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September 18, 2023

ELECTRONIC DELIVERY

Mr. Elliott Russell
Environmental Protection Specialist
Colorado Department of Natural Resources
Division of Reclamation, Mining and Safety
Office of Mined Land Reclamation
1313 Sherman Street, Room 215
Denver, Colorado 80203

Re: Permit No. M-1980-244; Cripple Creek & Victor Gold Mining Company; Cresson Project; Technical Revision 135 – Third Adequacy Review Response

Dear Mr. Russell:

On August 23, 2023, Newmont Corporation's Cripple Creek and Victor Gold Mining Company (CC&V) received the Division of Reclamation, Mining and Safety (DRMS) Adequacy Review, Part 2 of Technical Revision (TR) 135 to Permit M-1980-244, regarding the VLF2, Phase 3 Stage A.1 Record of Construction Report. Below are DRMS comments in **bold** and CC&V's response in *italics*.

1 Document Control: Please address the following:

***a. Explain why separate, identically numbered specifications, both addressing overburden fill were necessary*. The response was not adequate. Even if it were important to divide the earthworks into two tasks as stated in the response, both the 8/12/21 and 8/27/21 had sections addressing overburden fill. Furthermore, the low compaction zone/overburden fill did not begin until 8/31/2021 (and the high compaction backfill was not initiated until 10/17/2021), at which times the 8/27/2021 specifications were completed and addressed overburden backfill. Why was the 8/12/2021 specification used, as stated in the response to Comment 1b, when the 8/27/2021 version was finalized and addressed overburden fill? (Note: if the 8/27/2021 version did not include overburden fill, being a separate task, then this explanation might make sense. As it is, it just adds to the level of confusion)**

The version dated 8/12/2021 was developed to be used by the owner with larger equipment and the version dated 8/27/2021 was developed to be shared and used by an independent contractor with smaller equipment. The work being carried out by the owner was limited to the placement of overburden fill, within the low compaction zone, and structural fill, within the high compaction zone. The owner never intended to complete any finish work for the subgrade. The specification shared with the independent contractor also included overburden and structural materials to allow them to complete any work not completed by the owner.

b. Confirm whether the 8/12/21 or the 8/27/21 version of specification no. 02200 was used for overburden placement.

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The response was adequate.

c. Retire the 8/12/202101400 and 02200 specifications or explain why they are still needed and renumber them following standard industry practice. <u>The response required additional clarification:</u>

i. How will these be numbered?

The specifications utilized for the Overburden and Structural Fill for work completed by the owner have been re-numbered to 1400-1 Earthwork CQA and 2200-1 Earthworks to differentiate from specifications 1400 and 2200. (See attached - Specifications)

ii. How and when will the DRMS be notified?

The renumbered specifications are included in this response.

d. Commit to the following standard industry practice for document control in the development and revision of future specifications.

The response was adequate.

2 Undeclared Deviations:

A. Placing fill on snow.

These eight incidents are clear deviations to both the previously approved, and revised specifications. Please address the following:

a) Why were these deviations to the approved 02200 specifications not discussed in the Record of Construction Report as required?

The addition of the deviation notice in the revised CQA Report was adequate.

b) Provide an explanation as to why the approved specifications were not followed in these eight instances. <u>The response was not adequate.</u> The response did not answer the question, rather it attempts to explain what was done instead of following the approved specifications. It is common practice while placing structural fill to NOT place fill on snow or ice as specified in the approved 02200 – Earthworks. Moreover, the response to Comment 2.A.a claims the SOP "clarified" the requirements for placing fill on snow. As the approved specification clearly directs fill material NOT be placed on snow or ice, any allowance to place fill on snow is NOT a clarification, but a modification to the specification. A "clarification" might be appropriate if the approved specifications indicated fill could be allowed to be placed on snow under limited circumstances, but that is NOT the case here. The placement of fill on snow <u>is</u> a revision to the approved specification. Standard Operating Procedures (SOP) are not the way to revise specifications. Furthermore, the Division would not and will not approve this type of specification change without demonstration that it will

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not lead to potential detrimental or differential settling that may affect the liner system of an environmental protection facility (EPF). A demonstration similar to that provided for increasing the lift thickness from the previous two feet to the current approved five feet (see Comments 2.A.c below) is required. In addition, the review of the SOP and the multiple versions of specification 01400 and 02200 caused the Division to revisit the two different versions of Table 4 (test pad only in the original March submittal, and that in the June PAR response with 29 entries, not including the original test pad) and grain size distribution test curves in Appendix G-1, which only includes test result (Sample #SF-1-R). The Division noted Sample SF-1-R does not match any sample number reported in Table 4. The Division also noted that Table 4 reports the percent passing for 18 different particle sizes, but only two of the three sizes listed in the gradation specification for structural fill (the 8-inch sieve size is not listed in Table 4). The approved 02200 specification requires 40 to 100 percent of the sample size pass the 8-inch sieve. In all reported results, greater than 40 percent of the material passed the 4-inch sieve, thereby demonstrating at least 40 percent also passed the 8-inch sieve. However, if less than 40 percent was reported passing the 4-inch sieve, it would have been indeterminate if the sample met the approved specification. Please address the following:

i. **Explain why the approved specifications were not followed (not what was done instead) and why structural fill was placed on as much as two inches of snow.**

When NewFields developed the Cold Weather SOP, it was their intent to provide guidance and flexibility to the technical specifications to allow the placement and compaction of the structural fill after snow events. It was a mistake not to revise and reissue the technical specification to match the instructions provided in the SOP. If CC&V plans on placing overburden fill and structural fill in the future, Technical Specification 2200-1 will be revised accordingly and re-issued.

The minimal depth of snow in the SOP was allowed because Coarse ROM fill material at Cripple Creek and Victor Gold Mine historically carries a low natural moisture content and small percentages of fine material, creating low susceptibility to frost.

Mining operations equipment loaded 240 plus tons of ROM material per truck. With a large loading unit and multiple trucks delivering material, the average 50-foot dig-face was considered active. The material was drilled, blasted, and shot before loading, not stockpiled, further exposed to ambient temperatures, and was minimally exposed to inclement weather or ambient temperatures before being loaded.

Cripple Creek and Victor Gold Mine contains a network of connected haul roads enabling the efficient delivery of material to the leading edge of the active fill placements. Tracked and rubber tire dozers placed the material generally right after it was dumped and was safe to do so. NewFields, taking into

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consideration the overall scope of the operation, determined that the ROM placement would carry a warm material temperature and melt small amounts of loose snow (up to 2 inches) accumulated on the previous lift.

Mining operations placed the ROM Structural Fill lifts with the haul traffic working on top of the under-construction lift behind the leading edge compacting loosely placed fill efficiently. The mining operations loaded haul trucks traversing over the placement operation are estimated to weigh anywhere from 850,000 lbs to 950,000 lbs depending on the loading, material, and model. The kinetic energy created from the haul trucks traveling on and compacting material also assisted in creating active fill conditions warm enough to melt any snow of concern.

The up to 2" loose snow thickness called out in the SOP was considered acceptable given NewFields' experience in monitoring and conducting Quality Assurance during the placement of ROM fills in inclement weather. The moisture content in the 2 inches of snow is not significant and creates little potential for adverse settlement. Frost heave is not considered a significant issue (low susceptibility).

ii. Explain why there were two completely different versions of Table 4 and why the test pad samples listed in the March version of Table 4 was not included in the June version of Table 4.

There are two different Structural Fills reported in the A.1 report. The June submittal included the additional Grain Size Distribution testing that was conducted on the Structural Backfill placed by mining operations Table 4 – Structural Fill (High Compaction Backfill). It was an oversight to not include the renumbered tables. Table 4 was renumbered to Table 5 – Structural Fill (Contractor Placed) and the tables have been attached.

iii. In order to facilitate faster reviews by the Division, commit to ensuring all 02200 specified grain sizes are listed in grain size tables.

NewFields will commit to including an 8" sieve and reporting results in future reporting.

iv. Submit an updated App. G-1 with all 30 particle size distribution curves, including the test pad from March submittal. If the lab uses a different sample numbering system, explain how the sample numbers in Table 4 correlate with results in Appendix G-1.

Table 4 included greyed-out samples that were not part of the backfill placed in the A.1 construction footprint. The greyed-out sample testing results will be included in the A.2 report as they correspond to that construction footprint. SF-1-R correlates to the Structural Fill memo included in the March submittal.

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c) **Provide a demonstration as to how these actions met the intent of the approved specifications. <u>The response was not adequate</u>. A project decision was apparently made to ignore the approved specification. No demonstration was provided in the response to prove the placement of structural fill on snow would not have a potential detrimental impact on the EPF functionality. The response offered an offhand reference to the snow being water and being a presumed small amount. There is also a mention of the "coarse" material being placed. Industry standards typically consider structural fill to be "coarse" if fines (those passing the #200 sieve) are less than 15 percent. The approved specification for structural fill allows up to 25 percent of the material to pass the #200 sieve. In addition, the specification allows the plasticity index to be as high as 30, suggesting a higher clay content in the material. The Division acknowledges all 29 Table 4 summaries (June version) have less than 15 percent fines and all the plasticity indices are either non-plastic or are at 8 or less. However, if the project is to rely on the "coarseness" of the structural fill with respect to placement on snow, the specification needs to be changes accordingly to reduce the fines allowed, and reduce the plasticity index, perhaps requiring the material to be non-plastic. As to the implied water argument, CC&V must demonstrate that the snow melted if that is part, or all of the basis for allowing fill to be placed on snow. Such a demonstration would have to consider heat and energy transfer from the compaction effort and ambient temperatures at a minimum. Please prove to the Division the practice of placing structural fill on two inches of snow or less will not have a potential detrimental impact on the EPF functionality.**

The goal of the project specifications is to remove substantial layers of snow but recognize that minimal snow (up to 2 inches) can remain or accumulate (if snowing) during the fill placement. It is acknowledged that a more detailed specification should have been developed specifically for this work. Future winter backfill work will be considered and accounted for in the development of a revised specification. It is understood that a substantially thick layer of snow or ice can cause issues with fill. For Cripple Creek and Victor Gold Mine, the biggest risk would be future settlement as the snow melts.

The Structural Fill (High Compaction Zone) was largely overbuilt and regraded to meet the design during construction due to the size of the equipment utilized. The slopes of the PSSA (primarily constructed during the winter months) were cut to grade out of overbuilt compacted fill. No snow or ice lenses were noted during the grading process or removal of excess material. Subsequent inspections and ground surveys carried out throughout the course of construction, and the installation of the HVSC riser system have given no indication of settlement.

Additionally, the structural fill isn't susceptible to frost heave and is not considered a significant issue. Due to the coarse nature of the material, it is unlikely there is a thin frozen layer of material within the fill which will create a slip plane or will develop additional settlement in the fill. In the unlikely event that there is a thin ice lens in the

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material, and it melted, the ultimate elongation of the geomembrane (250%) can easily accommodate the amount of additional differential settlement of an estimated 2-inches. The deviation from project specifications is acknowledged and presented as a notice in the amended report text. As shown in the construction photos below, minimal amounts of snow remained in the fill after being cleared, therefore instability and excessive settlement is not a concern.

January 25, 2022 – Snow falling with 793 haul truck wheel rolling, tires melting snow.

January 29, 2022 – Trace amounts of snow remaining after clearing,

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ROM material advancing over previously approved lift.

February 18, 2022 – Trace amounts of snow remaining after clearing, ROM material advancing over previously approved lift.

March 14, 2022 – Cutting of overbuilt structural fill to grade on the west slope of the PSSA.

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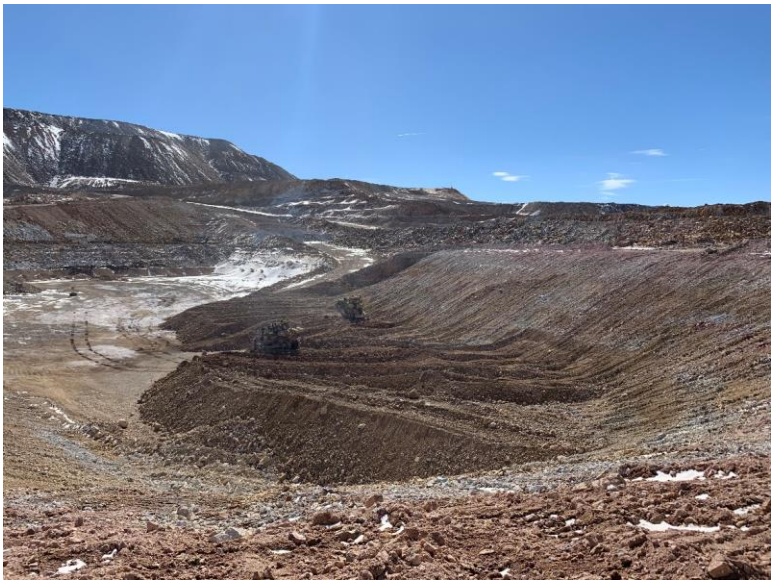

March 24, 2022 - Cutting overbuilt structural fill to grade of the north slope of the PSSA.

