



Interim Action Haul Road Upgrade Work Plan

*Addendum No. 8 to the Interim Action Work Plan
Former Satralloy Site
Jefferson County, Ohio*

Submitted to:

Ohio Environmental Protection Agency

2195 Front St.
Logan, OH 43138

Submitted by:

Cyprus Amax Minerals Company

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Phoenix, AZ 85004

Prepared by:

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August 26, 2021

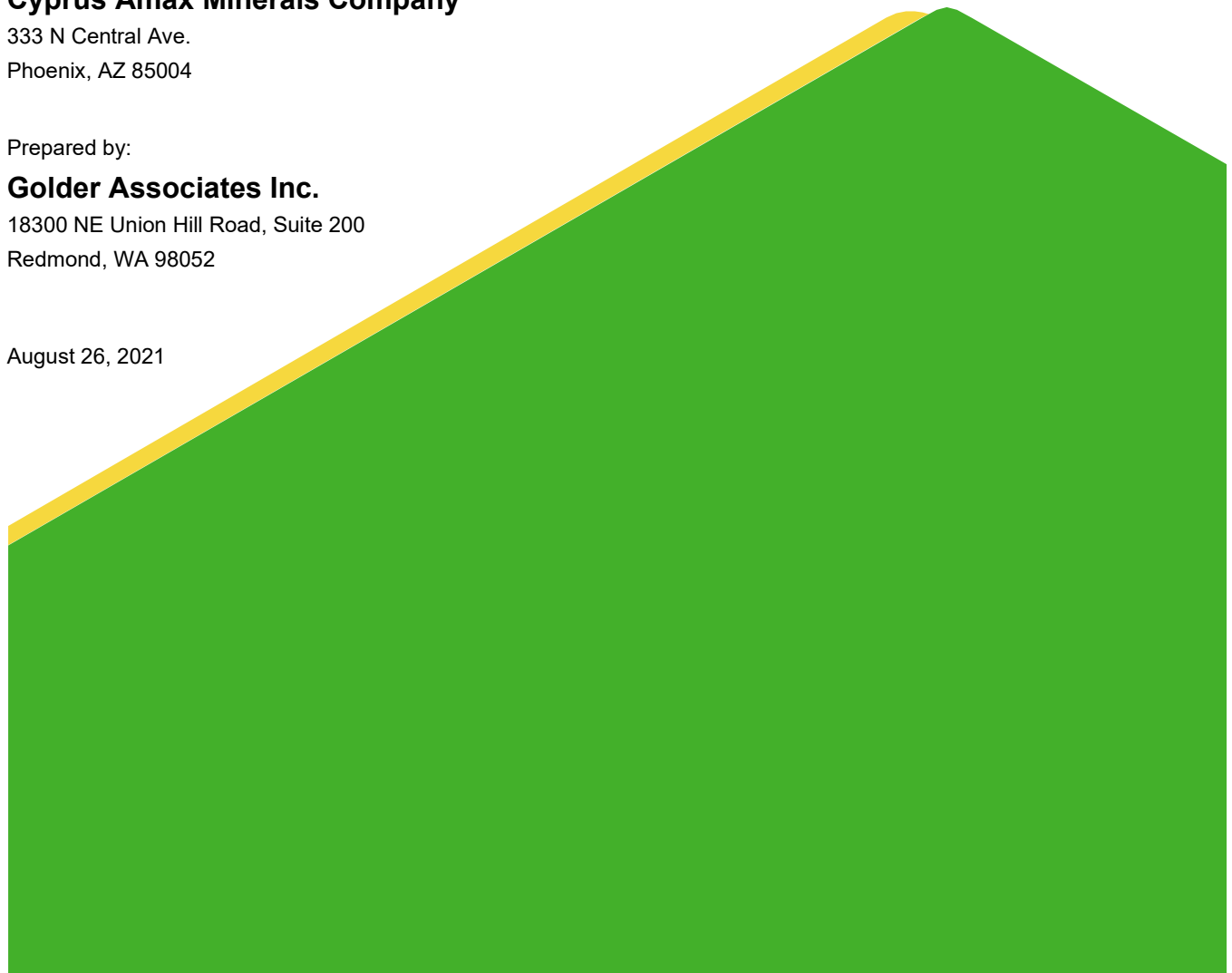


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FIGURES

Figure 1: Site Location Map

Figure 2: Site Map

Figure 3: Interim Action Organization Chart

APPENDICES

APPENDIX A

Design Drawings

ACRONYMS AND ABBREVIATIONS

| | |
|--------|--------------------------------------|
| cy | cubic yards |
| CAMC | Cyprus Amax Minerals Company |
| Golder | Golder Associates Inc. |
| IA | Interim Action |
| OEPA | Ohio Environmental Protection Agency |
| Site | Former Satralloy Site |
| SWP3 | Stormwater Pollution Prevention Plan |

1.0 INTRODUCTION

1.1 Site Description and Background

The Former Satralloy Site (Site) consists of approximately 333.5 acres of land and includes an abandoned ferrochromium alloy processing plant. The Site is located in Cross Creek Township, Jefferson County, Ohio, as shown on Figure 1, approximately four miles south of Steubenville. Portions of the Site are bordered on the west, south, and east by Cross Creek, a perennial stream which discharges into the Ohio River. Access is via County Road 74 (Gould Road).

Construction at the Site began in 1958. The plant's processing facilities consisted primarily of two production mills, an office building, baghouses, ancillary support buildings, and water and wastewater treatment facilities. The alloys produced in the plant were made from chromium ores that were transported to the Site for smelting and refining in electric-arc furnaces. A carbon slag residual material was produced during the active processing phase and was stockpiled at the Site. Four furnaces and two converters were housed in the mill buildings. The furnaces were shut down in 1982 and primary ore processing operations ceased.

From 1982 to 1994, low-carbon slag from the stockpiles was crushed and placed into a water clarifier, separating the residual chromium from the spent slag. Residual materials from this recovery process were moved from the mill buildings to several areas at the Site. The volume of slag remaining at the Site is estimated to be approximately 1.6 million cubic yards (cy). Existing site features and slag placement areas are shown on Figure 2.

Hazardous materials abatement and demolition of existing facilities was started in 2016 and is expected to be completed in 2022.

