REPORT

Infiltration Ponds Design

Triumph Mine

Submitted to:

Robin Nimmer

Alta Science and Engineering Inc.

Submitted by:

WSP USA Inc.

18300 Redmond Way, Suite 200, Redmond, Washington, USA 98052

+1 425 883 0777

31407131-002

February 10, 2025

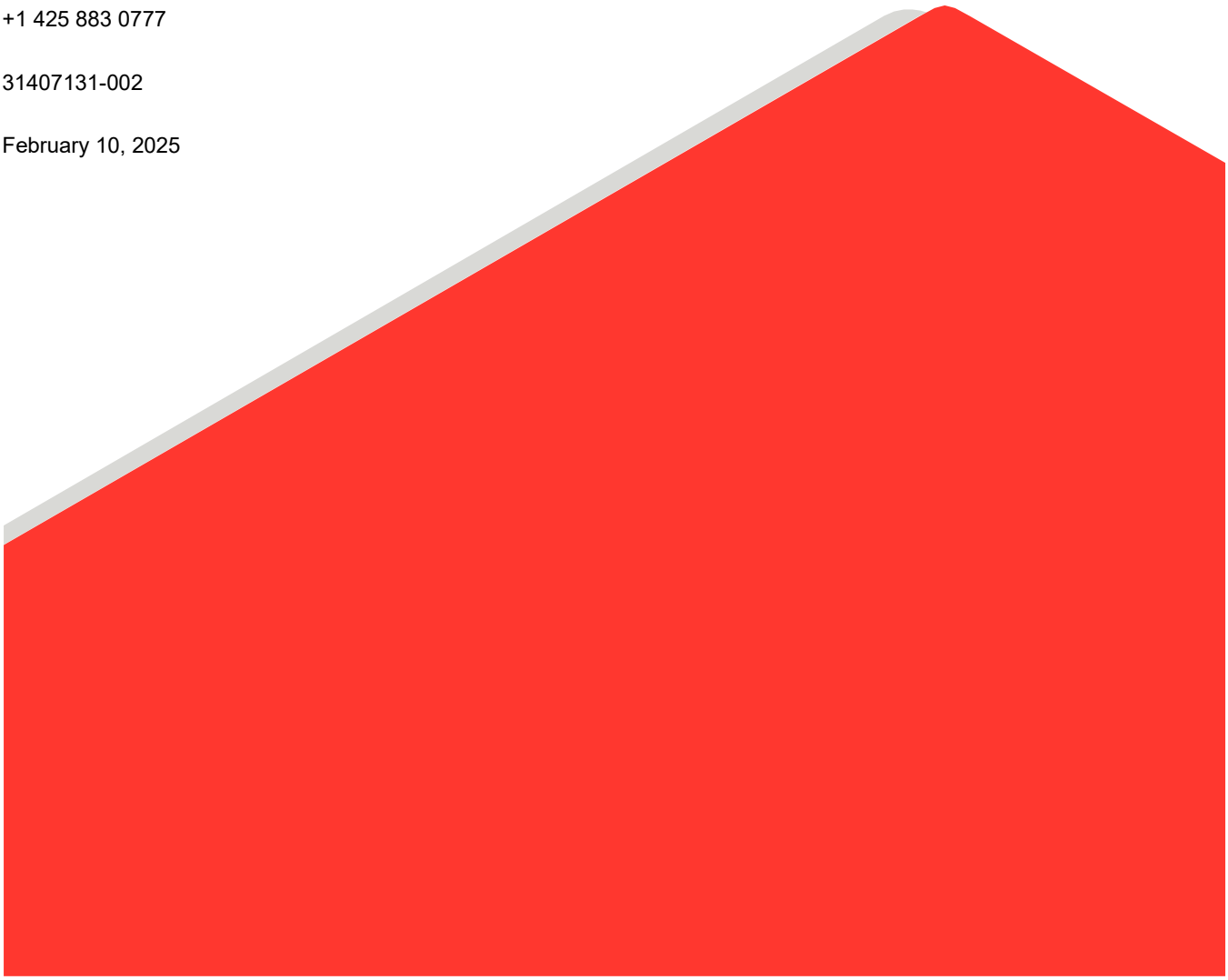


Table of Contents

1.0 INTRODUCTION 4

2.0 EXISTING CONDITION 4

2.1 Surface Conditions 4

2.2 Subsurface Conditions 5

3.0 DESIGN CRITERIA 5

4.0 DESIGN 6

4.1 Inflow Rate 6

4.2 Infiltration Rate 7

4.3 Hydrologic Model 8

4.4 Conveyance Piping 9

4.4.1 Connection to Existing Pipe 9

4.4.2 Pre-Cast Concrete Vault 9

4.4.3 Connection to East Infiltration Pond 9

4.4.4 Connection to West Infiltration Pond 9

4.4.5 Weir Plate 10

4.5 Pond Geometry 10

4.5.1 Infiltration Area 10

4.5.2 Infiltration Method 11

4.6 Pond Lining 12

4.7 Spillway 13

4.8 Access Road 14

4.9 Groundwater Flow Model 14

4.10 Geochemistry Model 15

4.11 Monitoring Well Decommissioning 15

4.12 Temporary Erosion and Sediment Control 15

5.0 OPERATION AND MAINTENANCE 15

6.0 REFERENCES 17

TABLES

Table 1: Return Period Summary Table 6
Table 2: SSA Model Results 8
Table 3: Infiltration Area Geometry Assessment Summary Table 10
Table 4: Return Period Relative to the Minimum Infiltration Area Footprint 11
Table 5: Spillway Hydraulic Parameters Summary Table 13
Table 6: Spillway Dimensions Summary Table 13
Table 7: Rock Lined Channel Design Dimensions 14
Figure 1: Infiltration Area Geometry Assessment Figure 10
Figure 2: Infiltration Gallery Example Cross Section 12

FIGURES

Figure 1: Infiltration Area Geometry Assessment Figure 10
Figure 2: Infiltration Gallery Example Cross Section 12

APPENDICES

APPENDIX A
Design Drawings and Specifications

APPENDIX B
2018 Test Pit and Infiltration Study

APPENDIX C
Design Inflow Rate Analysis

APPENDIX D
Design Infiltration Rate Analysis

APPENDIX E
Hydrologic Model Results

APPENDIX F
Spillway and Rock Lined Channel Calculations

APPENDIX G
Permitting Matrix

1.0 INTRODUCTION

This report presents the proposed design for the infiltration ponds at Triumph Mine Site. Triumph Mine is in Blaine County, Idaho, east of Ketchum off the East Fork Big Wood River Road and spans across multiple properties including properties owned by Idaho Department of Lands (IDL), Idaho Department of Environmental Quality (IDEQ), and the Bureau of Land Management (BLM). Currently, water from two sources (the Mine Portal Surge Pond and the Lower Tailings Pile (LTP) Permanent Pond) flow to a buried pipe system that discharges to ground surface and may be entering the East Fork Wood River. The water is required to be managed at the site and is not permitted to be discharged as surface water flow off-site.

WSP USA Inc. (WSP) was requested by Alta Science & Engineering, Inc. (Alta), IDEQ (Owner), and IDL (Owner) to prepare a detailed design of a system that redirects the flows to an infiltration system that meets the design criteria outlined in Section 3.0. A two-pond infiltration system is proposed to be located at the northeast corner of the IDL property (parcel number RP04N18036773A) and just south of the East Fork Big Wood River Road (Project Site). The infiltration ponds were designed to accommodate a peak flow of approximately 277 gallons per minute (gpm) and have a footprint of approximately 14,000 square feet (sf). This report presents the proposed design including the existing conditions, design criteria, infiltration rate analysis, hydrologic modeling, and infiltration ponds design. All supporting documents can be found in the Appendices of this report. Design drawings and technical specifications can be found in Appendix A.

2.0 EXISTING CONDITION

2.1 Surface Conditions

The Project Site is within the East Fork Big Wood River valley, between the East Fork Big Wood River Road and the edge of the valley floor. Topography at the Project Site drops in elevation at approximately a 10% grade southward to the valley floor. After this initial grade drop, topography continues to slope to the southwest at a shallow grade until it reaches the East Fork Wood River, approximately 0.25-miles away from the Project Site. Existing 1-meter LiDAR Site survey of land surface elevation (GeoTerra 2019) was provided to WSP and evaluated to understand the existing site conditions. An additional survey of existing site features and elevations located in the project area was performed by Accurate Surveying & Mapping in May 2024.

The current water management configuration directs water from two separate buried 8-inch pipes from the LTP Permanent Pond and the Mine Portal Surge Pond to a location west of the LTP where the two pipes merge into one 10-inch pipe (see Design Drawing Sheet 030 in Appendix A). The water is then conveyed in the single buried 10-inch pipe to the southwest where it discharges at the surface near the East Fork Wood River. Cleanouts are installed at various intervals along the 10-inch pipe. Depressions for drainage ditches exist on either side of the pipe alignment, directing surface water away from the pipe. A 24-inch culvert conveying water from north of the East Fork Big Wood River Road to the south, directs flows into the drainage ditch on the eastern side of the single buried pipe alignment. Design Drawing Sheet 030 in Appendix A provides a visual of existing surface conditions.

A wetland investigation and assessment was performed by Alta in May 2024 (Alta 2024). The wetland delineation extents were considered in the design and the construction limit of disturbance does not cross into the wetland. The assessment also found that in general, the Project Site is vegetated with brush, grasses, and occasional tree clusters. Additional detail regarding Project Site vegetation can be found in the wetlands assessment report (Alta 2024).

2.2 Subsurface Conditions

Test pit data collected by WSP in 2018 and presented in Appendix B indicate that surficial soils in and around the infiltration system area are primarily Drage Gravelly Loam (Hydrologic Soil Group C) which is a well-drained material. Less prominent surficial soils in and around the infiltration system area include 1) Marshdale-Bruneel Loam (Hydrologic Soil Group B/D) which is a poorly drained material, and 2) Vitale-Povey Association (Hydrologic Soil Group C) which is a well-drained material.

Hydrostratigraphic subsurface conditions were assessed and inferred in the conceptual site model prepared by WSP (WSP 2024). The hydrostratigraphy can be generalized into three units from top to bottom being 1) a fine-grained unit, 2 to 40 feet (ft) thick and averaging 6 feet thick, consisting of silt and silty sand, 2) a coarse-grained unit, 2 to 142 feet thick and averaging 55 feet thick, consisting of gravel and sandy gravel, and 3) the bedrock consisting of sedimentary bedrock of the Devonian Milligen and Pennsylvanian Wood River formations.

Twenty-four monitoring wells (instrumented with a datalogging pressure transducer and checked periodically with manual measurements) were monitored for water level elevations between 1995 and 2023 (WSP 2024). Seasonal groundwater contours were developed from manual measurements and transducer data. Monitoring well data obtaining and analyzed by WSP (WSP 2024) indicates the groundwater table is within 2 to 10 feet of the existing ground surface in the area of the proposed infiltration system.

Surface water and groundwater data collected from 2018 to 2023 were also assessed for geochemical characteristics (WSP 2024). Based on this assessment, arsenic and manganese were identified as the primary constituents of interest (COIs). Refer to the Triumph Mine Groundwater Flow and Reactive Transport Models Report for the conceptual site model and associated subsurface conditions (WSP 2024).

3.0 DESIGN CRITERIA

The following design criteria were assessed and considered during the infiltration system design.

Design Inflow Rate and Pond Capacity

The infiltration ponds can accommodate the 25-year peak discharge event from the LTP Permanent Pond and the maximum measured discharge from the Surge Pond (see Section 4.1).

High Groundwater Separation

A minimum separation of 2-feet from the pond floor elevations to the peak observed groundwater table (observed in April 2023) was applied throughout the extents of both infiltration ponds (see Section 4.2).

Property Line Setbacks

Setback criteria for the City of Boise, Idaho was adopted for the development of the proposed infiltration ponds (City of Boise 2018). Per these requirements, infiltration facilities are permitted to be within 2-feet of a property line. The infiltration pond design maintains a 2-foot-minimum setback from the East Fork Big Wood Road Right-of-Way (ROW) and the BLM property (the two properties adjacent to the project area).

Permitting Requirements

Federal, state, and local permitting requirements were assessed for the installation of the infiltration pond design. A matrix was established to summarize results of this assessment and can be found in Appendix G.

Maintenance

A two-pond infiltration system was determined to be the most feasible option for an infiltration system, see Section 4.5.2 for additional detail.

4.0 DESIGN

Based on the criteria outlined in Section 3.0, the following sections present the proposed infiltration ponds design.

4.1 Inflow Rate

As previously described, discharge water to be directed into the infiltration system originates from two source locations, the LTP Permanent Pond and the Mine Portal Surge Pond. Discharge data from each source were provided to WSP by IDEQ in January of 2024. Discharge data for the LTP Permanent Pond was measured by a Manta Ray flowmeter in 15-min intervals from April 10, 2020 through January 13, 2024. Substantial daily variations observed in the data set were deemed to be noise derived from instrument error so a 3-hr average of the dataset was used to determine the design inflow rate. The resulting peak discharge was 248-gpm and occurred on April 29, 2023. Using the 4-year data set from the measured data, annual peak discharges were fitted to a Log-Pearson Type 3 Statistical distribution for return periods. It was estimated that the April 2023 peak discharge event was between a 10- and 25-year event, see Table 1.

Table 1: Return Period Summary Table

Return Period (years)	Peak Discharge (gpm)
2	158
5	203
10	232
25	268
50	294
100	320

Since the measured flow dataset was such a short period of record, the 2023 peak discharge event was compared to a nearby stream gauge dataset with a longer period of record. Stream gauge data for the Little Wood River in Carey, Idaho was downloaded from the United States Geological Survey Stream Stats database (USGS 2024). The 2023 peak discharge at the Little Wood River was also between a 10- and 25-year event. A 25-year, design inflow hydrograph was then developed by scaling the 2023 dataset by a factor of 1.08 (268 cfs/248 cfs). See Appendix C for calculation details.

The second source of discharge water comes from the Mine Portal Surge Pond. Two manually measured flow rates are available at the outflow from the Surge Pond; 8.7 gpm in October 2017 and 8.48 gpm in October 2019 (WSP 2024). Water exiting the Mine Portal and flowing into the Surge Pond are reportedly consistent due to two plugs within the Mine shaft, one at 1,175 feet (installed in 2003) and another at 235 feet (installed in 2016) (IDEQ 2019). Based on this data, a flow of 9.0 gpm from the Surge Pond was added to the 25-year peak discharge from the LTP Permanent Pond for a total design inflow rate of 277 gpm.

Due to physical design constraints, the 25-yr peak discharge event is the largest event the infiltration ponds can accommodate. Flows exceeding the 25-yr design flow event will be conveyed to a stable discharge location through an emergency spillway (see Section 4.7).

4.2 Infiltration Rate

The infiltration rates of Project Site soils were calculated using three different methods and then assessed to determine a design infiltration rate. These methods include:

- Empirical equation computation from grain size distribution data,
- Analyzing falling head test data, and,
- Analyzing double ring infiltrometer data.

Data used for this analysis was collected by various contractors between 2018 to 2023 and provided to WSP by Alta and IDEQ. The following sections identify the data set and source used for each method.

Grain Size Distribution Analysis

The infiltration rate determination using grain size distribution was based on a methodology from the 2003 Massman Report (Massman 2003).

The empirical equation developed by Massman for calculating infiltration rate (K_{sat}) is as follows:

$$\log_{10}(K_{sat}) = -1.57 + 1.90D_{10} + 0.015D_{60} - 0.013D_{90} - 2.08f_{fines}$$

The variables D_{10}, D_{60}, and D_{90}, represent the grain sizes in which 10%, 60%, and 90%, respectively, are finer in the grain size distribution curve. Linear interpolations were performed to obtain D_{10}, D_{60}, and D_{90} values using the two closest points to the intersecting D_{10}, D_{60}, and D_{90} lines.

Grain size data from 8 test pits at the Project Site were reviewed, see Appendix D. Based on the grain size distribution analysis, estimated infiltration rates ranged from 1.5 to 38 inches per hour (in/hr) with an average rate of 10.2 in/hr.

Falling Head Analysis

Five falling head tests at the Project Site were reviewed, see Appendix D. The estimated infiltration rates ranged from 2.0 to 10.3 in/hr with an average rate of 5.0 in/hr.

Double Ring Infiltrometer Analysis

Two double ring infiltrometer tests were performed by STRATA in November 2023. Collection, logging, and testing methods can be found in the 2023 STRATA Infiltration Evaluation Report (STRATA 2023). The estimated infiltration rates were 3.7 and 2.2 in/hr with the average rate of 3.0 in/hr.

Summary

From these analyses, infiltration rates varied between 1.3 in/hr and 38.3 in/hr between all three methods. It was decided that only the double ring infiltrometer test results would be used to estimate the design infiltration rate because they are the two most representative test pits in proximity to the Project Site, most conservative, and thought to be most accurate. An infiltration rate of 3.0 in/hr was selected based on the average results from the double ring infiltrometer test. The averaged value was then multiplied by a correction factor of 0.40, to take into consideration the site variability, methodology, and potential long-term plugging (Ecology 2019). The resulting

design infiltration rate of 1.2 in/hr was used for design purposes. Appendix D provides the calculations for this analysis.

4.3 Hydrologic Model

Autodesk Storm and Sanitary Analysis (SSA) was used to develop a model for the proposed piping plan. SSA is a hydrodynamic modeling software interface that runs the Environmental Protection Agency's (EPA) Storm Water Management Model (SWMM). The model requires multiple inputs including an inflow hydrograph, infiltration rate, and the physical components of the drainage system. The inputs for the Project Site are as follows:

- The inflow was based on the measured discharge data provided by IDEQ. A 4.5-month span of data from March 15 to July 31, 2023, was brought into the SSA model for the inflow hydrograph. This value was calculated as described in Section 4.1 of this report.
- An infiltration rate (labeled exfiltration rate in the SSA software) of 1.2 in/hr was used in the model for both the east and west infiltration ponds. This value was calculated as described in Section 4.2 of this report.
- The components of the drainage system were added to the model using the WSP Triumph Mine Infiltration Pond Design Drawings as the reference for the dimensions and elevations of the system's pipes, weir, spillways, and infiltration ponds. The SSA model schematic representing the components of the designed drainage system can be seen in Figure 1 of Appendix E.

A summary of the model results is presented in Table 2 and graphs showing the depth and inflow over time are shown in Figures 2 and 3 of Appendix E.

Table 2: SSA Model Results

Location	Maximum Depth (ft)	Mean Depth (ft)	Maximum Infiltration Rate (gpm)	Maximum Velocity (ft/s)
Tie-in to Existing Pipe	1.01	0.70	N/A	N/A
Concrete Vault (Upstream Side of Weir)	2.60	2.43	N/A	N/A
Concrete Vault (Downstream Side of Weir)	1.92	1.46	N/A	N/A
East Infiltration Pond	1.09	0.84	76.29	N/A
West infiltration Pond	1.16	0.02	94.25	N/A
Pipe to Concrete Vault	N/A	N/A	N/A	1.89
Pipe to East Pond	N/A	N/A	N/A	1.55
Pipe to West Pond	N/A	N/A	N/A	4.53

The maximum depth in the east and west ponds for the 25-year event are estimated to be 1.09 feet and 1.16 feet, respectively. The maximum hydraulic grade line (HGL) depth at the tie-in point to the upstream conveyance system is 1.01 feet, indicating the pipe is slightly surcharged. Peak velocities through the pipes are relatively low, ranging from 1.55 to 4.53 feet per second (fps).

The results also indicate the maximum infiltration of the East Infiltration Pond is approximately 75 gpm. Once the water level rises to 1 foot above the bottom of the pond, water spills over the proposed weir and enters the West Infiltration Pond. The maximum infiltration of the West Infiltration Pond is approximately 94 gpm. For the duration (4.5 months) of the run, the West Infiltration Pond is expected to receive water approximately 40% of the time. The results also show that the east and west ponds are expected to infiltrate comparable volumes of water.

4.4 Conveyance Piping

The following section describes the proposed conveyance piping system to the infiltration ponds. All piping will be 8-inch HDPE pipe and have a minimum ground cover of 1-feet or 2-feet below the road surface. See Design Drawings Sheet 050, Sheet 052, Sheet 061, and Sheet 062 in Appendix A for drawings associated with the conveyance piping features.

4.4.1 Connection to Existing Pipe

The proposed piping system consists of an 8-inch diameter solid wall HDPE, DR 17 pipe tied into the existing 10-inch solid wall HDPE pipe at the northeast corner of the IDL property. The new pipe connection will be installed near the first cleanout on the IDL property at elevation 6043.5 feet. The remainder of the existing 10-inch HDPE pipe will be plugged and abandoned in-place. The new 8-inch HDPE pipe will be directed into a pre-cast concrete vault. Due to the relatively level ground and shallow high groundwater elevations in this area of the Project Site, this pipe cannot be sloped. In high flow conditions, water will move through the pipe system due to upstream head pressure in the piping system.

4.4.2 Pre-Cast Concrete Vault

The pre-cast concrete vault will be located at the eastern most point of the proposed access road and will be accessible through a traffic rated cover. The pre-cast concrete vault contains the outlets for the conveyance pipes that direct water to each infiltration pond. Each conveyance pipe outlet will have a set invert elevation of 6042.2 feet and will be separated by a weir plate with a crest elevation of 6043.0 feet. Due to the placement of the weir plate, water will first be directed to the eastern infiltration pond. All water in the vault that over tops the weir plate will be directed to the west infiltration pond.

Two shear gate valves will be installed in the vault, one at the east infiltration pond pipe outlet and one on the weir plate. The shear gate valves can be used at the Owner's discretion to direct flows into the western pond, bypassing the eastern pond (i.e. during maintenance of ponds).

4.4.3 Connection to East Infiltration Pond

An 8-inch HPDE pipe, 14-feet long, will be installed to direct water from the pre-cast concrete vault to the northwest where it discharges onto a 5- by 5-feet rock pad in the east infiltration pond. Due to the relatively level ground and shallow high groundwater elevations in this area of the Project Site, the connection from the pre-cast concrete vault into the east infiltration pond is 0.0%.

4.4.4 Connection to West Infiltration Pond

An 8-inch HPDE pipe, 138-feet long, will be installed to direct water from the pre-cast concrete vault to the southwest where it discharged onto a 5- by 5-feet rock pad in the west infiltration pond. The connection from the pre-cast concrete vault to the west infiltration pond is proposed be 2.2%.

4.4.5 Weir Plate

A weir plate with a crest elevation of 6043.0 feet is included in the design to allow the two-pond system to accommodate the 25-yr peak discharge over the duration of the flow event. The weir crest elevation is 1 foot above the east pond bottom elevation. From the SSA model, the maximum depth in the east and west ponds for the 25-year event are estimated to be 1.09 feet and 1.16 feet, respectively. The maximum volume in the east and west ponds will be 6,130 cubic feet (cf) and 8,100 cf, respectively.

4.5 Pond Geometry

4.5.1 Infiltration Area

Based on the design constraints presented in Section 3.0, seven infiltration geometries were assessed. For all geometries, the infiltration area geometry was constrained to the north by the East Fork Big Wood Road, to the east by the BLM property, and to the south and west by the encroachment of the peak observed groundwater table elevations. Due to the constraint of a minimum separation of 2-feet from the infiltration elevations to the peak observed groundwater table, the infiltration floor elevation was also adjusted relative to the alternative. Figure 1 presents the configurations assessed and Table 3 presents the findings from the geometries assessment.

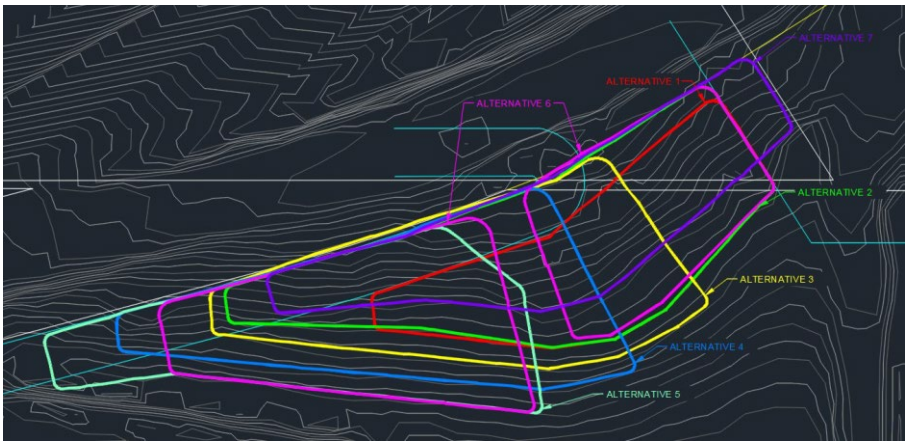


Figure 1: Infiltration Area Geometry Assessment Figure

Table 3: Infiltration Area Geometry Assessment Summary Table

Alternative	Approximate Infiltration Area (sf)	Infiltration Area Floor Elevation (ft)	Setback from County Road ROW (ft)
1	7,700	6,042	25
2	12,000	6,042	2
3	11,000	6,041	2
4	10,300	6,040	2
5	9,600	6,039	2

Alternative	Approximate Infiltration Area (sf)	Infiltration Area Floor Elevation (ft)	Setback from County Road ROW (ft)
6 (two areas)	14,400	6,042 & 6,039	2
7	8,700	6,043	2

The SSA model was also used to determine the minimum infiltration footprint required for each calculated peak discharge event. The summary of these results is presented in Table 4.

Table 4: Return Period Relative to the Minimum Infiltration Area Footprint

Return Period (years)	Peak Discharge (gpm)	Minimum Infiltration Area (sf)
10	241	12,500
April 2023 Event	257	13,000
25	277	14,000
100	329	18,000

Due to physical design constraints for the property line setbacks and high groundwater separation, the 25-yr peak discharge event is the largest size discharge event the infiltration ponds can accommodate at the Project Site. Based on this assessment of the infiltration area geometries, Alternative 6 was selected to maximize the area of infiltration and to accommodate the 25-yr high flow event. Alternative 6 is a two-pond configuration with two different pond bottom elevations. See Design Drawings Sheet 050 and Sheet 051 in Appendix A for depiction the pond geometries.

4.5.2 Infiltration Method

Two methods of infiltrating water were discussed for the infiltration system design. The first method is an infiltration gallery consisting of a series of buried perforated pipes that will allow for the infiltration of the Mine discharge water into the vadose zone as it is directed into the pipes. Figure 2 provides an example cross section of an infiltration gallery.

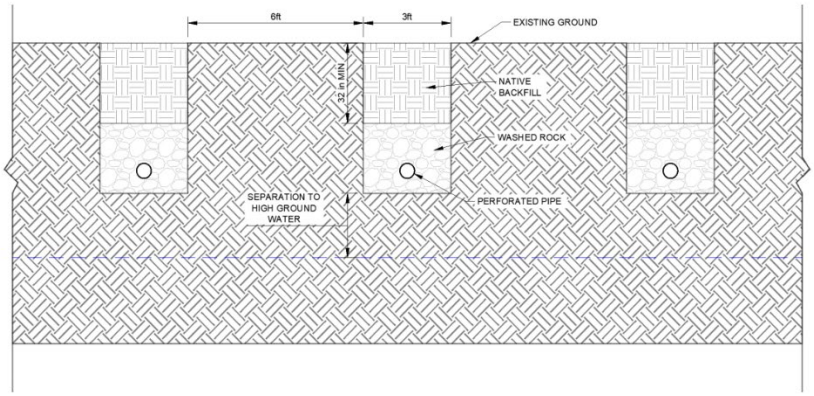


Figure 2: Infiltration Gallery Example Cross Section

The second method is an infiltration pond that will retain the Mine discharge water as the Mine discharge water infiltrates into the vadose zone (See Design Drawing Sheet 051 in Appendix A for the proposed infiltration pond sections). Both methods considered the same design constraints presented in Section 3.0 and both methods could be constructed with the infiltration area geometry chosen in the Infiltration Area section of this report (see Section 4.5.1). The two methods differed in 1) the feasibility of constructing relative to the design constraints, and 2) the maintenance of each system. For these two reasons (further described below), the infiltration pond was determined to be the most feasible option.

Feasibility of Constructing

Based on the SSA model for a 25-yr design flow event (277 gpm) the required infiltration area was calculated at approximately 14,000sf. For an infiltration gallery, additional area would be required to account for the 3-feet pipe trench width and a 6-feet minimum spacing between trenches (see Figure 2).The area require for an infiltration gallery is 42,000sf. The area required for the infiltration gallery is significantly higher than the area available for infiltration at the Project Site.

Maintenance of System

The discharge of water from the Mine Portal transports a significant volume of sediment that will build up in the infiltration system during operation (WSP 2024). Sediment deposition is expected in infiltration systems when sediment is present in the water being infiltrated. Overtime, the infiltration rate of the system will decrease as sediment deposition increases. To maintain the operation and function of the infiltration system, deposited sediment needs to be removed at a consistent frequency (e.g. approximately every 10 years). For an infiltration gallery, this means the perforated pipes would need to be uncovered and either cleaned or removed and replaced when maintenance is needed. For an infiltration pond, this means sediment depositions on the pond bottom needs to be removed, the pond lining replaced, and the conveyance piping system cleaned when maintenance is needed. From a maintenance standpoint, the infiltration pond is expected to be the easier, less disruptive, and less costly option. See Section 5.0 for the proposed operation and maintenance plan for the proposed infiltration pond design.

4.6 Pond Lining

WSP proposes the infiltration pond bottoms be lined with a 6-inch-thick layer of coarse sand or gravel (specified as pea gravel on the Design Drawings) to promote infiltration all year round, even during cold weather (CWP 2019). The Eastern Washington Stormwater Management design guidance (Ecology 2019) states that a lining

material (6 to 12 inches of coarse sand) may also be beneficial in that the filter layer can be replaced when it becomes clogged.

While a sand or gravel layer may provide the best infiltration during cold weather, is it not necessary, as infiltration basins with varying materials are frequently used in cold climates. For example, infiltration basins design guidance is found in the following regions that experience cold climates: Idaho Transportation Department (ITD) BMP Practices Manual (ITD 2011), City of Boise Stormwater Management Design Manual (City of Boise 2018), and Stormwater Management Manual for Eastern Washington (Ecology 2019). Vegetation (grass mix) is also commonly applied to infiltration pond surfaces (ITD 2011, City of Boise 2018, Ecology 2019, EPA 2021). If it is important for aesthetic reasons, pond bottoms vegetated with grass can be considered. However, there will likely be a lack of vegetation in the portion of the infiltration ponds that experience continual ponding.

WSP proposes after first maintenance cycle (when surface layer becomes clogged), further assessment is done to determine if the pond lining be replenished with sand/gravel, or a different material.

4.7 Spillway

An emergency spillway and rock lined channel will be situated on the south side of the West Infiltration Pond. The spillway and rock lined channel were sized to accommodate a peak inflow of 320 gpm, or 0.71 cfs, which is the associated peak flows resulting from the 100-year discharge event and assumes the proposed infiltration ponds total volume capacity has been reached prior to the start of discharge through the spillway. The spillway was sized using the trapezoidal/broad crested weir equation. The calculations for the spillway are attached in Appendix F. The hydraulic parameters and resulting dimensions of the spillway are presented in Table 5 and Table 6.

Table 5: Spillway Hydraulic Parameters Summary Table

Hydraulic Parameter	Parameter Value	Units
Design Discharge	0.71	cfs
Headwater depth	0.13	ft
Freeboard	0.87	ft

Table 6: Spillway Dimensions Summary Table

Spillway Dimensions	Parameter Value	Units
Depth	1	ft
Invert Elevation	6044	ft
Base Width	5	ft
Side Slope	10H:1V	-

The rock lined channel was designed to accommodate the design discharge of 0.71 cfs. The Robinson method adopted from Design of Rock Chutes (ASCE 1998) was applied to size the rock lined channel and rock size.

Calculations for the rock lined channel and rock size are attached in Appendix F. The dimensions and rock size are presented in the Table 7 below. Note, the rock lined channel slope will be graded to match final topography and to tie into existing Project Site topography.

Table 7: Rock Lined Channel Design Dimensions

Rock Lined Ditch Parameter	Parameter Value	Units
Base Width	5	ft
Side Slope	3H:1V	-
Channel Slope	0.33 max	ft/ft
Rock Size (D_{50})	5	inch
Rock Thickness	12	inch

During a 100-year flow event, water will enter the spillway, dissipate energy as it enters into the rock lined channel, and then be directed into an existing drainage path.

A second emergency spillway and rock lined channel will be situated on the west side of the East Infiltration Pond to directing overflows into the West Infiltration Pond. This spillway and rock lined ditch may never encounter flows but was included as a best management practice. In the event of clogging in the conveyance piping system to the western pond, water can be conveyed through the spillway and discharge into the West Infiltration Pond. The East Infiltration Pond emergency spillway will have the same dimensions as the emergency spillway on the south side of the West Infiltration Pond however, 10H:1V side slopes are not required and 3H:1V side slopes will suffice. See Design Drawings Sheet 050 in Appendix A for the emergency spillway and rock lined channel plans and their associated design details on Sheet 061.

4.8 Access Road

An access road is included in the proposed design for ease of access during and after construction. The 15-feet wide access road will branch off the East Fork Big Wood Road on the western side of the infiltration ponds, wrap around the southern side of the infiltration ponds, and terminate at the existing drainage path on the eastern side of the IDL property. The infiltration pond spillway is within the access road extents bordering the West Infiltration Pond. All other surface water drainage shedding from the access road will be directed to the south, away from the infiltration ponds. A 2-feet wide shoulder between the infiltration ponds and the access road as well as a turnaround at the road mid-point was included for safety purposes. A vehicle access gate and fencing separating the infiltration ponds and the county road is included to control access.