B. Leak Detection Trench Grade. Please address the following:

a) Why were the 359 feet of the leak detection system installed at a grade flatter than 2 percent not discussed in the Record of Construction Report deviations section as required?

The response was adequate.

b) Provide an explanation as to why the 2 percent grade was not maintained.

The response was adequate.

c) If bedrock prevented the proper installation of the leak detection trench, submit documentation demonstrating as much. <u>The response requires additional clarification.</u> Based on the leak detection profile provided, it appears the depth of the trench is up to 100 feet (Sta. 5+50) with all but the first 50 feet being at least 10 feet below grade. The grade reference is the labeled "surface after mining completed 11/2/2021". This date is well after both the low and high compaction efforts were initiated in August and October of 2021 (as discussed above in Comment 1.a). While this profile suggests the trench base is in bedrock (assuming mining was completed to at least the top of the bedrock), it also suggests an extremely deep trench was cut into bedrock for the trench. This raises one or two potential problems: 1) the trench design does not meet the design as presented in Detail A on IFC Drawing A420 being well below grade of the bedrock; and /or 2) if a trench was in fact cut to this depth, it does not seem likely the trench is in bedrock, therefore a 2% grade should have been feasible. Please provide additional clarification.

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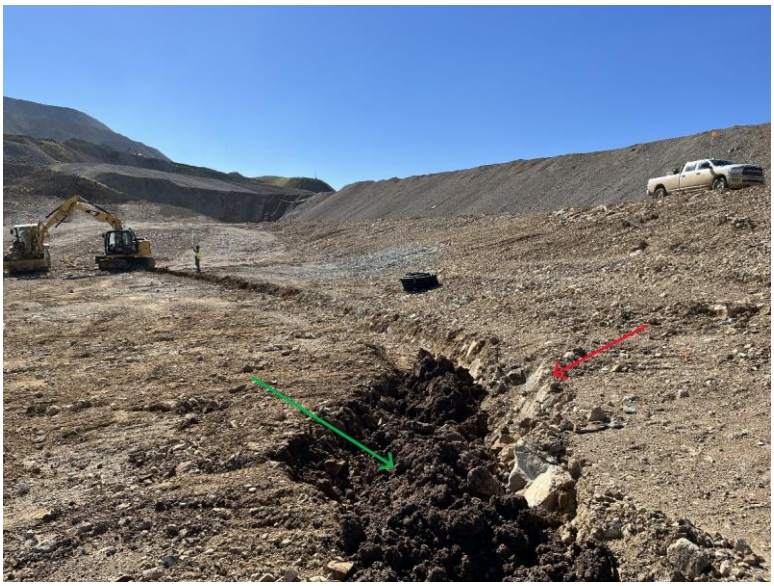
The below figures (6) provide more detailed documentation demonstrating the difficulty of construction.

The red arrow is pointing towards the excavator bucket breaking bedrock attempting to grade the trench bottom. The green arrow is pointing towards a thin layer of finer grained fill placed to prepare subgrade for SLF placement and attempt more uniform trench walls.



The red arrow is pointing towards bedrock. The green arrow is pointing towards SLF material placed in the trench waiting to be graded out in an attempt to better grade the trench bottom and walls.

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3. Location of Perforated CPeP:

The response was adequate.

4. Overburden Fill Placement Task Training:

The response was adequate.

Should you require further information, please do not hesitate to contact Johnna Gonzalez at (719)851-4190, Johnna.Gonzalez@Newmont.com, or myself at (719) 237-3442 or Katie.Blake@newmont.com.

Sincerely,

DocuSigned by:
Katie Blake
5A3D013B629844B...

Katie Blake
Sustainability & External Relations Manager
Cripple Creek & Victor Gold Mining Co

EC:

M. Cunningham – DRMS
T. Cazier - DRMS
J. McBryde – Teller County
J. Gonzalez – CC&V
K. Blake – CC&V
N. Townley – CC&V

Attachments: Attachment 1 – 01400 Earthwork CQA
Attachment 2 – 01400-1 Earthwork CQA
Attachment 3 – 02200 Earthworks
Attachment 4 – 02200-1 Earthworks
Attachment 5 – Tables 4-10 CQA Earthworks Laboratory Testing Summary
Figure 6 – Leak Detection Trench As-built Plan and Profile

NewFields	CLIENT Newmont Cripple Creek & Victor Gold Mine	PROJECT NO 475.0106.049
PROJECT: VLF2 Phase 3		
TITLE: TECHNICAL SPECIFICATIONS – Earthworks Construction Quality Assurance (CQA) Plan		**SPECIFICATION NO.** **01400 EARTHWORK CQA**

REV	DATE	PAGES	APPROVALS			REMARKS
			AUTHOR	REVIEW	CLIENT	
0	12/5/2019	10	JNM	KCW		Issued for Permitting
1	12/17/2020	10	JNM	KCW		Re-Issued for Permitting
2	8/27/2021	10	JNM	KCW		Issued for Construction

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SECTION 01400 EARTHWORKS CONSTRUCTION QUALITY ASSURANCE (CQA) PLAN

1. PART 1: INTRODUCTION

This plan addresses the construction quality assurance (CQA) procedures for the installation of the earthworks (soils) components of the valley leach facility at the Cresson Project, Teller County, Colorado. This program has been developed to assure that the construction of the soil components are in compliance with the project SPECIFICATIONS and to demonstrate that the regulatory requirements for the construction are achieved.

The objective of this plan is to assure that proper materials, construction techniques, and procedures are followed by the **CONTRACTOR** and that the intent of the design is met. This plan also provides the means for resolution of problems that may occur during construction.

This plan addresses quality assurance, not quality control. This CQA Plan is independent of the quality control (QC) programs conducted by **CONTRACTOR**. The intent of the CQA Plan is to provide independent third party verification and testing, to demonstrate that the **CONTRACTOR** has met its obligations in the supply and installation of earthwork (soils) materials according to the design, project SPECIFICATIONS, contractual, and regulatory requirements. Quality control is provided by **CONTRACTOR** and refers to those actions taken by the **CONTRACTOR** to ensure that materials and workmanship meet the requirements of the DRAWINGS and SPECIFICATIONS.

2. PART 2: DESCRIPTION OF PARTIES TO CONSTRUCTION QUALITY ASSURANCE

The following section provides descriptions of the parties to this CQA Plan including their responsibilities and qualifications.

2.1. CC&V

In this CQA Plan, **CC&V** refers specifically to Cripple Creek & Victor Gold Mining Company. **CC&V** owns and operates the valley leach facility.

2.2. Manager

In this CQA Plan, **MANAGER** refers to the individual appointed by the Cripple Creek & Victor Gold Mining Company. **MANAGER** is the official representative of **CC&V** and is responsible for all construction activities including oversight and direction during construction. **MANAGER** is also responsible for coordinating construction and CQA activities for the project.

MANAGER shall serve as communications coordinator for the project, initiating preconstruction and resolution meetings. As communications coordinator, **MANAGER** will serve as a liaison between all parties involved in the project to ensure that ongoing communications are

maintained. **MANAGER** and **CERTIFYING ENGINEER** shall be responsible for the resolution of all CQA issues.

Duties for this position include the following:

- review and approval of DRAWINGS and SPECIFICATIONS for all soil components of the valley leach facility;
- preconstruction coordination with the **CQA MONITOR** to ensure that the **CQA MONITOR** has performed similar reviews of the DRAWINGS and SPECIFICATIONS to ensure that the CQA Plan can be implemented;
- coordination of all construction activities associated with **CONTRACTOR**;
- scheduling and coordinating construction activities with required CQA testing and activities;
- overseeing the construction quality control operations performed by **CONTRACTOR**;
- approve specific corrective measures to be implemented during construction when deviations from the SPECIFICATIONS occur;
- ensure that required quality assurance testing has been performed in accordance with the CQA Plan and to the satisfaction of the **CQA MONITOR**; and
- ensure that the CQA personnel are provided with all documentation required in the CQA Plan and project SPECIFICATIONS.

2.3. Design Engineer

In this CQA Plan the **DESIGN ENGINEER and Engineer of Record (EOR)** refers specifically to NewFields who has assumed the role of **DESIGN ENGINEER** after a thorough review of design documents to include, but not limited to, the DRAWINGS and SPECIFICATIONS. The **DESIGN ENGINEER** or the **CERTIFYING ENGINEER** identified in Section 2.4 below, is responsible for approving all DRAWING and SPECIFICATION changes, modifications, or clarifications encountered during construction.

2.4. Certifying Engineer

In this plan, **CERTIFYING ENGINEER** refers specifically to NewFields. **CERTIFYING ENGINEER** is the individual or firm responsible for certifying the construction was performed in compliance with the DRAWINGS and SPECIFICATIONS. **MANAGER** and **CERTIFYING ENGINEER** shall be responsible for the resolution of all quality assurance issues.

2.5. Construction Quality Assurance Monitor

The **CQA MONITOR** is the firm or individual responsible for performing the CQA tasks outlined in this CQA Plan. The **CQA MONITOR** is the official CQA representative of **CC&V** and has the

responsibility of overseeing the CQA aspects of the Work. In this CQA Plan the **CQA MONITOR** is associated with the **CERTIFYING ENGINEER,** and refers specifically to (To Be Determined). The **CQA MONITOR** has the authority to stop any aspect of the Work that is not in compliance with the CQA Plan. Work would then be resumed once corrective action has been approved by **MANAGER**. The specific responsibilities of the **CQA MONITOR** include:

- review the DRAWINGS, SPECIFICATIONS, and related guidance documents;
- review all **CONTRACTOR** QC submittals and make appropriate recommendations;
- obtain preconstruction and construction samples and perform material evaluation testing as required;
- monitor foundation preparation activities as discussed in Section 6.3.1 and material placement as discussed in Section 6.3.2;
- assure that testing equipment used and tests performed are conducted according to SPECIFICATIONS and industry standards;
- document and report test results to **MANAGER**;
- report any deficiencies to **MANAGER** that are not corrected to the satisfaction of the **CQA MONITOR**, including design or SPECIFICATION changes;
- prepare a Construction Certification Report describing the construction, any deviations from SPECIFICATIONS or DRAWINGS and details, details of all field and laboratory test data, tests results (both laboratory and field), professional certification that construction was completed in accordance with the DRAWINGS and SPECIFICATIONS. The Construction Certification Report will be signed and sealed by the **CERTIFYING ENGINEER** registered in the State of Colorado;
- monitor the ambient air temperature and fill temperature, as outlined in Section 2200 of the SPECIFICATIONS; and
- maintain an on-site soils laboratory and perform regular calibration of equipment.

2.6. Earthworks Contractor

The Earthworks Contractor, also referred to as "**CONTRACTOR**", is responsible for proper processing, delivery and placement of all components as outlined in the SPECIFICATIONS.

3. PART 3: LINES OF COMMUNICATION

The **CQA MONITOR** shall be capable of direct communication with **MANAGER**, **DESIGN ENGINEER** and **CERTIFYING ENGINEER** at all times. Deficiencies that can be easily remedied, such as unsatisfactory test results, will be dealt with directly between the **CQA MONITOR**, and **CONTRACTOR**. The **CQA MONITOR** will also discuss any deficiencies with the **CERTIFYING ENGINEER**.

If there is a disagreement among the **DESIGN ENGINEER, CERTIFYING ENGINEER,** and/or **MANAGER** that cannot be resolved among themselves, **MANAGER** shall present the matter to **CC&V** with **MANAGER** related recommendations and **CC&V** shall decide the matter with such decision being final.

4. PART 4: DEFICIENCIES

When deficiencies (items that do not meet SPECIFICATIONS or DRAWINGS) are discovered, the **CQA MONITOR** will immediately determine the nature and extent of the problem and notify the **CONTRACTOR**. If unsatisfactory test results identify a deficiency, additional tests will be performed to define the extent of the deficient area.

CONTRACTOR shall correct the deficiency to the satisfaction of the **CQA MONITOR**. If **CONTRACTOR** is unable to correct the problem, the **CQA MONITOR** will notify **MANAGER** and **CERTIFYING ENGINEER** which will assist in problem resolution. If the solution involves a design revision, the **DESIGN ENGINEER** shall also be contacted.

The **CQA MONITOR** shall retest and the **MANAGER** and **CERTIFYING ENGINEER** shall approve the corrected deficiencies before any additional related work is performed by **CONTRACTOR**. All retests and related documentation shall be recorded by the **CQA MONITOR** and included in the Construction Certification Report.

5. PART 5: MEETINGS

This section identifies and describes the meetings to be held during the course of the construction. Meetings shall be held in order to clearly define construction activities and goals in order to facilitate construction.