1.2 Interim Action Objective

The objective of this interim action (IA) is to upgrade an existing section of road and construct a new section of road that bypasses the non-Cyprus Amax Minerals Company (non-CAMC) property to provide a haul road to move materials, as necessary, from the lowland areas to the uplands (see Figure 2 and Appendix A – Design Drawings). The existing haul roads are too narrow to allow large scale movement of materials in a safe and efficient manner.

1.3 Interim Action Overview

This IA includes the following components:

- The section of existing road to be upgraded uses the alignment of the existing road that runs behind the South Mill Building up to the plateau area.
- The new section of road is proposed along the northeast side of the non-CAMC property to avoid access issues.
- Increases the width of the roadway to a minimum of 50 feet to accommodate:
 - 1) Two-way traffic for off-road haul trucks
 - 2) Safety berm on outside edge of roadway above downslope areas
 - 3) Drainage ditch to control surface water along the toe of new and existing cut slopes

1.4 Relation of Interim Action to Other Site Activities

The haul road upgrade IA will support other remediation activities that involve transporting materials, as necessary, from existing locations to the uplands.

1.5 Health and Safety

All activities described in this work plan will be performed in accordance with the requirements of the *Project Health and Safety Plan* (Golder 2020). Additional health and safety requirements for construction activities will be addressed in project-specific health and safety plans prepared by the contractor. These plans will incorporate all pertinent Federal, State of Ohio, and CAMC requirements for the activities addressed in this work plan and will be submitted by CAMC to the Ohio Environmental Protection Agency (OEPA) for information prior to the start of the associated construction activities.

2.0 INTERIM ACTION MANAGEMENT

2.1 Project Organization and Key Personnel

Key personnel and lines of authority for this interim action are shown on the organization chart provided on Figure 3. Duties and responsibilities of key personnel are as follows.

Cyprus Amax Project Manager (CAPM). The CAPM, Ms. Barbara Nielsen, will have overall responsibility for ensuring that the IA is implemented in accordance with the requirements of this work plan. She will be the official point of contact for all communications with OEPA, although she may authorize direct contact by other members of the project team as appropriate. Ms. Nielsen will provide strategic direction and will oversee the work of the design engineer (Golder).

Cyprus Amax Site Manager (CASM). The CASM, Mr. Jordan Sisson, will have overall responsibility for implementing IA activities at the Site. He will coordinate the activities of the construction contractor and other members of the project team and ensure that required resources are provided. He will also ensure that the work is performed in accordance with the approved drawings, specifications, and project health and safety plan.

Golder Associates Project Manager (GAPM). Mr. John Wise will be the GAPM and will be responsible for coordinating required engineering activities. He will be the official point of contact between Cyprus Amax and the engineering design team.

Golder Associates Design Engineer (GADE). Ms. Vanessa Nancarrow will serve as the GADE. During implementation of the IA, she will be responsible for addressing any design changes necessary to accommodate actual field conditions and other technical requests from the construction contractor. She will also review final as-built conditions to verify that they conform to the design documents.

Construction Contractor. The construction contractor will be responsible for performing all construction activities associated with the IA. The construction contractor will plan and execute the work to meet the project and regulatory requirements and will be responsible for all health and safety of personnel involved in construction activities, including equipment, training, and monitoring. The construction contractor will direct and manage his own subcontractors.

2.2 Implementation Schedule

The IA described in this work plan will be performed during the 2021 construction season.

2.3 Deliverables

A construction summary for the haul road upgrade IA will be included in the construction completion report for the demolition interim action work that is currently in progress. The construction summary will include a description of the activities, including parties involved, chronology, as-built drawings, materials, quantities, and other pertinent information to document the work.

3.0 INTERIM ACTION DESIGN

3.1 Haul Road Upgrade

This IA includes an upgraded haul road, from behind the South Mill Building up to the plateau area, and a new section of haul road that bypasses the non-CAMC property on the northeast side, as shown on the Drawings (see Appendix A). A summary of the design details is as follows:

- The length of existing haul road upgrade is approximately 2,400 feet and the length of new haul road construction is approximately 1,300 feet.
- The maximum design roadway grade is approximately 13%.
- The minimum roadway turning radius is approximately 43 feet.
- The road width is a minimum of 50 feet to accommodate two-way traffic for off-road haul trucks, a safety berm on the outside edge of the roadway above downslope areas, and a drainage ditch to control surface water along the toe of new and existing cut slopes. In the area of the existing haul road upgrade, this drainage ditch will discharge into the existing surface water system; there will be no change to the existing flow network or volumes. Along the new bypass section of road, this drainage ditch will slope to a low point where a culvert with riprap discharge apron will be installed; runoff will discharge into the same drainage area as it previously did.
- Cut slopes are 1.25H:1V where possible. However, where necessary, cut slopes can be constructed as steep as 1H:1V to avoid encroaching within 5 feet of the non-CAMC property.
- Fill slopes are 1.5H:1V where possible. However, where necessary, fill slopes can be constructed as steep as 1.25H:1V to avoid encroaching within 5 feet of wetlands.
- The existing haul road upgrade will require approximately 29,900 cy of slag removal to achieve the road geometry shown on the Drawings.
- The new bypass section of road will require approximately 29,400 cy of fill to achieve the road geometry shown on the Drawings.

3.2 Geotechnical Considerations

In order to widen the existing road to 50 feet, slag will need to be removed in some areas. Slopes in such areas will be cut to 1.25H:1V. This value is based on observations and topography of existing slopes that have been stable for decades.

3.3 Temporary Erosion and Sediment Control

Silt fence will be placed downgradient of disturbed areas, and straw bales and wattles will be placed in drainage ditches as needed to prevent sediment from migrating outside of the work area. Silt fence will be placed along the

fill slope of the new bypass section of road to protect downgradient wetlands from disturbance. Other applicable requirements of the project *Stormwater Pollution Prevention Plan* (SWP3) (Golder 2019) will be implemented as appropriate.

4.0 REFERENCES

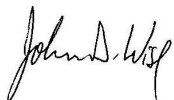
Golder Associates Inc. (Golder). 2020. *Project Health and Safety Plan for the Former Satralloy Site, Jefferson County, Ohio*. December 16, 2020.

Golder Associates Inc. (Golder). 2019. *Stormwater Pollution Prevention Plan for the General Construction Permit for the Former Satralloy Site*. April 2019.

Golder Associates Inc.

Handwritten signature of Vanessa M. Nancarrow in black ink.