4.9 Groundwater Flow Model

The proposed design configuration was used to perform a mounding analysis in MOUNDSOLV and a groundwater fate evaluation in MODFLOW-USG. The full documentation of the methodologies, inputs, and results can be found in the Triumph Mine Groundwater Flow and Reactive Transport Models Final Report (WSP 2024). The maximum resulting water table rise from the mounding analysis was 1-foot and occurred with the lowest hydraulic conductivity and the highest measured infiltration rate. WSP recommends a minimum of a 2-feet vertical separation between the high-water table elevation and the bottom infiltration pond elevation, which is reflected in

the proposed design. The groundwater fate evaluation indicates that Mine-impacted water infiltrating into the subgrade through the ponds will travel to the southwest parallel to the East Fork Big Wood River, therefore achieving the purpose of the infiltration pond design.

4.10 Geochemistry Model

The proposed design configuration was used to perform a groundwater reactive transport model. The full documentation of the methodology, inputs, and results can be found in the Triumph Mine Groundwater Flow and Reactive Transport Models Final Report (WSP 2024). The geochemical model predicts the proposed infiltration ponds will achieve the purpose of infiltrating the Mine water while providing removal of arsenic and manganese. The model also demonstrates the importance of maintaining the pond bottom to upkeep the function of the infiltration ponds system, see Section 5.0 for information on pond maintenance.

4.11 Monitoring Well Decommissioning

Monitoring well MW-23A is located within the West Infiltration Pond extents and will need to be decommissioned prior to the construction of the infiltration ponds. A new well will be installed down gradient of the infiltration ponds to monitor effectiveness. A decommissioning plan and new well installation plan will be completed by Alta.

4.12 Temporary Erosion and Sediment Control

During construction, surface water will be managed using temporary sediment and erosion control (TESC) measures to prevent soil/sediment from migrating off the Project Site (i.e., silt fence, straw bales, straw wattles, and plastic sheeting). At a minimum, silt fence will be installed along the south side of the Project Site and straw bale barriers will be installed within existing drainage pathways (see Design Drawing Sheet 040 in Appendix A). Additional use of silt fence, straw bale barriers, or other TESC measures can be used to further prevent soil/sediment from migrating off the Project Site during construction.

A construction entrance located at the Project Site entrance will control Project Site access. A 1-feet thick layer of rock will be placed at the construction entrance to minimize soil from trucks and equipment leaving the Project Site and using public roads. The area west of the construction entrance will be used to stage equipment and stockpile material project materials.

5.0 OPERATION AND MAINTENANCE

The intention of the infiltration pond design is for water to gravity drain through the conveyance piping, into the pre-cast concrete vault, into the infiltration pond, and infiltrate into the Project Site subgrade. Since the Triumph Mine closure, operators occasionally visit the Mine Site for monitoring and maintenance. The infiltration pond design will function year-round without consistent oversight. WSP recommends visual inspection of the ponds and conveyance piping system at a minimum of once per year (during spring high flows) or more frequently at the Owner’s discretion.

The inclusion of the shear gate valves in the pre-cast concrete vault (see Section 4.4.2) allows operators to perform maintenance on the eastern pond while water is directed to the western pond. Maintenance of either pond should be performed during low flow conditions.

Per findings from the Groundwater Flow and Reactive Transport Models (WSP 2024), sediment mobilized in the discharge water will accumulate on the pond bottoms as water infiltrations into the subgrade. To maintain the function of the ponds, accumulated material will need to be excavated and disposed of at a waste disposal facility at regular frequencies. WSP recommends pond cleanouts at least once every 10 years. Based on the observed

function and operation of the infiltration ponds, a more frequent cleanout interval may need to be evaluated and established. An inspection and maintenance plan will be developed post construction which may include other recommendations such as sampling and testing.

Signature Page

WSP USA Inc.

Kate DaPolito

Kate DaPolito, EIT
Consultant, Civil/Water Resources Engineering

Colby Caywood, PE
Assistant Vice President, Lead Consultant

Scott Stoneman, PE
Vice President

KMD/CLC/tp

6.0 REFERENCES

Alta Science & Engineering, Inc (Alta). 2024. Triumph Mine – Initial Wetland Assessment. May 15, 2024.

American Society of Civil Engineers (ASCE). 1998. Design of Rock Chutes. 1998.

Autodesk, Inc (Autodesk). 2021. Storm and Sanitary Analysis, Version 13.3.214.0. August 5, 2020.

Center for Watershed Protection (CWP). 2019. Stormwater Practices for Cold Climates, Chapter 5. December 2019.

City of Boise. 2018. Boise Stormwater Design Manual. January 2018.

Environmental Protection Agency (EPA). 2021. Stormwater Best Management Practice - Infiltration Basin. December 2021.

GeoTerra. 2019. 2019 Triumph Mine Mapping, LiDAR, and Orthography. Job #190204.

Idaho Department of Environmental Quality (IDEQ). 2019. Triumph Mine Tailings Piles Site 2019 Five-Year Review. October 2019.

Idaho Transportation Department (ITD). 2011. Best Management Practices (BMP) Manual, Chapter 5 – Post Construction Best Management Practices. August 2011.

Washington State Department of Ecology (Ecology). 2019. Stormwater Management Manual for Eastern Washington. February 2019.

WSP USA Inc. (WSP). 2024. Triumph Mine Groundwater Flow and Reactive Transport Models, Final Report. September 3, 2024.

Massman, Joel W. 2003. A Design Manual for Sizing Infiltration Ponds. October 2023.

STRATA. 2023. Report Infiltration Evaluation, Triumph Mine Wood River Valley, Idaho, Attachment B. November 20th, 2023.

United States Geological Survey (USGS). 2024. Stream Stats Database. Accessed in February 2024.

APPENDIX A

Design Drawings and Specifications

TRIUMPH MINE
INFILTRATION POND DESIGN
BLAINE COUNTY, IDAHO



PROJECT LOCATION
SCALE: N.T.S.



PROJECT SITE VICINITY MAP
SCALE: 1" = 150'

DRAWING INDEX	
SHEET NUMBER	SHEET TITLE
010	COVER SHEET
020	GENERAL NOTES AND SPECIFICATIONS (1 OF 3)
021	GENERAL NOTES AND SPECIFICATIONS (2 OF 3)
022	GENERAL NOTES AND SPECIFICATIONS (3 OF 3)
030	EXISTING CONDITIONS
040	TEMPORARY EROSION AND SEDIMENT CONTROL
050	INFILTRATION POND PLAN
051	INFILTRATION POND SECTIONS
052	DISCHARGE PIPE PROFILES
060	DETAILS (1 OF 3)
061	DETAILS (2 OF 3)
062	DETAILS (3 OF 3)

NOT FOR CONSTRUCTION

REV.	YYYY-MM-DD	DESCRIPTION	DESIGNED	PREPARED	REVIEWED	APPROVED
0	2025-02-07	ISSUED FOR PERMITTING	KMD	REDMOND	CLC	SJS
A	2024-08-06	DRAFT - ISSUED FOR REVIEW	KMD	REDMOND	SJS	SJS

SEAL

PROFESSIONAL ENGINEER LICENSED 16005 STATE OF IDAHO COLBY L. CATWOOD

CLIENT
ALTA SCIENCE & ENGINEERING, INC.

CONSULTANT
wsp
REDMOND
18300 REDMOND WAY, SUITE 200
REDMOND, WA 98052
USA
[+1] (425) 833 0777

PROJECT
INFILTRATION POND DESIGN
TRIUMPH MINE
BLAINE COUNTY, IDAHO

TITLE
COVER SHEET

PROJECT NO.	PHASE	REV.	SHEET
31407131	002	0	1 of 12 — 010

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

0 1in

Path: \\corp.pbwan.net\US\Central\Data\USXLC300\geomatics\Idaho_Dept_of_Lands\Triumph_Mine\99_PROJECTS\31407131_200_TriumphMine\Infiltration\03_PRODUCTION\31407131_200_InfiltrationPondDesign\DWG\ | File Name: 31407131_006.dwg | Last Edited By: usbh130706 Date: 2025-01-10 Time:3:23:21 PM | Printed By: USKD701463 Date: 2025-02-10 Time:3:11:51 PM

SUMMARY OF WORK

A. SUMMARY

1. THE OBJECTIVE OF THE PROJECT IS TO CONSTRUCT TWO INFILTRATION PONDS WITH CONVEYANCE PIPING THAT TIES INTO AN EXISTING PIPING SYSTEM AT THE TRIUMPH MINE SITE. THE INFILTRATION POND AND CONVEYANCE PIPING SYSTEM ARE INTENDED TO INFILTRATE WATER AT THE SITE (SOURCED FROM THE MINE PORTAL SURGE POND AND THE LOWER TAILINGS PILE (LTP) PERMANENT POND) RATHER THAN ALLOWING IT TO DISCHARGE AS SURFACE WATER FLOW OFF-SITE.

B. PROJECT LOCATION AND SITE ACCESS

1. THE SITE IS LOCATED IN BLAINE COUNTY, IDAHO, APPROXIMATELY 12 MILES NORTHEAST OF HAILEY, IDAHO ALONG THE EAST FORK BIG WOOD RIVER ROAD.
2. THE SITE IS IMMEDIATELY NORTH AND SOUTH OF THE EAST FORK BIG WOOD RIVER ROAD AND IS ACCESSIBLE VIA GRAVEL ROADS.

C. WORK ACTIVITIES

1. THE PROJECT CONSISTS OF THE FOLLOWING MAIN WORK ACTIVITIES TO BE PERFORMED BY THE CONTRACTOR:
   a. THE CONTRACTOR IS RESPONSIBLE FOR THE MANAGEMENT OF STORMWATER DURING CONSTRUCTION INCLUDING TEMPORARY EROSION AND SEDIMENT CONTROL.
   b. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING AND ABIDING BY ALL CONSTRUCTION PERMITS APPLICABLE TO THIS WORK.
   c. PERFORM STREET CLEANING, AS NECESSARY.
   d. CLEAR AND GRUB THE PROJECT FOOTPRINT.
   e. REMOVE TOPSOIL AND STOCKPILE IN DESIGNATED STAGING AREA.
   f. PLUG AND ABANDON THE EXISTING OUTLET PIPE THAT WILL NO LONGER BE PART OF THE CONVEYANCE PIPING SYSTEM.
   g. PREPARE SUBGRADE, ACCESS ROAD, EMERGENCY SPILLWAYS, AND ROCK LINED CHANNELS, WHICH INCLUDES APPROXIMATELY 3,600 CUBIC YARDS (CY) OF CUT AND APPROXIMATELY 560 CY OF FILL.
   h. INSTALL PRE-CAST CONCRETE VAULT WITH WEIR, SHEAR GATE VALVES, AND 8-INCH DR 17 HDPE CONVEYANCE PIPING THAT CONNECTS THE PRE-EXISTING PIPING SYSTEM TO THE INFILTRATION PONDS.
   i. INSTALL PEA GRAVEL IN THE BOTTOM OF THE EAST AND WEST INFILTRATION PONDS.
   j. INSTALL 2- TO 4-INCH ROCK IN THE EMERGENCY SPILLWAYS, ROCK LINED CHANNELS, AND ROCK PADS.
   k. INSTALL FINAL GRADING OF ACCESS ROAD TO INCLUDE A 2-FOOT-WIDE SHOULDER, A TURNAROUND, AND TO DRAIN AWAY FROM EAST AND WEST INFILTRATION PONDS.
   l. INSTALL WOOD FENCING, MAINTENANCE ACCESS GATE, AND RE-VEGETATION.
2. LISTING OF ACTIVITIES IS NOT INTENDED TO ESTABLISH A DETAILED CONSTRUCTION SEQUENCE. THE CONTRACTOR SHALL PROVIDE THEIR PROPOSED DETAILED SEQUENCE OF ACTIVITIES IN THE CONSTRUCTION SCHEDULE SUBMITTED WITH THEIR BID.

D. COORDINATION

1. COORDINATE ALL CONSTRUCTION ACTIVITIES WITH THE IDAHO DEPARTMENT OF ENVIRONMENTAL QUALITY (IDEQ) PROJECT MANAGER TO AVOID DISRUPTING OPERATIONS OR OTHER ADVERSE EFFECTS.
2. FAILURE TO COORDINATE IN AN ADEQUATE OR TIMELY MANNER SHALL NOT BE ALLOWED AS A BASIS FOR INCREASED BUDGET OR SCHEDULE.
3. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ANY DAMAGES RESULTING FROM INTERFERENCE WITH IDEQ OPERATIONS, DAMAGE TO EQUIPMENT, OR OTHER ADVERSE CONSEQUENCES OF CONTRACTOR'S ACTIVITIES.
4. WORKING HOURS OF 6 A.M. TO 6 P.M. SHALL BE ASSUMED. COORDINATE WITH THE IDEQ PROJECT MANAGER TO ADJUST ALLOWABLE WORKING HOURS AS NECESSARY.

E. PROTECTION

1. THE CONTRACTOR SHALL PERFORM A LOCATE TO CONFIRM THE LOCATION OF UTILITIES AND SHALL PROTECT AT ALL TIMES UNDERGROUND OR ABOVE-GROUND UTILITIES THAT ARE PRESENT, EITHER TEMPORARILY OR PERMANENTLY, WITHIN THE WORK LIMITS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE OR SERVICE INTERRUPTIONS TO UTILITIES CAUSED BY WORK PERFORMED BY THE CONTRACTOR, ROUTINE OR OTHERWISE.
2. GROUNDWATER MONITORING WELLS SHALL BE PROTECTED AGAINST DAMAGE. IN THE EVENT OF DAMAGE TO A WELL, THE CONTRACTOR SHALL REIMBURSE THE PROJECT FOR THE FULL COST OF REPLACING THE WELL. THE CONTRACTOR SHALL AT ALL TIMES MAINTAIN ACCESS TO GROUNDWATER MONITORING WELLS ON THE SITE.

F. PERMITS

1. THE CONTRACTOR MAY ASSUME THAT THE NECESSARY STORMWATER AND LAND USE PERMITS HAVE BEEN OBTAINED BY IDEQ PRIOR TO THE COMMENCEMENT OF CONSTRUCTION.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ANY NECESSARY TRAFFIC CONTROL PERMITS OR ANY OTHER PERMITS REQUIRED FOR THE CONSTRUCTION OF THE INFILTRATION PONDS AND ASSOCIATED WORK. COORDINATE WITH THE IDEQ SITE MANAGER AS NECESSARY.
3. THE CONTRACTOR SHALL NOTIFY THE CONSTRUCTION MANAGER IMMEDIATELY IF THEY BELIEVE A PERMIT IS REQUIRED AND HAS NOT BEEN OBTAINED.
4. THE CONTRACTOR SHALL COMPLY WITH ALL PERMIT CONDITIONS.
5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR IDENTIFYING AND COMPLYING WITH ANY ENVIRONMENTAL REGULATIONS APPLICABLE TO THEIR ACTIVITIES AND NOT INCLUDED IN THE PERMITS FOR THE PROJECT.

G. GOVERNING DOCUMENTS

1. ALL WORK INVOLVED WITH THIS PROJECT SHALL BE CONSTRUCTED AND COMPLETED IN ACCORDANCE WITH THE CONTRACT PROVISIONS AND CLAUSES, THESE SPECIFICATIONS, AND THE DRAWINGS.

SUBMITTALS

A. REQUIRED SUBMITTALS ARE IDENTIFIED IN THIS SECTION AND IN OTHER SECTIONS OF THESE SPECIFICATIONS. THE CONSTRUCTION MANAGER MAY AT THEIR DISCRETION DIRECT THE CONTRACTOR TO PROVIDE OTHER SUBMITTALS IF NECESSARY TO DOCUMENT MATERIAL QUALITY, CONSTRUCTION, MEASUREMENT FOR PAYMENT, OR OTHER PURPOSES.

B. SUBMITTAL NUMBERING

1. SUBMITTALS SHALL BE NUMBERED SEQUENTIALLY.
2. RE-SUBMITTALS, IF REQUIRED, SHALL MAINTAIN THE ORIGINAL NUMBER, BUT SHALL ALSO INCLUDE THE SUFFIX "A", FOR FIRST AND RE-SUBMITTALS, "B" FOR SECOND RE-SUBMITTAL, AND SO ON.

C. PROCEDURES

1. DELIVER ALL SUBMITTALS TO THE CONSTRUCTION MANAGER.
2. UNLESS INDICATED OR DIRECTED OTHERWISE, SUBMIT ELECTRONIC FILES OF ALL DOCUMENTS IN AN APPROPRIATE FILE TYPE AS APPROVED BY THE CONSTRUCTION MANAGER.
3. UNLESS INDICATED OR DIRECTED OTHERWISE, SUBMIT REQUIRED INFORMATION, SAMPLES, AND OTHER ITEMS A MINIMUM OF 14 CALENDAR DAYS PRIOR TO PURCHASE OR INTENDED USE. REGARDLESS OF THE MINIMUM REQUIREMENTS IN THE CONTRACT DOCUMENTS, CONTRACTOR SHALL DETERMINE SUBMITTAL DATES TO AVOID ADVERSE IMPACTS TO PROJECT SCHEDULE. FAILURE TO SUBMIT IN A TIMELY MANNER SHALL NOT CONSTITUTE A BASIS FOR ADDITIONAL PAYMENT OR EXTENSION OF THE PROJECT SCHEDULE.

D. REVIEW AND DISPOSITION

1. THE CONSTRUCTION MANAGER WILL REVIEW THE SUBMITTALS TO DETERMINE COMPLETENESS, ADEQUACY, AND CONFORMANCE WITH THE PROJECT REQUIREMENT AND WILL THEN DISTRIBUTE EACH SUBMITTAL TO THE APPROPRIATE PARTY FOR REVIEW.
2. ONE COPY OF THE SUBMITTAL WILL BE RETURNED TO THE CONTRACTOR WITH ONE OF THE FOLLOWING DISPOSITIONS:
   a. ACCEPTED AS IS.
   b. WORK MAY PROCEED, RESUBMIT WITH ADDITIONAL INFORMATION.
   c. WORK MAY NOT PROCEED, RESUBMIT WITH ADDITIONAL INFORMATION.
   d. REJECTED.
3. RESUBMITTALS SHALL BE SUBJECT TO THE REQUIREMENTS OF ALL PARAGRAPHS OF THIS ARTICLE.
4. THE CONSTRUCTION MANAGER'S OR ENGINEER'S DETERMINATION OF ACCEPTABILITY OF PLANS, SCHEDULES, SPECIFIED OR ALTERNATIVE PRODUCTS, AND ANY OTHER ITEMS WHERE REVIEW AND APPROVAL IS REQUIRED SHALL BE FINAL.

E. EQUIVALENT PRODUCTS

1. WHERE "OR EQUAL" IS INCLUDED IN THE PRODUCT DESCRIPTION, AND THE CONTRACTOR ELECTS TO SUBMIT AN ALTERNATIVE PRODUCT, SUFFICIENT INFORMATION SHALL BE PROVIDED TO FULLY DOCUMENT THAT THE PROPOSED ALTERNATIVE WILL FUNCTION IN THE SAME MANNER, HAS THE REQUIRED LONGEVITY AND RELIABILITY, IS APPROPRIATE FOR THE ENVIRONMENT, AND IN ALL OTHER WAYS SATISFIES THE CHARACTERISTICS AND PERFORMANCE OF THE SPECIFIED PRODUCT. THE BURDEN OF PROOF FOR EQUIVALENCY SHALL BE UPON THE CONTRACTOR.
2. ACCEPTANCE OF A SUBSTITUTE ITEM SHALL NOT RELIEVE THE CONTRACTOR OF THE RESPONSIBILITY FOR FULL COMPLIANCE WITH THE CONTRACT DOCUMENTS AND FOR ENSURING ADEQUACY OF THE SUBSTITUTE ITEM.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR RESULTANT CHANGES AND ALL ADDITIONAL COSTS WHICH THE ACCEPTED SUBSTITUTION REQUIRES IN THE CONTRACTOR'S WORK AND THE WORK OF ITS SUBCONTRACTORS, AND SHALL IMPLEMENT SUCH CHANGES WITHOUT ADDITIONAL COST TO THE OWNER.
4. NO SUBSTITUTE ITEM SHALL BE ORDERED, INSTALLED, OR UTILIZED WITHOUT PRIOR WRITTEN ACCEPTANCE BY THE CONSTRUCTION MANAGER OF THE CONTRACTOR'S WRITTEN REQUEST.

F. CONSTRUCTION SCHEDULE

1. PROVIDE A SCHEDULE THAT DETAILS SPECIFIC DATES ON WHICH EACH ITEM OF WORK INCLUDED IN THE LIST OF WORK ACTIVITIES WILL BEGIN AND BE COMPLETED, ALSO INCLUDE WHEN BREAKS IN THE CONSTRUCTION SCHEDULE ARE ANTICIPATED (E.G. HOLIDAYS) AND OVERALL PROJECT DURATION.
2. INITIAL SCHEDULE SUBMITTAL
   a. SUBMIT PRELIMINARY CONSTRUCTION SCHEDULE WITH BID. PRELIMINARY CONSTRUCTION SCHEDULE WILL BE REVIEWED AS PART OF BID EVALUATION. CONTRACTOR MAY BE INTERVIEWED TO DETERMINE CONTRACTOR'S UNDERSTANDING OF WORK AND ABILITY TO COMPLETE WORK IN A TIMELY AND EFFICIENT MANNER.
   b. SUBMIT FINAL CONSTRUCTION SCHEDULE WITHIN 7 DAYS AFTER NOTICE TO PROCEED IS ISSUED.
3. UPDATES
   a. EVERY 7 CALENDAR DAYS AFTER THE FINAL CONSTRUCTION SCHEDULE IS SUBMITTED, REVISE CONSTRUCTION SCHEDULE TO REFLECT PROGRESS OF WORK AND ITEMS COMPLETED.
   b. INDICATE PROGRESS OF EACH ACTIVITY TO DATE.
   c. SHOW CHANGES OCCURRING SINCE PREVIOUS SUBMITTAL, INCLUDING BUT NOT LIMITED TO:
      - MAJOR CHANGES IN SCOPE.
      - ACTIVITIES MODIFIED SINCE PREVIOUS SUBMITTAL.
      - REVISED PROJECTIONS OF PROGRESS AND COMPLETION, INCLUDING DISCUSSION OF MEASURES THAT WILL BE TAKEN TO INCREASE THE RATE OF CONSTRUCTION IF PROGRESS IS LESS THAN ANTICIPATED.
      - OTHER IDENTIFIABLE CHANGES.
   d. FAILURE TO SUBMIT SCHEDULE AND REVISIONS ON A TIMELY BASIS SHALL BE CONSIDERED CAUSE FOR WITHHOLDING PROGRESS PAYMENTS OTHERWISE DUE UNDER THIS CONTRACT.

G. INFORMATION AND SAMPLE SUBMITTALS

1. SUBMITTAL REQUIREMENTS FOR OTHER INFORMATION, SAMPLES, DOCUMENTATION, MEASUREMENTS, AND SIMILAR ITEMS ARE DESCRIBED IN THE PERTINENT TECHNICAL SECTIONS OF THESE SPECIFICATIONS. SUBMIT IN ACCORDANCE WITH THE REQUIREMENTS OF THESE OTHER SECTIONS AND THE GENERAL SUBMITTAL REQUIREMENTS CONTAINED IN THIS SECTION.

H. RECORD AND AS-BUILT DRAWINGS

1. THE CONTRACTOR SHALL KEEP AND MAINTAIN, AT THE JOB SITE, ONE RECORD SET OF DRAWINGS.
2. ON THE RECORD DRAWINGS, MARK ALL PROJECT CONDITIONS, LOCATIONS, CONFIGURATIONS, AND ANY OTHER CHANGES OR DEVIATIONS WHICH VARY FROM THE DETAILS REPRESENTED ON THE ORIGINAL CONTRACT DRAWINGS AND ADDENDA, CHANGE ORDERS AND THE LIKE. THE RECORD DRAWINGS SHALL INCLUDE BURIED OR CONCEALED CONSTRUCTION AND UTILITY FEATURES THAT WERE NOT PREVIOUSLY IDENTIFIED AND ARE REVEALED DURING THE COURSE OF CONSTRUCTION.
3. THE RECORD DRAWINGS SHALL BE SUPPLEMENTED BY ANY DETAILED SKETCHES AS NECESSARY OR DIRECTED TO FULLY INDICATE THE WORK AS ACTUALLY CONSTRUCTED.
4. THE RECORD DRAWINGS SHALL BE MAINTAINED UP-TO-DATE DURING THE PROGRESS OF THE WORK.
5. THE CONTRACTOR SHALL CONTRACT A THIRD PARTY SURVEYOR TO SURVEY THE FINAL SITE CONDITIONS AND ANY INTERMEDIATE PHASE CONDITIONS, AS DEEMED NECESSARY BY THE CONSTRUCTION MANAGER.
6. THE CONTRACTOR SHALL PREPARE AND SUBMIT AS-BUILT MARKED-UP DRAWINGS FOR ALL ASPECTS OF THE WORK WITHIN 6 WEEKS OF PROJECT COMPLETION AND AS A CONDITION OF FINAL PAYMENT.

HEALTH AND SAFETY

A. ALL PERSONNEL WORKING ON SITE SHALL HAVE COMPLETED OSHA 40-HOUR HAZARDOUS WASTE OPERATIONS AND EMERGENCY RESPONSE (HAZWOPER) TRAINING AND BE CURRENT IN THEIR ANNUAL REFRESHER TRAINING. THIS REQUIREMENT DOES NOT APPLY TO DELIVERY DRIVERS AND OTHER TEMPORARY VISITORS. IDEQ WILL MAKE THE FINAL DETERMINATION OF WHICH PERSONNEL WILL NEED HAZWOPER TRAINING.

B. SUBMIT A SITE-SPECIFIC HEALTH AND SAFETY PLAN FOR APPROVAL WITHIN 7 CALENDAR DAYS OF AWARD OR NOTICE TO PROCEED.

QUALITY ASSURANCE AND QUALITY CONTROL

A. THE CONSTRUCTION MANAGER WILL BE RESPONSIBLE FOR CONSTRUCTION QUALITY ASSURANCE (CQA). THE CONSTRUCTION MANAGER WILL BE RESPONSIBLE FOR OBSERVING AND DOCUMENTING PERIODIC VERIFICATION, CHECKING, AND TESTING TO CONFIRM AND DOCUMENT THAT THE QUALITY IS IN ACCORDANCE WITH THE APPROVED CONTRACT DOCUMENTS.

B. AT THEIR DISCRETION, THE CONTRACTOR/INSTALLER SHALL PERFORM CONSTRUCTION QUALITY CONTROL (CQC) INSPECTION, SAMPLING, TESTING, OR ANY OTHER ACTION, AS CONSIDERED NECESSARY BY THE CONTRACTOR TO ENSURE THAT THE WORK HAS BEEN COMPLETED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS. NOTWITHSTANDING THE RESULTS OF THE CONTRACTOR'S CQC PROGRAM, DETERMINATION OF WHETHER THE WORK IS IN COMPLIANCE WITH THE CONTRACT DOCUMENTS WILL BE MADE BY THE CONSTRUCTION MANAGER.

C. THE CONTRACTOR SHALL ACCOMMODATE AND PROVIDE SUPPORT FOR CQA ACTIVITIES AS REQUIRED AND DIRECTED.

ENVIRONMENTAL PROTECTION

A. SUBMITTALS

1. THE CONTRACTOR SHALL ISSUE A CONSTRUCTION STORMWATER POLLUTION PREVENTION PLAN (C-SWPPP) FOR REVIEW AND APPROVAL PRIOR TO THE COMMENCEMENT OF CONSTRUCTION.

B. GENERAL

1. THE CONTRACTOR SHALL PREVENT, ABATE, AND CONTROL ALL ENVIRONMENTAL POLLUTION ARISING FROM CONSTRUCTION ACTIVITIES BY IDENTIFYING AND COMPLYING WITH ALL APPLICABLE FEDERAL, STATE, AND LOCAL LAWS AND REGULATIONS CONCERNING ENVIRONMENTAL POLLUTION CONTROL AND ABATEMENT, AS WELL AS SITE REQUIREMENTS AND ANY OTHER REQUIREMENTS OF THE CONTRACT DOCUMENTS.
2. COMPLIANCE BY SUBCONTRACTORS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.

B. PREVENTION OF WATER POLLUTION

1. TEMPORARY EROSION AND SEDIMENT CONTROL (TESC) MEASURES SHALL BE INSTALLED PRIOR TO ANY CLEARING, EXCAVATION, STOCKPILING OF SOIL MATERIALS ON SITE, OR OTHER GROUND-DISTURBING ACTIVITY THAT COULD INTRODUCE SEDIMENT INTO SURFACE WATER RUNOFF.
2. THE CONTRACTOR'S CONSTRUCTION ACTIVITIES SHALL BE PERFORMED BY METHODS THAT WILL PREVENT ENTRANCE OR ACCIDENTAL SPILLAGE OF SOLID MATTER, CONTAMINANTS, SILTS, DEBRIS, AND OTHER OBJECTIONABLE POLLUTANTS AND WASTES INTO RIVERS, STREAMS, STORM DRAINS, FLOWING OR DRY WATERCOURSES, IRRIGATION DITCHES, LAKES, PONDS, AND UNDERGROUND WATER SOURCES.
3. ALL STORAGE AREAS, STOCKPILES, FUELING AREAS AND OTHER CONSTRUCTION-RELATED ACTIVITY AREAS SHALL BE LOCATED AWAY FROM BOTH NATURAL AND MANMADE WATERCOURSES. RUNOFF FROM SUCH AREAS SHALL BE CONTROLLED TO PREVENT DISCHARGE OF ANY AND ALL POTENTIAL CONTAMINANTS AND/OR POLLUTANTS WHETHER ACCIDENTAL OR NOT.
4. SPILLS, IF ANY, SHALL IMMEDIATELY BE REPORTED TO THE CONSTRUCTION MANAGER AND SHALL BE IMMEDIATELY AND PROPERLY CLEANED UP. MANAGEMENT AND DISPOSAL OF CONTAMINATED MATERIAL CLEAN-UP IS THE RESPONSIBILITY OF THE CONTRACTOR AND SHALL BE CONDUCTED IN ACCORDANCE WITH ALL APPLICABLE FEDERAL, STATE, AND LOCAL LAWS.
5. SANITARY FACILITIES, SUCH AS CHEMICAL TOILETS, SHALL BE LOCATED FAR ENOUGH FROM BODIES OF WATER, INCLUDING WETLANDS, TO PREVENT POLLUTION OF THE WATER.
6. DEWATERING WORK FOR EXCAVATIONS ADJACENT TO, OR ENCROACHING ON, STREAMS OR WATERCOURSES SHALL BE CONDUCTED IN A MANNER TO PREVENT MUDDY WATER AND ERODED MATERIALS FROM ENTERING THE STREAMS OR WATERCOURSES BY CONSTRUCTION OF INTERCEPTING DITCHES, BYPASS CHANNELS, BARRIERS, SETTLING PONDS, OR BY OTHER APPROVED MEANS. EXCAVATED MATERIAL SHALL NOT BE DEPOSITED OR STORED IN, OR ALONGSIDE, WATERCOURSES WHERE IT CAN BE WASHED AWAY BY HIGH WATER OR STORM RUNOFF.
7. WASTE WATERS FROM CONSTRUCTION OPERATIONS SHALL NOT ENTER STREAMS, WATERCOURSES, IRRIGATION DITCHES, OR OTHER SURFACE WATERS.
8. THE CONTRACTOR SHALL COMPLY WITH APPLICABLE REQUIREMENTS OF ANY EXISTING STORMWATER POLLUTION PREVENTION PLAN (SWPPP) FOR THE SITE.

TEMPORARY FACILITIES

A. GENERAL

1. THE CONTRACTOR SHALL PROVIDE ALL TEMPORARY FACILITIES AND UTILITIES DESCRIBED IN THIS SECTION AND AS REQUIRED TO FULLY SUPPORT ALL WORK ACTIVITIES AND COMPLY WITH THE HEALTH AND SAFETY AND ENVIRONMENTAL PROTECTION REQUIREMENTS DESCRIBED IN THESE SPECIFICATIONS AND AS REQUIRED BY APPLICABLE FEDERAL, STATE, AND LOCAL REGULATIONS.

B. SUBMITTALS

1. SUBMIT A SPILL PREVENTION, CONTROL, AND COUNTERMEASURE (SPCC) PLAN DESCRIBING EQUIPMENT AND PROCEDURES FOR FUEL STORAGE, FUELING OPERATIONS, SPILL PREVENTION AND CLEANUP, MAINTENANCE OPERATIONS, AND SIMILAR ACTIVITIES. THE SPCC PLAN SHALL COMPLY WITH APPLICABLE FEDERAL, STATE, AND LOCAL REGULATIONS.

C. TEMPORARY BUILDINGS

1. AS NECESSARY, PROVIDE PORTABLE OR MOBILE BUILDING(S) FOR CONTRACTOR PERSONNEL, INCLUDING SUBCONTRACTORS, FOR ADMINISTRATION, STORAGE, AND OTHER FUNCTIONS AS REQUIRED FOR PERFORMING THE WORK.
2. PORTABLE BUILDING LOCATION SHALL BE APPROVED WITH IDEQ PRIOR TO PLACEMENT.