5.1. Preconstruction Meeting

MANAGER will hold a preconstruction meeting at the site prior to the start of construction. **MANAGER**, **DESIGN ENGINEER, CERTIFYING ENGINEER**, **CQA MONITOR**, **CONTRACTOR**, and others designated by **MANAGER** shall attend this meeting. The purpose of this meeting will be to:

- review the construction DRAWINGS, CQA Plan, and SPECIFICATIONS;
- define the responsibilities of each party;
- define lines of communication and authority;
- review method of documentation, testing procedures, and reporting inspection data;
- establish testing protocols and procedures for correcting and documenting construction deficiencies;

- discuss any changes that may be needed to ensure that construction will be completed in compliance with the design; and
- This meeting will be documented by **MANAGER** and copies will be distributed to all parties.

5.2. Progress Meetings

MANAGER will hold a daily progress meeting, either before the start of work or at the completion of work. At a minimum, this meeting will be attended by the **CQA MONITOR** and **CONTRACTOR**. The purpose of this meeting will be to:

- review all the previous day's accomplishments and activities;
- review scheduled work location and activities for the day;
- discuss any problems or potential construction problems; and,
- review test data.

5.3. Deficiency Meetings

Special meetings will be held, as needed, to discuss potential problems or deficiencies. At a minimum, these meetings will be attended by the **CQA MONITOR** and **CONTRACTOR**. If the problem relates to a design issue, **MANAGER**, **DESIGN ENGINEER** and **CERTIFYING ENGINEER** should also be present. The meeting will be documented by the **CQA MONITOR**.

6. PART 6: EARTHWORKS CONSTRUCTION QUALITY ASSURANCE

Construction of the valley leach facility or specified earthworks shall be in accordance with the DRAWINGS and SPECIFICATIONS. A CQA monitoring and testing program shall be implemented by **CC&V** to ensure construction compliance by the **CONTRACTOR**. The CQA testing program shall consist of construction testing of materials used in the valley leach facility construction. The types of materials are defined in the SPECIFICATIONS. During construction, the **CQA MONITOR** shall sample and test these soil types to determine if they meet SPECIFICATIONS. The **CQA MONITOR** shall obtain and test soil samples in accordance with American Society for Testing and Material standards ASTM D75 and ASTM D420. All tests shall be performed by the **CQA MONITOR** on-site or in a geotechnical laboratory approved by the **CERTIFYING ENGINEER.**

6.1. Construction Testing

During construction, the **CQA MONITOR** shall test all earthwork components to verify that the construction is in accordance with the SPECIFICATIONS. Testing shall be performed on all soil used in the construction to confirm the materials meet SPECIFICATIONS. The **CQA MONITOR** shall

conduct testing after final placement of the materials. The tests to be performed, and the testing frequency, for each material type are listed in Tables 1 and 2. The testing frequencies specified in Tables 1 and 2 shall be increased when the **CQA MONITOR** determines that construction conditions (such as adverse weather, equipment breakdown, improperly ballasted compactor, excessive lift thickness, improper soil type, improper moisture conditioning and compaction) warrant additional tests. Additional tests will be approved by **MANAGER** and directed by the **CQA MONITOR**.

6.2. Construction Monitoring

The **CQA MONITOR** will monitor and test all earthwork quality assurance components of the construction to verify that the construction is in accordance with the SPECIFICATIONS. The **CQA MONITOR** shall identify inadequate construction methodologies or materials that may adversely impact the performance of the facility being constructed and existing structures. The **CQA MONITOR** will record visual observations throughout the construction process to ensure that the materials are placed to the minimum dimensions as shown on the DRAWINGS. Quality control testing will be performed by the **CONTRACTOR**.

6.2.1. Foundation Preparation

The **CQA MONITOR** shall observe and document the foundation preparation including:

- stripping and excavation activities to ensure that **CONTRACTOR** places the material in the appropriate stockpile (Structural Fill, Select Structural Fill, Leak Detection Fill, Low Volume Solution Collection Fill, Bedding Fill, Soil Liner Fill, Drain Cover Fill, Fine Shaft Backfill, Pipe Bedding Material and Granular Filter Material), if stockpiling is necessary;
- stockpiling activities to verify location of stockpile, material type, and dressing;
- excavations for moisture seeps, unsuitable foundation soil, elevation, and proper drainage;
- subgrade preparation to confirm that the surface of the subgrade is free of soft, organic, and otherwise deleterious materials (such as debris, branches, vegetation, mud, ice, or frozen materials); and that soil and rock surfaces that contain joints or fractures are adequately filled in accordance with the SPECIFICATIONS; and
- construction of access roads, drainage control features and erosion control features to verify compliance with the DRAWINGS and SPECIFICATIONS.

6.2.2. Placement Of Materials

During placement of Structural Fill, Select Structural Fill, Coarse Shaft Backfill, Cemented Rockfill, Low Volume Solution Collection Fill, Bedding Fill, Leak Detection Fill, Soil Liner Fill, Drain Cover

Fill, Fine Shaft Backfill, Pipe Bedding Material and Granular Filter Material, the **CQA MONITOR** shall:

- verify the use of appropriate fills;
- monitor and document material placement, including soil type, particle size, loose lift thickness, moisture conditioning process, compaction equipment and methods used to attain compaction, including number of passes, uniformity of compaction coverage, compacted lift thickness, bonding of lifts and in-place moisture content and dry density is in compliance with the SPECIFICATIONS;
- monitor Soil Liner Fill surface preparation to verify that the surface has been proof-rolled, compacted, or hand worked so as to be in a condition suitable for geomembrane installation as discussed in Section 02200 of the SPECIFICATIONS;
- monitor Bedding Fill placement and surface preparation to verify that the surface is suitable for geomembrane installation as discussed in Section 02200 of the SPECIFICATIONS;
- monitor the placement of fill to ensure that **CONTRACTOR** exercises care in the vicinity of pipes and that the underlying geosynthetics are not damaged;
- monitor and document **CONTRACTOR** verification of in-place Soil Liner Fill, Bedding Fill, Low Volume Solution Collection Fill and Drain Cover Fill thickness;
- monitor equipment being used to place Low Volume Solution Collection Fill and Drain Cover Fill to verify that the **CONTRACTOR** places the material in accordance with the SPECIFICATIONS;
- monitor that Low Volume Solution Collection Fill and Drain Cover Fill is pushed uphill for areas in which the slope exceeds 4H:1V and that the dozer does not perform unacceptable pivot turns; and
- monitor the fill temperature as identified in Section 02200 of the SPECIFICATIONS.

7. PART 7: DOCUMENTATION

Documentation kept by the **CQA MONITOR** shall consist of daily record-keeping, construction problem resolutions, design and SPECIFICATION changes, photographic records of construction, weekly progress reports, chain of custody forms for test sample tracking, and a Construction Certification Report.

7.1. Daily Record Keeping

Daily records kept by the **CQA MONITOR** shall consist of field notes, observation and testing data sheets, summary of the daily meeting with **CONTRACTOR**, and reporting of construction problems and resolutions. The **CQA MONITOR** shall submit this information on a regular basis to **MANAGER** for review.

7.2. Soils Observation and Testing Forms

The **CQA MONITOR** will document soils observations on forms that generally include the following information:

- date, project name, location, and weather data, including high and low daily temperatures;
- a site plan showing work areas and test locations;
- descriptions of ongoing construction detailing work areas and equipment utilized by **CONTRACTOR;**
- summary of test results and samples obtained, with locations and elevations;
- resolutions of deficient test results;
- test equipment calibrations, if necessary;
- summary of meetings held; and
- signature or initials of the **CQA MONITOR**.

7.3. Photo Documentation

The **CQA MONITOR** shall photograph all phases of construction. Photographs shall be identified by location, time, date, and name of the **CQA MONITOR** taking the photograph.

7.4. Design and Specification Changes

During construction, the need to address DESIGN and SPECIFICATION changes, modifications, or clarifications may arise. In such cases the **CQA MONITOR** shall notify **MANAGER**, which shall notify the **DESIGN ENGINEER** and the **CERTIFYING ENGINEER**. DESIGN and SPECIFICATION changes shall only be made with written agreement from **MANAGER** and **DESIGN ENGINEER**.

7.5. Weekly Progress Reports

The **CQA MONITOR** shall prepare weekly progress reports summarizing all construction and quality assurance activities. This report shall be submitted to **MANAGER** and shall include the following information:

- date, project name, and location;
- summary of construction related activities;
- summary of samples taken and test results;
- summary of deficiencies and/or defects and resolutions; and,
- signature of the **CQA MONITOR**.

7.6. Construction Certification Report

At the completion of the project, the **CQA MONITOR** shall submit to **MANAGER** a Construction Certification Report. This report shall certify that the work has been performed in compliance with the DRAWINGS and SPECIFICATIONS and will contain the following information:

- summary of all construction activities;
- photographic documentation;
- test data sheets;
- copies of weekly reports;
- CQA test results, including date, test locations and resolutions of deficient test results;
- copies of surveyors certificate;
- fill temperature monitoring results;
- staff schedule summary;
- a description of significant construction problems and the resolution of these problems;
- changes to the DRAWINGS or SPECIFICATIONS and the justification for these changes;
- record drawings, and
- a statement certifying that construction was completed in compliance with the DRAWINGS and SPECIFICATIONS, signed, and sealed by the **CERTIFYING ENGINEER** registered in the State of Colorado.

TABLE 1: SOIL CONSTRUCTION TESTING FREQUENCY[1] VOLUME PER TEST

Test and ASTM Designation	Subgrade (cy)	Select Structural Fill (cy)
Compaction (ASTM D698)	50,000	50,000
Particle Size[2] (ASTM C117, C136, D1140, D6913)	50,000	50,000
Atterberg Limit (ASTM D4318)	--	--
Moisture Content[3] (ASTM D2216)	2,000	2,000
Nuclear Density/Moisture (ASTM D6938)	2,000	2,000

TABLE 2: SOIL CONSTRUCTION TESTING FREQUENCY[1] VOLUME PER TEST

Test and ASTM Designation	Low Volume Solution Collection Fill, Bedding Fill, Leak Detection Fill, and Pipe Bedding Fill (cy)	Soil Liner Fill (cy)	Drain Cover Fill (cy)
Compaction (ASTM D698)	--	4,000	--
Particle Size[2] (ASTM C117, C136, D1140) D6913	10,000	4,000	20,000
Atterberg Limit (ASTM D4318)	10,000	4,000	20,000
Moisture Content[3] (ASTM D2216)	10,000	500	20,000
Permeability[4] (ASTM D5084)	--	4,000	--
Nuclear Density/Moisture (ASTM D6938)	--	500	--

[1] Tests shall be performed at the specified frequency or one per material type, whichever is greater.

[2] Use the USCS for description and identification (ASTM D2488).

[3] In-place Moisture Content.

[4] Permeability testing will be performed during the processing of the Soil Liner Fill material, certifying the processed stockpile.

NewFields	CLIENT Newmont Cripple Creek & Victor Gold Mine	PROJECT NO 475.0106.049
PROJECT: VLF2 Phase 3		
TITLE: TECHNICAL SPECIFICATIONS – Earthworks Construction Quality Assurance (CQA) Plan – Owner Performed Work		**SPECIFICATION NO.** **01400-1 EARTHWORK CQA**

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SECTION 01400-1 EARTHWORKS CONSTRUCTION QUALITY ASSURANCE (CQA) PLAN – OWNER PERFORMED WORK

1. PART 1: INTRODUCTION

This plan addresses the construction quality assurance (CQA) procedures for the installation of the earthworks (soils) component of the backfilling the Pit for VLF3 Phase 3 project at the Cresson Project, Teller County, Colorado. This program has been developed to assure that the construction of the soil components is in compliance with the project SPECIFICATIONS and to demonstrate that the regulatory requirements for the construction are achieved.

The objective of this plan is to assure that proper materials, construction techniques, and procedures are followed by the **CONTRACTOR** and that the intent of the design is met. This plan also provides the means for resolution of problems that may occur during construction.

This plan addresses quality assurance, not quality control. This CQA Plan is independent of the quality control (QC) programs conducted by **CONTRACTOR**. The intent of the CQA Plan is to provide independent third party verification and testing, to demonstrate that the **CONTRACTOR** has met its obligations in the supply and installation of earthwork (soils) materials according to the design, project SPECIFICATIONS, contractual, and regulatory requirements. Quality control is provided by **CONTRACTOR** and refers to those actions taken by the **CONTRACTOR** to ensure that materials and workmanship meet the requirements of the DRAWINGS and SPECIFICATIONS.

2. PART 2: DESCRIPTION OF PARTIES TO CONSTRUCTION QUALITY ASSURANCE

The following section provides descriptions of the parties to this CQA Plan including their responsibilities and qualifications.

2.1. CC&V

In this CQA Plan, **CC&V** refers specifically to Cripple Creek & Victor Gold Mining Company. **CC&V** owns and operates the valley leach facility.