Vanessa M. Nancarrow, P.E.
Design Engineer

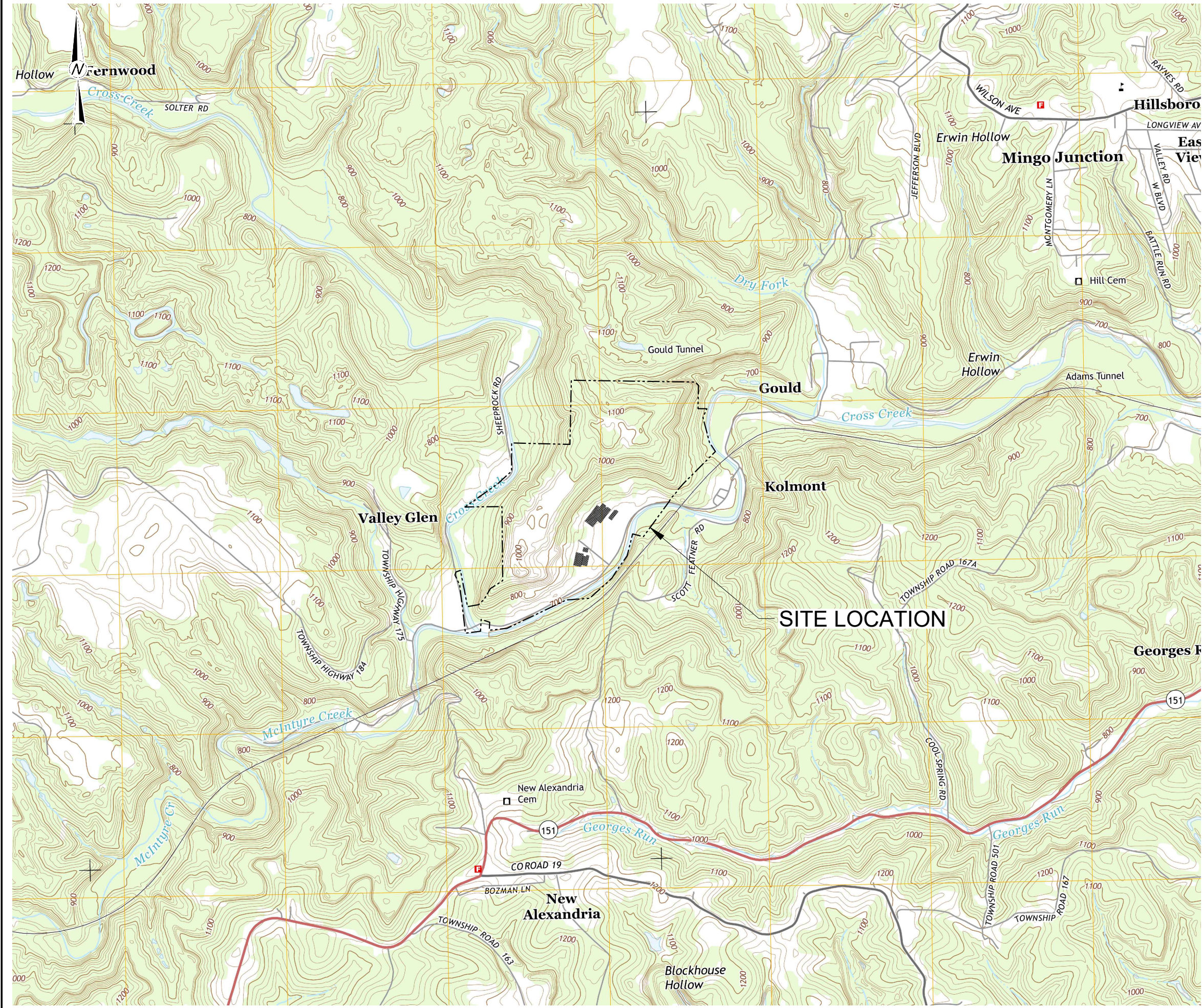
Handwritten signature of John D. Wise in black ink.

John D. Wise, C.P.G.
Project Manager

VMN/JDW/sb

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FIGURES



REFERENCE(S)
1.) MAP TAKEN FROM U.S.G.S. 7.5 MINUTE QUADRANGLE OF STEUBENVILLE WEST, OHIO, DATED 2013.