D. ELECTRICAL SERVICE

1. IF ELECTRICAL POWER IS REQUIRED TO PERFORM THE WORK, THE CONTRACTOR SHALL PERFORM THE ELECTRICAL HOOKUPS TO THE DESIGNATED POWER SOURCE (TBD SOURCE).
2. IF GENERATORS ARE USED TO SUPPLY ELECTRICAL POWER AT REMOTE WORK LOCATIONS, THEY SHALL BE EQUIPPED WITH SUITABLE NOISE AND EXHAUST LIMITING DEVICES AND LOCATED SO AS TO PREVENT NOISE OR EXHAUST DISTURBANCE TO ANY PERSONNEL WORKING IN THE FACILITIES AREA AND COMPLY WITH APPLICABLE NOISE LIMITS AT THE PROPERTY BOUNDARY.

E. COMMUNICATIONS

1. THE CONTRACTOR SHALL PROVIDE THEIR OWN COMMUNICATION FACILITIES AS NECESSARY.

F. FUELING AND MAINTENANCE AREAS

1. FUELING AND MAINTENANCE FACILITIES SHALL BE DESIGNED, LOCATED, EQUIPPED, AND OPERATED IN ACCORDANCE WITH THE PROVISIONS OF CONTRACTOR'S APPROVED SPCC PLAN.
2. PROVIDE APPROPRIATE FIRE EXTINGUISHERS AT THE FUELING AND MAINTENANCE AREAS AND ANY LOCATIONS WHERE FUELING, WELDING, TORCH CUTTING, OR OTHER SIMILAR ACTIVITIES WILL BE PERFORMED.

G. WATER

1. THE CONTRACTOR SHALL PROVIDE POTABLE BOTTLED WATER FROM A COMMERCIAL SOURCE NORMALLY ENGAGED IN PROVIDING SUCH WATER. WATER STATIONS SHALL BE PROVIDED AT CONVENIENT LOCATIONS IN OR ADJACENT TO THE WORK AREAS.
2. THE CONTRACTOR SHALL PROVIDE NON-POTABLE WATER FOR DUST CONTROL, MOISTURE CONDITIONING, AND OTHER USES. CONTRACTOR SHALL COORDINATE SOURCING WITH THE IDEQ SITE MANAGER FOR APPROVAL.

NOT FOR CONSTRUCTION

REV.	YYYY-MM-DD	DESCRIPTION	DESIGNED	PREPARED	REVIEWED	APPROVED
0	2025-02-07	ISSUED FOR PERMITTING	KMD	REDMOND	CLC	SJS
A	2024-08-06	DRAFT - ISSUED FOR REVIEW	KMD	REDMOND	SJS	SJS

SEAL

PROFESSIONAL ENGINEER LICENSED 16005 STATE OF IDAHO COLBY L. CAYWOOD

CLIENT
ALTA SCIENCE & ENGINEERING, INC.

CONSULTANT
wsp
REDMOND
18300 REDMOND WAY, SUITE 200
REDMOND, WA 98052
USA
[+1] (425) 833 0777

PROJECT
INFILTRATION POND DESIGN
TRIUMPH MINE
BLAINE COUNTY, IDAHO

TITLE
GENERAL NOTES AND SPECIFICATIONS (1 OF 3)

PROJECT NO.	PHASE	REV.	2 of 12	SHEET
31407131	002	0		020

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

0 1 in

Path: \\corp.pbwan.net\US\Central\Data\US\XLC300\geomatics\Idaho_Dept_of_Lands\Triumph_Mine\99_PROJECTS\31407131_200_TriumphMineInfiltration\03_PRODUCTION\31407131_200_InfiltrationPondDesign\DWG | File Name: 31407131_012.dwg | Last Edited By: uskd7014\63 Date: 2025-01-17 Time:4:01:49 PM | Printed By: USKD7014\63 Date: 2026-02-10 Time:3:12:05 PM

TEMPORARY FACILITIES (CONTINUED)

H. SANITARY FACILITIES

1. AS NECESSARY, THE CONTRACTOR SHALL PROVIDE A SUFFICIENT NUMBER OF PORTABLE TOILET FACILITIES FOR ALL PERSONNEL ON SITE TO ALLOW EFFICIENT OPERATIONS AND SATISFY THE MINIMUM REGULATORY REQUIREMENTS.
2. SEPARATE TOILET FACILITIES SHALL BE REQUIRED FOR MEN AND WOMEN.
3. THE CONTRACTOR SHALL CLEAN, EMPTY, SUPPLY, AND MAINTAIN ALL PORTABLE TOILET FACILITIES AS REQUIRED TO KEEP THEM IN A FUNCTIONAL AND SANITARY CONDITION, BUT IN NO CASE AT INTERVALS GREATER THAN ONCE PER WEEK, UNLESS APPROVED OTHERWISE BY THE CONSTRUCTION MANAGER.

I. SECURITY

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE SECURITY OF THEIR EQUIPMENT AND MATERIAL ON SITE. THE CONTRACTOR SHALL PROVIDE SECURED STORAGE SPACE AS NECESSARY AND SHALL PROVIDE ANY SECURITY FENCING THEY DEEM NECESSARY TO CONTROL UNAUTHORIZED ACCESS, VANDALISM, AND THEFT.
2. THE CONTRACTOR SHALL PROVIDE SECURE, LOCKABLE STORAGE FACILITIES AS NECESSARY FOR TOOLS, MATERIALS, EQUIPMENT, SUPPLIES, AND THE LIKE. STORAGE FACILITIES SHALL COMPLY WITH ALL APPLICABLE REGULATORY AND SAFETY REQUIREMENTS.

J. REMOVAL

1. UPON COMPLETION OF THE WORK, THE CONTRACTOR SHALL REMOVE TEMPORARY FACILITIES, SUPPORTS/FOUNDATIONS, TEMPORARY FENCING, AND ALL EQUIPMENT, MATERIALS, AND DEBRIS FROM THE SITE.

SURVEYING

A GENERAL REQUIREMENTS

1. THE CONTRACTOR SHALL PROVIDE ALL SURVEYING REQUIRED FOR THE PROJECT, INCLUDING BUT NOT LIMITED TO MONUMENTATION, STAKING, LAYOUT, AND ALL OTHER NECESSARY ACTIVITIES AS REQUIRED DURING CONSTRUCTION TO CONTROL THEIR ACTIVITIES, TO ACHIEVE LINES AND GRADES, AND OTHERWISE COMPLETE THE WORK AS SHOWN ON THE DRAWINGS.
2. ALL SURVEYING ACTIVITIES SHALL BE PERFORMED UNDER THE DIRECT SUPERVISION OF A PROFESSIONAL LAND SURVEYOR LICENSED IN THE STATE OF IDAHO.
3. "SURVEY POINT" AS DEFINED IN THIS SECTION MEANS DETERMINATION OF NORTHING, EASTING, AND ELEVATION AT THE SUBJECT POINT.
4. PROVIDE ELECTRONIC FILES IN AUTOCAD 2019 OR HIGHER VERSION AND, IF REQUESTED, HARD COPY TO THE CONSTRUCTION MANAGER.
5. DATA SHALL INCLUDE AS A MINIMUM THE DATE OF THE SURVEY, PERSONNEL PERFORMING THE SURVEY, EQUIPMENT USED, A UNIQUE IDENTIFIER FOR EACH SURVEY POINT, AND THE X, Y, AND Z COORDINATES OF THAT POINT IN THE PROJECT COORDINATE SYSTEM.
6. FINAL DETERMINATION OF THE ACCEPTABILITY OF THE CONTRACTOR'S SURVEY DATA SHALL BE MADE BY THE CONSTRUCTION MANAGER.

B. REFERENCE DATUM

SURVEY POINTS SHALL BE REFERENCED TO THE SAME HORIZONTAL DATUM AND VERTICAL DATUM AS SHOWN ON THE DRAWINGS FOR THIS PROJECT.

C. EQUIPMENT

THE CONTRACTOR SHALL SUPPLY ALL EQUIPMENT, SUPPLIES, AND SUPPORTING MATERIAL REQUIRED FOR SURVEY ACTIVITIES. SUCH EQUIPMENT SHALL BE STANDARD COMMERCIALLY AVAILABLE EQUIPMENT SUITABLE FOR THE INTENDED PURPOSE OF THIS SECTION.

D. ACCURACY

1. ALL SURVEYING ACTIVITIES SHALL BE PERFORMED USING METHODS AND EQUIPMENT WITH SUFFICIENT ACCURACY TO MEASURE TO THE TOLERANCES LISTED IN THESE SPECIFICATIONS.
2. UNLESS OTHERWISE SPECIFIED OR INDICATED, THE MINIMUM REQUIRED ACCURACY FOR BOTH VERTICAL AND HORIZONTAL MEASUREMENTS SHALL BE ± 0.1 FOOT.

E. CONTROL

1. PRIOR TO BEGINNING THE WORK, THE CONTRACTOR SHALL VERIFY THE LOCATIONS, CONDITION, AND ACCURACY OF EXISTING MONUMENTS AND ESTABLISH ANY OTHER REFERENCE POINTS OR MONUMENTS THAT MAY BE REQUIRED.
2. LOCATIONS OF EXISTING SURVEY MONUMENTS ARE SHOWN ON THE DRAWINGS.

F. SURVEY FOR MEASUREMENT

1. SURVEY POINTS TO MEASURE AREA SHALL BE AT INTERVALS OF 1-FEET OR LESS AROUND THE PERIMETER OF THE SUBJECT AREA.
2. SURVEY FOR LINEAR FOOT MEASUREMENTS SHALL BE AT INTERVALS OF 1-FEET OR LESS ALONG THE CENTERLINE OF THE SUBJECT FEATURE.
3. WHEN "BEFORE" AND "AFTER" SURVEYS ARE PERFORMED FOR THICKNESS MEASUREMENT, POINTS AT THE SAME HORIZONTAL COORDINATES SHALL BE USED FOR MEASUREMENT, UNLESS APPROVED OTHERWISE IN ADVANCE BY THE CONSTRUCTION MANAGER. THE GRID SPACING FOR SUCH MEASUREMENT SHALL BE 0.5 FEET, UNLESS APPROVED OR DIRECTED OTHERWISE BY THE CONSTRUCTION MANAGER.
4. WHERE THE MEASUREMENT METHOD IS BY TAPING, THE CONTRACTOR SHALL PERFORM THE MEASUREMENT WITH A HIGH-QUALITY SURVEYOR'S TAPE.
5. THE CONTRACTOR SHALL SURVEY THE LOCATIONS OF ANY "POTHOLES" OR OTHER FEATURES USED FOR MEASUREMENT, AS DIRECTED BY THE CONSTRUCTION MANAGER.

MOBILIZATION

A. SUMMARY

1. MOBILIZATION WILL INCLUDE ASSEMBLY OF ALL EQUIPMENT, ESTABLISHMENT OF TEMPORARY FACILITIES ON THE SITE, AS NECESSARY, SITE ACCESS INCLUDING ANY REQUIRED ROAD IMPROVEMENTS, EMPLOYEE TRAINING, PREPARATION OF WORK PLAN AND SCHEDULE, AND FURNISHING INSURANCE.

B. GENERAL

1. CONTRACTOR SHALL HAVE A THIRD-PARTY SURVEYOR COMPLETE CONSTRUCTION STAKING INCLUDING THE NECESSARY OFFSET.

TRAFFIC CONTROL

A. SUBMITTALS

1. PRIOR TO BEGINNING WORK, SUBMIT TRAFFIC CONTROL PLAN (IN ACCORDANCE WITH IDT STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION - SECTION 656 "TEMPORARY TRAFFIC CONTROL") FOR APPROVAL BY IDEQ AND JURISDICTIONAL AUTHORITY.
2. SUBMIT COPY OF APPROVED TRAFFIC CONTROL PLAN AND PERMIT(S) TO CONSTRUCTION MANAGER.
3. CONTRACTOR SHALL KEEP TRAFFIC CONTROL PLAN UP-TO-DATE AND RE-SUBMIT FOR APPROVAL AS NECESSARY.

B. GENERAL

1. CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS FOR HAULING OF SOIL AND DEBRIS, MOVING OF OVERSIZE EQUIPMENT, AND OTHER REGULATED ACTIVITIES.
2. TRAFFIC CONTROL PLAN SHALL ADDRESS TRUCKS ENTERING AND LEAVING SITE AND SHALL COMPLY WITH ALL CITY, COUNTY, AND STATE REQUIREMENTS.

EROSION AND SEDIMENT CONTROL

A. SUBMITTALS

1. PRIOR TO BEGINNING ANY GROUND-DISTURBING ACTIVITIES, SUBMIT A TEMPORARY EROSION AND SEDIMENT CONTROL (TESC) PLAN FOR APPROVAL. THE TESC PLAN SHALL DESCRIBE IN DETAIL THE MATERIALS, LOCATION, AND OPERATION \ MAINTENANCE OF ALL CONTROL MEASURES PROPOSED TO ACHIEVE THE REQUIREMENTS OF THIS SECTION.

C. GENERAL

1. THE CONTRACTOR SHALL PREVENT SEDIMENT ASSOCIATED WITH CONSTRUCTION ACTIVITIES FROM LEAVING THE WORK AREA.
2. THE CONTRACTOR MAY ELECT TO USE OTHER BEST MANAGEMENT PRACTICES (BMPS) NOT LISTED IN THESE SPECIFICATIONS, FOR EXAMPLE STRAW WATTLES OR PLASTIC SHEETING, IF APPROPRIATE FOR THEIR OPERATIONS. DESCRIBE ALL SUCH BMPS IN THE TESC PLAN.
3. FAILURE TO LIST A PARTICULAR EROSION CONTROL METHOD OR REQUIREMENT IN THESE SPECIFICATIONS OR OTHER CONTRACT DOCUMENTS SHALL NOT RELIEVE THE CONTRACTOR OF THE RESPONSIBILITY FOR COMPLYING WITH ALL APPLICABLE FEDERAL, STATE, AND LOCAL REGULATIONS.
4. ALSO COMPLY WITH ALL PERTINENT REQUIREMENTS OF THE CONSTRUCTION STORMWATER GENERAL PERMIT \ SWPPP.

B. CONSTRUCTION ENTRANCE

1. CONSTRUCTION ENTRANCE SHALL CONFORM TO IDT STANDARD DRAWING NUMBER 212-6 "STABILIZED CONSTRUCTION ENTRANCE AND VEHICLE WASHDOWN".

C. SILT FENCE

1. SILT FENCE MATERIAL SHALL CONFORM TO ITD 718.09 "TEMPORARY SILT-FENCE GEOTEXTILE PROPERTY REQUIREMENTS" INCLUDING TABLE 718.09.1 "TEMPORARY SILT FENCE GEOTEXTILE CRITERIA".

D. FIBER WATTLES/STRAW BALE BARRIER

1. FIBER WATTLES SHALL CONFORM TO ITD 711.20 "FIBER WATTLES".

E. STREET CLEANING

1. IF UNAVOIDABLE TRACK-OUT OR OFF-SITE SEDIMENT RELEASE OCCURS, CLEAN STREETS AS SOON AS PRACTICABLE.

CLEARING AND GRUBBING

A. CUT AND DISPOSE OF TREES WITH DIAMETERS OF LESS THAN 6 INCHES, BRUSH, SHRUBS, LOGS, AND WINDFALLS AND REMOVE AND DISPOSE OF STUMPS, INCLUDING ROOTS AND DEBRIS FROM THE DESIGNATED AREAS.

B. AREAS TO BE CLEARED AND GRUBBED ARE DESCRIBED BY A LINE DRAWN 2 FEET OUTSIDE THE PERIMETER OF THE WORK AREA. OTHER AREAS TO BE CLEARED AND GRUBBED WILL BE AS SPECIFIED OR AS DIRECTED.

C. PRESERVE AND PROTECT TREES WITHIN THE CONSTRUCTION AREA NOT REQUIRING REMOVAL.

TOPSOIL STRIPPING AND STOCKPILING

A. AFTER CLEARING AND GRUBBING HAS BEEN COMPLETED AND APPROVED BY THE CONSTRUCTION MANAGER, REMOVE TOPSOIL TO A NOMINAL DEPTH OF 0.5 FEET, UNLESS OTHERWISE INDICATED BY THE CONSTRUCTION MANAGER BASED ON FIELD CONDITIONS.

B. THE CONSTRUCTION MANAGER WILL MONITOR TOPSOIL REMOVAL ACTIVITIES TO VERIFY THAT NO UNSUITABLE MATERIAL IS BEING REMOVED WITH THE TOPSOIL. EXAMPLES OF UNSUITABLE MATERIALS INCLUDE INORGANIC SOILS, MINE WASTE, OR OTHER MATERIALS WHICH IN THE JUDGEMENT OF THE CONSTRUCTION MANAGER WOULD ADVERSELY IMPACT THE REVEGETATION PROCESS. IF UNSUITABLE MATERIALS ARE ENCOUNTERED, THE CONSTRUCTION MANAGER MAY MODIFY THE DEPTH OF REMOVAL OR DIRECT THAT OTHER MEASURES BE TAKEN TO PREVENT MIXING OF TOPSOIL AND UNSUITABLE MATERIALS.

C. STOCKPILE TOPSOIL SEPARATELY FROM OTHER EXCAVATED MATERIAL IN ACCORDANCE WITH THE APPLICABLE PROVISIONS OF THE EARTHWORKS SECTION OF THESE SPECIFICATIONS.

EARTHWORKS

A. SUBMITTALS

1. EXISTING PARTICLE SIZE DATA FOR ALL SOIL MATERIALS PURCHASED FROM COMMERCIAL ENTITIES.
2. WEIGH TICKETS FOR SOIL MATERIALS PURCHASED FROM OFF-SITE SOURCES.
3. SURVEY DATA AND OTHER DATA REQUIRED FOR MEASUREMENT.

B. EXCAVATION

1. EXCAVATE TO THE LIMITS SHOWN ON THE DRAWINGS OR AS DIRECTED BY THE CONSTRUCTION MANAGER.
2. COMPLY WITH ALL APPLICABLE LOCAL, STATE, AND FEDERAL REGULATIONS WITH RESPECT TO SLOPES, SAFETY, ENVIRONMENTAL PROTECTION, AND OTHER DESIGN AND CONSTRUCTION REQUIREMENTS. SAFE TEMPORARY CONSTRUCTION SLOPES, BOTH EXCAVATION AND FILL, SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING THE EXCAVATION GRADE AND LINES UNTIL COMPLETION AND ACCEPTANCE OF THE WORK.

B. ON-SITE TEMPORARY STOCKPILES

1. STOCKPILE LOCATION(S) SHALL BE WITHIN THE WORK AREA UNLESS APPROVED OTHERWISE. APART FROM THIS, LOCATION AND SEQUENCING SHALL BE AT THE CONTRACTOR'S DISCRETION TO FACILITATE THEIR CONSTRUCTION ACTIVITIES, SUBJECT TO THE CONSTRAINTS OF THESE SPECIFICATIONS.
2. SOIL MATERIALS SHALL BE TEMPORARILY STOCKPILED ON-SITE ONLY WITHIN THE LIMITS OF DISTURBANCE/CLEARING LIMITS AS INDICATED ON THE DRAWINGS, OR OTHERWISE APPROVED IN ADVANCE BY THE CONSTRUCTION MANAGER.
3. DO NOT STOCKPILE MATERIALS IN SURFACE WATER DITCHES, ACROSS ACCESS ROADS, OR AT OTHER LOCATIONS THAT WOULD INTERFERE WITH SITE OPERATIONS OR CAUSE ADVERSE IMPACTS TO THE ENVIRONMENT. COORDINATE WITH IDEQ AS NECESSARY WHEN LOCATING AREAS FOR STOCKPILE PLACEMENT.
4. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR STABILITY OF ALL STOCKPILES. THE REQUIREMENTS OF THIS SECTION ARE GENERAL IN NATURE AND SHALL NOT RELIEVE THE CONTRACTOR OF RESPONSIBILITY FOR MAINTAINING STABLE STOCKPILES. THESE REQUIREMENTS MAY BE MODIFIED BY THE CONTRACTOR AT THEIR DISCRETION TO INCREASE STABILITY AS NECESSARY. SUCH MODIFICATIONS SHALL IN ALL CASES BE CONSISTENT WITH OTHER PROJECT REQUIREMENTS.
5. ON-SITE TEMPORARY STOCKPILES SHALL HAVE A MAXIMUM SLOPE OF 2H:1V AND A MAXIMUM HEIGHT OF 40 FEET.
6. STOCKPILES SHALL BE GRADED TO PROVIDE POSITIVE DRAINAGE AT ALL LOCATIONS.
7. ON-SITE STOCKPILES SHALL NOT BE DISTURBED BY CONSTRUCTION ACTIVITIES, AND SHALL BE PROTECTED FROM WIND AND WATER EROSION, UNNECESSARY COMPACTION, AND CONTAMINATION.
8. INSTALL SILT FENCE COMPLETELY AROUND THE BASE OF STOCKPILES TO CONTAIN SEDIMENT. SILT FENCE MATERIALS, INSTALLATION, AND MAINTENANCE SHALL CONFORM TO THE REQUIREMENTS OF THE EROSION AND SEDIMENT CONTROL SECTION OF THESE SPECIFICATIONS.

C. GENERAL FILL

1. GENERAL FILL SHALL CONSIST OF CLEAN, INORGANIC, GRANULAR SOIL FREE OF ROOTS, RUBBISH, DEBRIS, FROZEN SOIL, ICE, AND OTHER DELETERIOUS MATERIAL.
2. GENERAL FILL SHALL HAVE A MAXIMUM PARTICLE SIZE OF 4 INCHES IN MAXIMUM DIMENSION, UNLESS SUCH PARTICLES WILL BREAK DOWN DURING COMPACTION.
3. EXECUTION
   a. PLACE AND COMPACT GENERAL FILL IN MAXIMUM 8-INCH-THICK LOOSE LIFTS.
   b. GENERAL FILL SOILS THAT ARE TOO WET OR DRY TO BE ADEQUATELY COMPACTED, AS DETERMINED BY THE CONSTRUCTION MANAGER, SHALL BE MOISTURE CONDITIONED APPROPRIATELY TO ACHIEVE ADEQUATE COMPACTION.
   c. PRIOR TO PLACING THE NEXT LAYER OF OVERLYING MATERIAL, PROTECT THE SURFACE OF EACH LIFT FROM EROSION, PRECIPITATION, DESICCATION, FREEZING, OR OTHER CONDITIONS THAT COULD AFFECT THE INTEGRITY OF THE LIFT.

D. PIPE BEDDING

1. PROVIDE COARSE AGGREGATE FOR CONCRETE SIZE NO. 1, NO. 2A, OR NO. 2B FOLLOWING THE CRITERIA OF ITD TABLE 703.02-8 AND MEETING THE GRADATION IN ITD TABLE 703.02-7 (APPLICABLE SECTION OF TABLE SHOWN BELOW).

PERCENT PASSING			
SIEVE SIZE	1	2A	2B
1 INCH	-	100	100
3/4 INCH	100	90-100	80-100
1/2 INCH	90-100	-	-
#4 INCH	40-70	20-55	10-40
NO. 4	0-15	0-10	0-4
NO. 8	0-5	0-5	-

2. THE NATIVE MATERIAL MAY BE APPROPRIATE TO USE AS BEDDING MATERIAL. THE CONSTRUCTION MANAGER ON SITE SHALL DETERMINE IF THIS IS AN ALLOWABLE SUBSTITUTE FOR USE AROUND THE PIPE AND BELOW THE CONCRETE VAULT.

E. ROCK LINING

1. PROVIDE UNCRUSHED, HARD, DURABLE GRAVEL OR FRAGMENTS OF STONE, FROM APPROVED SOURCE FOR ROCK LINING MATERIAL THAT IS IN ACCORDANCE WITH BLAINE COUNTY ROAD CONSTRUCTION STANDARDS TABLE 2.2D "UNCRUSHED AGGREGATE GRADATION" FOR DRAIN ROCK (SHOWN BELOW).
2. ROCK LINING SHALL HAVE 35% MINIMUM AIR VOIDS, AS DETERMINED BY ASTM C29; WASHED FREE OF CLAY, SHALE AND ORGANIC MATTER

SIEVE SIZE	PRECENT PASSING
3 INCH	100
1 INCH	25-60
#4 INCH	0-4
NO. 200	0-2

G. CRUSHED ROCK SURFACING

1. PROVIDE CLEAN, ANGULAR, CRUSHED QUARRY OR ALLUVIAL ROCK, FREE OF CLAY COATINGS, LUMPS, AND SOFT OR FLAKY PARTICLES MATERIAL FOR OPEN GRADED BASE CLASS 3 (CRUSHED ROCK SURFACING) AND MEETING THE QUALITY REQUIREMENTS OF ITD TABLE 703.08-1 "AGGREGATE GRADATION REQUIREMENTS" FOR CLASS 3.

SIEVE SIZE	PRECENT PASSING
1 INCH	100
3/4 INCH	80-98
1/2 INCH	60-85
#4 INCH	30-65

D. PEA GRAVEL

1. PROVIDE CLEAN, WELL ROUNDED, UNCRUSHED GRAVEL MEETING THE QUALITY REQUIREMENTS OF IDT TABLE 703.02-1 AND MEETING THE GRADATION IN ITD TABLE 703.09-1 (SHOWN BELOW):

SIEVE SIZE	PRECENT PASSING
1/2 INCH	100
#8 INCH	85-100
NO. 8	0-15

GEOTEXTILES

A. SUBMITTALS

1. SUBMIT FOR APPROVAL INFORMATION ON PROPOSED GEOTEXTILE MATERIAL, INCLUDING BUT NOT LIMITED TO MANUFACTURER, STANDARD PROPERTIES SHEET, AND TEST DATA TO DEMONSTRATE COMPLIANCE WITH THE REQUIREMENTS OF THIS SECTION.

B. GENERAL

1. GEOTEXTILE SHALL BE NON-WOVEN POLYPROPYLENE AND CONFORM TO THE REQUIREMENTS OF ITD 718.07 "SUBGRADE SEPARATION GEOTEXTILE PROPERTY REQUIREMENTS", TABLE 718.07-1 - "SUBGRADE SEPARATION GEOTEXTILE CRITERIA".
2. OVERLAP GEOTEXTILE PANELS AS RECOMMENDED BY THE MANUFACTURER.
3. GEOTEXTILES SHALL BE CONTINUOUSLY SEWN (I.E., SPOT SEWING IS NOT ALLOWED). ALTERNATIVELY, SINGLE OR DOUBLE WEDGE FUSION WELDING WILL BE ACCEPTABLE. LEISTER WELDING (SPOT OR CONTINUOUS) WILL NOT BE ACCEPTED AS A SEAMING METHOD. ALL SEWING SHALL BE DONE USING A SEWING MACHINE WHICH CREATES A CHAIN STITCH. WHEN ENTERING A SEAM, THE STITCHES SHALL BE OVERLAPPED TO PREVENT UNRAVELING.

PIPING

A. SUBMITTALS

1. MANUFACTURER'S PRODUCT INFORMATION AND SPECIFICATIONS FOR PIPE, FITTINGS, AND APPURTENANCES IN SUFFICIENT DETAIL TO DEMONSTRATE COMPLIANCE WITH THE REQUIREMENTS OF THIS SECTION.

B. DELIVERY, STORAGE, AND HANDLING

1. PIPE SHALL BE DELIVERED, HANDLED, AND STORED IN SUCH A MANNER AS TO ENSURE A SOUND, UNDAMAGED CONDITION. PIPE SHALL BE DELIVERED TO THE JOB SITE AND HANDLED BY MEANS THAT PROVIDE ADEQUATE SUPPORT TO THE PIPE AND DO NOT SUBJECT IT TO UNDUE STRESSES OR DAMAGE. WHEN HANDLING AND PLACING PLASTIC PIPE, CARE SHALL BE TAKEN TO PREVENT IMPACT BLOWS, ABRASION DAMAGE, AND GOUGING OR CUTTING BY METAL EDGES AND/OR SURFACE OR ROCKS. FOLLOW MANUFACTURER'S SPECIAL HANDLING AND STORAGE REQUIREMENTS. AVOID IMPACTS WHEN HANDLING PLASTIC PIPE AT TEMPERATURES LESS THAN 40 DEGREES FAHRENHEIT. PIPE SHALL BE STORED ON A RELATIVELY FLAT SURFACE SO THAT THE BARRELS ARE EVENLY SUPPORTED. UNLESS THE PIPE IS SPECIFICALLY MANUFACTURED TO WITHSTAND EXPOSURE TO ULTRAVIOLET RADIATION AS CERTIFIED BY THE MANUFACTURER, ALL PIPE SHALL BE COVERED WITH AN OPAQUE MATERIAL WHEN STORED OUTDOORS FOR MORE THAN 15 DAYS.

C. HIGH DENSITY POLYETHYLENE (HDPE) PIPE

1. PIPE AND FITTINGS SHALL BE 8-INCH HDPE DR 17 PIPE UNLESS OTHERWISE SPECIFIED ON THE DRAWINGS.
2. PIPES SHALL BE THE SIZE AS SHOWN ON THE DRAWINGS.
3. MATERIAL: HDPE PIPE AND FITTINGS SHALL MEET ASTM D4976 ASTM D3350.
4. FITTINGS: UNLESS OTHERWISE SPECIFIED, FITTINGS SHALL BE MADE BY THE SAME MANUFACTURER AS THE CONNECTING PIPE, UTILIZE THE JOINING METHOD DESCRIBED IN THIS SECTION, AND MAINTAIN THE SAME QUALITY REQUIREMENTS INCLUDING DURABILITY AND STRENGTH OF THE PIPE MATERIAL.
5. QUALITY: THE PIPE SHALL HAVE UNIFORM THICKNESS AND SHALL BE UNIFORM IN COLOR, OPACITY, DENSITY, AND OTHER PHYSICAL PROPERTIES. PIPE SHALL BE HOMOGENEOUS THROUGHOUT AND FREE OF VISIBLE CRACKS, HOLES, BLISTERS, BUBBLES, UNDISPERSED RAW MATERIALS, OR ANY CONTAMINATION BY FOREIGN MATTER. ANY PIPE WITH NICKS, SCRAPES, OR GOUGES DEEPER THAN 10 PERCENT OF THE NOMINAL WALL THICKNESS SHALL BE REJECTED.

E. PIPE INSTALLATION

1. PIPING DIMENSIONS SHOWN ON THE DRAWINGS ARE APPROXIMATE. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO INSTALL PIPING OF THE PROPER DIMENSIONS, WHICH WILL PROPERLY FIT WITH THE CONNECTING ELEMENTS, FITTINGS, ETC. TO PROVIDE A COMPLETE AND FUNCTIONAL SYSTEM.
2. PIPE SHALL BE CUT IN A NEAT, WORKMANLIKE MANNER USING AN APPROVED MECHANICAL CUTTER THAT WILL NOT DAMAGE THE PIPE.
3. JOINING OF HDPE PIPE TO HDPE PIPE SHALL BE ACCOMPLISHED BY THERMAL BUTT OR SOCKET FUSION; NO SOLVENT OR ADHESIVE WELDING SHALL BE ALLOWED. PIPE SHALL BE JOINED PER ASTM D2657 AND MANUFACTURER'S RECOMMENDATIONS. INSTALLATION PERSONNEL WHO JOIN HDPE PIPE SHALL BE EXPERIENCED AND CERTIFIED IN ACCORDANCE WITH 49 CFR 192.285. THE CONTRACTOR SHALL PROVIDE THE ENGINEER WITH A LIST OF PROPOSED JOINING PERSONNEL AND THEIR QUALIFICATIONS.
4. DURING INSTALLATION, THE PIPE SHALL NOT BE PULLED ACROSS SHARP PROJECTIONS THAT COULD CAUSE GOUGES, KINKS, OR OTHER TYPES OF DAMAGE.
5. THE PIPE SHALL NOT BE DROPPED INTO THE TRENCH. EXERCISE CARE WHEN LOWERING PIPE INTO TRENCH TO PREVENT TWISTING OR DAMAGE TO PIPE.
6. TEMPORARILY CLOSE PIPE ENDS AS REQUIRED TO AVOID INTRODUCING DIRT OR OTHER FOREIGN MATERIAL INTO THE PIPE.

NOT FOR CONSTRUCTION

REV.	YYYY-MM-DD	DESCRIPTION	DESIGNED	PREPARED	REVIEWED	APPROVED
0	2025-02-07	ISSUED FOR PERMITTING	KMD	REDMOND	CLC	SJS
A	2024-08-06	DRAFT - ISSUED FOR REVIEW	KMD	REDMOND	SJS	SJS

SEAL

PROFESSIONAL ENGINEER LICENSED 16005 STATE OF IDAHO COLBY L. CAYWOOD

CLIENT
ALTA SCIENCE & ENGINEERING, INC.