2.2. Manager

In this CQA Plan, **MANAGER** refers to the individual appointed by the Cripple Creek & Victor Gold Mining Company. **MANAGER** is the official representative of **CC&V** and is responsible for all construction activities including oversight and direction during construction. **MANAGER** is also responsible for coordinating construction and CQA activities for the project.

MANAGER shall serve as communications coordinator for the project, initiating preconstruction and resolution meetings. As communications coordinator, **MANAGER** will serve as a liaison

between all parties involved in the project to ensure that ongoing communications are maintained. **MANAGER** and **CERTIFYING ENGINEER** shall be responsible for the resolution of all CQA issues.

Duties for this position include the following:

- review and approval of DRAWINGS and SPECIFICATIONS for all soil components of the valley leach facility;
- preconstruction coordination with the **CQA MONITOR** to ensure that the **CQA MONITOR** has performed similar reviews of the DRAWINGS and SPECIFICATIONS to ensure that the CQA Plan can be implemented;
- coordination of all construction activities associated with **CONTRACTOR**;
- scheduling and coordinating construction activities with required CQA testing and activities;
- overseeing the construction quality control operations performed by **CONTRACTOR**;
- approve specific corrective measures to be implemented during construction when deviations from the SPECIFICATIONS occur;
- ensure that required quality assurance testing has been performed in accordance with the CQA Plan and to the satisfaction of the **CQA MONITOR**; and
- ensure that the CQA personnel are provided with all documentation required in the CQA Plan and project SPECIFICATIONS.

2.3. Design Engineer

In this CQA Plan, the **DESIGN ENGINEER and Engineer of Record (EOR)** refers specifically to NewFields who has assumed the role of **DESIGN ENGINEER** after a thorough review of design documents to include, but not limited to, the DRAWINGS and SPECIFICATIONS. The **DESIGN ENGINEER** or the **CERTIFYING ENGINEER** identified in Section 2.4 below, is responsible for approving all DRAWING and SPECIFICATION changes, modifications, or clarifications encountered during construction.

2.4. Certifying Engineer

In this plan, **CERTIFYING ENGINEER** refers specifically to NewFields. **CERTIFYING ENGINEER** is the individual or firm responsible for certifying the construction was performed in compliance with the DRAWINGS and SPECIFICATIONS. **MANAGER** and **CERTIFYING ENGINEER** shall be responsible for the resolution of all quality assurance issues.

2.5. Construction Quality Assurance Monitor

The **CQA MONITOR** is the firm or individual responsible for performing the CQA tasks outlined in this CQA Plan. The **CQA MONITOR** is the official CQA representative of **CC&V** and has the responsibility of overseeing the CQA aspects of the Work. In this CQA Plan the **CQA MONITOR** is associated with the **CERTIFYING ENGINEER and** refers specifically to (To Be Determined). The **CQA MONITOR** has the authority to stop any aspect of the Work that is not in compliance with the CQA Plan. Work would then be resumed once corrective action has been approved by **MANAGER**. The specific responsibilities of the **CQA MONITOR** include:

- review the DRAWINGS, SPECIFICATIONS, and related guidance documents;
- review all **CONTRACTOR** QC submittals and make appropriate recommendations;
- obtain preconstruction and construction samples and perform material evaluation testing as required;
- monitor foundation preparation activities as discussed in Section 6.3.1 and material placement as discussed in Section 6.3.2;
- assure that testing equipment used and tests performed are conducted according to SPECIFICATIONS and industry standards;
- document and report test results to **MANAGER**;
- report any deficiencies to **MANAGER** that are not corrected to the satisfaction of the **CQA MONITOR**, including design or SPECIFICATION changes;
- prepare a Construction Certification Report describing the construction, any deviations from SPECIFICATIONS or DRAWINGS and details, details of all field and laboratory test data, tests results (both laboratory and field), professional certification that construction was completed in accordance with the DRAWINGS and SPECIFICATIONS. The Construction Certification Report will be signed and sealed by the **CERTIFYING ENGINEER** registered in the State of Colorado;
- monitor the ambient air temperature and fill temperature, as outlined in Section 2200 of the SPECIFICATIONS; and
- maintain an on-site soils laboratory and perform regular calibration of equipment.

2.6. Earthworks Contractor

The Earthworks Contractor, also referred to as "**CONTRACTOR**", is responsible for proper processing, delivery and placement of all components as outlined in the SPECIFICATIONS.

3. PART 3: LINES OF COMMUNICATION

The **CQA MONITOR** shall be capable of direct communication with **MANAGER**, **DESIGN ENGINEER** and **CERTIFYING ENGINEER** at all times. Deficiencies that can be easily remedied, such

as unsatisfactory test results, will be dealt with directly between the **CQA MONITOR**, and **CONTRACTOR**. The **CQA MONITOR** will also discuss any deficiencies with the **CERTIFYING ENGINEER**.

If there is a disagreement among the **DESIGN ENGINEER, CERTIFYING ENGINEER,** and/or **MANAGER** that cannot be resolved among themselves, **MANAGER** shall present the matter to **CC&V** with **MANAGER** related recommendations and **CC&V** shall decide the matter with such decision being final.

4. PART 4: DEFICIENCIES

When deficiencies (items that do not meet SPECIFICATIONS or DRAWINGS) are discovered, the **CQA MONITOR** will immediately determine the nature and extent of the problem and notify the **CONTRACTOR**. If unsatisfactory test results identify a deficiency, additional tests will be performed to define the extent of the deficient area.

CONTRACTOR shall correct the deficiency to the satisfaction of the **CQA MONITOR**. If **CONTRACTOR** is unable to correct the problem, the **CQA MONITOR** will notify **MANAGER** and **CERTIFYING ENGINEER** which will assist in problem resolution. If the solution involves a design revision, the **DESIGN ENGINEER** shall also be contacted.

The **CQA MONITOR** shall retest and the **MANAGER** and **CERTIFYING ENGINEER** shall approve the corrected deficiencies before any additional related work is performed by **CONTRACTOR**. All retests and related documentation shall be recorded by the **CQA MONITOR** and included in the Construction Certification Report.

5. PART 5: MEETINGS

This section identifies and describes the meetings to be held during the course of the construction. Meetings shall be held in order to clearly define construction activities and goals in order to facilitate construction.

5.1. Preconstruction Meeting

MANAGER will hold a preconstruction meeting at the site prior to the start of construction. **MANAGER**, **DESIGN ENGINEER, CERTIFYING ENGINEER**, **CQA MONITOR**, **CONTRACTOR**, and others designated by **MANAGER** shall attend this meeting. The purpose of this meeting will be to:

- review the construction DRAWINGS, CQA Plan, and SPECIFICATIONS;
- define the responsibilities of each party;
- define lines of communication and authority;

- review method of documentation, testing procedures, and reporting inspection data;
- establish testing protocols and procedures for correcting and documenting construction deficiencies;
- discuss any changes that may be needed to ensure that construction will be completed in compliance with the design; and
- This meeting will be documented by **MANAGER** and copies will be distributed to all parties.

5.2. Progress Meetings

MANAGER will hold a daily progress meeting, either before the start of work or at the completion of work. At a minimum, this meeting will be attended by the **CQA MONITOR** and **CONTRACTOR**. The purpose of this meeting will be to:

- review all the previous day's accomplishments and activities;
- review scheduled work location and activities for the day;
- discuss any problems or potential construction problems; and,
- review test data.

5.3. Deficiency Meetings

Special meetings will be held, as needed, to discuss potential problems or deficiencies. At a minimum, these meetings will be attended by the **CQA MONITOR** and **CONTRACTOR**. If the problem relates to a design issue, **MANAGER**, **DESIGN ENGINEER** and **CERTIFYING ENGINEER** should also be present. The meeting will be documented by the **CQA MONITOR**.

6. PART 6: EARTHWORKS CONSTRUCTION QUALITY ASSURANCE

Construction of the valley leach facility or specified earthworks shall be in accordance with the DRAWINGS and SPECIFICATIONS. A CQA monitoring and testing program shall be implemented by **CC&V** to ensure construction compliance by the **CONTRACTOR**. The CQA testing program shall consist of construction testing of materials used in the valley leach facility construction. The types of materials are defined in the SPECIFICATIONS. During construction, the **CQA MONITOR** shall sample and test these soil types to determine if they meet SPECIFICATIONS. The **CQA MONITOR** shall obtain and test soil samples in accordance with American Society for Testing and Material standards ASTM D75 and ASTM D420. All tests shall be performed by the **CQA MONITOR** on-site or in a geotechnical laboratory approved by the **CERTIFYING ENGINEER.**

6.1. Overburden Fill Placement

Construction of the Overburden Fill will be completed by the **CONTRACTOR** prior to the arrival of the **CQA MONITOR**. During this period, the **MANAGER** will provide the **CERTIFYING ENGINEER** and Division of Reclamation, Mining and Safety with weekly progress reports. These reports will include photographic evidence the material being placed meets the specification requirements, progress being made, and placement methods utilizing a template developed by the **CERTIFYING ENGINEER**. In addition, "Photographic Analysis" of the gradation of the material will be completed by the **MANAGER** on a monthly basis. Additionally, on a quarterly basis the **CERTIFYING ENGINEER** will perform on-site visual inspections and meet with the **MANAGER** to review the progress of the Overburden Fill placement.

6.2. Construction Testing

During construction, the **CQA MONITOR** shall test all earthwork components to verify that the construction is in accordance with the SPECIFICATIONS. Testing shall be performed on all soil used in the construction to confirm the materials meet SPECIFICATIONS. The **CQA MONITOR** shall conduct testing after final placement of the materials. The tests to be performed, and the testing frequency, for each material type are listed in Tables 1. The testing frequencies specified in Tables 1 and 2 shall be increased when the **CQA MONITOR** determines that construction conditions (such as adverse weather, equipment breakdown, improperly ballasted compactor, excessive lift thickness, improper soil type, improper moisture conditioning and compaction) warrant additional tests. Additional tests will be approved by **MANAGER** and directed by the **CQA MONITOR**.

6.3. Construction Monitoring

The **CQA MONITOR** will monitor and test all earthwork quality assurance components of the construction to verify that the construction is in accordance with the SPECIFICATIONS. The **CQA MONITOR** shall identify inadequate construction methodologies or materials that may adversely impact the performance of the facility being constructed and existing structures. The **CQA MONITOR** will record visual observations throughout the construction process to ensure that the materials are placed to the minimum dimensions as shown on the DRAWINGS. Quality control testing will be performed by the **CONTRACTOR**.

6.3.1. Foundation Preparation

The **CQA MONITOR** shall observe and document the foundation preparation including:

- stripping and excavation activities to ensure that **CONTRACTOR** places the material in the appropriate stockpile (Structural Fill, Select Structural Fill, Leak Detection Fill, Low Volume Solution Collection Fill, Bedding Fill, Soil Liner Fill, Drain Cover Fill, Fine Shaft Backfill, Pipe

Bedding Material and Granular Filter Material), if stockpiling is necessary;

- stockpiling activities to verify location of stockpile, material type, and dressing;
- excavations for moisture seeps, unsuitable foundation soil, elevation, and proper drainage;
- subgrade preparation to confirm that the surface of the subgrade is free of soft, organic, and otherwise deleterious materials (such as debris, branches, vegetation, mud, ice, or frozen materials); and that soil and rock surfaces that contain joints or fractures are adequately filled in accordance with the SPECIFICATIONS; and
- construction of access roads, drainage control features and erosion control features to verify compliance with the DRAWINGS and SPECIFICATIONS.

6.3.2. Placement Of Materials

6.3.2.1. Overburden Material

During placement of Overburden fill, the **CONTRACTOR** shall:

- verify the use of appropriate fills;
- monitor and document material placement, including soil type, particle size, loose lift thickness, is in compliance with the SPECIFICATIONS;

6.3.2.2. Structural Fill

During placement of Structural Fill, the **CQA MONITOR** shall:

- verify the use of appropriate fills;
- monitor and document material placement, including soil type, particle size, loose lift thickness, moisture conditioning process, compaction equipment and methods used to attain compaction, including number of passes, uniformity of compaction coverage, compacted lift thickness, bonding of lifts and in-place moisture content and dry density is in compliance with the SPECIFICATIONS;
- monitor the fill temperature as identified in Section 02200 of the SPECIFICATIONS.

7. PART 7: DOCUMENTATION

Documentation kept by the **CONTRACTOR/CQA MONITOR** shall consist of daily record-keeping, construction problem resolutions, design and SPECIFICATION changes, photographic records of construction, weekly progress reports, chain of custody forms for test sample tracking, and a Construction Certification Report.

7.1. Daily Record Keeping

Daily records kept shall consist of field notes, observation and testing data sheets, summary of the daily meeting and reporting of construction problems and resolutions. The **CONTRACTOR/CQA MONITOR** shall submit this information on a regular basis to **MANAGER** for review.

