPI.....”. CAMC respectfully requests confirmation from the Ohio EPA that the Interim Action Work Plan for the Site is deemed to be amended in order to incorporate the additional Work outlined in this letter.

This Amendment Number 2 has been structured to respond to questions posed in Mr. Erik Hagen’s January 27, 2014 email to Ms. Barbara Nielsen and Mr. Todd Anderson’s February 12, 2014 email to Mr. Shane Farolino.

**Reason for request (when it was discovered, where it came from, and why it was not anticipated in the IA workplan), and the general nature of the dust.**

CAMC recently discovered the presence of generally between 2 to 6 inches of saturated dust on top of 5 flat roofs at the site (see below). The volume is estimated to be approximately 700 cubic yards. Because CAMC was unaware of the existence of the dust on the roofs of the buildings, this material was not addressed in the Interim Action Work Plan for the project. The flat roofs were never accessed previously for safety reasons. The Mill Building roofs vary in height from 35 to 55 feet (too high for ladder access) and require large man lifts to access. Because of load restrictions on the bridges to the Site, man lifts could not be safely mobilized to the site. It was not until CAMC's contractor installed a temporary short section of rail track that man lifts could be brought on to the Site. In addition, CAMC had no reason to believe that dust had been deposited on the roofs as they appeared dark gray and visually different from the dust and slag when viewed from the uplands (see attached photo). It is suspected that the dust was

deposited by both wind deposition and operational processes prior to the air emission control equipment being installed at the Site.

Flat roof sizes and dust quantities:

Building	Flat roof size in square feet	Estimated saturated material in cubic yards (cy)
North Mill Building	38,000	630
South Mill Building	510	5
Waste Water Treatment	2,000	20
Cooling Water Pumphouse	2,000	20

Due to the saturated condition of the dust, it cannot be bagged in the same manner as the dust inside the buildings. However, in the spirit of cooperation, and in accordance with the AOC policy, CAMC would like to remove the dust from the roofs in its current slurry form (like a thick paint) and move it to the area denoted on the attached figure and allow it to dry. This area is very near the "Gary Smith" piles that were allegedly managed by the prior site owner. The area is a depression that currently consists of slag and is already bermed by natural slopes on three sides. CAMC is proposing to use on-site material to complete the berm around the area, which will facilitate surface water management in the area while the dust dries. CAMC has measured the area and it is capable of holding approximately 1,000 cubic yards prior to any construction. OEPA has asked if the saturated dust contained asbestos or chromium and if the previously conducted Site studies would be applicable to the material. The roofs were recently accessed to assess the presence of asbestos containing building materials. In the five building roofs surveyed, the only asbestos containing material found was in the outside edge flashing of the South Mill Building. Therefore, it is highly unlikely that the dust contains asbestos. Regarding chromium content, it is expected that chromium could be present. However, long-term, CAMC proposes to include the material and the storage area in the RI/FS investigation to be completed pursuant to the COPI. Thereafter, the area will be addressed in connection with the implementation of the remedy that is ultimately selected for the Site.

#### **Describe the operation of dust removal.**

CAMC's contractor will use a combination of high lifts and a crane to move workers, tools, supplies and small equipment onto the roofs. The contractor is currently looking to use a small "Dingo" track loader to help move the saturated dust into a chute that will be

set on the edge of the roof. The chute will be set so that the material can be loaded into a dump truck.

**How the material will be transported;**

A JCB 714 Articulated 10 cubic yard dump truck (picture attached) will pull underneath the chute to load approximately 6-8 cubic yards at a time into the truck bed. The truck will then travel to the designated deposit area, drive over an ingress berm, back up to a marked location to drop the saturated dust into the depressed area, egress out at the marked exit route and then return back to the chute for its next load.