CLIENT
CYPRUS AMAX MINERALS COMPANY

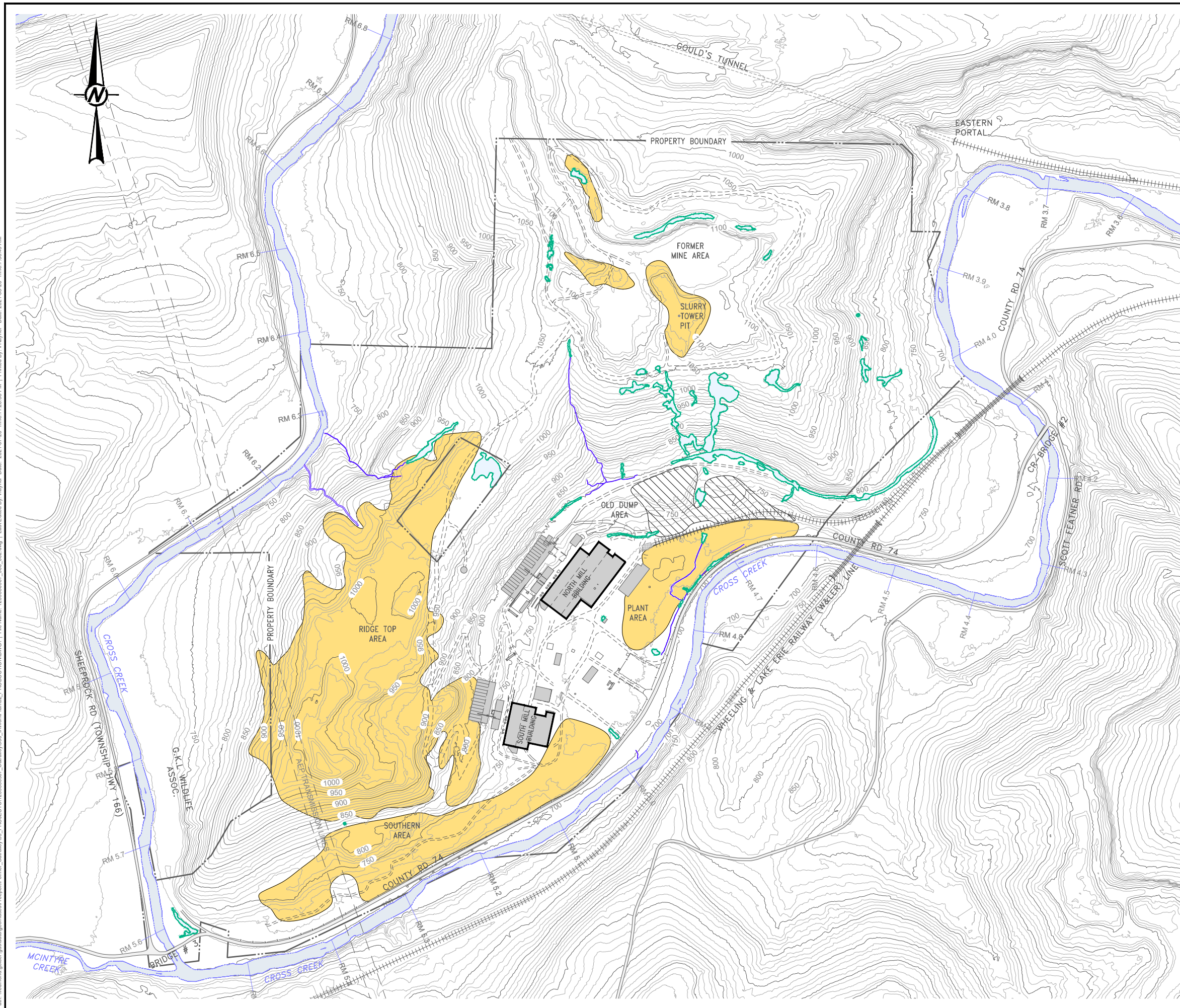
PROJECT
FORMER SATRALLOY SITE
HAUL ROAD UPGRADE INTERIM ACTION WORK PLAN

TITLE
SITE LOCATION MAP

| | | |
|------------|------------|------------|
| CONSULTANT | YYYY-MM-DD | 2021-08-26 |
| | DESIGNED | VMN |
| | PREPARED | REDMOND |
| | REVIEWED | FSS |
| | APPROVED | JW |



| | | | |
|---------------------------|--------------|-----------|-------------|
| PROJECT NO. 1239330907 | PHASE 900 | REV. 0 | FIGURE 1 |
|---------------------------|--------------|-----------|-------------|












NOTES

1. BASE TOPOGRAPHY PROVIDED BY JEFFERSON COUNTY, OHIO, ENGINEER'S OFFICE, DATED 2003. TOPOGRAPHY AND SITE FEATURES UPDATED USING AS-BUILT SURVEY OF STAGE 1 INTERIM ACTION PROVIDED BY RETTEW, DATED AUGUST 30, 2017.

COORDINATE SYSTEM: NAD83 OHIO STATE PLANE, NORTH ZONE, US FOOT.
VERTICAL DATUM: NAVD 88