CONSULTANT
wsp
REDMOND
18300 REDMOND WAY, SUITE 200
REDMOND, WA 98052
USA
[+1] (425) 833 0777

PROJECT
INFILTRATION POND DESIGN
TRIUMPH MINE
BLAINE COUNTY, IDAHO

TITLE
GENERAL NOTES AND SPECIFICATIONS (2 OF 3)

PROJECT NO.	PHASE	REV.	SHEET
31407131	002	0	3 of 12 021

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

1 in

Path: \\corp.pbwan.net\US\Central\Data\USXLC300\geomatics\Idaho_Dept_of_Lands\Triumph_Mine\99_PROJECTS\31407131_200_TriumphMineInfiltration\03_PRODUCTION\31407131_200_InfiltrationPondDesign\DWG\ | File Name: 31407131_012.dwg | Last Edited By: uskd7014\63 Date: 2025-01-17 Time:4:01:49 PM | Printed By: USKD7014\63 Date: 2026-02-10 Time:3:12:09 PM

PRE-CAST CONCRETE VAULT

A. SUBMITTALS
   1. SUBMIT FOR APPROVAL INFORMATION ON PROPOSED PRE-CAST CONCRETE VAULT, INCLUDING BUT NOT LIMITED TO MANUFACTURER PRODUCT SHEET, STANDARD PROPERTIES SHEET, AND TEST DATA TO DEMONSTRATE COMPLIANCE WITH THE REQUIREMENTS OF THIS SECTION.
   2. SUBMIT FOR APPROVAL THE PROPOSED PLAN FOR CONNECTION OF THE FLANGED VALVE TO A PIPE OR THE WEIR.

B. GENERAL
   1. PRE-CAST CONCRETE VAULT SHALL BE A MINIMUM 4-INCH X 4INCH X 4-INCH VAULT MANUFACTURED BY OLDCASTLE INFRASTRUCTURE, OR APPROVED EQUAL, AND INCLUDE OPENINGS SITUATED APPROPRIATELY TO CONNECT INTO CONVEYANCE PIPING.
   2. CONTRACTOR TO CONNECT THE CONVEYANCE PIPING INTO THE PRE-CAST CONCRETE VAULT TO MEET DESIGN INTENT. A SEALANT OR GROUT MUST BE INCLUDED TO PREVENT LEAKAGES AND MUST MEET THE REQUIREMENTS OF THE VAULT MANUFACTURER.
   3. PRE-CAST CONCRETE VAULT SHALL BE EQUIPPED WITH A SPRING ASSISTED GALVANIZED STEEL OR ALUMINUM TRAFFIC RATED COVER, OR APPROVED EQUAL.
   4. PRE-CAST CONCRETE VAULT SHALL INCLUDE A CONCRETE WEIR WALL RATED TO A MINIMUM OF 4,500 PSI. THE WEIR WALL SHALL BE MINIMUM 3-INCH THICK AND SHALL INCLUDE THE PENETRATION FOR THE PIPE/VALVE CONNECTION. CONNECTION OF THE FLANGED VALVE TO A PIPE OR THE WEIR SHALL BE PROPOSED BY THE CONTRACTOR AND APPROVED BY THE ENGINEER.

SHEAR GATE VALVES AND APPURTENANCES

A. SUBMITTALS
   5. SUBMIT FOR APPROVAL INFORMATION ON PROPOSED SHEAR GATE VALVES AND APPURTENANCES, INCLUDING BUT NOT LIMITED TO MANUFACTURER PRODUCT SHEET AND TEST DATA TO DEMONSTRATE COMPLIANCE WITH THE REQUIREMENTS OF THIS SECTION.

B. SHEAR GATE VALVE
   1. SHEAR GATE VALVE SHALL BE 8-INCH SHEAR GATE VALVE SYTLE 44-02 MANUFACTURED BY M&H VALVE COMPANY, OR APPROVED EQUAL.
   2. SHEAR GATE VALVE SHALL INCLUDE ALL APPURTENANCES IN THE ASSOCIATED DESIGN DRAWINGS (NOTE, THE LIFT HANDLE WILL NEED TO BE SHORTENED TO ACCOMMODATE THE VAULT DIMENSIONS), OR THE CONTRACTOR MUST SUBMIT AN ALTERNATIVE ASSEMBLY TO THE CONSTRUCTION MANAGER FOR APPROVAL.

MONITORING WELL DECOMMISSIONING

A. MONITORING WELLS WILL BE DECOMMISSION AT LOCATIONS SHOWN ON THE DRAWINGS PRIOR TO THE BEGINNING OF THIS CONSTRUCTION WORK.
B. DECOMMISSION OF WELLS WILL BE DONE IN ACCORDANCE WITH IDAHO DEPARTMENT OF WATER RESOURCES IDAPA 37.03.09 - WELL CONSTRUCTION STANDARDS RULES SECTION ON "DECOMMISSIONED (ABANDONED) WELL".
C. DECOMMISSIONING SHALL BE PERFORMED BY A QUALIFIED WELL CONTRACTOR.
D. REMOVE AND DISPOSE OF BOLLARDS, CONCRETE PADS, WELL CASING, AND OTHER STRUCTURES AND RESTORE THE GROUND SURFACE TO CONDITIONS TO MATCH THE SURROUNDING GROUND SURFACE.

PLUG AND ABANDON EXISTING PIPE

A. THE EXISTING 10-INCH HDPE PIPE NOT PART OF THE CONVEYANCE PIPING SYSTEM SHALL BE PROPERLY CUT, PLUGGED, AND ABANDONED. PIPE PLUG AND ABANDONMENT SHALL MEET BLAINE COUNTY ROAD CONSTRUCTION STANDARDS SECTION 24 - SELECTIVE DEMOLITION FOR "UTILITY SERVICES".

RESEEDING

A. RESEED DISTURBED AREAS FOLLOWING THE PROTOCOLS OUTLINED IN ITD SECTION 621 "SEEDING".
B. SEED MIX SHALL CONFORM TO THE REQUIRMENTS OF ITD SECTION 711.05 "SEED".
   1. SEED MIX MAY CONTAIN A MIX OF SEEDS FROM THE ITD IDAHO ROADSIDE REVEGETATION HANDBOOK THAT ACCOMODATES AN AVERAGE ANNUAL RAINFALL OF APPROXIMATELY 20 INCHES AND ACCOMODATES THE PROJECT SITE ELEVATION.
   2. SEED MIX SHOULD PRIORITIZE SEEDS OF NATIVE ORIGIN AND THAT ESTABLISH QUICKLY.
   3. CONTRACTOR SHALL SUBMIT SEED MIX AND SUPPLIER FOR APPROVAL.
C. IN ALL AREAS TO BE BROADCAST OR HYDROSEEDED, RAKE OR MECHANICALLY ROUGHEN THE SOIL AT LEAST 2 INCHES DEEP AND LEAVE IN A ROUGH CONDITION IMMEDIATELY BEFORE APPLYING SEED.
D. RESEED ANY AREAS THAT FAIL TO ESTABLISH GREATER THAN OR EQUAL TO 50% COVER AS DETERMINED BY VISUAL INSPECTION BY THE OWNER AFTER 3 MONTHS OF ACTIVE GROWTH FOLLOWING GERMINATION DURING THE INITIAL GROWING SEASON.
E. DO NOT RESEED DRAINAGE DITCHES, ACCESS ROADS, OR OTHER AREAS WHERE RESEEDING WOULD BE DETRIMENTAL TO THE FUNCTION OF THE AREA.

WOOD FENCE

A. WOOD FENCE SHALL CONSIST OF PRESSURE TREATED WOOD POSTS AND BRACING AND SHALL MEET THE STANDARD SPECIFICATIONS FOR ITD SECTION 710.08 "POSTS FOR BARBED OR WOVEN WIRE FENCE" AND 710.09 "PRESERVATION TREATMENT", OR APPROVED EQUAL. STANDARD DETAILS FOR THE WOOD FENCE ARE FOUND UNDER ITD 2024 STANDARD DRAWINGS 610-1 "FENCES" AND 610-3 "FENCE BRACES".

MAINTENANCE ACCESS GATE- AND

A. A MAINTENANCE VEHICLE ACCESS GATE SHALL BE INSTALLED AND MEET THE -STANDARD SPECIFICATIONS AND DRAWING NOTES FOR ITD "GATE TYPE 1A", OR APPROVED EQUAL.

VISUAL BARRIER

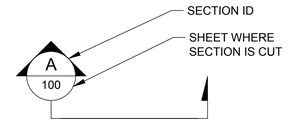
A. A VISUAL BARRIER SUCH AS TREES, SHRUBS, OR OTHER GROUND COVER MAY BE ELECTED TO BE ADDED AT A LATER DATE BY IDEQ.
B. MATERIALS, MEASUREMENTS, AND PAYMENTS TBD BY IDEQ.

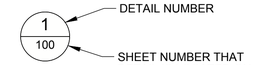
LEGEND

- EXISTING MAJOR CONTOURS (5 FT)
- EXISTING MINOR CONTOURS (1FT)
- PROPOSED MAJOR CONTOURS (5 FT)
- PROPOSED MINOR CONTOURS (1FT)
- PROPOSED 8" HDPE PIPE
- PARCEL BOUNDARY
- EXISTING DISCHARGE PIPE
- EXISTING CULVERT
- EXISTING ROAD
- EXISTING TREE LINE
- PROPOSED ACCESS ROAD
- ROCK LINING
- MW-22 — MONITORING WELL LOCATIONS TO BE PROTECTED/RETAINED
- MW-23 — MONITORING WELL LOCATIONS TO BE DECOMMISSIONED (NOTE 6 ON SHEET 030)
- CLEAN OUT LOCATIONS
- TEST PIT LOCATIONS
- PIEZOMETER LOCATION TO BE PROTECTED/RETAINED
- PIPE FLOW DIRECTION

REFERENCES

1. AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM), VERSIONS CURRENT AT TIME OF BID.
2. ASTM D2657: PRACTICE FOR HEAT FUSION JOINING OF POLYOLEFIN PIPE AND FITTINGS.
3. ASTM D3350: STANDARD SPECIFICATION FOR POLYETHYLENE PLASTICS PIPE AND FITTING MATERIALS.
4. ASTM D4976: SPECIFICATION FOR POLYETHYLENE PLASTICS MOLDING AND EXTRUSION MATERIALS.
5. BLAINE COUNTY 2019 ROAD CONSTRUCTION STANDARDS, JANUARY 2019 VERSION.
6. IDAHO DEPARTMENT OF WATER RESOURCES. IDAPA 37.03.09 - WELL CONSTRUCTION STANDARDS RULES, 2023 VERSION.
7. IDAHO TRANSPORTATION DEPARTMENT (ITD) IDAHO ROADSIDE REVEGETATION HANDBOOK. JULY, 2014.
8. ITD STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION, 2023 VERSION.
9. ITD STANDARD DRAWINGS, APRIL 2024 VERSION.
10. SITE TOPOGRAPHY OBTAINED FROM GEOTERRA, COLLECTED IN 2019.
11. WETLAND DELINEATION PERFORMED BY ALTA SCIENCE & ENGINEERING (ALTA), OCTOBER 2, 2024.
12. SURVEY OF EXISTING SITE FEATURE PERFORMED BY ACCURATE SURVEYING & MAPPING, MAY 16-17, 2024.
13. HORIZONTAL DATUM: NAD83 IDAHO STATE PLANE, CENTRAL ZONE, US FOOT.
14. VERTICAL DATUM: NAVD88.





NOT FOR CONSTRUCTION

REV.	YYYY-MM-DD	DESCRIPTION	DESIGNED	PREPARED	REVIEWED	APPROVED
0	2025-02-07	ISSUED FOR PERMITTING	KMD	REDMOND	CLC	SJS
A	2024-08-06	DRAFT - ISSUED FOR REVIEW	KMD	REDMOND	SJS	SJS

SEAL

PROFESSIONAL ENGINEER LICENSED 16005 STATE OF IDAHO COLBY L. CATMOOD

CLIENT
ALTA SCIENCE & ENGINEERING, INC.

CONSULTANT
wsp
REDMOND
18300 REDMOND WAY, SUITE 200
REDMOND, WA 98052
USA
[+1] (425) 833 0777

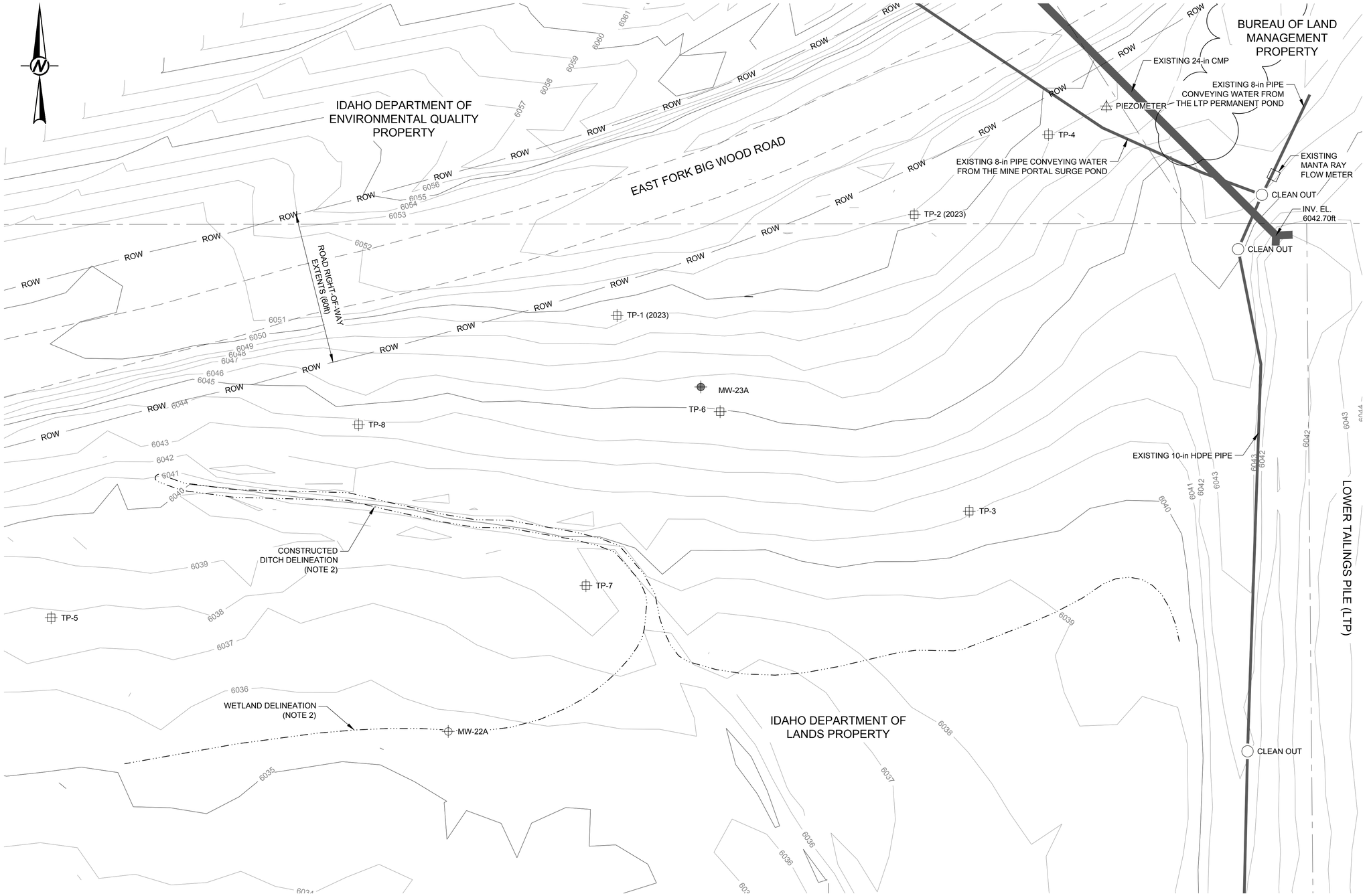
PROJECT
INFILTRATION POND DESIGN
TRIUMPH MINE
BLAINE COUNTY, IDAHO

TITLE
GENERAL NOTES AND SPECIFICATIONS (3 OF 3)

PROJECT NO.	PHASE	REV.	SHEET
31407131	002	0	4 of 12 022

0 1in IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI D

Path: \\corp.pbwan.net\US\Central\Data\USXLC300\gis\matics\Idaho_Dept_of_Lands\Triumph_Mine\99_PROJECTS\31407131_200_Triumph\Mine\Infiltration\03_PRODUCTION\31407131_200_InfiltrationPondDesign\DWG | File Name: 31407131_012.dwg | Last Edited By: usld7014\63 Date: 2025-01-17 Time:4:01:49 PM | Printed By: USKD7014\63 Date: 2026-02-10 Time:3:12:13 PM



LEGEND

- EXISTING MAJOR CONTOURS (5 FT)
- EXISTING MINOR CONTOURS (1FT)
- PARCEL BOUNDARY
- EXISTING DISCHARGE PIPE
- EXISTING CULVERT
- EXISTING ROAD
- EXISTING TREE LINE
- MW-22 — MONITORING WELL LOCATIONS TO BE PROTECTED/RETAINED
- MW-23 — MONITORING WELL LOCATIONS TO BE DECOMMISSIONED (NOTE 6)
- CLEAN OUT LOCATIONS
- TEST PIT LOCATIONS
- PIEZOMETER LOCATION TO BE PROTECTED/RETAINED

NOTE(S)

1. SITE TOPOGRAPHY OBTAINED FROM GEOTERRA, COLLECTED IN 2019.
2. WETLAND DELINEATION PERFORMED BY ALTA SCIENCE & ENGINEERING (ALTA), OCTOBER 2, 2024.
3. SURVEY OF EXISTING SITE FEATURE PERFORMED BY ACCURATE SURVEYING & MAPPING, MAY 16-17, 2024.
4. HORIZONTAL DATUM: NAD83 IDAHO STATE PLANE, CENTRAL ZONE, US FOOT.
5. VERTICAL DATUM: NAVD88.
6. MONITORING WELL(S) TO BE DECOMMISSIONED PRIOR TO BEGINNING THE CONSTRUCTION OF INFILTRATION PONDS. WELL TO BE DECOMMISSIONED UNDER A SEPARATE CONTRACT.

NOT FOR CONSTRUCTION

0 20 40
1" = 20' FEET

REV.	YYYY-MM-DD	DESCRIPTION	DESIGNED	PREPARED	REVIEWED	APPROVED
0	2025-02-07	ISSUED FOR PERMITTING	KMD	REDMOND	CLC	SJS
A	2024-08-06	DRAFT - ISSUED FOR REVIEW	KMD	REDMOND	SJS	SJS

SEAL

PROFESSIONAL ENGINEER LICENSED 16005 STATE OF IDAHO COLBY L. CATMOOD

CLIENT
ALTA SCIENCE & ENGINEERING, INC.

CONSULTANT
wsp
REDMOND
18300 REDMOND WAY, SUITE 200
REDMOND, WA 98052
USA
[+1] (425) 833 0777

PROJECT
INFILTRATION POND DESIGN
TRIUMPH MINE
BLAINE COUNTY, IDAHO

TITLE
EXISTING CONDITIONS

PROJECT NO.	PHASE	REV.	SHEET
31407131	002	0	5 of 12 030

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

0 1 in

Path: \\corp.pbwan.net\US\CentralData\JAXLC300\geomatics\Idaho_Dept_of_Lands\Triumph_Mine\99_PROJECTS\31407131_200_TriumphMine\Infiltration\03_PRODUCTION\31407131_200_InfiltrationPondDesign\DWG\ | File Name: 31407131_007.dwg | Last Edited By: uskd7014463 Date: 2025-01-22 Time:10:41:14 AM | Printed By: USKD7014463 Date: 2025-02-10 Time:3:12:28 PM

Path: \\corp.pbwan.net\US\Central\Data\USXLC300\geomatics\Idaho_Dept_of_Lands\Triumph_Mine\99_PROJECTS\31407131_200_TriumphMineInfiltration\03_PRODUCTION\31407131_200_InfiltrationPondDesign\DWG\ | File Name: 31407131_008.dwg | Last Edited By: uskd7014\63 Date: 2025-02-10 Time:3:04:17 PM | Printed By: USKD7014\63 Date: 2025-02-10 Time:3:12:45 PM

IDAHO DEPARTMENT OF ENVIRONMENTAL QUALITY PROPERTY

EAST FORK BIG WOOD ROAD

RIGHT-OF-WAY EXTENTS (60ft)

BUREAU OF LAND MANAGEMENT PROPERTY

TREES TO BE MAINTAINED IN PLACE

PIEZOMETER

TP-4

CLEAN OUT

TP-2 (2023)

CLEAN OUT

1 / 060 CONSTRUCTION ENTRANCE

TP-1 (2023)

3 / 060 STRAW BALE BARRIER (NOTE 1)

SF

SE

MW-23A

TP-6

TP-8

3 / 060 STRAW BALE BARRIER (NOTE 1)

CONTRACTOR STAGING AREA

TP-3

CONTRACTOR STAGING AREA

CONSTRUCTED DITCH DELINEATION

2 / 060 SILT FENCE

TP-5

TP-7

LIMIT OF DISTURBANCE EXTENTS TO BE MAINTAINED TO STAY OUT OF CONSTRUCTED DITCH

LIMIT OF DISTURBANCE EXTENTS TO BE MAINTAINED TO STAY OUT OF WETLAND EXTENTS

WETLAND DELINEATION

MW-22A

IDAHO DEPARTMENT OF LANDS PROPERTY

LOWER TAILINGS PILE (LTP)

CLEAN OUT

ROW

6060 6061 6059 6058 6057 6056 6055 6054 6053 6052 6051 6043 6042 6041 6040 6039 6038 6037 6036 6035 6034

LEGEND

- EXISTING MAJOR CONTOURS (5 FT)
- EXISTING MINOR CONTOURS (1FT)
- PARCEL BOUNDARY
- EXISTING DISCHARGE PIPE
- EXISTING CULVERT
- EXISTING ROAD
- EXISTING TREE LINE
- PROPOSED ACCESS ROAD
- SF — SILT FENCE
- LIMITS OF DISTURBANCE
- ROCK LINING
- MW-22 — MONITORING WELL LOCATIONS TO BE PROTECTED/RETAINED
- MW-23 — MONITORING WELL LOCATIONS TO BE DECOMMISSIONED (NOTE 6 ON SHEET 030)
- CLEAN OUT LOCATIONS
- TEST PIT LOCATIONS
- PIEZOMETER LOCATION TO BE PROTECTED/RETAINED

NOTE(S)

1. POTENTIAL STRAW BALE BARRIERS TO BE PLACED AS NEEDED OR AS DIRECTED BY THE CONSTRUCTION MANAGER.

NOT FOR CONSTRUCTION

0 20 40
1" = 20' FEET

REV.	YYYY-MM-DD	DESCRIPTION	DESIGNED	PREPARED	REVIEWED	APPROVED
0	2025-02-07	ISSUED FOR PERMITTING	KMD	REDMOND	CLC	SJS
A	2024-08-06	DRAFT - ISSUED FOR REVIEW	KMD	REDMOND	SJS	SJS

SEAL

PROFESSIONAL ENGINEER LICENSED 16005 STATE OF IDAHO COLBY L. CATMOOD

CLIENT
ALTA SCIENCE & ENGINEERING, INC.

CONSULTANT
wsp

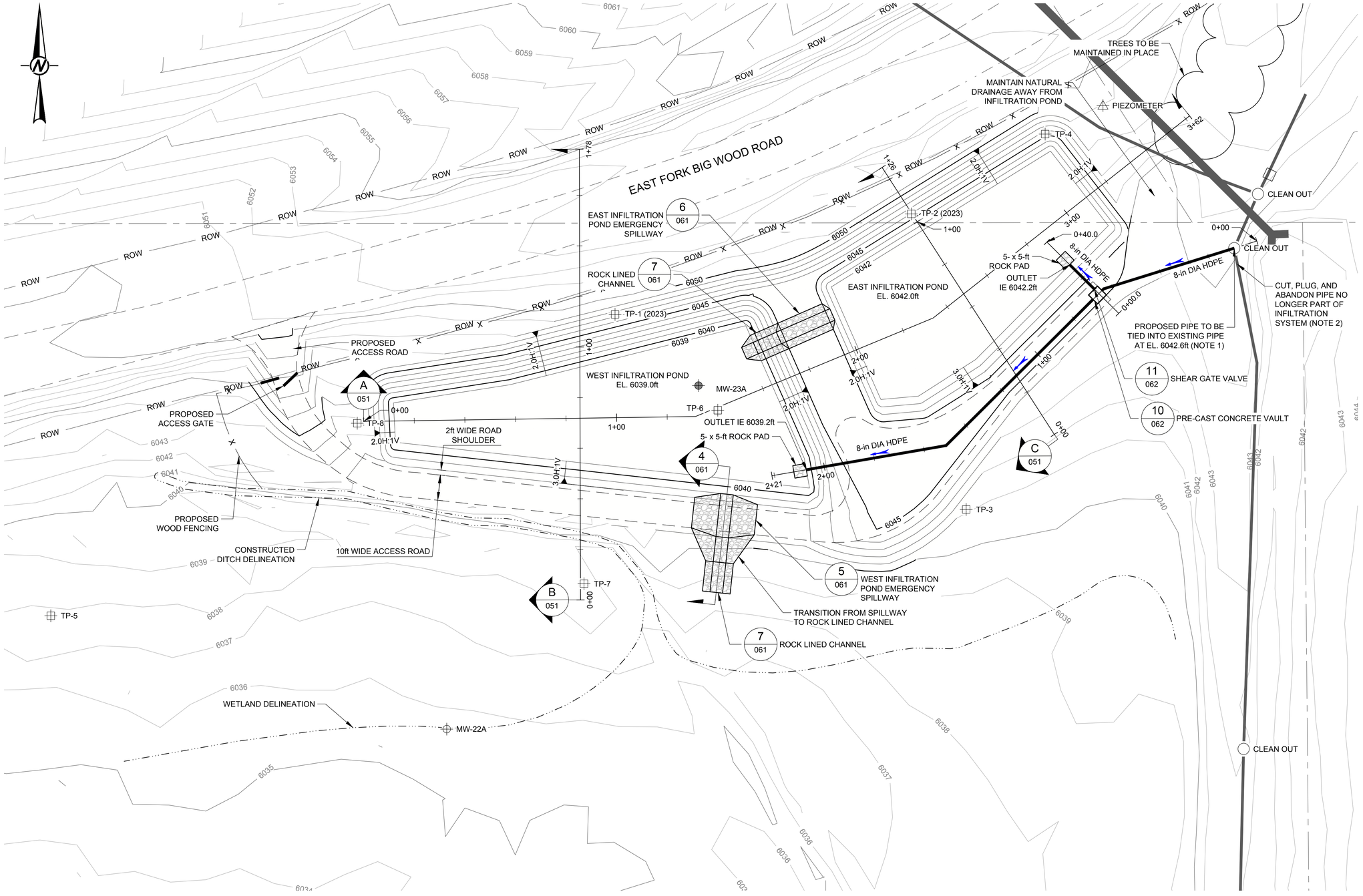
REDMOND
18300 REDMOND WAY, SUITE 200
REDMOND, WA 98052
USA
[+1] (425) 833 0777

PROJECT
INFILTRATION POND DESIGN
TRIUMPH MINE
BLAINE COUNTY, IDAHO

TITLE
TEMPORARY EROSION AND SEDIMENT CONTROL

PROJECT NO.	PHASE	REV.	SHEET
31407131	002	0	6 of 12 040

0 1in
IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI D



LEGEND

- EXISTING MAJOR CONTOURS (5 FT)
- EXISTING MINOR CONTOURS (1FT)
- PROPOSED MAJOR CONTOURS (5 FT)
- PROPOSED MINOR CONTOURS (1FT)
- PROPOSED 8" HDPE PIPE
- PARCEL BOUNDARY
- EXISTING DISCHARGE PIPE
- EXISTING CULVERT
- EXISTING ROAD
- EXISTING TREE LINE
- PROPOSED ACCESS ROAD
- ROCK LINING
- MW-22 — MONITORING WELL LOCATIONS TO BE PROTECTED/RETAINED
- MW-23 — MONITORING WELL LOCATIONS TO BE DECOMMISSIONED (NOTE 6 ON SHEET 030)
- CLEAN OUT LOCATIONS
- TEST PIT LOCATIONS
- PIEZOMETER LOCATION TO BE PROTECTED/RETAINED
- PIPE FLOW DIRECTION

NOTE(S)

1. THE PROPOSED 8-in DIAMETER HDPE PIPE WILL BE CONNECTED INTO THE EXISTING 10-in DIAMETER HDPE PIPE DIRECTLY UPSTREAM OR DOWNSTREAM OF THE CLEANOUT AT ELEVATION 6042.6 ft.
2. ONCE THE EXISTING PIPE IS CUT AND THE NEW PIPE TIED-IN, THE REMAINDER OF THE EXISTING PIPE EXTENTS DRAINING TO THE SOUTH WILL NO LONGER BE PART OF THE INFILTRATION SYSTEM AND SHALL BE PLUGGED AND ABANDONED.

NOT FOR CONSTRUCTION

0 20 40
1" = 20' FEET

REV.	YYYY-MM-DD	DESCRIPTION	DESIGNED	PREPARED	REVIEWED	APPROVED
0	2025-02-07	ISSUED FOR PERMITTING	KMD	REDMOND	CLC	SJS
A	2024-08-06	DRAFT - ISSUED FOR REVIEW	KMD	REDMOND	SJS	SJS

SEAL

PROFESSIONAL ENGINEER LICENSED 16005 STATE OF IDAHO COLBY L. CATWOOD

CLIENT
ALTA SCIENCE & ENGINEERING, INC.

CONSULTANT
REDMOND
18300 REDMOND WAY, SUITE 200
REDMOND, WA 98052
USA
[+1] (425) 833 0777

PROJECT
INFILTRATION POND DESIGN
TRIUMPH MINE
BLAINE COUNTY, IDAHO

TITLE
INFILTRATION POND PLAN

PROJECT NO.	PHASE	REV.	SHEET
31407131	002	0	7 of 12 050

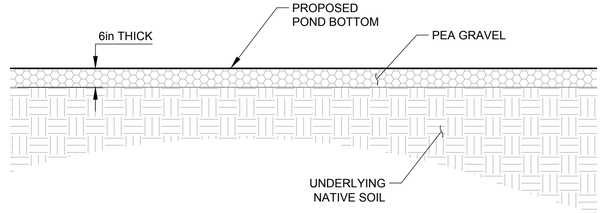
IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI D

0 1in

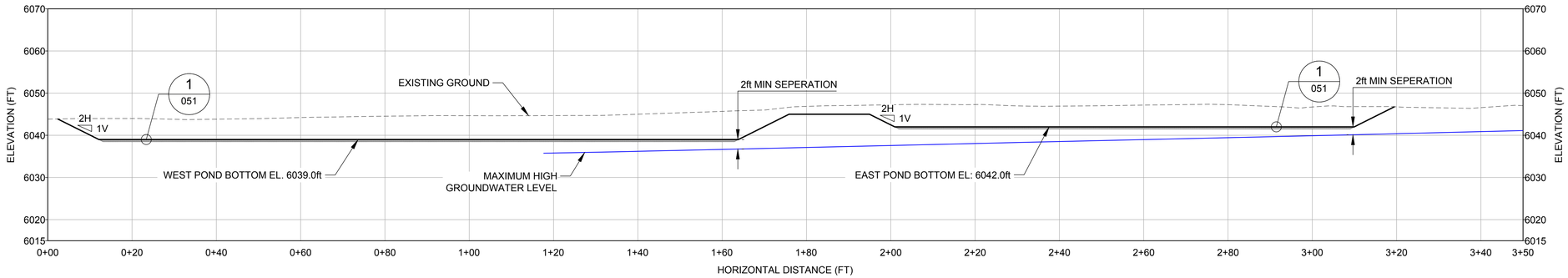
Path: \\corp.pbwan.net\US\Central\Data\USXLC300\geomatics\Idaho_Dept_of_Lands\Triumph_Mine\99_PROJECTS\31407131_200_TriumphMineInfiltration\03_PRODUCTION\31407131_200_Infiltration_Pond_Design.dwg | File Name: 31407131_000.dwg | Last Edited By: uskd7014\63 Date: 2025-02-10 Time:3:07:33 PM | Printed By: USKD7014\63 Date: 2025-02-10 Time:3:12:59 PM

LEGEND

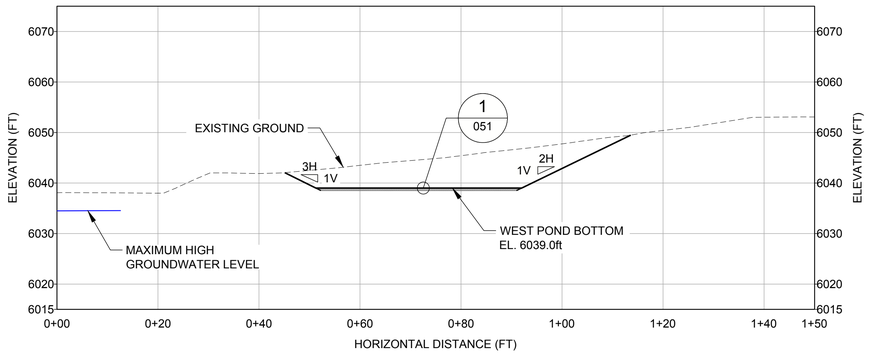
- EXISTING GROUND
- PROPOSED POND BOTTOM
- MAXIMUM HIGH GROUNDWATER LEVEL
- PEA GRAVEL



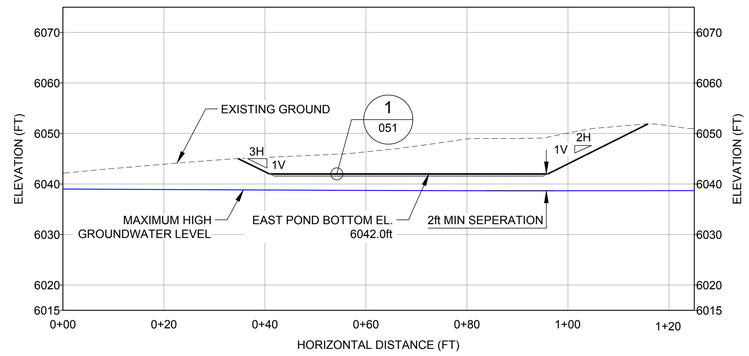
SCALE 1" = 2' (1 / -) INFILTRATION POND BOTTOM DETAIL



SCALE 1" = 15' VERT. SCALE 1:1 (A / 050) INFILTRATION PONDS PROFILE VIEW



SCALE 1" = 15' VERT. SCALE 1:1 (B / 050) WEST INFILTRATION POND SECTION VIEW



SCALE 1" = 15' VERT. SCALE 1:1 (C / 050) EAST INFILTRATION POND SECTION VIEW

NOT FOR CONSTRUCTION

0 2 4
1" = 2' FEET

0 15 30
1" = 15' FEET

REV.	YYYY-MM-DD	DESCRIPTION	DESIGNED	PREPARED	REVIEWED	APPROVED
0	2025-02-07	ISSUED FOR PERMITTING	KMD	REDMOND	CLC	SJS
A	2024-08-06	DRAFT - ISSUED FOR REVIEW	KMD	REDMOND	SJS	SJS

SEAL

PROFESSIONAL ENGINEER LICENSED 16005 STATE OF IDAHO COLBY L. CAYWOOD

CLIENT
ALTA SCIENCE & ENGINEERING, INC.