**How the depositional site will be prepared (i.e. surface modification soil and berming).**

An area to the south of the “Gary Smith” piles has been identified as a natural depression area to receive the saturated dust. A small amount of earthwork will be needed to smooth the containment area and build a dump curb/berm to facilitate a safe stopping point for the truck when backing up and provide protection from the backsplash on the truck tires when the dust is being dumped from the truck. This will minimize the decontamination work necessary on the truck before it leaves the deposit area to return to the drop chute.

**How the material will be deposited into the bermed area.**

An elevated access road will be constructed on one side above the depressed area so the truck will never drive through the saturated dust. Material will be deposited into the bermed area by end dumping. End dumping will occur in a few places along the access road. As the truck dumps the 6-8 cubic yard loads into the depressed area, the low viscosity of the saturated dust will cause the area to slowly fill.

**Describe how the surface water monitoring sampling network is adequate to demonstrate that this source area will not pose threat from runoff.**

The area has a natural depression on three sides and most of the water flow to the depression comes from the hillside on the west. Using an excavator, the plan is to construct a diversion berm on the hillside above the depression to divert runoff from the hill from coming into the dust deposit area. Once all the dust has been deposited, the entrance or ingress berm will be built up further to create more free board and stormwater storage capacity for precipitation that falls directly onto the area. When the final berming (reference figure 1 – containment berm) is completed it is estimated this area could hold an additional 1,400 cubic yards of rainfall on top of the dust (i.e. 2 times the volume of the estimated dust to be stored there).

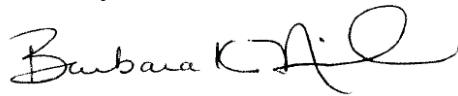
In light of the foregoing, CAMC respectfully requests your approval to address the saturated dust on the roofs of the buildings at the Site in the manner outlined above, and requests confirmation that the Interim Action Work Plan for the Site is deemed to be amended in order to incorporate the additional Work outlined in this letter. Because

CAMC would like to proceed with the collection of the dust at the earliest convenience, your prompt response to this request would be greatly appreciated.

To the extent that CAMC identifies any additional Work that needs to be incorporated into the Interim Action Work Plan in this matter, it will submit further proposals to amend the Interim Action Work Plan for the project pursuant to Sections VI and XII of the COPI.

Thank you in advance for your consideration of this request.

Sincerely,

A handwritten signature in black ink, appearing to read "Barbara K. Nielsen". The signature is fluid and cursive, with the first name "Barbara" written in a larger, more prominent script than the last name "Nielsen".

Barbara K. Nielsen  
Manager, Remediation Projects

Cc: James D Lynch  
Shane Farolino  
Lee Holder  
Soren Suver  
Joe Brunner



Cyprus Amax Minerals Company  
333 North Central Avenue  
Phoenix, Arizona 85004

February 28, 2014

Erik Hagen  
Site Coordinator  
Ohio Environmental Protection Agency  
50 West Town Street, Suite 700  
Columbus, Ohio 43216

**RE: Request for Approval of Amendment No. 3 to the Interim Action  
Workplan Former Satralloy Site**

Mr. Hagen:

Cyprus Amax Mineral Company would like to amend the Interim Action Work Plan in accordance with the Consent Order for Preliminary Injunction (COPI) Section VI (Interim Action) 13(d) and Section XII (Review of Submittals) 32, "All work plans, reports, or other items required to be submitted to Ohio EPA under this COPI, including any approved additional Work, shall, upon approval by Ohio EPA, be deemed to be incorporated in the made an enforceable part of this COPI."

Our interim action contractor (Neumeyer Environmental Services [NES]) found that construction of the Baghouse Dust Staging Area per the approved design could be done in a more economical way, and has proposed the revised design as shown in the attached drawings IAR-255 and IAR-257. The revised design still provides a cover and two bottom liners, albeit in a different manner. The placement of one cubic yard sacks inside 10 cubic yard sacks for the bottom two layers provides the double lining (when dust is directly placed into a 10 cy sack it is done using a double-walled sack).

The location of the staging area is proposed to be moved inside the North Mill Building on a concrete slab. The staging area cover will initially be provided by the building, and then the final cover will be added after demolition of the building (see Note 1 on IAR-255). NES assures us that they can demolish the building without damaging the pile.