2. PROPERTY BOUNDARY BY BONAR SURVEYING, BERGHOLZ, OHIO, DATED OCTOBER 17, 2006.
3. JURISDICTIONAL WETLAND AND TRIBUTARY ORDINARY HIGH WATER MARK (OHWM) DELINEATION PROVIDED BY WESTLAND RESOURCES, INC., DATED NOVEMBER 14, 2018. WETLAND AND TRIBUTARY DELINEATIONS ARE PRELIMINARY, SUBJECT TO CORPS APPROVAL.
4. CROSS CREEK MILE MARKERS OBTAINED FROM GEODATABASE AVAILABLE ON THE OHIO STATE DNR WEBSITE, JUNE 2012.
5. SITE ADDRESS: 4243 COUNTY ROAD 74
MINGO JUNCTION, OH 43938

LEGEND

- | | |
|---|--|
|  | EXISTING PROPERTY BOUNDARY (SEE NOTE 2) |
|  | EXISTING ON-SITE ACCESS ROAD |
|  | EXISTING COUNTY ROAD (PAVED) |
|  | EXISTING RAILROAD |
|  | EXISTING FACILITY |
|  | JURISDICTIONAL WETLAND (SEE NOTE 3) |
|  | JURISDICTIONAL TRIBUTARY (SEE NOTE 3) |
|  | SLAG AREA |
|  | OLD DUMP |



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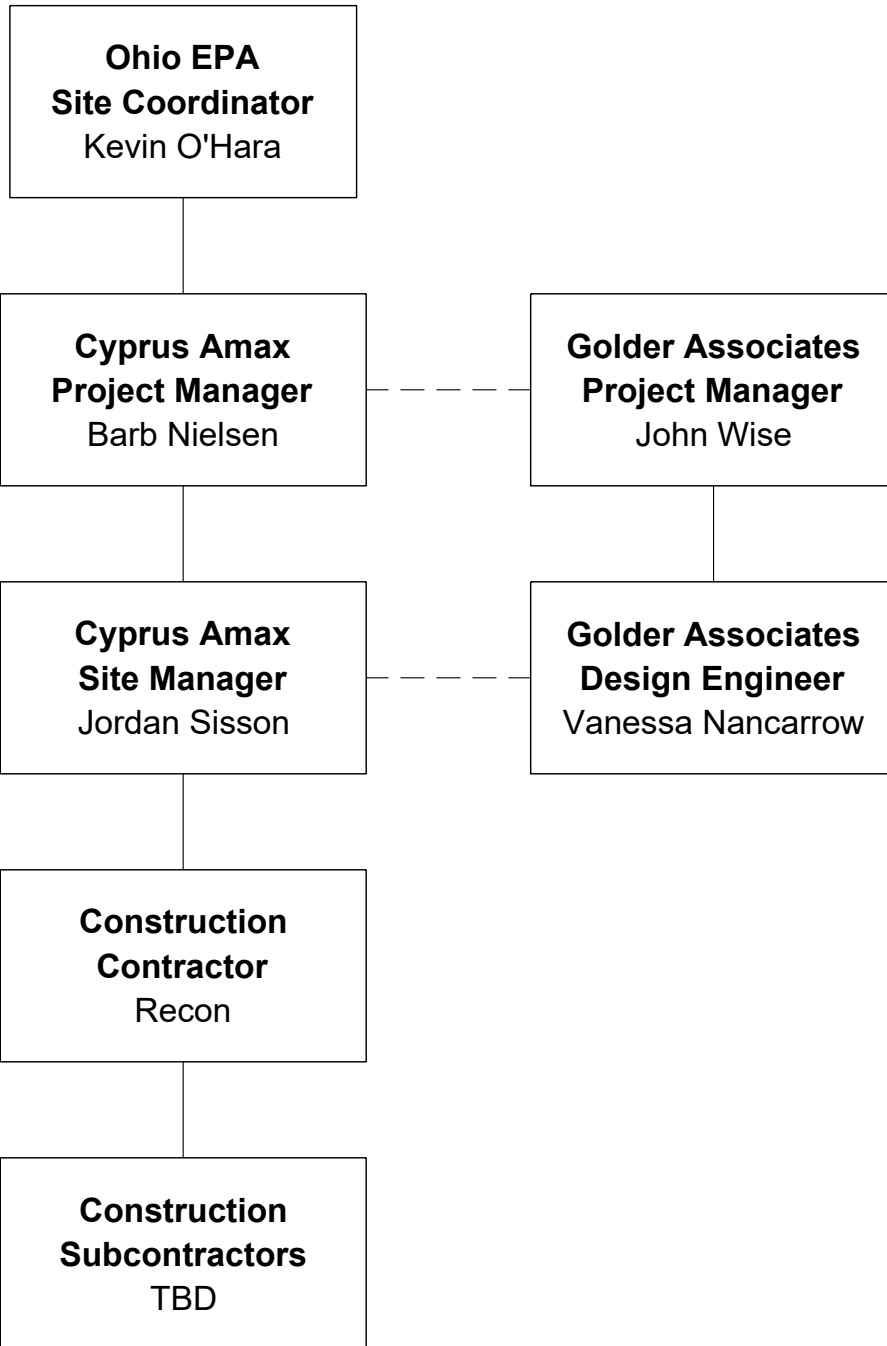
PROJECT FORMER SATRALLOY SITE HAUL ROAD UPGRADE INTERIM ACTION WORK PLAN