CONSULTANT
REDMOND
18300 REDMOND WAY, SUITE 200
REDMOND, WA 98052
USA
[+1] (425) 833 0777

PROJECT
INFILTRATION POND DESIGN
TRIUMPH MINE
BLAINE COUNTY, IDAHO

TITLE
INFILTRATION POND SECTIONS

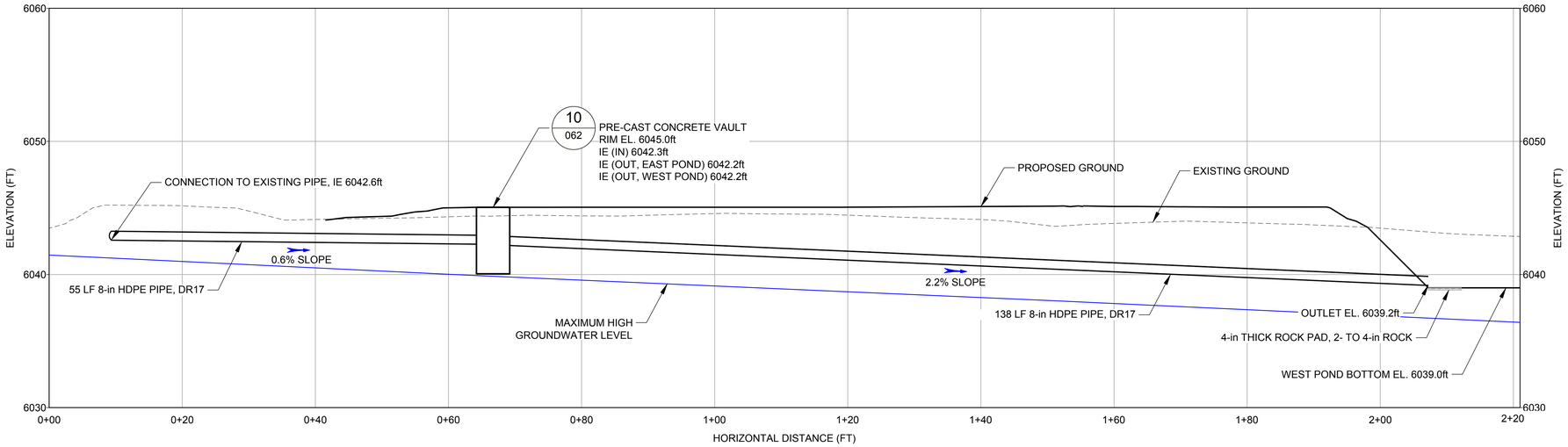
PROJECT NO.	PHASE	REV.	SHEET
31407131	002	0	051

8 of 12

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

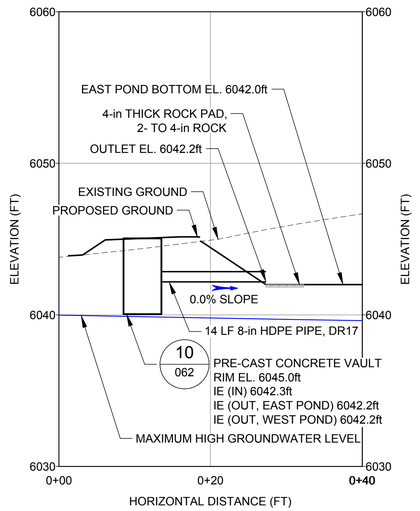
0 1in

Path: \\corp.pbwan.net\US\Central\Data\USXLC300\geomatics\Idaho_Dept_of_Lands\Triumph_Mine\99_PROJECTS\31407131_200_TriumphMineInfiltration\03_PRODUCTION\31407131_200_InfiltrationPondDesign\DWG | File Name: 31407131_009.dwg | Last Edited By: uskd7014l63 Date: 2025-02-10 Time:3:07:33 PM | Printed By: USKD7014l63 Date: 2025-02-10 Time:3:13:02 PM



PROPOSED PIPE ALIGNMENT TO WEST POND

SCALE 1" = 10'
VERT. SCALE 1:2



PROPOSED PIPE ALIGNMENT TO EAST POND

SCALE 1" = 10'
VERT. SCALE 1:2

NOT FOR CONSTRUCTION

0 2 4
1" = 2' FEET

REV.	YYYY-MM-DD	DESCRIPTION	DESIGNED	PREPARED	REVIEWED	APPROVED
0	2025-02-07	ISSUED FOR PERMITTING	KMD	REDMOND	CLC	SJS
A	2024-08-06	DRAFT - ISSUED FOR REVIEW	KMD	REDMOND	SJS	SJS

SEAL

PROFESSIONAL ENGINEER LICENSED 16005 STATE OF IDAHO COLBY L. CAYWOOD

CLIENT
ALTA SCIENCE & ENGINEERING, INC.

CONSULTANT
REDMOND
18300 REDMOND WAY, SUITE 200
REDMOND, WA 98052
USA
[+1] (425) 833 0777

PROJECT
INFILTRATION POND DESIGN
TRIUMPH MINE
BLAINE COUNTY, IDAHO

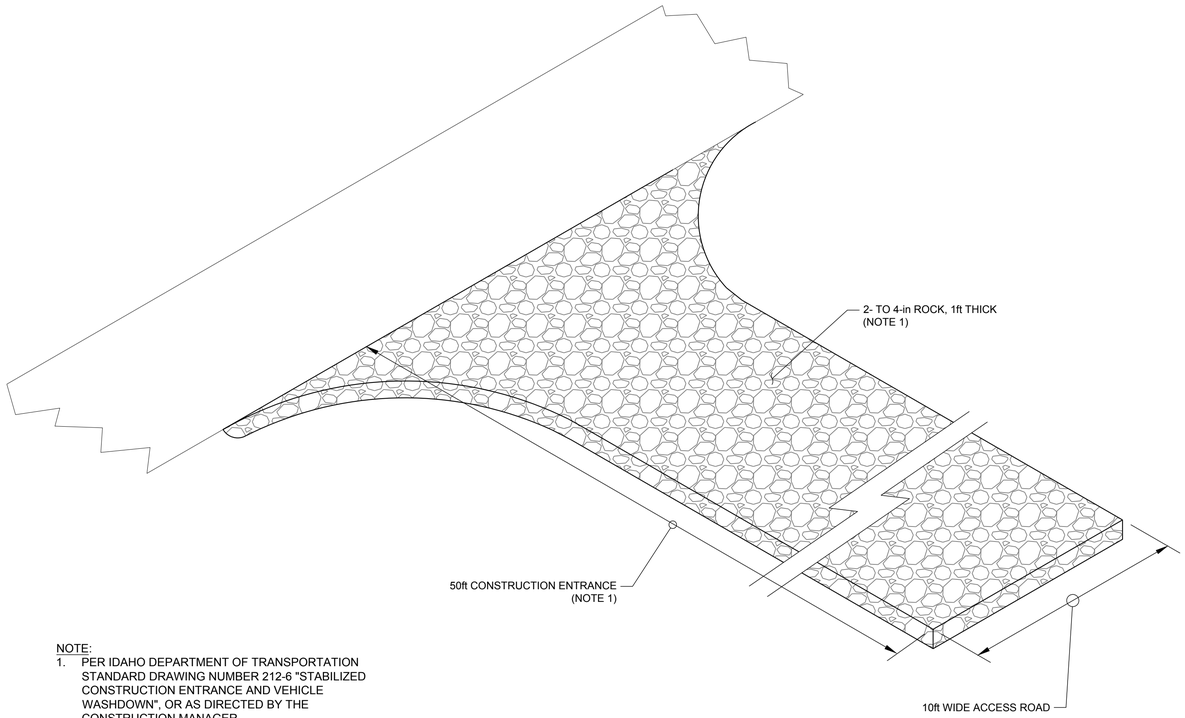
TITLE
DISCHARGE PIPE PROFILES

PROJECT NO.	PHASE	REV.	9 of 12	SHEET
31407131	002	0		052

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

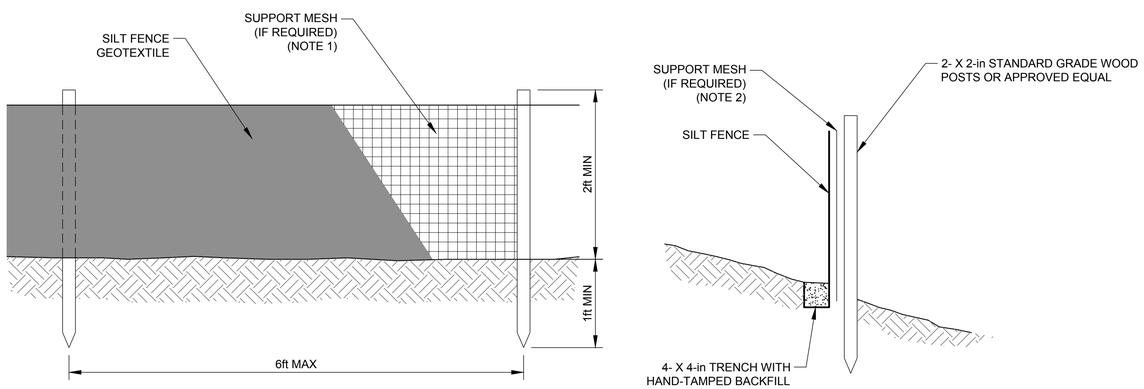
0 1 in

Path: \\corp.pbwan.net\US\Central\Data\US\XLC300\geomatics\Idaho_Dept_of_Lands\Triumph_Mine\99_PROJECTS\31407131_200_TriumphMine\Infiltration\03_PRODUCTION\31407131_200_InfiltrationPondDesign\DWG\ | File Name: 31407131_009.dwg | Last Edited By: uskd7014463 Date: 2025-02-10 Time:3:07:33 PM | Printed By: USKD7014463 Date: 2025-02-10 Time:3:13:04 PM



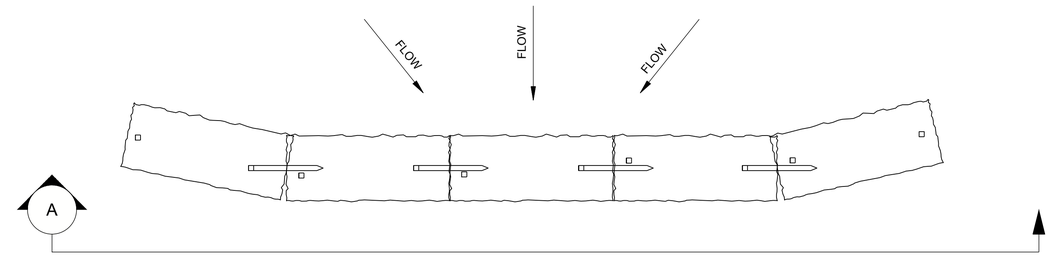
NOTE:
1. PER IDAHO DEPARTMENT OF TRANSPORTATION STANDARD DRAWING NUMBER 212-6 "STABILIZED CONSTRUCTION ENTRANCE AND VEHICLE WASHDOWN", OR AS DIRECTED BY THE CONSTRUCTION MANAGER.

N.T.S. 1 - CONSTRUCTION ENTRANCE

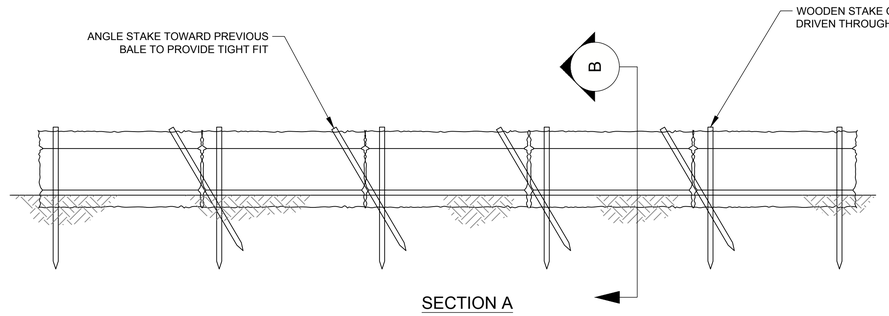


NOTES:
1. SUPPORT MESH SHALL BE REQUIRED IF SPACING BETWEEN POSTS IS INCREASED OR IF IN THE OPINION OF THE CONSTRUCTION MANAGER, THE SILT FENCE IS NOT ADEQUATELY SUPPORTED TO FUNCTION AS INTENDED.
2. EXTEND SUPPORT MESH AT LEAST 3-in INTO TRENCH.

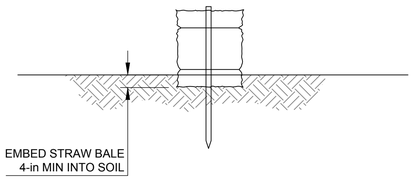
N.T.S. 2 - SILT FENCE



PLAN



SECTION A



SECTION B

NOTES:
1. STRAW BALES SHALL BE PLACED IN A ROW WITH THE ENDS TIGHTLY ABUTTING.
2. KEY IN BALES TO PREVENT EROSION OR FLOW UNDER BALES.
3. LOCATION AND NUMBER OF BALES IN EACH BARRIER TO BE DETERMINED BY THE CONSTRUCTION MANAGER.
4. STRAW BALE BARRIERS TO BE INSTALLED UPSTREAM OF SILT FENCE.

N.T.S. 3 - STRAW BALE BARRIER

NOT FOR CONSTRUCTION

REV.	YYYY-MM-DD	DESCRIPTION	DESIGNED	PREPARED	REVIEWED	APPROVED
0	2025-02-07	ISSUED FOR PERMITTING	KMD	REDMOND	CLC	SJS
A	2024-08-06	DRAFT - ISSUED FOR REVIEW	KMD	REDMOND	SJS	SJS

SEAL

PROFESSIONAL ENGINEER LICENSED 16005 STATE OF IDAHO COLBY L. CATWOOD

CLIENT
ALTA SCIENCE & ENGINEERING, INC.

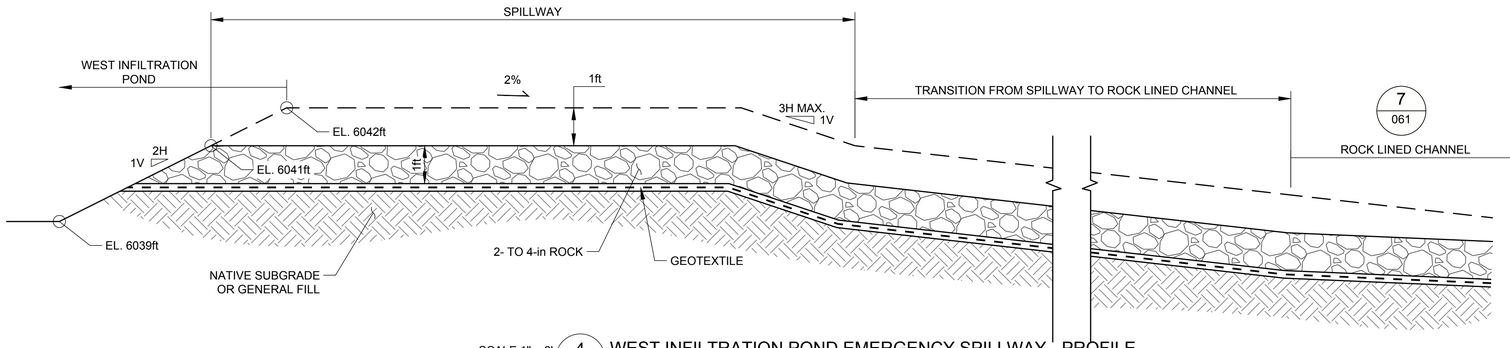
CONSULTANT
wsp
REDMOND
18300 REDMOND WAY, SUITE 200
REDMOND, WA 98052
USA
[+1] (425) 833 0777

PROJECT
INFILTRATION POND DESIGN
TRIUMPH MINE
BLAINE COUNTY, IDAHO

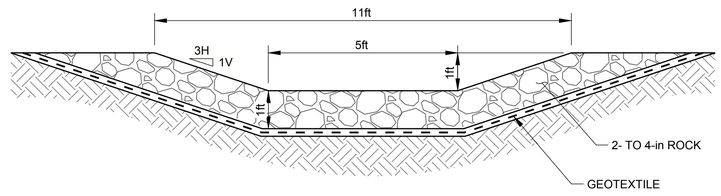
TITLE
DETAILS (1 OF 3)

PROJECT NO.	PHASE	REV.	10 of 12	SHEET
31407131	002	0		060

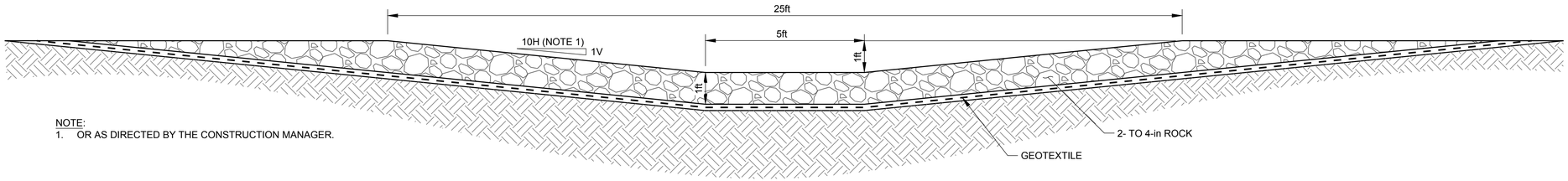
Path: \\corp.pbwan.net\US\Central\Data\USXLC300\geomatics\Idaho_Dept_of_Lands\Triumph_Mine\99_PROJECTS\31407131_200_TriumphMineInfiltration\03_PRODUCTION\31407131_200_InfiltrationPondDesign\DWG\ | File Name: 31407131_011.dwg | Last Edited By: uskd7701463 Date: 2025-01-22 Time:11:51:43 AM | Printed By: USKD7701463 Date: 2025-02-10 Time:3:13:23 PM
0 1/2" 1" IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI D
1 in



SCALE 1" = 2' 4 - WEST INFILTRATION POND EMERGENCY SPILLWAY - PROFILE

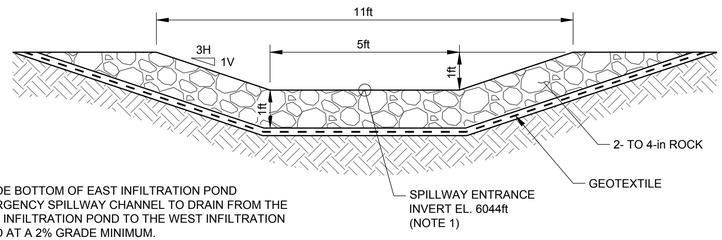


SCALE 1" = 2' 7 - ROCK LINED CHANNEL - SECTION



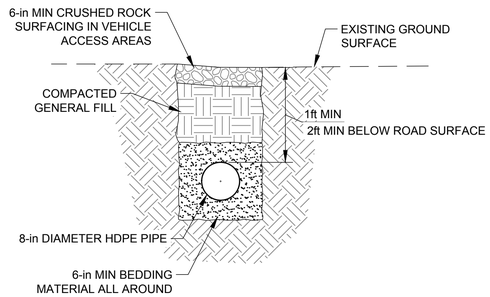
NOTE:
1. OR AS DIRECTED BY THE CONSTRUCTION MANAGER.

SCALE 1" = 2' 5 - WEST INFILTRATION POND EMERGENCY SPILLWAY - SECTION

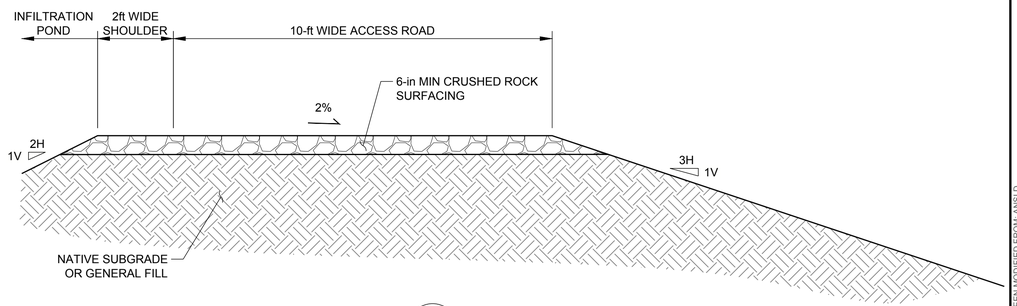


NOTE:
1. GRADE BOTTOM OF EAST INFILTRATION POND EMERGENCY SPILLWAY CHANNEL TO DRAIN FROM THE EAST INFILTRATION POND TO THE WEST INFILTRATION POND AT A 2% GRADE MINIMUM.

SCALE 1" = 2' 6 - EAST INFILTRATION POND EMERGENCY SPILLWAY - SECTION



SCALE 1" = 2' 8 - PIPE TRENCH



SCALE 1" = 2' 9 - ACCESS ROAD

NOT FOR CONSTRUCTION

0 2 4
1" = 2' FEET

REV.	YYYY-MM-DD	DESCRIPTION	DESIGNED	PREPARED	REVIEWED	APPROVED
0	2025-02-07	ISSUED FOR PERMITTING	KMD	REDMOND	CLC	SJS
A	2024-08-06	DRAFT - ISSUED FOR REVIEW	KMD	REDMOND	SJS	SJS

SEAL

PROFESSIONAL ENGINEER LICENSED 16005 STATE OF IDAHO COLBY L. CAYWOOD

CLIENT
ALTA SCIENCE & ENGINEERING, INC.

CONSULTANT
wsp
REDMOND
18300 REDMOND WAY, SUITE 200
REDMOND, WA 98052
USA
[+1] (425) 833 0777

PROJECT
INFILTRATION POND DESIGN
TRIUMPH MINE
BLAINE COUNTY, IDAHO

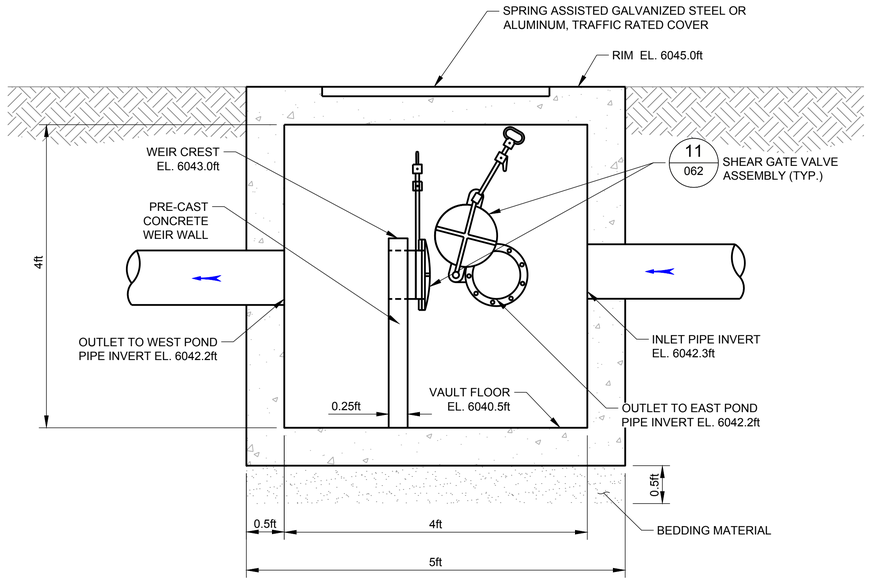
TITLE
DETAILS (2 OF 3)

PROJECT NO.	PHASE	REV.	11 of 12	SHEET
31407131	002	0		061

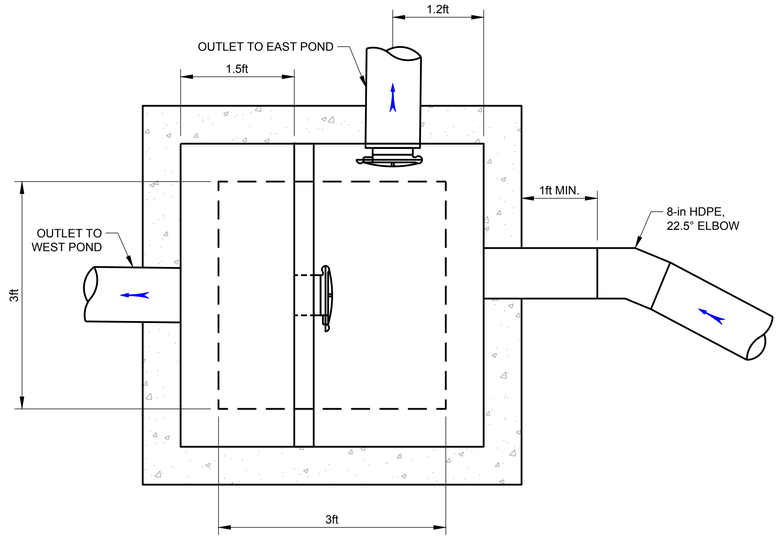
IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI D

0 1 in

Path: \\corp.pbwan.net\US\Central\Data\USXLC300\geomatics\Idaho_Dept_of_Lands\Triumph_Mine\99_PROJECTS\31407131_200_TriumphMineInfiltration\03_PRODUCTION\31407131_200_InfiltrationPondDesign\DWG\ | File Name: 31407131_011.dwg | Last Edited By: uskd7014/63 Date: 2025-01-22 Time:11:51:43 AM | Printed By: USKD7014/63 Date: 2025-02-10 Time:3:13:36 PM

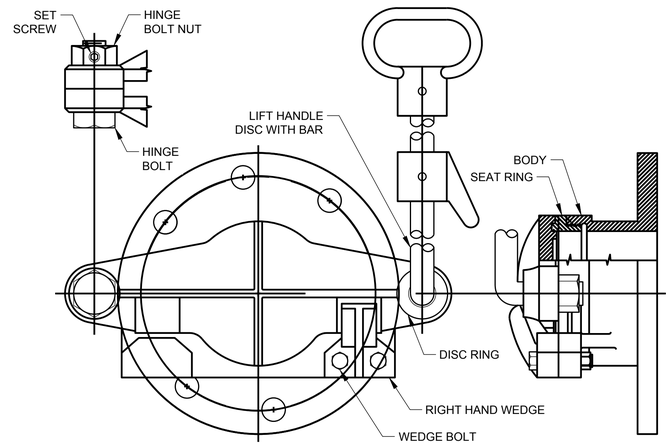


SECTION VIEW
SCALE 1" = 1'



PLAN VIEW
SCALE 1" = 1'

SCALE 1" = 1' 10 - PRE-CAST CONCRETE VAULT



SCALE 1" = 5' 11 - SHEAR GATES VALVE ASSEMBLY

NOT FOR CONSTRUCTION

0 1 2
1" = 1' FEET

0 5 10
1" = 5' FEET

REV.	YYYY-MM-DD	DESCRIPTION	DESIGNED	PREPARED	REVIEWED	APPROVED
0	2025-02-07	ISSUED FOR PERMITTING	KMD	REDMOND	CLC	SJS
A	2024-08-06	DRAFT - ISSUED FOR REVIEW	KMD	REDMOND	SJS	SJS

SEAL

PROFESSIONAL ENGINEER LICENSED 16005 STATE OF IDAHO COLBY L. CAYWOOD

CLIENT
ALTA SCIENCE & ENGINEERING, INC.

CONSULTANT
wsp
REDMOND
18300 REDMOND WAY, SUITE 200
REDMOND, WA 98052
USA
[+1] (425) 833 0777

PROJECT
INFILTRATION POND DESIGN
TRIUMPH MINE
BLAINE COUNTY, IDAHO

TITLE
DETAILS (3 OF 3)

PROJECT NO.	PHASE	REV.	12 of 12	SHEET
31407131	002	0		062

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

0 1 in

Path: \\corp.pbwan.net\US\Central\Data\US\XLC300\geomatics\Idaho_Dept_of_Lands\Triumph_Mine\99_PROJECTS\31407131_200_TriumphMine\Infiltration\03_PRODUCTION\31407131_200_InfiltrationPondDesign\DWG\ | File Name: 31407131_011.dwg | Last Edited By: uskd7701463 Date: 2025-01-22 Time:11:51:43 AM | Printed By: USKD7701463 Date: 2025-02-10 Time:3:13:42 PM

APPENDIX B

2018 Test Pit and Infiltration Study

This summary presents the findings of an infiltration basin feasibility assessment conducted near the Triumph Mine Tailings Pile site in Triumph, Idaho (Site, Figure 1). The assessment was conducted by Golder Associates Inc (Golder). on behalf of the Idaho Department of Lands (IDL) to provide a preliminary evaluation of the feasibility of an infiltration basin for discharge of the Lower Tailings Pile (LTP) Permanent Pond water.

The Site is located at 512 East Fork Road, Triumph, Blaine County, Idaho and is identified by Blaine County Assessor as parcel number RP04N18036773A. The Site is approximately 32.74-acres and is situated west of the Triumph Mine Tailings Piles Site between the East Fork of the Big Wood River and East Fork Road. The East Fork of the Big Wood River is located approximately 0.25-miles south of the Site. The Site slopes gently to the south from East Fork Road towards the river and appears to have been reworked in some areas (drainage ditches, access path etc.). The field activities were limited to approximately 1.5-acres located in the

Eight test pits (TP-1 through TP-8) were excavated on October 4, 2018 to characterize soils and assess the feasibility of an infiltration basin on the Site. The test pits were excavated by Dahle Construction, LLC using a Cat 305E track hoe. Test pits were excavated to a maximum depth of 10 feet below ground surface (bgs) and excavated material was logged by a Golder geologist using the Unified Soil Classification System (USCS). Additional observations included photographs, depth to groundwater (where encountered), observations of organics, and stratification. Excavation lithology was logged from the test wall up to 4 feet (bgs) and from the excavator bucket or spoils pile below 4 feet bgs. Nine representative soil samples were collected from the test pit excavations and submitted to Strata, Inc. in Boise, Idaho for textual analysis.
Following excavation, a global positioning system (GPS) unit was used to record each test pit location. Test pits were backfilled with excavated materials and roughly graded to match existing ground surface. Representative photographs of selected test pit locations are presented in Attachment A and the field test pit logs are provided in Attachment B. Table 1 presents a summary of the test pit locations and the

Table 1: Test Pit Locations

Test Pit	Latitude	Longitude	Depth (feet)	Groundwater Observed
TP-1	43.642216	-114.26444	9	None observed
TP-2	43.641985	-114.26398	8	None observed
TP-3	43.642303	-114.26246	8	7 feet bgs
TP-4	43.642711	-114.26234	9	None observed
TP-5	43.642185	-114.26383	10	None observed
TP-6	43.64241	-114.26283	9	None observed
TP-7	43.642222	-114.26303	7.5	7.5 feet bgs
TP-8	43.642395	-114.26337	9	None observed

Nine soil samples were submitted to Strata, Inc. for textural analysis by ASTM C136/C136M-14, ASTM C117-17 and ASTM D7928-17. Results of the soil sample analysis are presented in Table 2 and laboratory data is provided in Attachment C.

Table 2: Laboratory Soil Sample Analysis Results

Sample ID	Sample Location	Depth (feet)	Textural Classification
TP-1-1.0-9.0'	TP-1	1.0-9.0	Silty Gravel with Sand
TP-2-0.0-2.0'	TP-2	0.0-2.0	Sandy Silt
TP-3-1.5-4.0'	TP-3	1.5-4.0	Gravel with Sand and Silt
TP-3-4.0-8.0'	TP-3	4.0-8.0	Gravel with Sand and Silt
TP-4-0.0-6.0'	TP-4	0.0-6.0	Silty Sand with Gravel
TP-4-6.0-9.0'	TP-4	6.0-9.0	Silty Sand with Gravel
TP-5-5-10.0'	TP-5	5.0-10.0'	Silty Sand with Gravel
TP-7-0.0-6.0'	TP-6	0.0-6.0	Silty Sand
TP-8-0.0-9.0'	TP-8	0.0-9.0	Silty Sand with Gravel

ASTM C136/C136M-14. Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates
ASTM C117-17. Standard Test Method for Materials Finer than 75-µm (No. 200) Sieve in Mineral Aggregates by Washing

The Natural Resource Conservation Services (NRCS) Web Soil Survey website was accessed to evaluate surficial soils at the Site. Four soil units are present in the test pit excavation area and are briefly described below. The approximate boundary of the soil units are presented on Figure 2.