Thank you in advance for your consideration of this request.

Sincerely,

A handwritten signature in black ink, appearing to read 'Barbara K. Nielsen'.

Barbara K. Nielsen  
Manager, Remediation Projects



Cc: James D Lynch  
Shane Farolino  
Lee Holder  
Soren Suver  
Joe Brunner



Cyprus Amax Minerals Company  
333 North Central Avenue  
Phoenix, AZ 85004

November 12, 2015

Maria Galanti  
Site Coordinator  
Division of Environmental Response and Revitalization  
Ohio Environmental Protection Agency  
Southeast District Office  
2195 Front Street  
Logan, Ohio 43138

**RE: Amendment No. 4 to the Interim Action Workplan  
Former Satralloy Site**

Dear Ms. Galanti:

Cyprus Amax Minerals Company (Cyprus) would like to amend the Interim Action Workplan in accordance with the Consent Order for Preliminary Injunction (COPI) Section VI (Interim Action) 13(d) and Section XII (Review of Submittals): "All work plans, reports, or other items required to be submitted to Ohio EPA under this COPI, including any approved additional Work, shall, upon approval by Ohio EPA, be deemed to be incorporated in the made an enforceable part of this COPI."

**SCHEDULE**

Cyprus and Golder Associates are currently negotiating the contract that we will use to complete Interim Action work. We expect to be able to begin the portion of the interim action work that Cyprus previously planned for 2015 in spring 2016 and complete the work in 2016.

**ADDITIONAL WORK**

Cyprus proposes the following additional work under this Amendment:

- **PCB soil and concrete removal** – Soils and concrete impacted by polychlorinated biphenyls (PCBs) have been found near the Electrical Building at the site. The PCB concrete and PCB soil with PCBs detected at greater than or equal to 2 mg/kg will be removed for off-site disposal in accordance with applicable regulations.

- **Filling of Waterbodies in the Lowlands** – Three waterbodies identified as federally jurisdictional by the U.S. Army Corps of Engineers (Corps), consisting of one wetland and two manmade ditches in the plant area of the site, will be filled so they will not interfere with future remedial action as shown on the attached drawing. Because the area to be filled is less than 0.1 acre per waterbody, mitigation will not be required. A Preconstruction Notification has been submitted to the Corps for coverage of this work under Clean Water Act Section 404 Nationwide Permit No. 38, Cleanup of Hazardous Waste. Work will not commence until the work coverage is authorized by the Corps.

Cyprus respectfully requests approval of the additional Work described above. Please call me if you have any questions.

Sincerely,

A handwritten signature in cursive script, appearing to read "Barbara K. Nielsen".

Barbara K. Nielsen  
Manager, Remediation Projects

cc: Sabrina Mizrachi, Cyprus-Amax Minerals Company  
Lee Holder, Golder  
J. Stanton Curry, G&K  
Shane Farolino, R&A  
Chris Rife, Westland Resources

Established in 1960, Golder Associates is a global, employee-owned organization that helps clients find sustainable solutions to the challenges of finite resources, energy and water supply and management, waste management, urbanization, and climate change. We provide a wide range of independent consulting, design, and construction services in our specialist areas of earth, environment, and energy. By building strong relationships and meeting the needs of clients, our people have created one of the most trusted professional services organizations in the world.

Africa	+ 27 11 254 4800
Asia	+ 852 2562 3658
Australasia	+ 61 3 8862 3500
Europe	+ 356 21 42 30 20
North America	+ 1 800 275 3281
South America	+ 56 2 2616 2000

[solutions@golder.com](mailto:solutions@golder.com)  
[www.golder.com](http://www.golder.com)

**Golder Associates Inc.**  
**18300 NE Union Hill Road, Suite 200**  
**Redmond, WA 98052 USA**  
**Tel: (425) 883-0777**  
**Fax: (425) 882-5498**



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