7.2. Soils Observation and Testing Forms

The **CONTRACTOR/CQA MONITOR** will document soils observations on forms that generally include the following information:

- date, project name, location, and weather data, including high and low daily temperatures;
- a site plan showing work areas and test locations;
- descriptions of ongoing construction detailing work areas and equipment utilized by **CONTRACTOR;**
- summary of test results and samples obtained, with locations and elevations (Structural Fill only);
- resolutions of deficient test results;
- test equipment calibrations, if necessary;
- summary of meetings held; and
- signature or initials of the **CONTRACTOR/CQA MONITOR**.

7.3. Photo Documentation

The **CONTRACTOR/CQA MONITOR** shall photograph all phases of construction. Photographs shall be identified by location, time, date, and name of the **CQA MONITOR** taking the photograph.

7.4. Design and Specification Changes

During construction, the need to address DESIGN and SPECIFICATION changes, modifications, or clarifications may arise. In such cases the **CONTRACTOR/CQA MONITOR** shall notify **MANAGER**, which shall notify the **DESIGN ENGINEER** and the **CERTIFYING ENGINEER**. DESIGN and SPECIFICATION changes shall only be made with written agreement from **MANAGER** and **DESIGN ENGINEER**.

7.5. Weekly Progress Reports

The **CONTRACTOR/CQA MONITOR** shall prepare weekly progress reports summarizing all construction and quality assurance activities. This report shall be submitted to **MANAGER** and shall include the following information:

- date, project name, and location;
- summary of construction related activities;
- summary of samples taken and test results;
- summary of deficiencies and/or defects and resolutions; and,
- signature of the **CONTRACTOR/CQA MONITOR**.

7.6. Construction Certification Report

At the completion of the Structural Fill placement, the **CQA MONITOR** shall submit to **MANAGER** documentation to be included in a future Construction Certification Report. This report shall certify that the work has been performed in compliance with the DRAWINGS and SPECIFICATIONS and will contain the following information:

- summary of all construction activities;
- photographic documentation;
- test data sheets;
- copies of weekly reports during placement of the Structural Fill;
- CQA test results, including date, test locations and resolutions of deficient test results;
- fill temperature monitoring results;
- staff schedule summary;
- a description of significant construction problems and the resolution of these problems;
- changes to the DRAWINGS or SPECIFICATIONS and the justification for these changes.

TABLE 1: SOIL CONSTRUCTION TESTING FREQUENCY[1] VOLUME PER TEST

Test and ASTM Designation	Overburden Fill	Structural Fill (cy)
Compaction (ASTM D698)	-	50,000
Particle Size[2] (ASTM C117, C136, D1140, D6913)	1 per month[3]	50,000
Atterberg Limit (ASTM D4318)	--	50,000
Nuclear Density/Moisture (ASTM D6938)	-	2,000[4]

[1] Tests shall be performed at the specified frequency or one per material type, whichever is greater.
[2] Use the USCS for description and identification (ASTM D2488).
[3] Particle Size analysis will be completed using Photo Analysis Software
[4] Nuclear Density/Moisture testing only when appropriate based upon the in-place materials

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SECTION 02200 EARTHWORKS

1. PART 1: GENERAL

1.1. Summary

This specification describes site preparation, excavation, stockpiling of soils for earthwork if necessary, and placement of Structural Fill, Select Structural Fill, Coarse Shaft Backfill, Low Volume Solution Collection Fill, Bedding Fill, Leak Detection Fill, Soil Liner Fill, Select Drain Cover Fill, Fine Shaft Backfill, Pipe Bedding Material, and Granular Filter Material for the valley leach facility.

1.2. Related Sections

Refer to the following Sections for related work:

- Section 01050 - Staking and Construction Certification Documentation
- Section 02776-0 - Geomembrane
- Section 02777 - Geotextile

1.3. Tolerances

A. Limits of excavation, Structural Fill, Select Structural Fill, Coarse Shaft Backfill, Low Volume Solution Collection Fill, Bedding Fill, Leak Detection Fill, Soil Liner Fill, Drain Cover Fill, Select Drain Cover Fill, Fine Shaft Backfill, Pipe Bedding Material, and Granular Filter Material for the valley leach facility are defined by the lines and elevations shown on the DRAWINGS. All fills shall be placed to the minimum thicknesses shown on the DRAWINGS.

B. Finished grades shown on the DRAWINGS are given in feet and shall slope uniformly between given spot and contour elevations, without sag or humps. All grades shall provide for natural runoff.

C. The Soil Liner Fill and Bedding Fill shall have a minimum thickness of 1.0 foot.

D. The Low Volume Solution Collection Fill will have a minimum thickness of 3.0 feet at all times while the Drain Cover fill and Select Drain Cover Fill will have a minimum thickness of 2.0 feet at all times.

E. Clearance of pipes with respect to regulated boundaries will be checked by **MANAGER**. If clearances are inadequate, **CONTRACTOR** shall backfill trenches to compaction SPECIFICATIONS and relocate trenches at **CONTRACTOR**'s expense.

F. Correction of over-excavation and backfilling shall be to **CONTRACTOR**'s account.

1.4. Quality Assurance

A. All work shall be monitored and tested in compliance with the requirements of the CQA Plan.

B. **CONTRACTOR** shall be aware of all testing activities outlined in the CQA Plan, and shall account for these activities in the construction schedule.

C. All CQA soils testing (both field and laboratory testing) will be the responsibility of **CERTIFYING ENGINEER**, as identified in the Earthworks CQA plan. **CONTRACTOR** shall be responsible for cooperating with **CQA MONITOR** during all testing activities. **CONTRACTOR** shall provide equipment and labor to assist **CQA MONITOR** in sampling, if requested, and shall also provide access to all areas requiring testing activities. Quality Control testing shall be the responsibility of the **CONTRACTOR**.

D. All excavation, backfill, and grading operations shall be carried out under the observation of **MANAGER** and **CERTIFYING ENGINEER**.

E. Any work found unsatisfactory, or any work disturbed by subsequent operations before acceptance is granted shall be corrected by **CONTRACTOR**, at its sole cost.

2. PART 2: PRODUCTS

2.1. Materials

A. Fill materials will be soils, gravels, or rock fill approved by **MANAGER** and **CERTIFYING ENGINEER**. The materials shall be free of organic matter, debris, frozen material, and other deleterious materials, and shall be excavated, as required, as follows:

1. Overburden Fill – material as approved by the **MANAGER** and **CERTIFYING ENGINEER** conforming to the following specifications:

U.S. Standard Sieve Size	Percent Passing by Dry Weight
60-inch	100
36-inch	80 – 100
3-inch	40 – 100
Plasticity Index: 30 maximum	

2. Structural Fill - material as approved by **MANAGER** and **CERTIFYING ENGINEER** conforming to the following specification:

U.S. Standard Sieve Size	Percent Passing by Dry Weight
24-inch	100
8-inch	40 – 100
No. 200	0 – 25
Plasticity Index: 30 maximum	

3. Select Structural Fill - well graded granular soil or sound, hard, durable, rockfill excavated on-site or supplied from off-site mine waste rock with a maximum particle size of 3 inches as approved by **MANAGER** and **CERTIFYING ENGINEER**.

4. Leak Detection Fill - material approved by **MANAGER** and **CERTIFYING ENGINEER** conforming to the following specification:

U.S. Standard Sieve Size	Percent Passing by Dry Weight
1-inch	100
⅜-inch	40 – 70
No. 4	5 – 50
No. 40	0 – 20
No. 200	0 – 10
Plasticity Index: NP	

5. Low Volume Solution Collection Fill - material approved by **MANAGER** and **CERTIFYING ENGINEER** conforming to the following specification:

U.S. Standard Sieve Size	Percent Passing by Dry Weight
1-inch	100
⅜-inch	40 – 70
No. 4	5 – 55
No. 200	0 – 10
Plasticity Index: NP	

6. Soil Liner Fill - processed materials as approved by **MANAGER** and **CERTIFYING ENGINEER**, conforming to the following specification:

U.S. Standard Sieve Size	Percent Passing by Dry Weight
2-inch	100
No. 200	15 – 65
Point load tensile strength:	> 300 psi
Plasticity Index: 10 Minimum Hydraulic Conductivity 1×10-6 cm/s maximum	

7. Drain Cover Fill - material approved by **MANAGER** and **CERTIFYING ENGINEER** conforming to the following specification:

U.S. Standard Sieve Size	Percent Passing by Dry Weight
1½-inch	100
¾-inch	70 – 100
No. 4	5 – 55
No. 200	0 – 10
Plasticity Index: NP	

Upon approval by the **CERTYIFYING ENGINEER**, spent ore (within the above SPECIFICATIONS) from Phase IV of VLF1 may be used as Drain Cover Fill.

or

The **MANAGER** substitute crushed ore as Drain Cover Fill. The crushed ore material shall conform to the following SPECIFICATIONS:

U.S. Standard Sieve Size	Percent Passing by Dry Weight
3-inch	100
2-inch	97 - 100
¾-inch	40 – 100
No. 4	5 – 35
No. 200	0 – 8
Plasticity Index: Non Plastic	

8. Select Drain Cover Fill - material approved by MANAGER and CERTIFYING ENGINEER conforming to the following specification:

U.S. Standard Sieve Size	Percent Passing by Dry Weight
1½-inch	100
¾-inch	70 – 100
No. 4	5 – 55
No. 200	0 – 10
Plasticity Index: NP	

Acceptance of non-conforming materials: In cases where non-conformance to these material specifications occur the Design Engineer in tandem with the Manager can approve the material for use, if in their opinion, the specification deviation does not diminish functionality of a given design element and/or compromise the design intent. If non-conforming materials are accepted by the Design Engineer and Manager for use during construction, the DRMS will be contacted, within a week of discovery, to alert them to the acceptance and rationale behind acceptance of non-conforming materials.

3. PART 3: EXECUTION

3.1. Clearing and Grubbing

A. Clearing and grubbing shall be done within the footprint of the limits of the construction area, as delineated on the DRAWINGS. Clearing shall extend a maximum of 15 feet and a minimum of 10 feet outside of the construction limits or as directed by **MANAGER**. Areas for clearing shall be released to **CONTRACTOR** by **MANAGER**. No pioneering of roads across undisturbed areas shall be allowed without prior approval of **MANAGER**

B. No clearing shall be performed until written permission is given by **MANAGER** and until the **CONTRACTOR** has provided construction staking for the proposed work. Clearing shall consist of cutting brush to the ground level, removing such material, along with wood, rubbish, tree stumps, and any other vegetation with roots in excess of 1-inch diameter, and other deleterious materials, and disposing of all such material in the accepted manner described below.

C. In areas designated to be stripped of unsuitable or objectionable material, said materials shall be stripped to the full depth of organic or other unsuitable material as determined by **MANAGER** and **CERTIFYING ENGINEER**, whichever is greater.

D. Stripped and grubbed vegetation shall be removed and disposed in stockpiles or other approved methods in an area designated by **MANAGER**.

3.2. Topsoil Removal

Topsoil is defined as an acceptable growth medium as approved by **MANAGER** and **CERTIFYING ENGINEER** that has no chemical or physical characteristics, which will exclude its use as such.

A. Stripping of the topsoil shall be done within the entire area of the stripping limits.

B. **CONTRACTOR** shall excavate and remove topsoil in a manner that will minimize contamination with other soil horizons and will take such measures as are necessary to ensure that the removal of topsoil does not result in erosion or excessive sedimentation.

C. **CONTRACTOR** shall stockpile topsoil at locations designated by **MANAGER**. Stored topsoil shall not be disturbed by mining, leaching operations, or construction activities, and shall be protected from wind and water erosion, compaction, and contamination.

D. **CONTRACTOR** shall grade topsoil stockpiles to prevent erosion and ponding of precipitation in the stockpile areas. The maximum topsoil stockpile height will be approved by **MANAGER**. The **CONTRACTOR** shall protect stockpiled topsoil by an effective cover of non-noxious, quick- growing, annual, and perennial plants, approved by **MANAGER**, which shall be seeded or planted during the first appropriate growing season after removal.

3.3. Waste Removal

Waste material is defined as material too wet, too dry, frozen or containing ice or snow, containing organic or other deleterious matter, having poor characteristics of grading or compaction, having other characteristics that may result in undesirable settlement or other movement of the fill, or within the fill, or otherwise not meeting the requirements of the SPECIFICATIONS, provided that this definition permits drying, water, and any other processing or reprocessing to make the material stable and suitable prior to incorporating it into the fill as permitted in the SPECIFICATIONS or by the **MANAGER** and **CERTIFYING ENGINEER**.

A. **CONTRACTOR** shall excavate and remove waste in a manner that will minimize contamination with other soil horizons.

B. **CONTRACTOR** shall stockpile removed waste at locations designated by **MANAGER**

3.4. Excavation

A. **CONTRACTOR** shall perform excavation to the lines and grades shown on the DRAWINGS or as directed by **MANAGER**. No excavation shall begin until the **CONTRACTOR** has provided construction staking for the proposed work.