Drage Gravelly Loam (Map Unit Symbol 28): Hydrologic Soil Group C, well drained, parent material is mixed alluvium, landforms are typically remnants of alluvial fans.

Marshdale-Bruneel Loam (Map Unit Symbol 72): Hydrologic Soil Group B/D, poorly drained, parent material is mixed alluvium, landforms are typically drainageways and flood plains.

Vitale-Povey Association (Map Unit Symbol 109): Hydrologic Soil Group C, well drained, parent material is Tephra and/or alluvium and/or colluvium over bedrock derived from welded tuff and/or rhyolite and/or quartz monzonite and/or sandstone and/or conglomerate and/or siltstone, landforms are typically mountain slopes.

Water (Map Unit Symbol 112): The NRCS Web Soil Survey depicts the LTP as water, which are estimates based on observations, descriptions, and transects of the map units.

This appendix summarizes a field investigation complete in 2018 as part of a feasiblity assessment for the Infiltration Ponds by Golder Associates, USA, under contract to the Idaho Deptartment of Lands. The results were not published at that time, but were summarized at the end of the project, and are presented here.

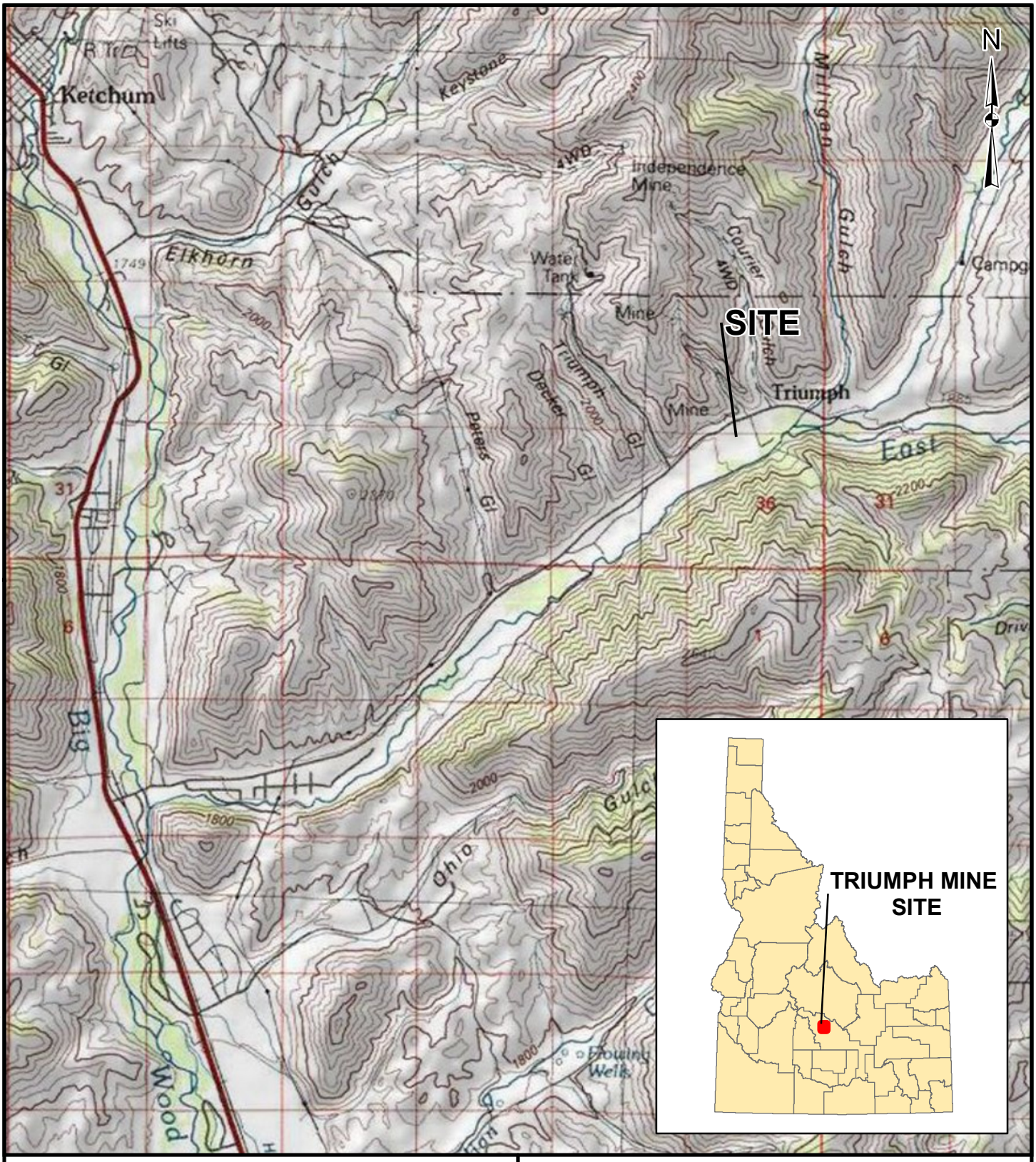
Small-scale test pits were also excavated adjacent to the large test pits on October 4, 2018 for open-pit falling head infiltration testing. Total excavation depths of the test pits used for infiltration testing ranged between 1.3 and 5.0 feet bgs (7.7 to 21.6 cubic feet). Following excavation, each small test pit was filled with potable water to at least 2 to 3 feet above the bottom of the test pit to allow for overnight saturation (presoak). A full 24-hour presoak period was not conducted because confining layers or significantly different soil types were not observed in the deeper test pit excavations.

On October 5, 2018, open-pit falling head infiltration testing was conducted in general accordance with the procedures outlined in the City of Boise Public Works Stormwater Design Manual. The open-pit falling head infiltration test method estimates the vertical and lateral infiltration rates of soils. Following the overnight presoak, the test pits were hand excavated with a shovel or gently with the track hoe to remove loose, unconsolidated material and to square-off the excavation. The test pit dimensions were measured and a graduated PVC pipe was placed in the middle of the test pit to allow for accurate readings during

Table 3: Falling Head Infiltration Test Data

Test Pit	Excavation Depth (feet)	Infiltration Rate (in/hr)	Infiltration Rate (cm/sec)
TP-1	2.7	4.2	$2.9x10^{-3}$
TP-2	1.3	2.5	$1.8x10^{-3}$
TP-3	4.7	11.4	$8.1x10^{-3}$
TP-4	2.2	2.3	$1.6x10^{-3}$
TP-5	5	2.9	$2.1x10^{-3}$
TP-6*	2.3	7	$5.0x10^{-3}$
TP-7	2.5	3	$2.1x10^{-3}$

Note: Infiltration rates shown are based on an average of the last 3 readings collected during testing.
* TP-6 was not presoaked – excavation advanced prior to testing



Miles

1 0.5 0 1 2 3

PROJECT

IDAHO DEPARTMENT OF LANDS
INFILTRATION BASIN FEASIBILITY ASSESSMENT

TITLE

VICINITY MAP

REFERENCES

1. Service Layer Credits: Copyright:© 2013 National Geographic Society, i-cubed
2. COORDINATE SYSTEM: WGS 1984 Web Mercator Auxiliary

GOLDER

PROJECT NO. 130123519			FILE No. 1402308_001_F01_REV0_IDL_LocationMap.mxd
DESIGN	JJ	10/19/2018	SCALE: AS SHOWN REV. 0
GIS	HJ	5/13/2014	
CHECK	JJ	10/19/2018	FIGURE 1
REVIEW	Jp	10/19/2018	

Map Document: H:\IdahoDeptofLands\TriumphMine\99_PROJECTS\1402308\QualityAssurancePlan\02_PRODUCTION\MXD\1402308_001_F01_REV0_IDL_LocationMap.mxd / Modified 5/13/2014 8:58:54 AM by HJackson / Exported 5/13/2014 8:59:48 AM by HJackson



LEGEND

- Test Pit / Falling Head Infiltration Test
- Approximate Extent of Lower Tailings Pile

Soil Map Unit Name

- Drage gravelly loam (Map Unit Symbol 28)
- Marshdale-Bruneel loams (Map Unit Symbol 72)
- Vitale-Povey association (Map Unit Symbol 109)
- Water (Map Unit Symbol 112) - as defined by NRCS (Lower Tailings Pile)

DRAFT

0 50 100 200
FEET

REFERENCE(S)

1. NRCS SOILS (2018): HTTPS://SOILSPACKAGE-USEAST.S3.AMAZONAWS.COM/2018/PACIFICNORTHWEST/BIGWOOD_17040219.MPK
2. COORDINATE SYSTEM: NAD 1983 STATEPLANE IDAHO CENTRAL FIPS 1102 FEET
3. SERVICE LAYER CREDITS: ESRI, HERE, DELORME, MAPMYINDIA, © OPENSTREETMAP

CLIENT
IDAHO DEPARTMENT OF LANDS

PROJECT
INFILTRATION BASIN FEASIBILITY ASSESSMENT
TRIUMPH, IDAHO

TITLE
TEST PIT AND INFILTRATION TEST LOCATIONS

CONSULTANT
GOLDER

YYYY-MM-DD	2018-10-26
DESIGNED	HJ
PREPARED	HJ
REVIEWED	JJ
APPROVED	-

PROJECT NO. 130123519 | REV. A | FIGURE 1

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

PATH: G:\Idaho_Dept_of_Lands\Triumph_Mine\99_PROJECTS\130123519\03_PRODUCTION\Proj\DocNo_Doc\Desc\MXD\Report\Rev\A\130123519_01_F01_TP_Locations.mxd



LEGEND

- Test Pit / Falling Head Infiltration Test
- Approximate Extent of Lower Tailings Pile

Soil Map Unit Name

- Drage gravelly loam
- Marshdale-Bruneel loams
- Vitale-Povey association
- Water - as defined by NRCS (Lower Tailings Pile)

DRAFT

0 50 100 200
FEET

REFERENCE(S)

1. NRCS SOILS (2018): HTTPS://SOILSPACKAGE-USEAST.S3.AMAZONAWS.COM/2018/PACIFICNORTHWEST/BIGWOOD_17040219.MPK
2. COORDINATE SYSTEM: NAD 1983 STATEPLANE IDAHO CENTRAL FIPS 1102 FEET
3. SERVICE LAYER CREDITS: ESRI, HERE, DELORME, MAPMYINDIA, © OPENSTREETMAP

CLIENT
IDAHO DEPARTMENT OF LANDS

PROJECT
INFILTRATION BASIN FEASIBILITY ASSESSMENT
TRIUMPH, IDAHO

TITLE
TEST PIT AND INFILTRATION TEST LOCATIONS

CONSULTANT
GOLDER

YYYY-MM-DD	2018-10-19
DESIGNED	HJ
PREPARED	HJ
REVIEWED	JJ
APPROVED	-

PROJECT NO. 130123519 | REV. A | FIGURE 1

PATH: G:\Idaho_Dept_of_Lands\Triumph_Mine\99_PROJECTS\130123519\03_PRODUCTION\[ProjDocNo_DocDesc]MXD\Report\Rev\A\130123519_01_F01_TP_Locations.mxd

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

DRAFT

GOLDER

TEST PIT LOG: TP-1

Date: 10/4/2018

Client: Idaho Department of Lands
Project: Triumph Mine Infiltration Assessment
Project No.: 130-123519
Engineer: Jeremy Jones
Contractor: Dahle Construction
Equipment: CAT 305E
Weather: 50ºF Rain
Google Earth (WGS 84): **Lat** 43.642216 **Long** -114.264438
Location: South of East Fork Road, west of Lower Tailings Pile

Notes: Begin 15:30
Finish 16:00
No groundwater observed

Samples:	Sample Type	Material Sampled
TP-1-1.0-9.0'	Composite	Silty Gravel with Sand

Lithology

Depth	***USCS***	***Description***
0-1	ML	*SANDY SILT; brown; dry; slightly plastic; some fine to coarse angular sand and gravel, trace weathered volcanic tuff, white, silt/sand texture, small black inclusions <2-3mm.*
1-9	GM	*SILTY GRAVEL with SAND; dark gray; moist; fine to coarse angular gravel; some fine to coarse angular sand; trace cobbles; fines are slightly plastic.*







DRAFT

GOLDER

TEST PIT LOG: TP-2

Date: 10/4/2018

Client: Idaho Department of Lands
Project: Triumph Mine Infiltration Assessment
Project No.: 130-123519
Engineer: Jeremy Jones
Contractor: Dahle Construction
Equipment: CAT 305E
Weather: 45ºF Rain
Google Earth (WGS 84): **Lat** 43.641985 **Long** -114.263980
Location: South of East Fork Road, west of Lower Tailings Pile

Notes: Begin 14:50
Finish 15:20
Groundwater observed at 6.5 feet

Samples:	Sample Type	Material Sampled
TP-2-0-2'	Composite	Sandy Silt

Lithology

Depth	***USCS***	***Description***
0-2	ML	*SANDY SILT; dark brown to reddish brown; moist; slightly plastic; some fine to coarse angular sand; trace angular fine to coarse gravel; trace decomposed organics*
2-8	MH	*CLAYEY SILT; dark gray; moist to wet; slightly plastic; mottling; some fine to coarse angular sand and gravel; trace highly weathered limestone?. Groundwater observed at 6.5 feet bgs, filled pit rapidly.*







DRAFT

GOLDER

TEST PIT LOG: TP-3

Date: 10/4/2018

Client: Idaho Department of Lands
Project: Triumph Mine Infiltration Assessment
Project No.: 130-123519
Engineer: Jeremy Jones
Contractor: Dahle Construction
Equipment: CAT 305E
Weather: 45ºF Rain
Google Earth (WGS 84): **Lat** 43.642303 **Long** -114.262459
Location: South of East Fork Road, west of Lower Tailings Pile

Notes: Begin 10:20
Finish 10:47
Groundwater observed at 7 feet

Samples:	Sample Type	Material Sampled
TP-3-1.5-4'	Composite	Gravel with Sand and Silt
TP-3-4.0-8.0'	Composite	Gravel with Sand and Silt

Lithology

Depth	***USCS***	***Description***
0-1.5	GM	*SILTY GRAVEL with SAND; light gray; dry; fine to coarse angular gravel; some fine to coarse angular sand; trace organics; fines are slightly plastic.*
1.5-8	GP	*GRAVEL WITH SAND AND SILT; grayish brown to light gray; moist-wet; fine to coarse; angular to subrounded gravel/cobbles; fine to coarse angular to subrounded sand; some silt. Grades to grayish brown are 4.0 feet. Groundwater observed at 7 feet.*









DRAFT

GOLDER

TEST PIT LOG: TP-4

Date: 10/4/2018

Client: Idaho Department of Lands
Project: Triumph Mine Infiltration Assessment
Project No.: 130-123519
Engineer: Jeremy Jones
Contractor: Dahle Construction
Equipment: CAT 305E
Weather: 50ºF Overcast
Google Earth (WGS 84): **Lat** 43.642711 **Long** -114.262343
Location: South of East Fork Road, west of Lower Tailings Pile

Notes: Begin 09:27
Finish 10:05
No groundwater observed

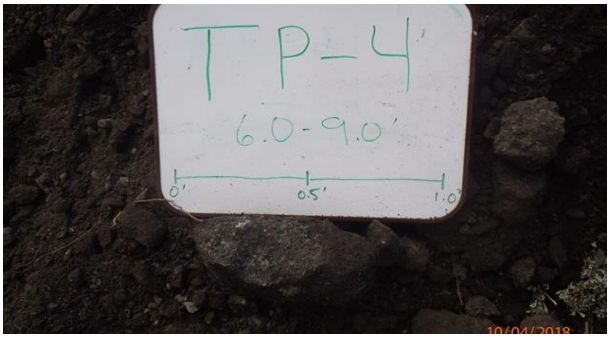
Samples:	Sample Type	Material Sampled
TP-4-0-6'	Composite	Silty Sand with Gravel
TP-4-6-9'	Composite	Silty Sand with Gravel

Lithology

Depth	***USCS***	***Description***
0-9	SM	*SILTY SAND with GRAVEL; dark gray; dry; fine to coarse angular sand; some fine to coarse angular gravel and cobbles; organics to 6 feet bgs; some white precipitate or weathering observed from 6-9 feet bgs. Increase sand at 6 feet bgs, becomes moist.*









DRAFT

GOLDER

TEST PIT LOG: TP-5

Date: 10/4/2018

Client: Idaho Department of Lands
Project: Triumph Mine Infiltration Assessment
Project No.: 130-123519
Engineer: Jeremy Jones
Contractor: Dahle Construction
Equipment: CAT 305E
Weather: 45ºF Rain
Google Earth (WGS 84): **Lat** 43.642185 **Long** -114.263826
Location: South of East Fork Road, west of Lower Tailings Pile

Notes: Begin 14:20
Finish 14:40
No groundwater observed

Samples:	Sample Type	Material Sampled
TP-5-5-10'	Composite	Silty Sand with Gravel

Lithology

Depth	***USCS***	***Description***
0-10	SM	*SILTY SAND with GRAVEL; gray; dry; fine to coarse angular sand; some fine to coarse angular gravel and cobbles; fines are slightly plastic; trace organics to 2.5 feet bgs. Becomes dark gray, moist at 5 feet bgs.*









DRAFT

GOLDER

TEST PIT LOG: TP-6

Date: 10/4/2018

Client: Idaho Department of Lands
Project: Triumph Mine Infiltration Assessment
Project No.: 130-123519
Engineer: Jeremy Jones
Contractor: Dahle Construction
Equipment: CAT 305E
Weather: 50ºF Overcast
Google Earth (WGS 84): **Lat** 43.642410 **Long** -114.262831
Location: South of East Fork Road, west of Lower Tailings Pile

Notes: Begin 11:50
Finish 12:20
No groundwater observed

Samples:	Sample Type	Material Sampled
None		

Lithology

Depth	***USCS***	***Description***
0-9	SM	*SILTY SAND with GRAVEL; light to dark gray; dry; fine to coarse angular sand; some fine to coarse angular gravel and cobbles; fines are slightly plastic; trace organics to 3.0 feet bgs. Slight increase in moisture with depth.*







DRAFT

GOLDER

TEST PIT LOG: TP-7

Date: 10/4/2018

Client: Idaho Department of Lands
Project: Triumph Mine Infiltration Assessment
Project No.: 130-123519
Engineer: Jeremy Jones
Contractor: Dahle Construction
Equipment: CAT 305E
Weather: 45ºF Rain
Google Earth (WGS 84): **Lat** 43.642222 **Long** -114.263030
Location: South of East Fork Road, west of Lower Tailings Pile

Notes: Begin 12:50
Finish 13:10
Groundwater observed at 7 feet

Samples:	Sample Type	Material Sampled
TP-7-0-6'	Composite	Silty Sand

Lithology

Depth	***USCS***	***Description***
0-6	SM	*SILTY SAND; light gray to gray; dry; fine to coarse angular sand; fines are slightly plastic; trace fine to coarse angular gravel and cobbles*
6-8	SM	*SILTY SAND with GRAVEL; dark gray; moist to wet; fine to coarse angular sand; some fine to coarse angular gravel and cobbles; fines are slightly plastic. Groundwater observed at 7.5 feet bgs.*





DRAFT

GOLDER

TEST PIT LOG: TP-8

Date: 10/4/2018

Client: Idaho Department of Lands
Project: Triumph Mine Infiltration Assessment
Project No.: 130-123519
Engineer: Jeremy Jones
Contractor: Dahle Construction
Equipment: CAT 305E
Weather: 45ºF Rain
Google Earth (WGS 84): **Lat** 43.642395 **Long** -114.263369
Location: South of East Fork Road, west of Lower Tailings Pile

Notes: Begin 13:45
Finish 14:05
No groundwater observed

Samples:	Sample Type	Material Sampled
TP-8-0-9'	Composite	Silty Sand with Gravel

Lithology

Depth	***USCS***	***Description***
0-9	SM	*SILTY SAND with GRAVEL; gray to dark gray; dry to moist; fine to coarse angular sand; some fine to coarse angular gravel and cobbles; fines are slightly plastic. Organics/roots to 2.5 feet bgs. Becomes dark gray and moist at 4 feet bgs.*







STRATA
A Professional Services Corporation
Integrity from the Ground Up

Laboratory Report

Project: Misc. Lab Testing

Project No.: BO18253A
Date: 10/12/2018
Tested By: NK

Client: Idaho Department of Lands

Sample Location: TP1-1.0-9.0"
Classification: Silty Gravel with Sand

Sample No.: BL1801237
Sampled by: Client
Date Sampled: N/A
Date Received: 10/4/2018

Standard Method of Test for Sieve Analysis of Fine and Coarse Aggregates
Standards: ASTM C 136, C 117, D 7928

Sieve Size	Metric	Percent Passing
21/2 "	62.5 mm	100
2"	50 mm	81
11/2"	37.5 mm	81
1"	25 mm	81
3/4"	19 mm	77
1/2"	12.5 mm	71
3/8"	9.5 mm	67
No. 4	4.75 mm	58
No. 8	2.36 mm	51
No. 16	1.18 mm	44
No. 30	0.60 mm	39
No. 50	0.30 mm	34
No. 100	0.150 mm	28
No. 200	0.075 mm	22.8
Hydrometer	0.02 mm	13.2

Reviewed By: _____
Keith Wildman
Soils Lab Coordinator

8653 West Hackamore Drive, Boise, Idaho 83709 Phone.208.376.8200 Fax.208.376.8201
www.stratageotech.com
©2015 Strata, A Professional Services Corporation. All Rights Reserved.

STRATA
A Professional Services Corporation
Integrity from the Ground Up

Laboratory Report

Project: Misc. Lab Testing

Project No.: BO18253A
Date: 10/12/2018
Tested By: NK

Client: Idaho Department of Lands

Sample Location: TP2-0.0-2.0
Classification: Sandy Silt

Sample No.: BL1801238
Sampled by: Client
Date Sampled: N/A
Date Received: 10/4/2018

Standard Method of Test for Sieve Analysis of Fine and Coarse Aggregates
Standards: ASTM C 136, C 117, D 7928

Sieve Size	Metric	Percent Passing
2"	50 mm	100
11/2"	37.5 mm	100
1"	25 mm	100
3/4"	19 mm	100
1/2"	12.5 mm	97
3/8"	9.5 mm	95
No. 4	4.75 mm	89
No. 8	2.36 mm	81
No. 16	1.18 mm	74
No. 30	0.60 mm	69
No. 50	0.30 mm	64
No. 100	0.150 mm	58
No. 200	0.075 mm	49.9
Hydrometer	0.02 mm	28.2

Reviewed By:
Keith Wildman
Soils Lab Coordinator

©2015 Strata, A Professional Services Corporation. All Rights Reserved.

STRATA
A Professional Services Corporation
Integrity from the Ground Up

Laboratory Report

Project: Misc. Lab Testing

Project No.: BO18253A
Date: 10/12/2018
Tested By: NK

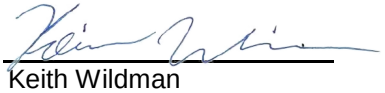
Client: Idaho Department of Lands

Sample Location: TP3-1.5-4.0
Classification: Gravel with Sand and Silt

Sample No.: BL1801239
Sampled by: Client
Date Sampled: N/A
Date Received: 10/4/2018

Standard Method of Test for Sieve Analysis of Fine and Coarse Aggregates
Standards: ASTM C 136, C 117, D 7928

Sieve Size	Metric	Percent Passing
3.0"	75 mm	100
2.5"	62.5 mm	88
2"	50 mm	88
11/2"	37.5 mm	78
1"	25 mm	72
3/4"	19 mm	63
1/2"	12.5 mm	58
3/8"	9.5 mm	53
No. 4	4.75 mm	42
No. 8	2.36 mm	33
No. 16	1.18 mm	26
No. 30	0.60 mm	20
No. 50	0.30 mm	14
No. 100	0.150 mm	11
No. 200	0.075 mm	9.3
Hydrometer	0.02 mm	6.3

Reviewed By: 
Keith Wildman
Soils Lab Coordinator

©2015 Strata, A Professional Services Corporation. All Rights Reserved.

STRATA
A Professional Services Corporation
Integrity from the Ground Up

Laboratory Report

Project: Misc. Lab Testing

Project No.: BO18253A
Date: 10/12/2018
Tested By: NK

Client: Idaho Department of Lands

Sample Location: TP3-4.0-8.0
Classification: Gravel with Sand and Silt

Sample No.: BL1801240
Sampled by: Client
Date Sampled: N/A
Date Received: 10/4/2018

Standard Method of Test for Sieve Analysis of Fine and Coarse Aggregates
Standards: ASTM C 136, C 117, D 7928

Sieve Size	Metric	Percent Passing
2"	50 mm	100
11/2"	37.5 mm	100
1"	25 mm	87
3/4"	19 mm	79
1/2"	12.5 mm	67
3/8"	9.5 mm	61
No. 4	4.75 mm	47
No. 8	2.36 mm	35
No. 16	1.18 mm	27
No. 30	0.60 mm	21
No. 50	0.30 mm	14
No. 100	0.150 mm	9
No. 200	0.075 mm	5.4
Hydrometer	0.02 mm	3.2

Reviewed By:
Keith Wildman
Soils Lab Coordinator

©2015 Strata, A Professional Services Corporation. All Rights Reserved.

STRATA
A Professional Services Corporation
Integrity from the Ground Up

Laboratory Report

Project: Misc. Lab Testing

Project No.: BO18253A
Date: 10/12/2018
Tested By: NK

Client: Idaho Department of Lands

Sample Location: TP4-0.0-6.0
Classification: Silty Sand with Gravel

Sample No.: BL1801241
Sampled by: Client
Date Sampled: N/A
Date Received: 10/4/2018

Standard Method of Test for Sieve Analysis of Fine and Coarse Aggregates
Standards: ASTM C 136, C 117, D 7928

Sieve Size	Metric	Percent Passing
3.0"	75 mm	100
2.5"	62.5 mm	90
2"	50 mm	90
11/2"	37.5 mm	90
1"	25 mm	89
3/4"	19 mm	88
1/2"	12.5 mm	84
3/8"	9.5 mm	82
No. 4	4.75 mm	72
No. 8	2.36 mm	65
No. 16	1.18 mm	58
No. 30	0.60 mm	52
No. 50	0.30 mm	46
No. 100	0.150 mm	39
No. 200	0.075 mm	30.5
Hydrometer	0.02 mm	20.1

Reviewed By: _____
Keith Wildman
Soils Lab Coordinator

©2015 Strata, A Professional Services Corporation. All Rights Reserved.

STRATA
A Professional Services Corporation
Integrity from the Ground Up

Laboratory Report

Project: Misc. Lab Testing

Project No.: BO18253A
Date: 10/12/2018
Tested By: NK

Client: Idaho Department of Lands

Sample Location: TP4-6.0-9.0
Classification: Silty Sand with Gravel

Sample No.: BL1801242
Sampled by: Client
Date Sampled: N/A
Date Received: 10/4/2018

Standard Method of Test for Sieve Analysis of Fine and Coarse Aggregates
Standards: ASTM C 136, C 117, D 7928

Sieve Size	Metric	Percent Passing
2"	50 mm	100
11/2"	37.5 mm	98
1"	25 mm	93
3/4"	19 mm	88
1/2"	12.5 mm	80
3/8"	9.5 mm	76
No. 4	4.75 mm	62
No. 8	2.36 mm	49
No. 16	1.18 mm	39
No. 30	0.60 mm	31
No. 50	0.30 mm	26
No. 100	0.150 mm	22
No. 200	0.075 mm	16.9
Hydrometer	0.02 mm	9.1

Reviewed By:
Keith Wildman
Soils Lab Coordinator

©2015 Strata, A Professional Services Corporation. All Rights Reserved.

STRATA
A Professional Services Corporation
Integrity from the Ground Up

Laboratory Report

Project: Misc. Lab Testing

Project No.: BO18253A
Date: 10/12/2018
Tested By: NK

Client: Idaho Department of Lands

Sample Location: TP5-5.0-10.0
Classification: Silty Sand with Gravel

Sample No.: BL1801243
Sampled by: Client
Date Sampled: N/A
Date Received: 10/4/2018

Standard Method of Test for Sieve Analysis of Fine and Coarse Aggregates
Standards: ASTM C 136, C 117, D 7928

Sieve Size	Metric	Percent Passing
2"	50 mm	100
11/2"	37.5 mm	96
1"	25 mm	94
3/4"	19 mm	88
1/2"	12.5 mm	80
3/8"	9.5 mm	75
No. 4	4.75 mm	65
No. 8	2.36 mm	56
No. 16	1.18 mm	48
No. 30	0.60 mm	41
No. 50	0.30 mm	35
No. 100	0.150 mm	30
No. 200	0.075 mm	25.9
Hydrometer	0.02 mm	14.0

Reviewed By: _____
Keith Wildman
Soils Lab Coordinator

©2015 Strata, A Professional Services Corporation. All Rights Reserved.

STRATA
A Professional Services Corporation
Integrity from the Ground Up

Laboratory Report

Project: Misc. Lab Testing

Project No.: BO18253A
Date: 10/12/2018
Tested By: NK

Client: Idaho Department of Lands

Sample Location: TP7-0.0-6.0
Classification: Silty Sand

Sample No.: BL1801244
Sampled by: Client
Date Sampled: N/A
Date Received: 10/4/2018

Standard Method of Test for Sieve Analysis of Fine and Coarse Aggregates
Standards: ASTM C 136, C 117, D 7928

Sieve Size	Metric	Percent Passing
2"	50 mm	100
11/2"	37.5 mm	100
1"	25 mm	100
3/4"	19 mm	97
1/2"	12.5 mm	95
3/8"	9.5 mm	93
No. 4	4.75 mm	87
No. 8	2.36 mm	82
No. 16	1.18 mm	77
No. 30	0.60 mm	72
No. 50	0.30 mm	65
No. 100	0.150 mm	58
No. 200	0.075 mm	47.1
Hydrometer	0.02 mm	31.3

Reviewed By:
Keith Wildman
Soils Lab Coordinator

©2015 Strata, A Professional Services Corporation. All Rights Reserved.

STRATA
A Professional Services Corporation
Integrity from the Ground Up

Laboratory Report

Project: Misc. Lab Testing

Project No.: BO18253A
Date: 10/12/2018
Tested By: NK

Client: Idaho Department of Lands

Sample Location: TP8-0.0-9.0
Classification: Silty Sand with Gravel

Sample No.: BL1801245
Sampled by: Client
Date Sampled: N/A
Date Received: 10/4/2018

Standard Method of Test for Sieve Analysis of Fine and Coarse Aggregates
Standards: ASTM C 136, C 117, D 7928

Sieve Size	Metric	Percent Passing
2"	50 mm	100
11/2"	37.5 mm	94
1"	25 mm	89
3/4"	19 mm	86
1/2"	12.5 mm	80
3/8"	9.5 mm	76
No. 4	4.75 mm	66
No. 8	2.36 mm	58
No. 16	1.18 mm	52
No. 30	0.60 mm	48
No. 50	0.30 mm	43
No. 100	0.150 mm	38
No. 200	0.075 mm	32.1
Hydrometer	0.02 mm	19.1

Reviewed By: _____
Keith Wildman
Soils Lab Coordinator

©2015 Strata, A Professional Services Corporation. All Rights Reserved.