TITLE

SITE MAP

| | | | |
|--|------------|------------|------------|
|  GOLDER MEMBER OF WSP | CONSULTANT | YYYY-MM-DD | 2021-08-26 |
| | | DESIGNED | VMN |
| | | PREPARED | REDMOND |
| | | REVIEWED | FSS |
| | | APPROVED | JW |

| | | | |
|-------------|-------|------|--------|
| PROJECT NO. | PHASE | REV. | FIGURE |
| 1239330907 | 900 | 0 | 2 |



CLIENT
CYPRUS AMAX MINERALS COMPANY

PROJECT
FORMER SATRALLOY SITE
HAUL ROAD UPGRADE INTERIM ACTION WORK PLAN

CONSULTANT

YYYY-MM-DD 2021-08-26

DESIGNED VMN

PREPARED REDMOND

REVIEWED FSS

APPROVED JW



TITLE

INTERIM ACTION ORGANIZATION CHART

PROJECT NO.
1239330907

PHASE
900

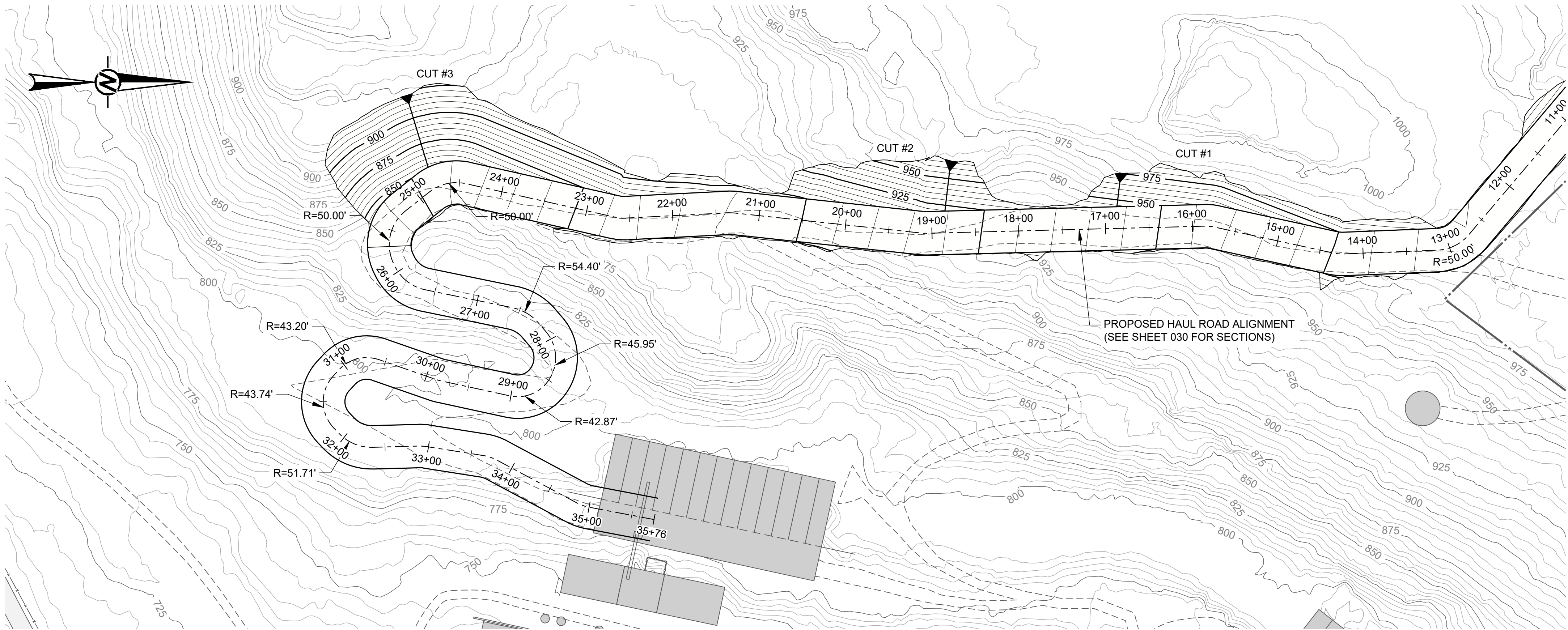
REV.
0

FIGURE
3

APPENDIX A

Design Drawings

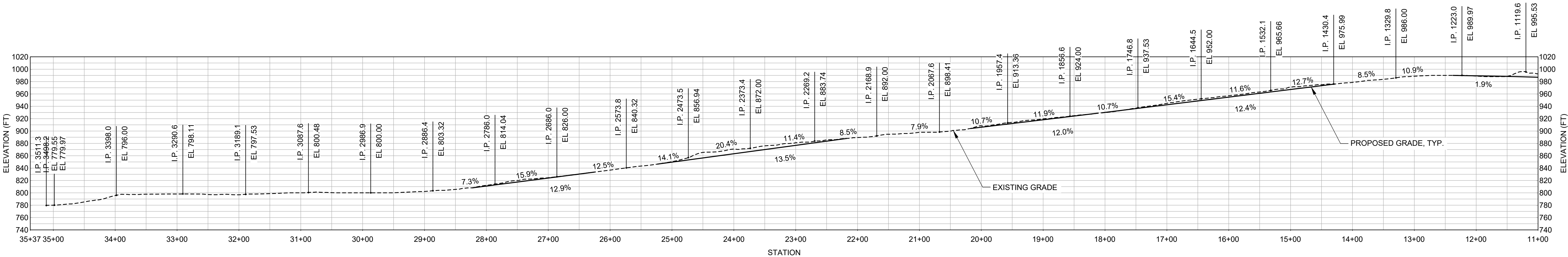
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EXISTING HAUL ROAD UPGRADE - PLAN
SCALE 1" = 80'

| LEGEND | |
|--------|------------------------------|
| | EXISTING ON-SITE ACCESS ROAD |
| | EXISTING FACILITY |

| CUT VOLUME TABLE | |
|------------------|-------------|
| | VOLUME (CY) |
| CUT #1 | 4,415 |
| CUT #2 | 5,115 |
| CUT #3 | 20,376 |
| TOTAL | 29,906 |



EXISTING HAUL ROAD UPGRADE - PROFILE
SCALE 1" = 80'



| | | | | | | |
|------|------------|----------------|----------|----------|----------|----------|
| 0 | 2021-08-26 | ISSUED FOR BID | VMN | REDMOND | FSS | JW |
| REV. | YYYY-MM-DD | DESCRIPTION | DESIGNED | PREPARED | REVIEWED | APPROVED |

SEAL

CLIENT
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CONSULTANT



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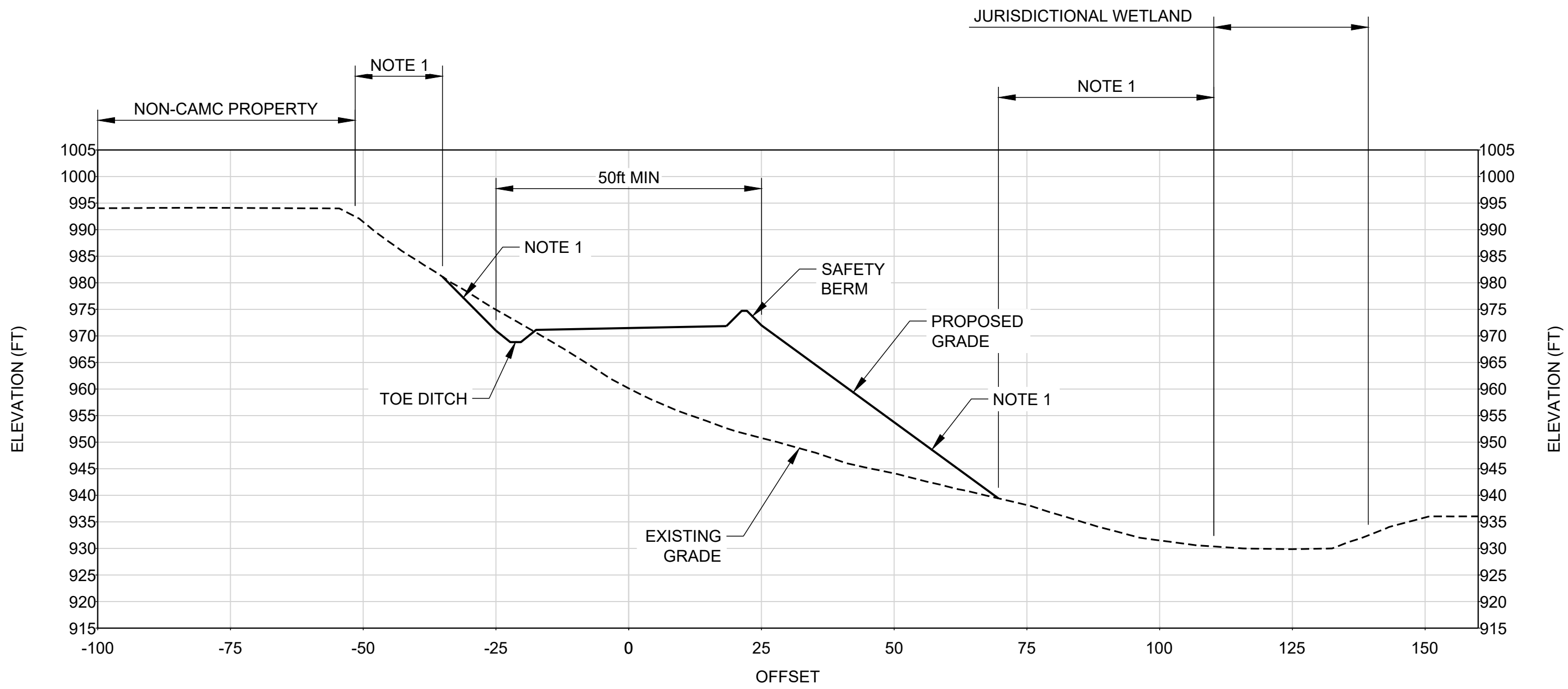
PROJECT
FORMER SATRALLOY SITE
HAUL ROAD DESIGN