B. **CONTRACTOR** shall prevent the disturbance of surrounding areas during excavation. Where selective excavations are required to obtain materials for Structural Fill and Select Structural Fill, the material removed from the excavations shall be taken directly to the

fill areas or, if required, stockpiled by material types. The stockpiles shall be approved by **MANAGER**.

C. **CONTRACTOR** shall grade all excavations to ensure grades are maintained to provide adequate drainage at all times. Work shall be suspended by **CONTRACTOR** when, in the opinion of **MANAGER** and **CERTIFYING ENGINEER**, the site is overly wet, muddy, or otherwise unsuitable for proper maintenance, until directed otherwise by **MANAGER**, at no cost to **CC&V**.

D. In excavations where Structural Fill or Select Structural Fill is to be placed on slopes steeper than 3H:1V, horizontal benches shall be excavated into the slope to allow fill to be placed in horizontal lifts. The **CONTRACTOR** shall continuously bench and key embankment material into the existing material a minimum of 2 feet.

E. The **CONTRACTOR** will be responsible for the safety of temporary construction slopes. **CONTRACTOR** shall inspect all temporary and permanent open-cut excavations on a regular basis for signs of instability. Should signs of instability be noted, **CONTRACTOR** shall immediately undertake remedial measures and shall notify **MANAGER** immediately. Permanent cut slopes shall be left in smooth, safe, and stable condition at the end of the workday.

F. **CONTRACTOR** shall final grade excavations within the valley leach facility to establish positive drainage to the Pregnant Solution Storage Area. In no case will depressions or bowls be permitted in the valley leach facility area.

G. **CONTRACTOR** shall conduct all excavation and shoring operations in compliance with applicable MSHA, Colorado State and Federal government laws and regulations.

3.5. Subgrade

A. The **MANAGER** and **CERTIFYING ENGINEER** will inspect and approve the exposed subgrade prior to any fill or Soil Liner being placed. **CQA MONITOR** will confirm that the surface of the subgrade is smooth and free of debris, grade stakes, angular rocks, roots, branches, vegetation, mud, ice, or frozen material. If the subgrade is determined to be frozen, using the criteria identified in Section 3.6 below, the **CONTRACTOR** may either remove and replace the frozen subgrade or wait until subsequent temperature monitoring indicates the fill is unfrozen, at no cost to **CC&V**. The subgrade shall have no sudden sharp or abrupt changes in grade.

B. **CONTRACTOR** is responsible for maintaining subgrades in a condition satisfactory to **CERTIFYING ENGINEER**. **CONTRACTOR** shall protect prepared subgrades, including previously approved subgrade, from weather, construction equipment, or other factors as outlined in Section 3.6.A.10 below. Subgrade surfaces, including previously approved subgrade, that become softened or otherwise unsuitable for placement of fill, shall be repaired to **CERTIFYING ENGINEER's** and **MANAGER's** satisfaction, at no cost to **CC&V**.

C. Prior to placement of fill materials, **CONTRACTOR** shall scarify all in-situ materials to a depth of 6-inches, moisture condition, and recompact the subgrade. Compactive effort shall be adequate to obtain a minimum of 95 percent of maximum dry density as determined by the standard Proctor test (ASTM D698) for the particular fill material. Moisture conditioning shall be adequate to achieve a uniform moisture and density. In rock areas, the **CONTRACTOR** shall prepare the subgrade by removing loose rock fragments until competent foundation material is encountered as approved by **CERTIFYING ENGINEER**.

D. If the underlying material is unsuitable to permit proper compaction of the subgrade, **CONTRACTOR** shall loosen, aerate (or excavate and remove), and recompact the subgrade until the top layer can be compacted as required. The recompacted surface shall then be scarified, as needed, to provide a good bond between the foundation and fill materials.

3.6. Fill Placement

A. The following general guidelines shall be followed except as noted elsewhere in this Section.

1. No fill materials shall be placed until the foundation and subgrade preparations have been completed as specified herein, in Section 3.5 of this SPECIFICATION. The procedures for fill placement shall be approved by **MANAGER** and **CERTIFYING ENGINEER** prior to start of fill placement.

2. No brush, roots, sod, frozen material, or other deleterious or unsuitable materials shall be incorporated in the fills. The suitability of all materials intended for use in the fill shall be subject to approval by **MANAGER** and **CERTIFYING ENGINEER**. Fill placement shall be temporarily stopped by **CONTRACTOR** due to weather conditions, if materials and installation do not meet the SPECIFICATIONS, at no cost to **CC&V**. Fill shall not be placed upon frozen material, such as snow or ice.

3. If the surface of the prepared foundation or the surface of any layer of the fill is too dry or too smooth to bond properly with the layer of material to be placed thereon, it shall be moisture-conditioned and/or worked with harrow, scarifier teeth, disc, or other suitable equipment to provide a satisfactory bonding surface before fill material is placed thereon. If the surface of the prepared foundation or the rolled surface of any layer is excessively wet for fill materials to be placed thereon, it shall be removed and allowed to dry or worked with a harrow, scarifier teeth, disc, or other suitable equipment to reduce the moisture content to an acceptable level or meet project SPECIFICATIONS as determined by **MANAGER** and **CERTIFYING ENGINEER**. It shall then be compacted before the next layer of fill material is placed. Determination of such dry or wet conditions shall be made by **CERTIFYING ENGINEER**.

4. The distribution of materials shall be such that the fill is free from voids, lenses, pockets, streaks, or layers of material differing substantially in texture or gradation from the surrounding material. The material of a fill shall be as described in Section 2.1 of this specification.
5. Unless otherwise approved by **MANAGER** and **CERTIFYING ENGINEER**, the entire fill surface shall be at or near the same elevation at all times during construction. At all times during construction, the surface of the fill shall be graded and maintained by the **CONTRACTOR** to prevent ponding of water and to allow for storm water drainage.
6. Except as otherwise specified or approved by **MANAGER** and **CERTIFYING ENGINEER**, the **CONTRACTOR** shall dump and spread fill in such a manner so that no excessive gaps are left between successively dumped loads of materials. The fill shall be leveled prior to compaction by means of a dozer or grader, or other suitable approved equipment, to obtain a surface free from depressions.
7. Except in areas approved by **MANAGER** and **CERTIFYING ENGINEER** where space is limited or otherwise specified, **CONTRACTOR** shall place fill by routing the hauling and spreading units approximately parallel to the axis of the fill. As far as practical, hauling units shall be so routed that they do not follow in the same paths, but split their tracks evenly across the surface of the fill to enhance compaction.
8. **CONTRACTOR** shall apply water required for moisture conditioning on the fill or in the borrow areas.

   CONTRACTOR shall maintain fill materials within the moisture content range required to permit proper compaction to the specified density with the equipment being used. The moisture content of the fill materials, prior to and during compaction, shall be uniform throughout each layer of the material.

   Prior to mixing of wet and dry material on the fill to obtain the proper moisture content, approval shall be obtained from **CERTIFYING ENGINEER**. Mixed material shall have a uniform distribution of the moisture content prior to placement on the subsequent lift.

   When materials spread on the fill are too dry for proper compaction, **CONTRACTOR** shall spray water on each layer of the fill and shall work the moisture into the fill by harrowing or other approved means, until a uniform distribution of moisture is obtained. Material that is too wet for proper compaction, as determined by **CERTIFYING ENGINEER**, shall be removed from the fill and/or spread out and permitted to dry, assisted by disking, and harrowing or mixing in dry material when permitted by **CERTIFYING ENGINEER**, if necessary, until the moisture content is reduced to an amount suitable for obtaining the specified degree of compaction, at no cost to **CC&V.**

9. After each layer of fill material has been placed, spread, and moisture-conditioned, the layer shall be compacted by passing compaction equipment over the entire surface of the layer a sufficient number of times to obtain the required density, as specified herein. Compaction shall be accomplished with equipment and by methods approved by **CERTIFYING ENGINEER**. If such equipment or methods are found unsatisfactory for the intended use, **CONTRACTOR** shall replace the unsatisfactory equipment with other types or adjust methods until proper compaction is achieved. Prior to placement of a subsequent lift, the previous lift shall be thoroughly scarified to a nominal depth of 2-inches to provide good bonding between lifts. Scarification shall be accomplished by disking, raking with a grader, or an alternative method approved by **CERTIFYING ENGINEER**.
10. The **CQA MONITOR** will measure the ambient air temperature on an hourly basis. If the ambient air temperature is less than thirty-two degrees Fahrenheit for more than one hour over the preceding twenty-four (24) hours, the **CQA MONITOR** will measure the temperature of the fill to determine if the fill is frozen. "Frozen" is defined as a mean temperature of thirty-two degrees Fahrenheit (32°F) or less. The **CQA MONITOR** will measure the temperature at a depth of three (3) inches and six (6) inches, recording the lower of the two. Six (6) measurements will be taken per acre, and if the average is below thirty-two degrees Fahrenheit (32°F), the fill will be considered frozen. If the fill is determined to be frozen the **CONTRACTOR** may either remove and replace the frozen fill or wait until subsequent temperature monitoring indicates the fill is unfrozen at no cost to **CC&V**.
11. Overburden slopes shall be compacted using a method specification and graded to meet the grades and dimensions shown on the DRAWINGS. The Bedding Fill subgrade surface will be prepared as identified in Section 2200 of the SPECIFICATIONS.

B. Overburden Fill

1. Areas to receive Overburden Fill will include, but are not limited to, backfilling existing pits to within 35 feet of the proposed geomembrane surface.
2. Overburden Fill material shall be overburden waste placed with in maximum 25-foot thick lifts, and compacted utilizing loaded haulage equipment.
3. Maximum rock size for overburden fill shall be 5 feet.
4. Prior to commencement of Overburden Fill, the **CONTRACTOR** shall complete task training to ensure that material meeting the specification is borrowed and placed. This training will include visually identifying oversized material and visually verifying that the material being loaded and placed is reasonably graded to avoid placement of gap graded material with excessive voids.

C. Structural Fill

1. Areas to receive Structural Fill will include, but are not limited to, slope reductions, and miscellaneous site grading.
2. **CONTRACTOR** shall condition Structural Fill to a moisture content that allows compaction to the required density and that results in a firm, unyielding surface capable of allowing the movement of vehicles and equipment over the surface without causing rutting or other deleterious effects.
3. **CONTRACTOR** shall place Structural Fill materials with less than 30 percent rock materials above 3/4-inch size in maximum 12-inch loose lifts, and compact to 95 percent of maximum dry density (ASTM D698). The moisture content shall be within +3% to -3% of the optimum moisture content.
4. **CONTRACTOR** shall condition, place and compact Structural Fill containing more than 30 percent rock materials above 3/4-inch size(rock fill) by a method compaction technique. The compaction equipment shall consist of a minimum 10-ton (static drum weight) vibratory smooth-drum compactor. The number of passes and loose lift thickness shall be subject to **CERTIFYING ENGINEER's** approval, at no additional cost to **CC&V**. The method specifications may be changed at any time, at the discretion of **CERTIFYING ENGINEER**, based upon changes in material characteristics, field conditions, and/or compaction equipment.
5. Maximum rock size for rock fill shall be two-thirds of the compacted lift thickness, unless otherwise approved by **MANAGER**, **DESIGN ENGINEER,** and **CERTIFYING ENGINEER**. **CONTRACTOR** shall remove oversize materials from fills at no additional cost to **CC&V**.

D. Select Structural Fill

1. Select Structural Fill shall be placed for miscellaneous site grading as required by the **MANAGER** and **CERTIFYING ENGINEER**.
2. **CONTRACTOR** shall condition Select Structural Fill to a moisture content that allows compaction to the required density and that results in a firm, unyielding surface capable of allowing the movement of vehicles and equipment over the surface without causing rutting or other deleterious effects.
3. **CONTRACTOR** shall place Select Structural Fill materials with less than 30 percent rock materials above 3/4-inch size in maximum 12-inch loose lifts, and compacted to 95 percent of maximum dry density (ASTM D698). The moisture content shall be within +3% to -3% of the optimum moisture content.
4. **CONTRACTOR** shall condition and place Select Structural Fill containing more than 30 percent rock materials above 3/4-inch size (rock fill) in maximum 12-inch loose lifts and compact by a method compaction technique. The compaction equipment shall consist of a minimum ten 10-ton (static drum weight) vibratory smooth-drum

compactor. The number of passes shall be subject to **CERTIFYING ENGINEER's** approval, at no additional cost to **CC&V**. The method SPECIFICATIONS may be changed at any time, at the discretion of **CERTIFYING ENGINEER**, based upon changes in material characteristics, field conditions, and/or compaction equipment.

E. Leak Detection Fill

1. Leak Detection Fill shall be placed in the Leak Detection Trenches as shown on the DRAWINGS.
2. **CONTRACTOR** shall condition Leak Detection Fill to allow a surface that does not cause rutting or other deleterious effects.