Blaine County Area, Idaho

72—Marshdale-Bruneel loams, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2nl1
Elevation: 4,800 to 6,000 feet
Mean annual precipitation: 12 to 16 inches
Mean annual air temperature: 43 degrees F
Frost-free period: 60 to 100 days
Farmland classification: Prime farmland if irrigated and either protected from flooding or not frequently flooded during the growing season

Map Unit Composition

Marshdale and similar soils: 50 percent
Bruneel and similar soils: 30 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Marshdale

Setting

Landform: Drainageways, flood plains
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Mixed alluvium

Typical profile

A - 0 to 27 inches: loam
Cg1 - 27 to 50 inches: loam
2Cg2 - 50 to 62 inches: gravelly coarse sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 2.00 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: Frequent
Frequency of ponding: None
Calcium carbonate, maximum in profile: 5 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: High (about 9.0 inches)

Interpretive groups

Land capability classification (irrigated): 5w
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: B/D

Ecological site: MEADOW DECA18-CANE2 (R010AY027ID)
Hydric soil rating: Yes

Description of Bruneel

Setting

Landform: Flood plains
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Mixed alluvium

Typical profile

A - 0 to 14 inches: loam
Bg - 14 to 23 inches: loam
2Cg1 - 23 to 27 inches: very gravelly loamy sand
2Cg2 - 27 to 61 inches: extremely gravelly coarse sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 2.00 in/hr)
Depth to water table: About 12 to 18 inches
Frequency of flooding: Occasional
Frequency of ponding: None
Calcium carbonate, maximum in profile: 10 percent
Available water storage in profile: Low (about 5.2 inches)

Interpretive groups

Land capability classification (irrigated): 5w
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: B/D
Ecological site: WET MEADOW CAREX-JUNCUS (R010AY039ID)
Hydric soil rating: Yes

Minor Components

Riverwash

Percent of map unit: 5 percent
Landform: Flood plains
Hydric soil rating: Yes

Bruneel, gravelly surface

Percent of map unit: 5 percent
Landform: Flood plains
Ecological site: DRY MEADOW 8-15 PONE3-PHAL2 (R010AY028ID)

Hydric soil rating: Yes

Data Source Information

Soil Survey Area: Blaine County Area, Idaho
Survey Area Data: Version 15, Sep 14, 2018

Blaine County Area, Idaho

28—Drage gravelly loam, 4 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2njg
Elevation: 4,800 to 6,100 feet
Mean annual precipitation: 12 to 16 inches
Mean annual air temperature: 39 to 45 degrees F
Frost-free period: 60 to 90 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Drage and similar soils: 90 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Drage

Setting

Landform: Fan remnants
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Mixed alluvium

Typical profile

AB - 0 to 14 inches: gravelly loam
Bt - 14 to 30 inches: very gravelly clay loam
Bk - 30 to 61 inches: extremely gravelly sandy loam

Properties and qualities

Slope: 4 to 8 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 30 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 5.0
Available water storage in profile: Low (about 4.6 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: C
Ecological site: SANDY LOAM 12-16 - Provisional (R010AY022ID)

Hydric soil rating: No

Data Source Information

Soil Survey Area: Blaine County Area, Idaho
Survey Area Data: Version 15, Sep 14, 2018

Blaine County Area, Idaho

11—Bickett mucky peat, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2nhs
Elevation: 4,700 to 5,500 feet
Mean annual precipitation: 12 to 16 inches
Mean annual air temperature: 39 to 45 degrees F
Frost-free period: 60 to 100 days
Farmland classification: Prime farmland if irrigated and either protected from flooding or not frequently flooded during the growing season

Map Unit Composition

Bickett and similar soils: 95 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Bickett

Setting

Landform: Flood plains
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Herbaceous organic material over silty alluvium

Typical profile

Oek - 0 to 6 inches: mucky peat
Oak - 6 to 11 inches: muck
2Bkg - 11 to 40 inches: silty clay loam
3Cg - 40 to 61 inches: loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Very poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: Frequent
Frequency of ponding: Frequent
Calcium carbonate, maximum in profile: 30 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Very high (about 14.1 inches)

Interpretive groups

Land capability classification (irrigated): 5w
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: C/D

Ecological site: MEADOW DECA18-CANE2 (R010AY027ID)
Hydric soil rating: Yes

Minor Components

Hapur
Percent of map unit: 5 percent
Landform: Flood plains
Ecological site: MEADOW DECA18-CANE2 (R010AY027ID)
Hydric soil rating: Yes

Data Source Information

Soil Survey Area: Blaine County Area, Idaho
Survey Area Data: Version 15, Sep 14, 2018

Blaine County Area, Idaho

8—Balaam-Adamson-Riverwash complex, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2nl9
Elevation: 4,800 to 6,100 feet
Mean annual precipitation: 12 to 18 inches
Mean annual air temperature: 39 to 45 degrees F
Frost-free period: 60 to 100 days
Farmland classification: Not prime farmland

Map Unit Composition

Balaam and similar soils: 35 percent
Adamson and similar soils: 25 percent
Riverwash: 20 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Balaam

Setting

Landform: Flood plains
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Mixed alluvium

Typical profile

A - 0 to 10 inches: gravelly sandy loam
2Bw - 10 to 17 inches: very gravelly sandy loam
3Bk - 17 to 60 inches: extremely cobbly coarse sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Somewhat excessively drained
Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 in/hr)
Depth to water table: About 60 inches
Frequency of flooding: Occasional
Frequency of ponding: None
Calcium carbonate, maximum in profile: 2 percent
Available water storage in profile: Very low (about 2.2 inches)

Interpretive groups

Land capability classification (irrigated): 3w
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: A
Hydric soil rating: No

Description of Adamson

Setting

Landform: Flood plains
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Mixed alluvium

Typical profile

A - 0 to 19 inches: loam
Bw - 19 to 28 inches: fine sandy loam
2Bk - 28 to 61 inches: very gravelly coarse sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 2.00 in/hr)
Depth to water table: About 48 inches
Frequency of flooding: Occasional
Frequency of ponding: None
Calcium carbonate, maximum in profile: 5 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Moderate (about 6.0 inches)

Interpretive groups

Land capability classification (irrigated): 4c
Land capability classification (nonirrigated): 4c
Hydrologic Soil Group: B
Hydric soil rating: No

Description of Riverwash

Setting

Landform: Flood plains

Typical profile

C - 0 to 60 inches: stratified sand to gravel

Properties and qualities

Slope: 0 to 2 percent
Depth to water table: About 0 to 24 inches
Frequency of flooding: Frequent

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8
Hydric soil rating: Yes

Minor Components

Bruneel

Percent of map unit: 10 percent

Landform: Depressions
Ecological site: DRY MEADOW 8-15 PONE3-PHAL2 (R010AY028ID)
Hydric soil rating: Yes

Data Source Information

Soil Survey Area: Blaine County Area, Idaho
Survey Area Data: Version 15, Sep 14, 2018

APPENDIX C

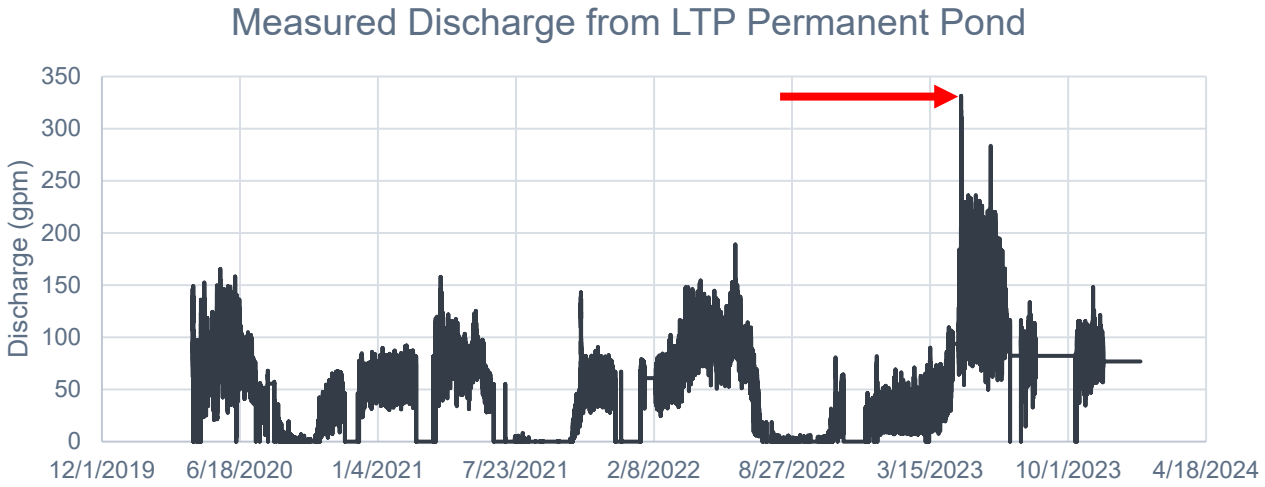
Design Inflow Rate Analysis

Infiltration Gallery Hydrologic Design, Triumph Mine

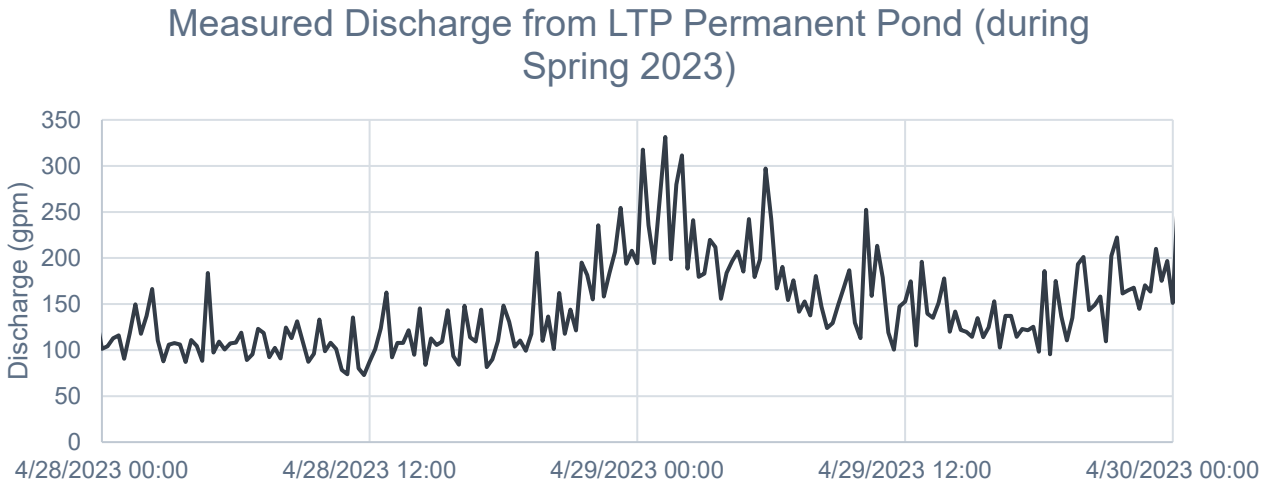


Kate DaPolito, EIT, Geological Engineer

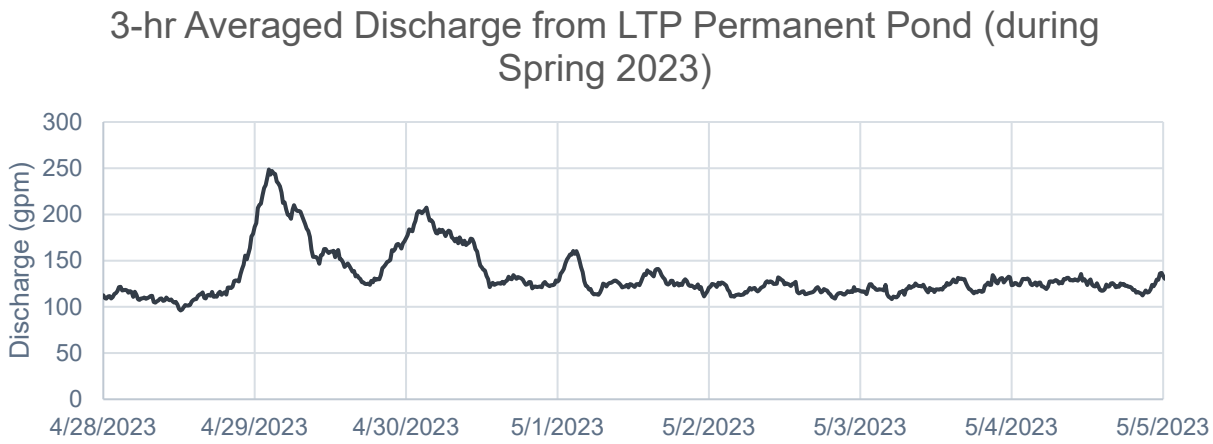
DRAFT – For Information Purposes Only



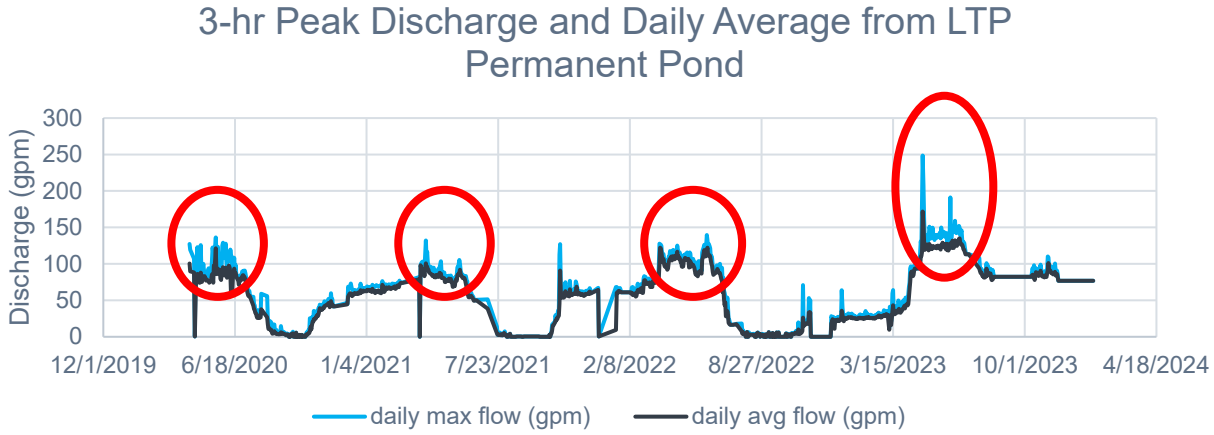
- Measured discharge provided by IDEQ
- From April 10, 2020 through January 13, 2024
- Measured discharge from lower tailings pile (LTP) permanent pond



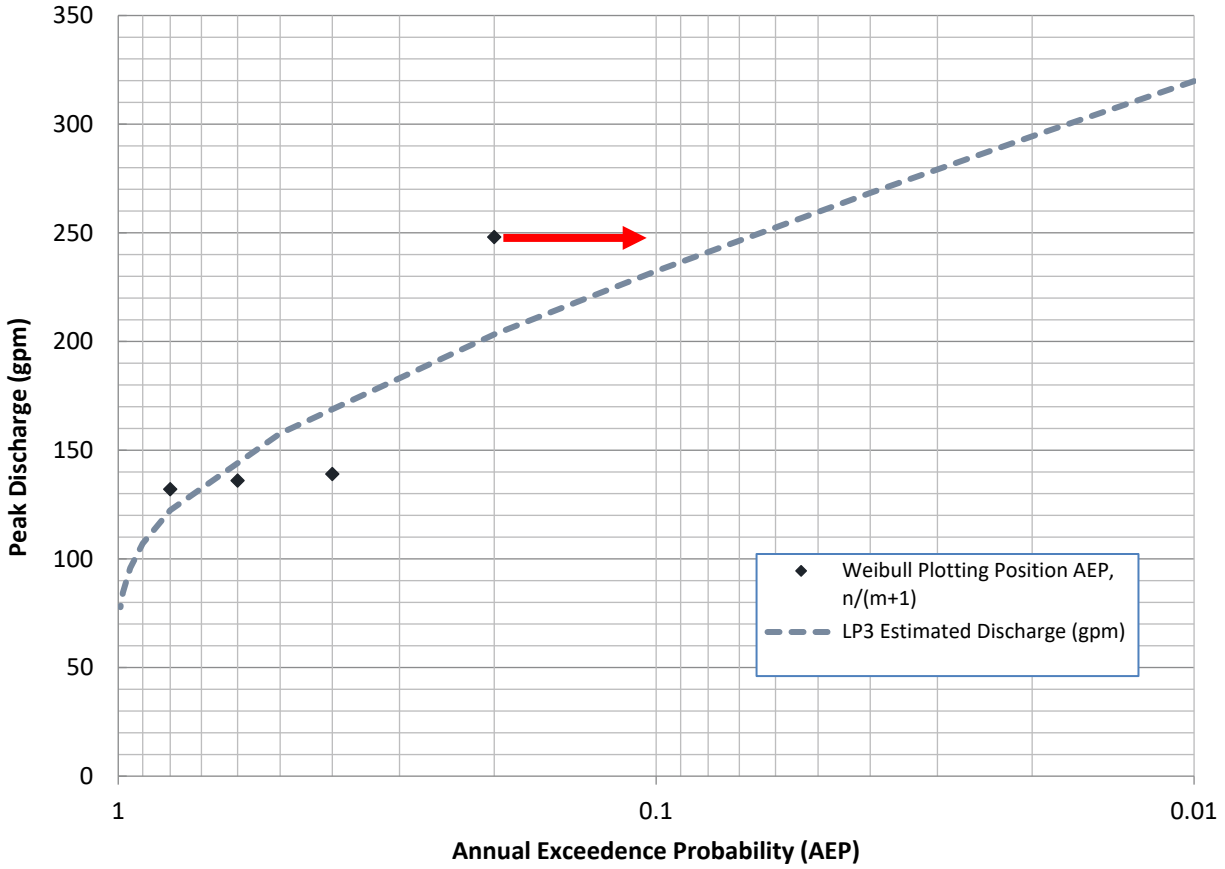
- Close up of measured discharge from April 28, 2023 through April 30, 2023
- Fluctuating measurements assumed to be a result of instrument error



- Mitigated errors by creating a new data set with 3-hr averaged discharges
- Peak discharge reduced from 331 gpm to 248 gpm



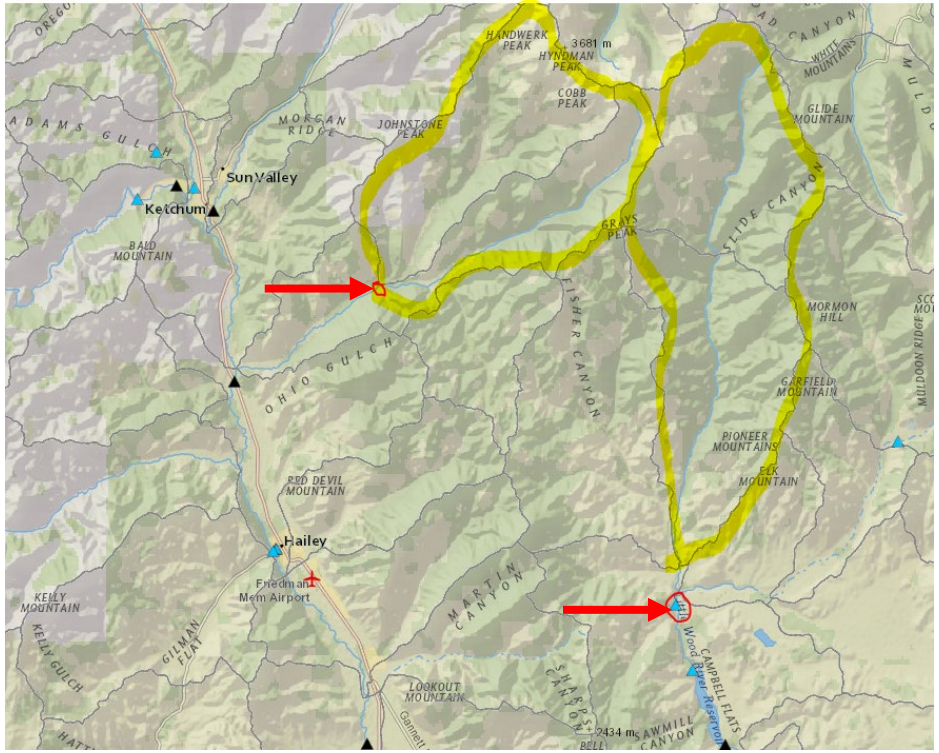
- 3-hr average data set shows annual peak discharge occurring in the spring (associated with snowmelt)
  - May 20, 2020; 136 gpm
  - April 4, 2021; 132 gpm
  - June 5, 2022; 139 gpm
  - April 29, 2023; 248 gpm

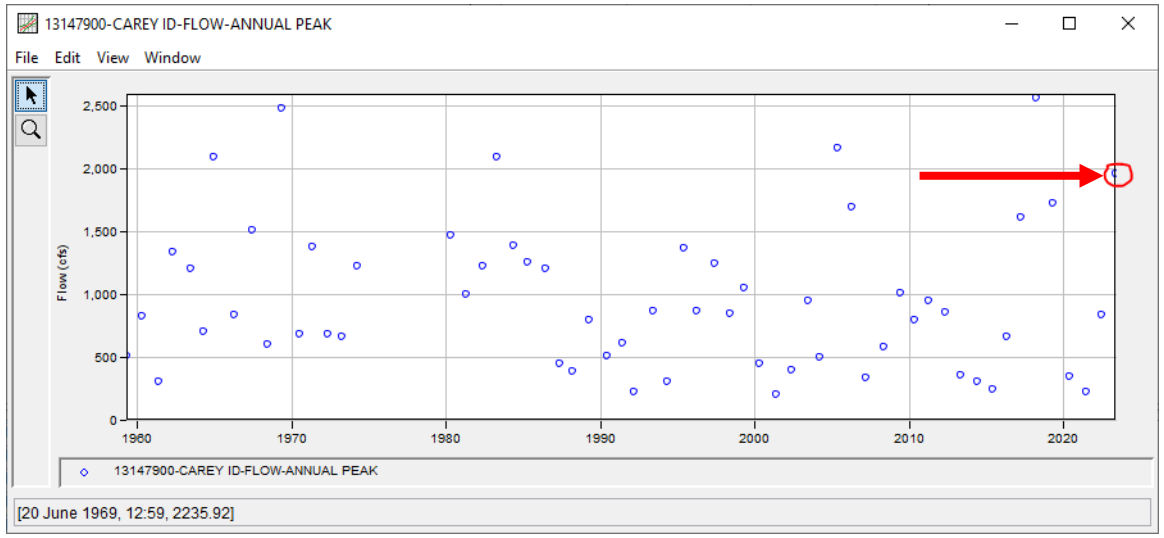


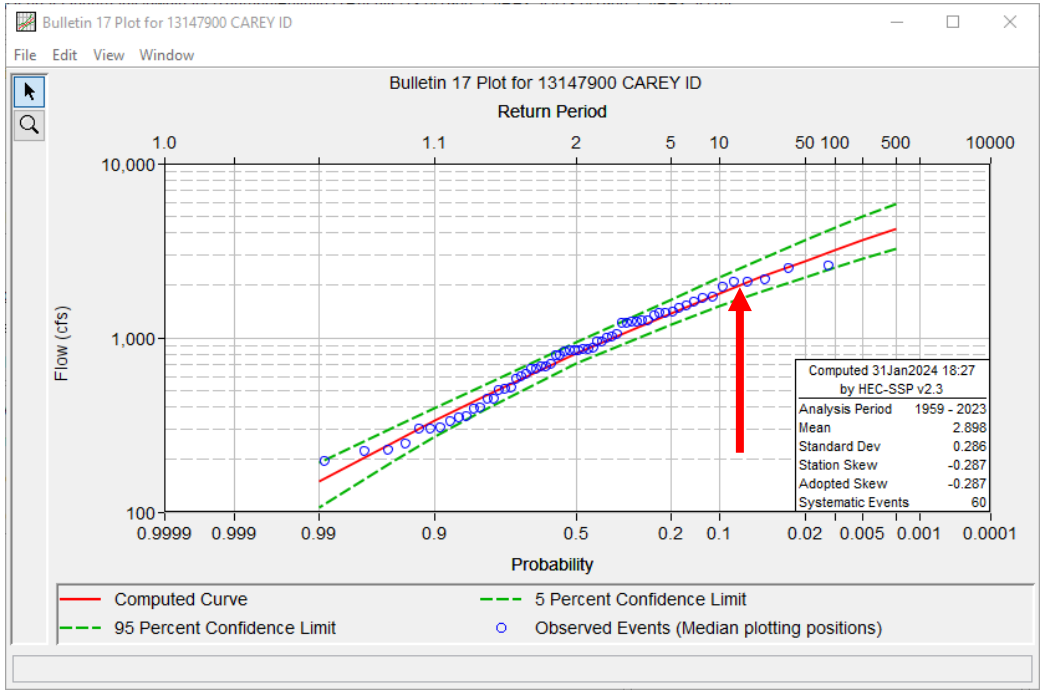
- Applied a Log-Pearson Type 3 statistical distribution to the four annual peak discharges
- The 2023 peak discharge (248 gpm) is between a 10- and 25-year event

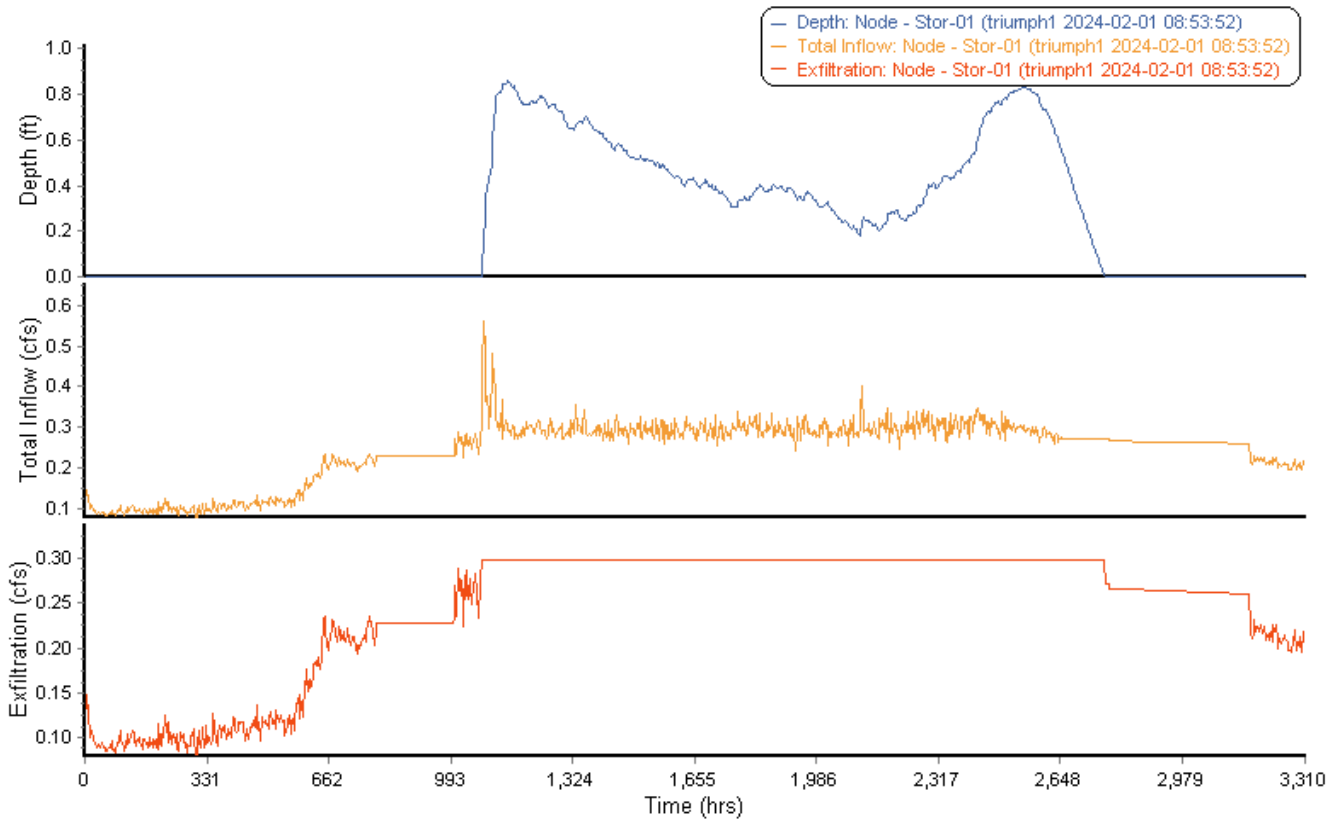
Return Period (years)	Peak Discharge (gpm)
2	158
5	203
10	232
25	268
50	294
100	320

- Compare the 2023 peak discharge event to near by stream gauge data with longer period of record (Little Wood River in Carey, ID)
- Results confirm 2023 peak discharge is between a 10- and 25-year event

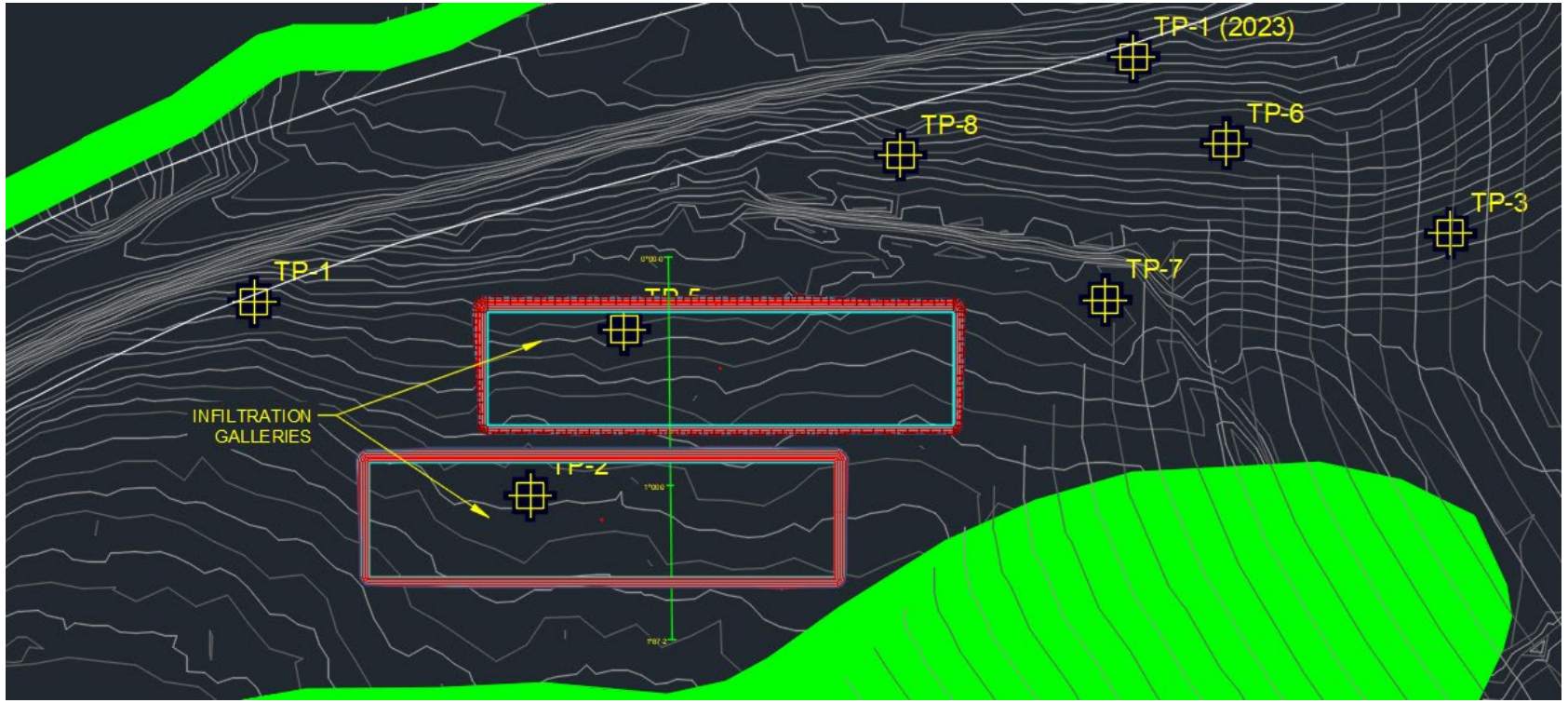


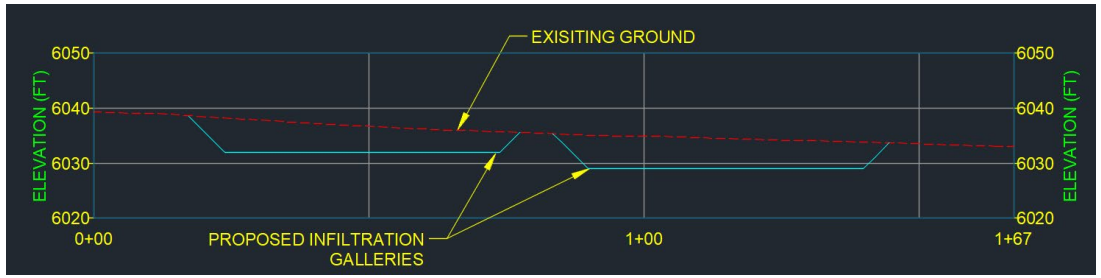






- Created a hydrologic model of the proposed infiltration gallery
- Model inputs
  - Dates range from March 15, 2023 through July 31, 2023 (approximately 10-year event)
  - Discharge from the LTP Permanent Pond plus the measured discharge from the Surge Pond (9 gpm)
  - Infiltration rate of 0.63 in/hr (includes correction factors)
  - Results in 20,400 sq. ft. infiltration gallery bed area





- Updated preliminary design as an infiltration gallery
- Next steps
  - Design return period and corresponding inflow rate
  - Offset from county road ROW and wetland
  - Infiltration method (gallery vs pond)
  - Pre-treatment requirements
  - Refine design layout

Thank you

DRAFT – For Information Purposes Only

wsp.com

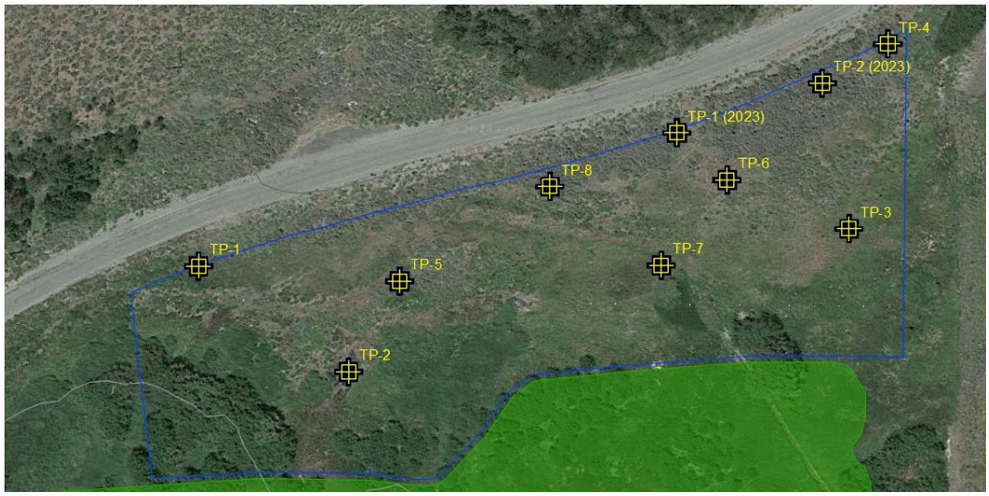
APPENDIX D

Design Infiltration Rate Analysis

Triumph Mine Infiltration Rate Analysis Summary

Alta / Triumph Mine Infiltration Rate Analysis
Project #: 31407131.002
Prepared by: CJC 12/29/2023
Reviewed by: SJS 1/11/2024

Test Pit Locations



Infiltration Rate Summary Table

Test Pit Designation	Grain Size Distribution (in/hr)	Double Ring Infiltrometer (in/hr)	Falling Head (in/hr)	Infiltration Test Depth (ft)	Test Pit Floor Elevation (ft)
TP3-1.5-4.0	9.20		10.29	4.7	6036.4
TP3-4.0-8.0	38.29				
TP4-0.0-6.0	1.52				
TP4-6.0-9.0	11.61		2.00	2.2	6046.9
TP-6			6.55	2.3	6042.6
TP7-0.0-6.0	3.43		2.88	2.5	6035.6
TP8-0.0-9.0	4.25		3.13	2.9	6040.8
TP1-3.75 (2023)	2.57	3.70		3.75	6045.5
TP2-3.25 (2023)	10.76	2.20		3.25	6047.6
Average	**10.20**	**2.95**	**4.97**		
Median	**6.73**	**2.95**	**3.13**		
Geometric Mean	**6.31**	**2.85**	**4.14**		

Correction Factors

CFv	1	Site Variability and Number of Locations Tested, Assumed (Ecology 2019)
CFt	0.4	Uncertainty of Test Method - Grain Size Method/ Double Ring Infiltrometer (Ecology 2019)
CFm	1	Degree of Influent Control to Prevent Siltation and Bio-Buildup (Ecology 2019)
CFt	**0.4**	Total Correction Factor (Ecology 2019)

Results

Estimated Infiltration rate; based on average of Double Ring Infiltrometer Test (in/hr)	**3.0**
Corrected Infiltration rate (in/hr)	**1.2**
Factor of Safety	**2.5**

APPENDIX E

Hydrologic Model Results

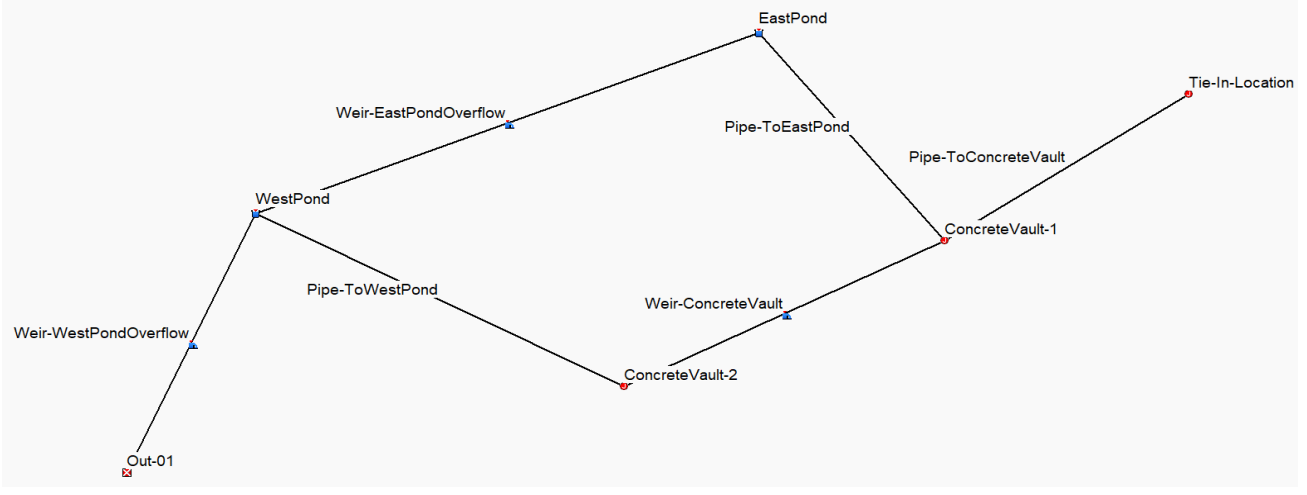


Figure 1. SSA model schematic.