TITLE
HAUL ROAD PLAN AND PROFILE

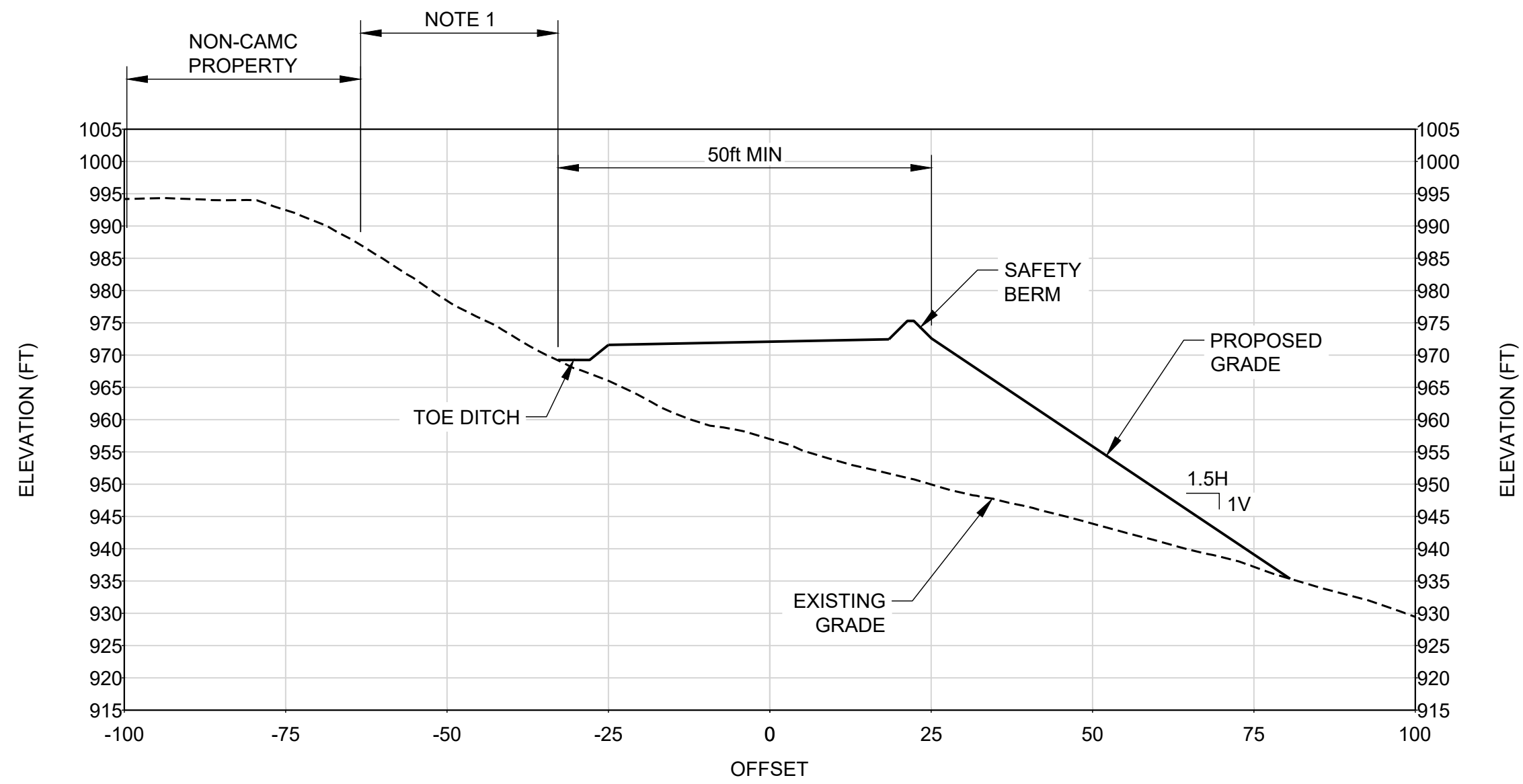
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|-------------------------|--------------|-----------|--------|--------------|
| PROJECT NO. 21466501 | PHASE 400 | REV. 0 | 1 of 3 | SHEET 010 |
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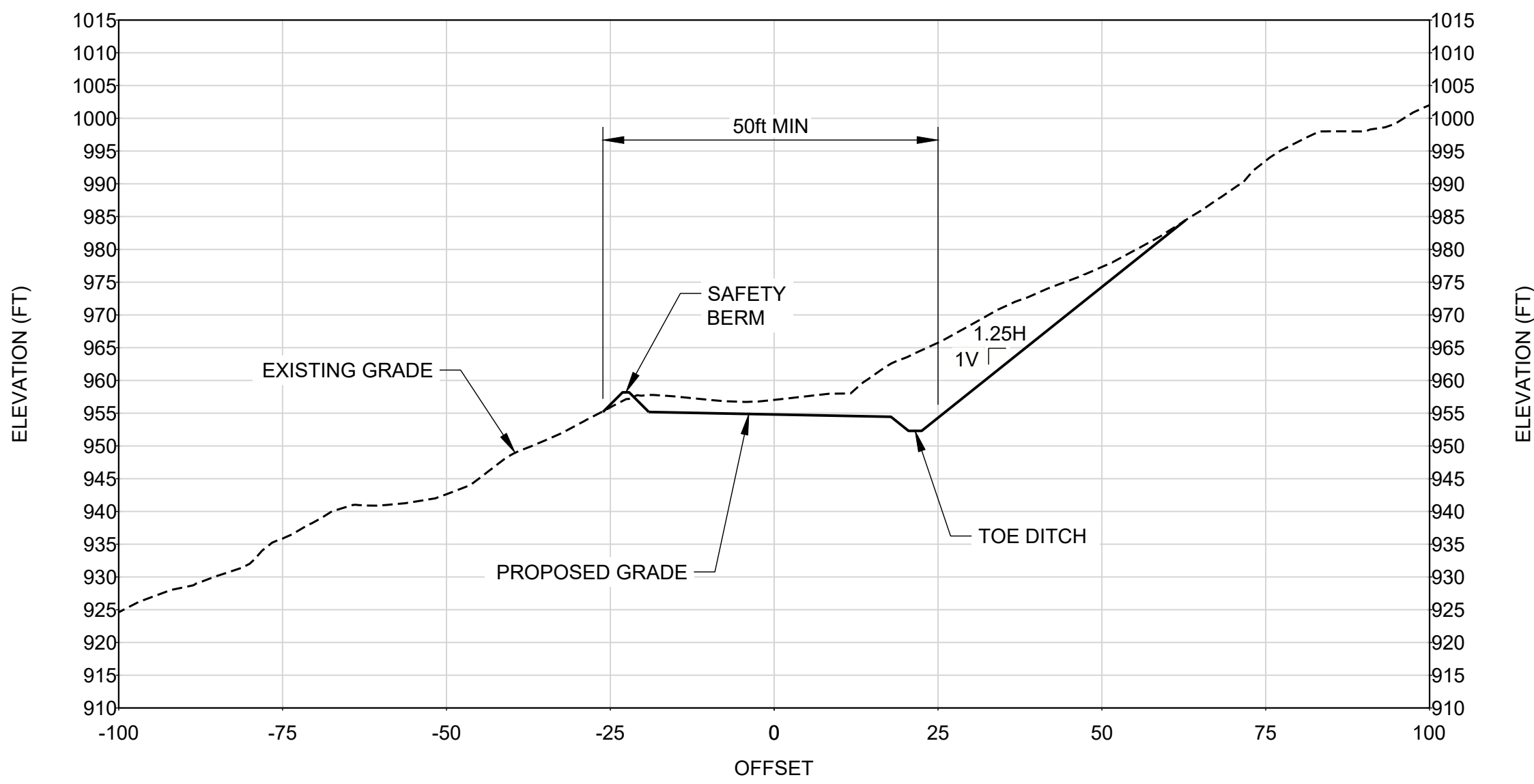
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SCALE 1" = 20'