F. Low Volume Solution Collection Fill

1. Low Volume Solution Collection Fill shall be placed over the geomembrane in the locations shown on the DRAWINGS.
2. **CONTRACTOR** shall condition Low Volume Solution Collection Fill to allow a surface that does not cause rutting or other deleterious effects.
3. **CONTRACTOR** shall place Low Volume Solution Collection Fill around the Low Volume Solution Collection Vertical Riser Pipes in maximum 12-inch loose lifts and compact using a hand operated vibratory plate compactor to the satisfaction of the **MANAGER** and **CERTIFYING ENGINEER**. Low Volume Solution Collection Fill shall be worked under the Low Volume Solution Collection Rise pipe haunches by hand to provide uniform support of the pipe.
4. Prior to placing the Low Volume Solution Collection Fill, **CONTRACTOR** shall verify by visual inspection that the underlying geosynthetics are free of holes, tears, wrinkles, or foreign objects. **MANAGER** and **CERTIFYING ENGINEER** will inspect the geosynthetic for wrinkles prior to placement of Low Volume Solution Collection Fill. As instructed by **MANAGER**, **CONTRACTOR** shall "work out" wrinkles to the satisfaction of **MANAGER** and **CERTIFYING ENGINEER** prior to placement of the Low Volume Solution Collection Fill. In all cases, wrinkles shall not be of a size that they could fold back on themselves. Wrinkles greater than one foot shall be removed and repaired by the **INSTALLER**.
5. **CONTRACTOR** shall place Low Volume Solution Collection Fill in a single 36-inch loose lift. The tracked equipment shall operate only over previously placed Low Volume Solution Collection Fill. **CONTRACTOR** shall not operate equipment directly on geosynthetics. Only a dozer with a ground pressure not exceeding 14.7 psi can be used to place Low Volume Solution Collection Fill. Equipment used for placement will not be allowed to pivot on one track (i.e., no abrupt or sharp turns). There shall be no downhill placement on slopes steeper than 4H:1V. Material can be placed along contours if buttressed from below.

6. Rubber tired construction equipment shall not be allowed to travel over the geomembrane or on top of Solution Collection piping unless a thickness of at least 45 inches of Low Volume Solution Collection Fill has been placed over the geomembrane and on top of Solution Collection piping. The **CONTRACTOR** will be required to demonstrate to the **MANAGER, DESIGN ENGINEER** and **CERTIFYING ENGINEER** that the equipment and procedures used are not detrimental to the geomembrane and piping, at no cost to **CC&V**. Off road haul truck traffic shall require a minimum of 60 inches for Cat 773 (or equivalent) of Low Volume Solution Collection Fill placed over the geomembrane and solution collection piping, and a minimum of 120 inches for CAT 777 (or equivalent) of Low Volume Solution Collection Fill placed over the geomembrane and solution collection piping.
7. When placing Low Volume Solution Collection Fill the maximum acceptable drop height is 3 feet.
8. **CONTRACTOR** shall operate equipment in a manner that is protective of underlying geosynthetics. If **MANAGER** or **CERTIFYING ENGINEER** suspects the occurrence of any damage to the underlying geosynthetics, **MANAGER** will instruct **CONTRACTOR** to remove Low Volume Solution Collection Fill to expose the geosynthetics. **CONTRACTOR** shall uncover, repair any observed damage of the underlying geosynthetics, in accordance with the repair requirements of Sections 02776 and 02777 of the SPECIFICATIONS, and recover, at no cost to **CC&V**.
9. **CONTRACTOR** shall place Low Volume Solution Collection Fill at a rate such that no single area of 350,000 square feet of geomembrane liner is exposed to ultraviolet light for more than 180 days.
10. **CONTRACTOR** shall provide close continuous monitoring at the point of placement during the placement of the Low Volume Solution Collection Fill over geosynthetics.
11. **CONTRACTOR** shall verify the final thickness of Low Volume Solution Collection Fill to determine compliance with this SPECIFICATION. **CONTRACTOR** shall record verification location, elevation, and thickness. **CQA MONITOR** shall witness all verification measurements. **CONTRACTOR** will submit a method of verifying Low Volume Solution Collection Fill depth to **MANAGER** for approval. Grade markers shall be placed on a 50- by-50-foot grid with additional points required for breaks in grade. **CONTRACTOR** shall remove all grade markers under supervision of **CQA MONITOR** after verification measurements have been approved by **MANAGER** and **CERTIFYING ENGINEER** and will backfill holes with Low Volume Solution Collection Fill. Areas with deficient thickness shall be reworked by **CONTRACTOR**, until acceptable measurements are obtained. If **MANAGER** or **CERTIFYING ENGINEER** suspects the occurrence of any damage to the underlying geosynthetics, **MANAGER** will instruct **CONTRACTOR** to remove Low Volume Solution Collection Fill to expose the geosynthetics. **CONTRACTOR** shall uncover, repair any observed damage of the

underlying geosynthetics, in accordance with the repair requirements of Sections 02776 and 02777 of the SPECIFICATIONS and recover, at no cost to **CC&V**.

12. **CONTRACTOR** will provide adequate illumination as approved by **MANAGER**, if Low Volume Solution Collection Fill placement is carried out at night. A minimum of 2-foot candles measured at the synthetic liner, shall be used when Low Volume Solution Collection Fill placement is carried out at night.

G. Soil Liner Fill

1. Soil Liner Fill shall be placed within the limits of the valley leach facility as shown on the DRAWINGS and shall begin only after completion of all, or **MANAGER** and **CERTIFYING ENGINEER** approved portion of, excavation and Structural Fill placement in the valley leach facility.
2. **CONTRACTOR** shall process, place and compact the Soil Liner Fill to achieve a coefficient of permeability of less than $1x10^{-6}$ cm/sec, measured according to ASTM Method D5084, Method D. Any Soil Liner Fill not meeting the permeability specification shall be removed and replaced with material meeting the permeability specification, at no additional cost to **CC&V**.
3. **CONTRACTOR** shall place and compact the Soil Liner Fill in loose lifts such that the compacted lift thickness is a minimum of 12 inches.
4. **CONTRACTOR** shall compact the Soil Liner Fill to at least 95 percent of the maximum dry density as determined by the Standard Proctor density test (ASTM D698). The moisture content shall be within +3% to -2% of the optimum moisture content. Both moisture and density shall be uniform throughout the lift. If the Soil Liner Fill cannot be conditioned to meet the placement SPECIFICATIONS, the material shall be removed and replaced with new Soil Liner Fill at the **CONTRACTOR's** expense. The **CONTRACTOR** shall reduce the clod size of the soil liner fill to a size that is acceptable to the **CERTIFYING ENGINEER**, the method by which will be approved by **CERTIFYING ENGINEER** and **MANAGER** prior to implementation.
5. The moisture content of the Soil Liner Fill shall be uniform throughout prior to and during compaction of the material. **CONTRACTOR** shall be responsible for meeting moisture content and compaction SPECIFICATIONS. If the Soil Liner Fill cannot be conditioned to meet the placement SPECIFICATIONS, the material shall be removed and replaced with new Soil Liner Fill at no additional cost to **CC&V**. **MANAGER** may require **CONTRACTOR** to moisture condition Soil Liner Fill at stockpile at least 24 hours prior to the Soil Liner Fill being placed.
6. **CONTRACTOR** shall place Soil Liner Fill to form a continuous monolithic material. If a lift of compacted Soil Liner Fill dries out during placement operations, **CONTRACTOR** shall scarify, moisture condition the dry soil and recompact the lift. If a lift of compacted Soil Liner Fill becomes overly wet due to precipitation or over watering,

CONTRACTOR shall allow the wet soil to dry to the specified moisture content range before re-compaction of fill and placement of geosynthetic materials.

7. **CONTRACTOR** shall assist **CQA MONITOR** in obtaining soil samples for CQA testing. Soil Liner Fill sampling shall be scheduled by **CQA MONITOR** with **CONTRACTOR** to facilitate CQA field testing.
8. **CONTRACTOR** shall maintain Soil Liner Fill stockpile areas in a free-draining condition. The **CONTRACTOR** will maintain Soil Liner Fill stockpiles and Soil Liner Fill placed within the limits of the valley leach facility to prevent the drying out of the surface.
9. **CONTRACTOR** shall compact corners and other areas inaccessible to driven compaction equipment using hand-operated 500-pound vibratory plate or vibratory smooth-drum compaction equipment approved by **MANAGER** and **CERTIFYING ENGINEER**.
10. **CONTRACTOR** shall trim the surface of the Soil Liner Fill to the design grades shown on the DRAWINGS.
11. **CONTRACTOR** shall roll the surface of the Soil Liner Fill with a smooth drum roller to remove ridges and surface irregularities greater than 0.5 inches in height. **CERTIFYING ENGINEER** shall determine if surface preparation is sufficient to place geomembrane. On areas with slopes steeper than 3H:1V, **CONTRACTOR** shall adopt methods as necessary to obtain the same final surface preparations that would be obtained by the passage of a smooth-drum roller on flat or level ground. Pushing of compaction equipment by tracked equipment shall not be performed. Wheel ruts on the surface of the Soil Liner Fill from grading equipment shall be repaired by **CONTRACTOR** prior to placement of the geomembrane by rolling the surface as approved by **CQA MONITOR**.
12. **CONTRACTOR** will remove angular protruding rocks greater than 3/4 inches in diameter from the compacted Soil Liner Fill surface. Indentations left in the Soil Liner Fill Surface after removal of the rocks shall be filled with Soil Liner Fill or other suitable fill approved by **CQA MONITOR**, and compacted to achieve final grade. Areas of the Soil Liner Fill surface with concentrated gravelly areas will have suitable fill approved by **CQA MONITOR** placed on top and compacted to achieve final grade. A maximum thickness of 0.5 inches of suitable fill will be placed on the Soil Liner Fill.
13. **MANAGER** and **CERTIFYING ENGINEER** will identify any areas of significant desiccation, crusting, or erosion of a lift surface. Soil Liner Fill surfaces found to have desiccation cracks greater than 0.25-inches in width or depth, or which exhibit swelling, heaving or other similar conditions shall be replaced or reworked by **CONTRACTOR** to remove such defects. Desiccation cracks on the Soil Liner Fill surface less than 0.25-inches in width or depth shall be compacted with a smooth drum roller. **CONTRACTOR** shall take whatever steps necessary to prepare Soil Liner Fill

surface to the satisfaction of **MANAGER** and **CERTIFYING ENGINEER**, at no additional cost to **CC&V**.

14. **CONTRACTOR** shall maintain the Soil Liner Fill surface in a condition suitable for geomembrane installation as specified in these SPECIFICATIONS and in the CQA Plan until the surface is covered. **CONTRACTOR** shall repair all weather related damage to Soil Liner Fill surfaces or other portions of the Work that have or have not been covered by geomembrane, at no additional cost to **CC&V.** If any moisture is allowed to collect under the geomembrane prior to or after final seaming and softens the Soil Liner Fill, the geomembrane shall be removed and **CONTRACTOR** shall recondition and recompact the Soil Liner Fill to meet all placement and trimming SPECIFICATIONS, at no additional cost to **CC&V**.
15. **CONTRACTOR** shall remove all hubs and survey stakes in the Soil Liner Fill and backfill all holes with **MANAGER** and **CERTIFYING ENGINEER** approved moisture-conditioned Soil Liner Fill or bentonite. Compact with a Proctor hammer or other suitable device that will achieve a kneading type of compaction and will achieve the required density.
16. **CONTRACTOR** shall verify the final thickness of Soil Liner Fill to determine compliance with this SPECIFICATION. Thickness verification shall be performed at a minimum frequency of two measurements per acre using a soil-coring device, unless directed otherwise by **MANAGER**. **CONTRACTOR** shall record as part of the as-built documentation the location, elevation, and thickness of each Soil Liner Fill verification test. **CQA MONITOR** will witness all verification measurements. **CONTRACTOR** shall backfill all holes with **MANAGER** and **CERTIFYING ENGINEER** approved moisture- conditioned Soil Liner Fill compacted with a Proctor hammer or other suitable device that will achieve a kneading type of compaction and will achieve the required density, or bentonite. Areas with deficiencies shall be reworked by **CONTRACTOR**, until acceptable measurements are obtained at no additional cost to **CC&V**.
17. If tests indicate the Work does not meet the requirements of the SPECIFICATIONS, **MANAGER** and **CERTIFYING ENGINEER** will establish the extent of the nonconforming area. The nonconforming area shall be re-worked by CONTRACTOR until acceptable test results are obtained at no additional cost to **CC&V**
18. Prior to any geosynthetics being placed on Soil Liner Fill, the area will be tested by **CQA MONITOR**. No geosynthetics will be allowed to be placed on frozen material, as defined in Section 3.6.A.10, without the area in question being retested by the **CQA MONITOR**.