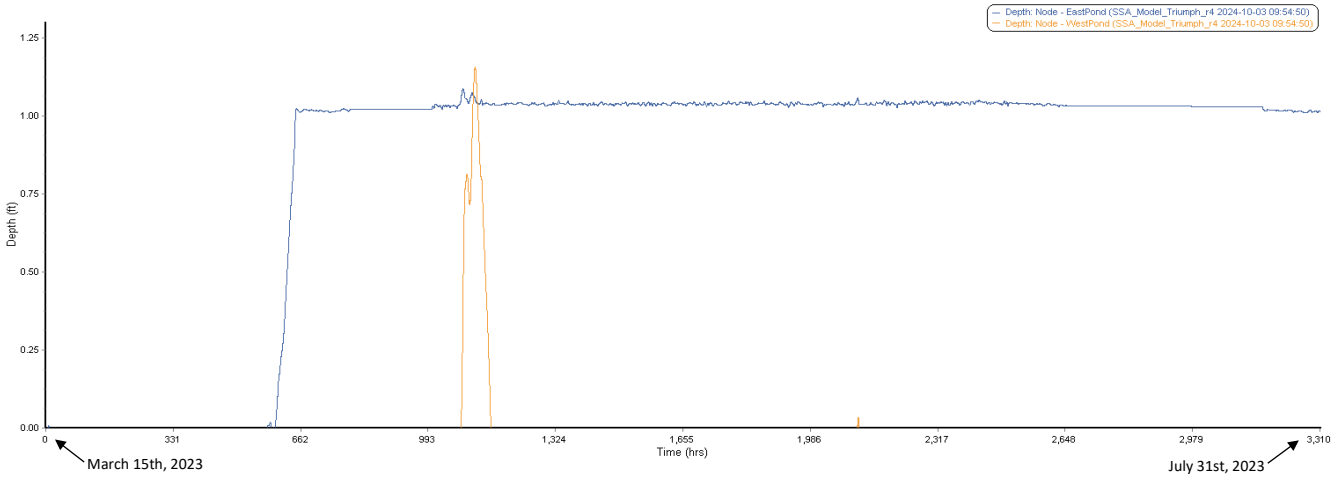


Figure 2. Depth vs. time results for the east and west infiltration ponds.

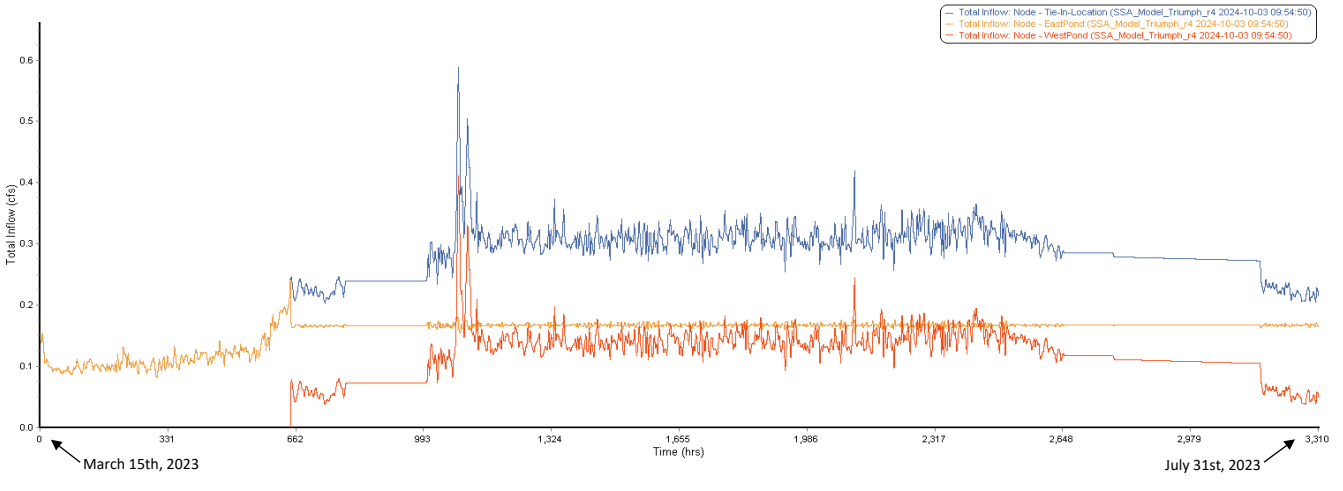


Figure 3. Total inflow vs. time results for the tie-in location and the east and west infiltration ponds.

APPENDIX F

Spillway and Rock Lined Channel Calculations

Spillway Weir Calculations - West Pond to Existing Ground

Triumph Mine Infiltration Pond Design
Project #: 31407131.002
Prepared by: KMD 1/17/2025
Reviewed by: SJS 1/17/2025

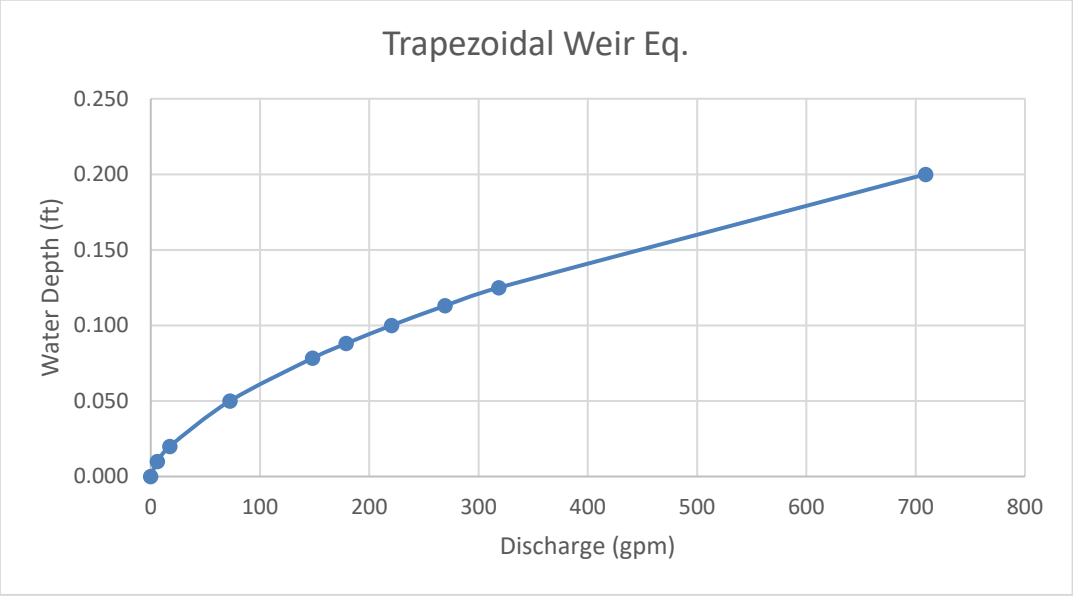
Estimated Outlet Rating Curve based on trapezoidal outlet channel

$$Q_{100} = C\,(2g)^{1/2}\left[\frac{2}{3}LH^{3/2} + \frac{8}{15}(\mathrm{Tan}\,\theta)\,H^{5/2}\right]$$

L, length (ft)	5
sideslope (xH:1V, Tan theta)	10
c	0.5
equivalent weir coefficient, K	2.67

Event	Peak Flow (gpm)
10-yr	232
2023	248
25-yr	268
100-yr	320

Approx. Event	Headwater (ft)	Discharge (cfs)	Discharge (gpm)
	0.000	0.00	0
	0.010	0.01	6
	0.020	0.04	18
	0.050	0.16	73
	0.078	0.33	148
	0.088	0.40	179
	0.100	0.49	220
25-yr	0.113	0.60	269
100-yr	0.125	0.71	318
	0.200	1.58	709



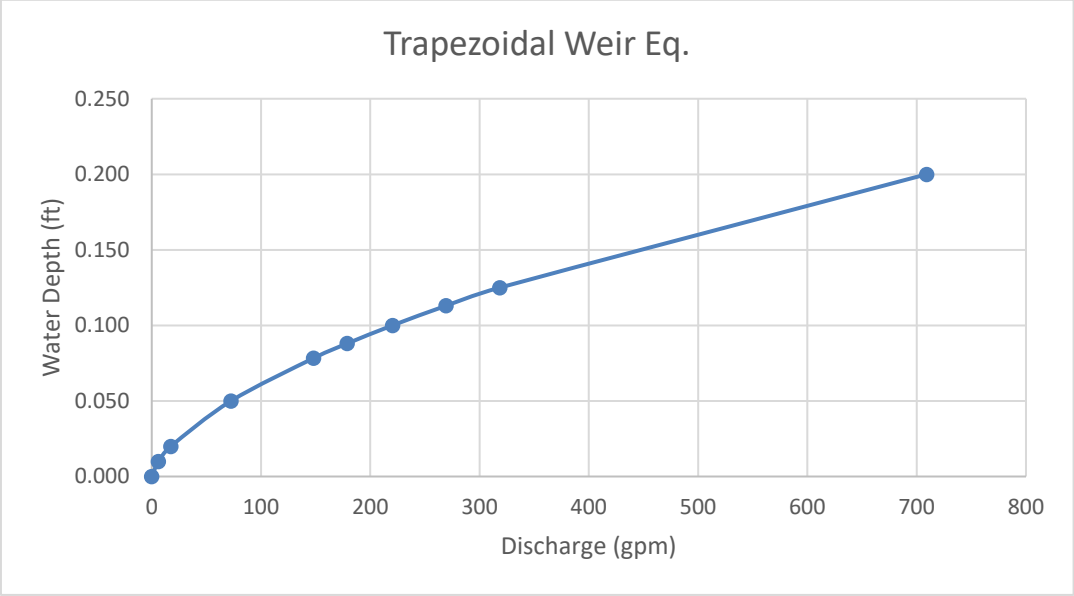
Estimated Outlet Rating Curve based on trapezoidal outlet channel

$$Q_{100} = C\,(2g)^{1/2}\left[\frac{2}{3}LH^{3/2} + \frac{8}{15}(\mathrm{Tan}\,\theta)\,H^{5/2}\right]$$

L, length (ft)	5
sideslope (xH:1V, Tan theta)	3
c	0.5
equivalent weir coefficient, K	2.67

Event	Peak Flow (gpm)
10-yr	232
2023	248
25-yr	268
100-yr	320

Approx. Event	Headwater (ft)	Discharge (cfs)	Discharge (gpm)
	0.000	0.00	0
	0.010	0.01	6
	0.020	0.04	17
	0.050	0.15	69
	0.078	0.30	137
	0.088	0.36	163
	0.100	0.44	199
25-yr	0.121	0.60	267
100-yr	0.136	0.71	321
	0.200	1.31	589



Riprap Lined Rock Chute Calculations - West Pond to Existing Ground

Triumph Mine Infiltration Pond Design
Project #: 31407131.002
Prepared by: KMD 1/17/2025
Reviewed by: SJS 1/17/2025

Reference: Robinson, Rice, Kadavy. 1998. *Design of Rock Chutes*. ASAE.

Input Data

discharge, cfs	0.712695
base width, ft	5
slope, ft/ft	0.33
side slope, xH:1V	3
n (initial estimate, iterate to match calc'd below)	0.044
np, porosity	0.4
g, gravity, ft/s²	32.2
K'	4
SF, rock size safety factor	1.4

Calculate Surface Flow Regime (conservatively assume no subsurface flow)

normal depth (based on Manning's Eq.), ft	0.05
area (based on normal depth), sf	0.3
top width (based on normal depth), ft	5.31
average width, ft	5.16
velocity (Q=V/A), fps	2.7
critical depth (watertools.xla), ft	0.08
froude no. (watertools.xla)	2.1
flow regime	supercritical
unit discharge (discharge/average width), cfs/ft	0.14

Estimate rock size

$q = 9.76E-7\ D_{50}^{1.89}\ S_o^{-1.50}$ $\quad S_o < 0.10$

$q = 8.07E-6\ D_{50}^{1.89}\ S_o^{-0.58}$ $\quad 0.10 \le S_o \le 0.40$

D_{50} (s<0.1), mm	63
D_{50} (s>0.1), mm	35
D_{50} x SF, mm	48
D_{50} x SF, in	1.9

Caculate Manning's roughness coefficient

$n = 0.0292\ (D_{50}\ S_o)^{0.147}$

n, based on equation	0.044

Calculate percent subsurface flow

Check initial condition. For long-term condition assume sediment will fill void space of rock.

$$V_m = n_p \left(\frac{S_o g D}{K'}\right)^{1/2}$$

Vm, velocity within rock, ft/s	0.26
Riprap thickness factor	1.00
Riprap thickness, factor*D50, ft	2
qm, unit flow in mantle, ft3/s/ft	0.04
Percent subsurface flow	29%
Liner thickness (factor*D_{50}), in	2

Minimum Channel Depth

d, (normal depth), ft	0.05
Freeboard, ft	0.50
Lined channel depth, ft	0.55

Reference: Robinson, Rice, Kadavy. 1998. *Design of Rock Chutes*. ASAE.

Input Data

discharge, cfs	0.712695
base width, ft	5
slope, ft/ft	0.50
side slope, xH:1V	3
n (initial estimate, iterate to match calc'd below)	0.047
np, porosity	0.4
g, gravity, ft/s²	32.2
K'	4
SF, rock size safety factor	1.4

Calculate Surface Flow Regime (conservatively assume no subsurface flow)

normal depth (based on Manning's Eq.), ft	0.05
area (based on normal depth), sf	0.2
top width (based on normal depth), ft	5.29
average width, ft	5.14
velocity (Q=V/A), fps	2.9
critical depth (watertools.xla), ft	0.08
froude no. (watertools.xla)	2.4
flow regime	supercritical
unit discharge (discharge/average width), cfs/ft	0.14

Estimate rock size

$q = 9.76E-7\ D_{50}^{1.89}\ S_o^{-1.50}$ $\quad S_o < 0.10$

$q = 8.07E-6\ D_{50}^{1.89}\ S_o^{-0.58}$ $\quad 0.10 \le S_o \le 0.40$

D_{50} (s<0.1), mm	87
D_{50} (s>0.1), mm	40
D_{50} x SF, mm	54
D_{50} x SF, in	2.1

Caculate Manning's roughness coefficient

$n = 0.0292\ (D_{50}\ S_o)^{0.147}$

n, based on equation	0.047

Calculate percent subsurface flow

Check initial condition. For long-term condition assume sediment will fill void space of rock.

$$V_m = n_p \left(\frac{S_o g D}{K'}\right)^{1/2}$$

Vm, velocity within rock, ft/s	0.34
Riprap thickness factor	1.00
Riprap thickness, factor*D50, ft	2
qm, unit flow in mantle, ft3/s/ft	0.06
Percent subsurface flow	43%
Liner thickness (factor*D_{50}), in	2

Minimum Channel Depth

d, (normal depth), ft	0.05
Freeboard, ft	0.50
Lined channel depth, ft	0.55

APPENDIX G

Permitting Matrix

Triumph Mine Permit Requirements

Permit Name and Description	Permitting Agency & Contact Info	WSP Determination of Necessity	Supporting Documents and Preliminary Assessments Required	Permitting Agency Review Timeline	Fees	Public Notice Requirement	Appeals
Federal							
Clean Water Act (CWA) Nationwide Permit (NWP) 18 (Minor Discharges), NWP 38 (Cleanup of Hazardous and Toxic Waste), or 43 (Stormwater Management Facilities) under Section 404. Regulates discharge of dredged or fill material into all waters of the United States, including wetlands. **Guidance on permit application process can be found here**	United States Army Corps of Engineers (USACE) Walla Walla District Address: 720 E. Park Boulevard, Suite 245 Boise, Idaho 83712 Phone: (208) 433-4464 Email: CENWW-RD-BOI-SE@USACE.army.mil	Likelihood of Necessity: Low National Hydrography Dataset and National Wetlands Inventory have mapped several streams and wetlands near the proposed project. A wetland site assessment has also been performed, which determined wetlands to be present. The project has been designed to avoid impacts on streams and wetlands. Assuming the project would not impact Waters of the U.S., no Section 404 permit would be needed.	Assuming wetlands and streams will be avoided, no permit is required.	Not applicable, assuming wetlands and streams will be avoided.	Not applicable, assuming wetlands and streams will be avoided.	Not applicable, assuming wetlands and streams will be avoided.	Not applicable, assuming wetlands and streams will be avoided.
Sections 7, 9 & 10 of the Endangered Species Act of 1973 (ESA). In the event of federal action, Section 7 of the ESA will be triggered. Section 9 prohibits the take of any threatened or endangered species regardless of federal action, and Section 10 can authorize incidental take if an endangered species will be impacted by the proposed project. **Further guidance on permit approval process can be found here**	USFWS Idaho Fish and Wildlife Office Address: 1387 South Vinnell Way, Suite 368 Boise, ID 83709 Phone: (208) 378-5243 **ePermit Website for submittal**	Likelihood of Necessity: Low ESA threatened and endangered species that may be present in the area consist of Canada lynx and North American wolverine. Critical habitat is not present. Suitable habitat for these species is not likely to be present based on a desktop review of the area. If no suitable habitat for listed species is present, a "no effect" determination would be appropriate. Assuming the project would avoid Waters of the U.S. and federal lands, no federal nexus would exist, and Section 7 consultation would not be required.	If no threatened or endangered species will be impacted by the proposed activity, a "no effect letter" is recommended to document the lack of impact. If adverse impact to critical habitats/threatened or endangered species is determined, and there is a federal nexus with the project, then Section 7 of the ESA requires written consultation with the USFWS regarding project fundamentals/mitigation efforts in the form of a Biological Assessment. If Section 10 authorization is pursued, a Habitat Conservation Plan is required. Assuming the project would avoid Waters of the U.S. and federal lands, no federal nexus would exist, and Section 7 consultation would not be required.	Assuming the project would avoid Waters of the U.S. and federal lands, no federal nexus would exist, and Section 7 consultation would not be required.	None	No public involvement process.	Not Applicable

Triumph Mine Permit Requirements

Permit Name and Description	Permitting Agency & Contact Info	WSP Determination of Necessity	Supporting Documents and Preliminary Assessments Required	Permitting Agency Review Timeline	Fees	Public Notice Requirement	Appeals
NEPA Federal action such as federal funding or permits triggers compliance requirement with NEPA regulations. **More information regarding NEPA review process can be found here**	Federal Decision Maker, (Bureau of Land Management [BLM])	Likelihood of Necessity: Low The project is not funded by federal money, nor is it likely to require a federal action. The project is located close to property owned by the BLM. If the project can avoid work on the BLM property, NEPA would not apply. If the property must cross the BLM property, and easement or right-of-way agreement will be needed. This would be a federal action requiring NEPA compliance. An environmental assessment would likely need to be prepared to support the easement/right-of-way.	Not applicable, assuming no federal action (work on BLM land) would be needed.	Not applicable, assuming no federal action (work on BLM land) would be needed.	None	Not applicable, assuming no federal action would be needed. **See this link for more information**	Not applicable, assuming no federal action (work on BLM land) would be needed.
Section 106 of the National Historic Preservation Act. Provides protection to archaeological resources and historical buildings that could potentially be impacted by the proposed project.	The federal lead agency would be responsible for the Section 106 consultation. The Idaho State Historic Preservation Office (SHPO) would also be involved. Idaho SHPO Address: 2205 Old Penitentiary Rd. Boise, ID 83712 Phone: (208) 334-3861 Email: shpo@ishs.idaho.gov	Likelihood of Necessity: Low This approval is only necessary if federal review is triggered and if there are historical artifacts/buildings located at the site. A review of the SHPO Idaho Cultural Resources Information System shows no previously recorded historical/cultural resources near the project. The project is not funded by federal money, nor is it likely to require a federal action. Assuming BLM land can be avoided by the project, Section 106 would not apply.	Not applicable, assuming no federal action would be needed.	Not applicable, assuming no federal action would be needed.	None	Not applicable, assuming no federal action would be needed.	Not applicable, assuming no federal action would be needed.

Triumph Mine Permit Requirements

Permit Name and Description	Permitting Agency & Contact Info	WSP Determination of Necessity	Supporting Documents and Preliminary Assessments Required	Permitting Agency Review Timeline	Fees	Public Notice Requirement	Appeals
State of Idaho							
State Water Quality Certification under Section 401 of the Clean Water Act. Required for a federal agency to issue a permit or license (typically a Section 404 permit) to ensure the project will not violate surface water quality standards.	Idaho Department of Environmental Quality (DEQ) Address: 1410 N. Hilton St. Boise, ID 83706 Phone: (208) 373-0502	Likelihood of Necessity: Low A 401 Water Quality Certification would be needed for the USACE to issue the Section 404 permit, if required. Assuming no Waters of the U.S. would be impacted, a 401 Water Quality Certification would not be needed. Even if a Section 404 permit was needed, NWP 18, 38, and 43 are pre-certified under Section 401.	Not applicable, assuming no Section 404 permit would be needed, or the project would fit under NWP 18, 38, or 43.	Not applicable, assuming no Section 404 permit would be needed, or the project would fit under NWP 18, 38, or 43.	Not applicable, assuming no Section 404 permit would be needed, or the project would fit under NWP 18, 38, or 43.	Not applicable, assuming no Section 404 permit would be needed, or the project would fit under NWP 18, 38, or 43.	Not applicable, assuming no Section 404 permit would be needed, or the project would fit under NWP 18, 38, or 43.
Shallow Injection Well Inventory Required for every shallow injection well (less than 18 feet deep) in Idaho.	Idaho Department of Water Resources Address: 322 E Front Street Boise, ID 83702 Phone: (208) 287-4800 Email: idwrinfo@idwr.idaho.gov	Likelihood of Necessity: Low Idaho defines shallow injection wells, in part, as features that are operated to allow injection that also include a subsurface fluid distribution system. The proposed project would not include a subsurface distribution system, so this process is not required.	Completion and submittal of a shallow injection well inventory form.	None	$75 processing fee	Not applicable	Not applicable
Idaho Pollutant Discharge Elimination System (IPDES) Construction General Permit under Section 402 of the Clean Water Act Required for construction activities that disturb 1 acre or more of land.	Idaho Department of Environmental Quality (DEQ) Address: 1410 N. Hilton St. Boise, ID 83706 Phone: (208) 373-0502	Likelihood of Necessity: High An IPDES Construction General Permit would be needed if project construction would disturb more than one acre of land and if stormwater is discharged into waters of the United States. Because the current design plans show disturbance exceeding an acre, this permit is likely to be needed.	Submission of a Notice of Intent and a Stormwater Pollution Prevention Plan	30 days	$200	Before formal public notice of a draft IPDES general permit, DEQ will post a notice for the forthcoming draft general permit on DEQ's website. After completing a draft general permit and associated NOI requirements, DEQ will issue a public notice, initiating a minimum 30-day public review and comment period. This public notice is provided by a combination of mailings, press releases, or other methods that reasonably give notice to the persons potentially affected.	A person who is aggrieved by the final permit decision may file a Petition for Review as provided in this section. A person aggrieved is limited to the permit holder or applicant, and a person or entity who filed comments or who participated in the public meeting on the draft permit. A Petition for Review must be filed with the Department's Hearing Coordinator within twenty-eight (28) days after the Department serves notice of the final permit decision.

Triumph Mine Permit Requirements

Permit Name and Description	Permitting Agency & Contact Info	WSP Determination of Necessity	Supporting Documents and Preliminary Assessments Required	Permitting Agency Review Timeline	Fees	Public Notice Requirement	Appeals
Idaho Pollutant Discharge Elimination System (IPDES) Industrial Stormwater Multi-Sector General Permit under Section 402 of the Clean Water Act Required for industrial operations, including mining (40 CFR 122.26[b][14]) that discharge pollutants via stormwater to surface waters.	Idaho Department of Environmental Quality (DEQ) Address: 1410 N. Hilton St. Boise, ID 83706 Phone: (208) 373-0502	Likelihood of Necessity: Low As an industrial use, the project would be required to obtain an IPDES Permit if stormwater will be discharged into waters of the United States. Given that the project would only discharge from the pond during a 25-year modeled rain event and the discharge would travel approximately 0.4 mile to East Fork Wood River, there is a low risk of a discharge reaching any Waters of the U.S. The risk of not obtaining permit coverage is that if the discharge causes an exceedance of water quality standards in East Fork Wood River, a violation could result.	Not applicable, assuming no discharge to surface water would occur.	Not applicable, assuming no discharge to surface water would occur.	Not applicable, assuming no discharge to surface water would occur.	Not applicable, assuming no discharge to surface water would occur.	Not applicable, assuming no discharge to surface water would occur.
Conditional Use Permit Required for development on land owned by Idaho Department of Lands.	Idaho Department of Lands (IDL) Address: 300 N. 6th St., Suite 103 Boise, ID 83702 Phone: (208) 334-0200	Likelihood of Necessity: High The project would involve development on IDL land, which would require a conditional use permit. The conditions of the permit would be negotiated between IDEQ and IDL.	None	Unknown	Unknown	Unknown	Unknown

Triumph Mine Permit Requirements

Permit Name and Description	Permitting Agency & Contact Info	WSP Determination of Necessity	Supporting Documents and Preliminary Assessments Required	Permitting Agency Review Timeline	Fees	Public Notice Requirement	Appeals
Local (Blaine County, ID)							
Conditional Use Permit (CUP) for certain developments in the Residential/ Agricultural District (R-5) as required by Blaine County Code Section 9.7. Ensures compliance with land use regulations.	Blaine County Land Use Services Address: 219 South 1st Avenue Hailey, ID 83333 Phone: (208) 788-5570 Email: pzcounter@co.blaine.id.us	Likelihood of Necessity: Low Blaine County Code Section 9.7 does not list water treatment as a permitted use, accessory use, or conditional use. Coordination with Blaine County determined this permit is unlikely to be needed.	Coordination with Blaine County determined this permit is unlikely to be needed.	Coordination with Blaine County determined this permit is unlikely to be needed.	Coordination with Blaine County determined this permit is unlikely to be needed.	Coordination with Blaine County determined this permit is unlikely to be needed.	Coordination with Blaine County determined this permit is unlikely to be needed.
Approach Permit Application pursuant to Blaine County Code Section 6.1.1.1. For new vehicle access off County roads to the site.	Blaine County Road & Bridge Department Address: 219 South First Avenue Suite 208 Hailey, ID 83333 Phone: (208) 788-5543	Likelihood of Necessity: High This permit is required for access roads or driveways off of County roads. It would also be required if any work is required on the pipes that are located in the East Fork Road right-of-way.	Encroachment Permit Application: Link Site plan, construction drawings, traffic control plan, applicable easements/agreements, and land use/building services approvals are required with submittal.	Permit issued 15 days from submission of a completed application.	$25	None	Likely N/A. Coordination with Blaine County needed to determine
Building Permit as required by 9.3.5 of the Blaine County Code. Facilitates compliance with local building and design standards to ensure public health and safety.	Blaine County Building Services Address: 219 South First Avenue Suite 208 Hailey, ID 83333 Phone: (208) 788-5573 Email: build@co.blaine.id.us	Likelihood of Necessity: Low The Blaine County Building Code does not specify that a permit is needed for projects only involving grading, without any proposed structures. Coordination with Blaine County determined this permit is not needed.	Coordination with Blaine County determined this permit is not needed.	Approximately 4 weeks	Varies by total project valuation. *See this link for more details*	Public notice not required.	Not applicable. Coordination with Blaine County determined this permit is not needed.

Triumph Mine Permit Requirements

Permit Name and Description	Permitting Agency & Contact Info	WSP Determination of Necessity	Supporting Documents and Preliminary Assessments Required	Permitting Agency Review Timeline	Fees	Public Notice Requirement	Appeals
Wetlands Overlay District Conditional Use as required by 9.19 of the Blaine County Code. For disturbance within wetlands or their designated 25 foot setback.	Blaine County Land Use Services Address: 219 South 1st Avenue Hailey, ID 83333 Phone: (208) 788-5570 Email: pzcounter@co.blaine.id.us	Likelihood of Necessity: Low The project will work to avoid impacts to wetlands, but may encroach into the 25 foot wetland setback. The wetland is located on state-owned land, and Blaine County does not have authority over the wetland setback on state or federal lands.	Not applicable, assuming wetlands will be avoided.	Not applicable, assuming wetlands will be avoided.	Not applicable, assuming wetlands will be avoided.	Not applicable, assuming wetlands will be avoided.	Not applicable, assuming wetlands will be avoided.
Mountain Overlay District Site Alteration Permit as required by 9.21 of the Blaine County Code For particular actions within the mapped Mountain Overlay District.	Blaine County Land Use Services Address: 219 South 1st Avenue Hailey, ID 83333 Phone: (208) 788-5570 Email: pzcounter@co.blaine.id.us	Likelihood of Necessity: Low The project will likely be located outside of the mapped Mountain Overlay District. If elements of the project encroach into the overlay buffer, a categorical exclusion would be needed.	Not applicable, assuming the Mountain Overlay District will be avoided.	Not applicable, assuming the Mountain Overlay District will be avoided.	Not applicable, assuming the Mountain Overlay District will be avoided.	Not applicable, assuming the Mountain Overlay District will be avoided.	Not applicable, assuming the Mountain Overlay District will be avoided.



wsp.com