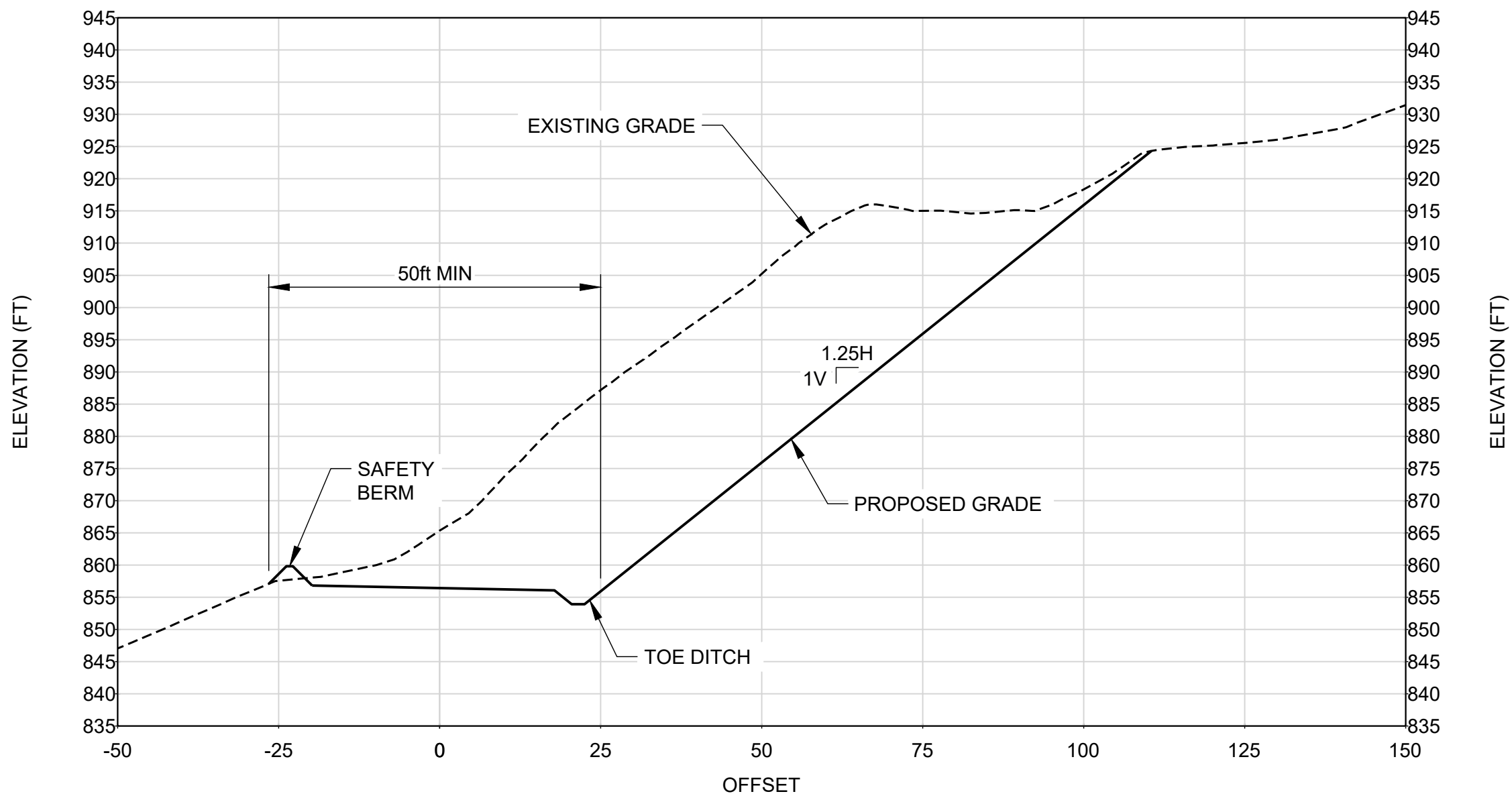
STA 7+00
SCALE 1" = 20'

NOTE(S)

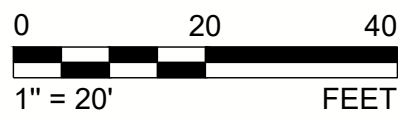
1. CONSTRUCT FILL SLOPES AT 1.5H:1V OR FLATTER AND CUT SLOPES AT 1.25H:1V OR FLATTER WHERE POSSIBLE. HOWEVER, WHERE NECESSARY, CONSTRUCT FILL SLOPES AS STEEP AS 1.25H:1V TO AVOID ENCROACHING WITHIN 5 FT OF WETLANDS, AND CONSTRUCT CUT SLOPES AS STEEP AS 1H:1V TO AVOID ENCROACHING WITHIN 5 FT OF THE NON-CAMC PROPERTY.



STA 16+00
SCALE 1" = 20'



STA 24+50
SCALE 1" = 20'



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PROJECT
FORMER SATRALLOY SITE
HAUL ROAD DESIGN

TITLE
HAUL ROAD TYPICAL SECTIONS

0 2021-08-26 ISSUED FOR BID

VMN REDMOND FSS JW

REV. YYYY-MM-DD DESCRIPTION

DESIGNED PREPARED REVIEWED APPROVED

PROJECT NO.
21466501

PHASE
400

REV. 0 3 of 3

SHEET
030

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