H. Drain Cover Fill

1. Drain Cover Fill shall be placed over the geomembrane in the locations shown on the DRAWINGS.

2. Prior to placing the Drain Cover Fill, **CONTRACTOR** shall verify by visual inspection that the underlying geosynthetics are free of holes, tears, wrinkles, or foreign objects. **MANAGER** and **CERTIFYING ENGINEER** will inspect the geosynthetic for wrinkles prior to placement of Drain Cover Fill. As instructed by **MANAGER**, **CONTRACTOR** shall "work out" wrinkles to the satisfaction of **MANAGER** and **CERTIFYING ENGINEER** prior to placement of the Drain Cover Fill. In all cases, wrinkles shall not be of a size that they could fold back on themselves. Wrinkles greater than one foot shall be removed and repaired by the **INSTALLER**.
3. **CONTRACTOR** shall place Drain Cover Fill in a single 24-inch loose lift. The tracked equipment shall operate only over previously placed Drain Cover Fill. **CONTRACTOR** shall not operate equipment directly on geosynthetics. Only a dozer with a ground pressure not exceeding 8.7 psi can be used to place Drain Cover Fill. A CAT 12G motor grader, or equivalent approved by **CERTIFYING ENGINEER,** can be used for Drain Cover Fill final grading. Equipment used for placement will not be allowed to pivot on one track (i.e. no abrupt or sharp turns). There shall be no downhill placement on slopes steeper than 4H:1V. Material can be placed along contours if buttressed from below. Motor graders shall not be allowed to make abrupt turns, brake suddenly, or dig blade in which results in the tires spinning on the Drain Cover Fill surface.
4. Highway compatible Rubber tired construction equipment shall not be allowed to travel over the geomembrane or on top of Solution Collection piping unless a thickness of at least 45 inches of Drain Cover Fill has been placed over the geomembrane and on top of Solution Collection piping. The **CONTRACTOR** will be required to demonstrate to the **MANAGER, DESIGN ENGINEER** and **CERTIFYING ENGINEER** that the equipment and procedures used are not detrimental to the geomembrane and piping, at no cost to **CC&V**. Off road haul truck traffic shall require a minimum of 42 inches for Cat 740 (or equivalent), a minimum of 60 inches for Cat 773 (or equivalent), and a minimum of 120 inches for CAT 777 (or equivalent) of Drain Cover Fill placed over the geomembrane and solution collection piping.
5. When placing Drain Cover Fill the maximum acceptable drop height is 3 feet.
6. **CONTRACTOR** shall operate equipment in a manner that is protective of underlying geosynthetics. If **MANAGER** or **CERTIFYING ENGINEER** suspects the occurrence of any damage to the underlying geosynthetics, **MANAGER** will instruct **CONTRACTOR** to remove Drain Cover Fill to expose the geosynthetics. **CONTRACTOR** shall uncover, repair any observed damage of the underlying geosynthetics, in accordance with the repair requirements of Sections 02776 and 02777 of the SPECIFICATIONS, and recover, at no cost to **CC&V**.
7. **CONTRACTOR** shall place Drain Cover Fill at a rate such that the geomembrane liner is not exposed to ultraviolet light for more than 180 days.
8. **CONTRACTOR** shall provide close continuous monitoring at the point of placement during the placement of the Drain Cover Fill over geosynthetics.

9. **CONTRACTOR** shall verify the final thickness of Drain Cover Fill to determine compliance with this SPECIFICATION. **CONTRACTOR** shall record verification location, elevation, and thickness. **CQA MONITOR** shall witness all verification measurements. **CONTRACTOR** will submit a method of verifying Drain Cover Fill depth to **MANAGER** for approval. Areas with deficient thickness shall be reworked by **CONTRACTOR**, until acceptable measurements are obtained. If **MANAGER** or **CERTIFYING ENGINEER** suspects the occurrence of any damage to the underlying geosynthetics, **MANAGER** will instruct **CONTRACTOR** to remove Drain Cover Fill to expose the geosynthetics. **CONTRACTOR** shall uncover, repair any observed damage of the underlying geosynthetics, in accordance with the repair requirements of Sections 02776 and 02777 of the SPECIFICATIONS and recover, at no cost to **CC&V**.
10. **CONTRACTOR** will provide adequate illumination as approved by **MANAGER**, if Drain Cover Fill placement is carried out at night. A minimum of 2-foot candles measured at the synthetic liner shall be used when Drain Cover Fill placement is carried out at night.

I. Select Drain Cover Fill

1. Select Drain Cover Fill shall be placed around the PSSA Riser Pipes as shown on the drawings.
2. **CONTRACTOR** shall place Select Drain Cover Fill in maximum 24-inch loose lifts around the PSSA Riser Pipes. The fill elevation shall always rise evenly around the pipe.
3. **CONTRACTOR** will not allow mobile heavy equipment to contact the PSSA Riser Pipe during fill placement.
4. **CONTRACTOR** shall place Crushed Ore, or an equivalent material approved by the **CERTIFYING ENGINEER** and **MANAGER** around the limits of the Select Drain Cover Fill placement as the elevation of the Select Drain Cover Fill rises.
5. Select Drain Cover Fill is to remain loose and free draining around the PSSA Riser Pipe Louvered Screen. Any material that is not loose around the screen will be scarified and made loose before the placement of the next lift of material.
6. **CONTRACTOR** shall constantly monitor the plumb of the PSSA Riser Pipes during Select Drain Cover Fill placement. Any corrections required to maintain the plumb of the PSSA Riser Pipes will be done so at no cost to CC&V.

J. Pipe Bedding Material

1. Pipe bedding material shall be placed around the CSP as shown on the drawings.
2. For piping external to the valley leach facility, **CONTRACTOR** shall compact the Pipe Bedding Material requiring compaction to at least 95 percent of the maximum dry

density as determined by the Standard Proctor density test (ASTM D698), and a moisture content 3 percent below and 3 percent over the optimum moisture content.

3. **CONTRACTOR** shall place Pipe Bedding Material in maximum 12-inch loose lifts. Pipe Bedding Material will be worked under pipe haunches by hand to provide uniform support of the CSP.
4. Native material used for backfilling CSP excavation shall be placed in 12-inch to 18-inch loose lifts, and compacted by wheel rolling with light, rubber tired or other light compaction equipment, as approved by **CERTIFYING ENGINEER.**

K. Granular Filter Material

1. Granular Filter Material shall be placed beneath the Riprap as shown on the drawings.

L. Bedding Fill

1. Bedding Fill shall be placed within the limits of the valley leach facility as shown on the DRAWINGS.
2. **CONTRACTOR** shall place and compact the Bedding Fill in loose lifts such that the compacted lift thickness is a minimum of 12 inches. **CONTRACTOR** shall condition the Bedding Fill to allow a surface that does not cause rutting or other deleterious effects. The moisture content and density shall be uniform throughout the lift. If a lift of compacted Bedding Fill dries out during placement operations, **CONTRACTOR** shall scarify, moisture condition the dry soil and recompact the lift. If a lift of compacted Bedding Fill becomes overly wet due to precipitation or over watering, **CONTRACTOR** shall allow the wet soil to dry to the specified moisture content range before re-compaction of fill and placement of geosynthetic materials.
3. **CONTRACTOR** shall assist **CQA MONITOR** in obtaining soil samples for CQA testing. Bedding Fill sampling shall be scheduled by **CQA MONITOR** with **CONTRACTOR** to facilitate CQA field testing.
4. **CONTRACTOR** shall trim the surface of the Bedding Fill to the design grades shown on the DRAWINGS.
5. **CONTRACTOR** shall roll the surface of the Bedding Fill with a smooth drum roller to remove ridges and surface irregularities greater than 0.5 inches in height. **CERTIFYING ENGINEER** shall determine if surface preparation is sufficient to place geomembrane. On areas with slopes steeper than 3H:1V, **CONTRACTOR** shall adopt methods as necessary to obtain the same final surface preparations that would be obtained by the passage of a smooth-drum roller on flat or level ground. Pushing of compaction equipment by tracked equipment shall not be performed. Wheel ruts on the surface of the Bedding Fill from grading equipment shall be repaired by **CONTRACTOR** prior to placement of the geomembrane by rolling the surface as

approved by **CQA MONITOR**. **CONTRACTOR** shall take whatever steps necessary to prepare Soil Liner Fill surface to the satisfaction of **MANAGER** and **CERTIFYING ENGINEER**, at no additional cost to **CC&V**.

6. **CONTRACTOR** shall maintain the Bedding Fill surface in a condition suitable for geomembrane installation as specified in these SPECIFICATIONS and in the CQA Plan until the surface is covered. **CONTRACTOR** shall repair all weather-related damage to Bedding Fill surfaces or other portions of the Work that have or have not been covered by geomembrane, at no additional cost to **CC&V**.

   If any moisture is allowed to collect under the geomembrane prior to or after final seaming and softens the Bedding Fill, the geomembrane shall be removed and **CONTRACTOR** shall recondition and recompact the Soil Liner Fill to meet all placement and trimming SPECIFICATIONS, at no additional cost to **CC&V**.

7. **CONTRACTOR** shall remove all hubs and survey stakes in the Bedding Fill and backfill all holes with **MANAGER** and **CERTIFYING ENGINEER** approved material.

8. **CONTRACTOR** shall verify the final thickness of Bedding Fill to determine compliance with this SPECIFICATION. **CONTRACTOR** shall record as part of the as-built documentation the location, elevation, and thickness of each Bedding Fill verification test. **CQA MONITOR** will witness all verification measurements. Areas with deficiencies shall be reworked by **CONTRACTOR**, until acceptable measurements are obtained at no additional cost to **CC&V**. If tests indicate the Work does not meet the requirements of the SPECIFICATIONS, **MANAGER** and **CERTIFYING ENGINEER** will establish the extent of the nonconforming area. The nonconforming area shall be reworked by **CONTRACTOR** until acceptable test results are obtained at no additional cost to **CC&V**

9. Prior to any geosynthetics being placed on Bedding Fill, the area will be tested by **CQA MONITOR**. No geosynthetics will be allowed to be placed on frozen material, as defined in Section 3.6.A.10, without the area in question being retested by the **CQA MONITOR**

3.7. Equipment

CONTRACTOR may use any type of earthmoving or excavating equipment unless otherwise noted in the SPECIFICATIONS, provided the equipment is in a satisfactory condition, complies with applicable rules and regulations, is of such capacity that the construction schedule can be maintained as planned by **CONTRACTOR**, and is approved by **MANAGER.**

NewFields	CLIENT Newmont Cripple Creek & Victor Gold Mine	PROJECT NO 475.0106.049
PROJECT: VLF2 Phase 3		
TITLE: TECHNICAL SPECIFICATIONS –EARTHWORKS-Owner Performed Work		**SPECIFICATION NO.** **02200-1 EARTHWORKS**

REV	DATE	PAGES	APPROVALS			REMARKS
			AUTHOR	REVIEW	CLIENT	
0	9/13/2023	7	JNM	KCW		Issued for Construction

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SECTION 02200.0 EARTHWORKS

1. PART 1: GENERAL

1.1. Summary

This specification describes the placement of Overburden Fill and Structural Fill for the pit backfilling project.

1.2. Related Sections

Refer to the following Sections for related work:

- Section 01400 – Earthworks CAQ

1.3. Tolerances

A. Limits of excavation, Overburden Fill and Structural Fill for the pit backfill project are defined by the lines and elevations shown on the DRAWINGS. All fill shall be placed to the minimum thicknesses shown on the DRAWINGS.

B. Finished grades shown on the DRAWINGS are given in feet and shall slope uniformly between given spot and contour elevations, without sag or humps. All grades shall provide for natural runoff.

C. Correction of over-excavation and backfilling shall be to **CONTRACTOR**'s account.

1.4. Quality Assurance

A. All work shall be monitored and tested in compliance with the requirements of the CQA Plan.

B. **CONTRACTOR** shall be aware of all testing activities outlined in the CQA Plan and shall account for these activities in the construction schedule.

C. All the CQA soils testing for the Overburden Fill (both field and laboratory testing) will be the responsibility of the CONTRACTOR, as identified in the Earthworks CQA plan.

D. All CQA soils testing for the Structural Fill (both field and laboratory testing) will be the responsibility of **CERTIFYING ENGINEER**, as identified in the Earthworks CQA plan. **CONTRACTOR** shall be responsible for cooperating with **CQA MONITOR** during all testing activities. **CONTRACTOR** shall provide equipment and labor to assist **CQA MONITOR** in sampling, if requested, and shall also provide access to all areas requiring testing activities. Quality Control testing shall be the responsibility of the **CONTRACTOR**.

E. All excavation, backfill, and grading operations shall be carried out under the observation of **MANAGER** and **CERTIFYING ENGINEER**.

F. Any work found unsatisfactory or any work disturbed by subsequent operations before acceptance is granted shall be corrected by **CONTRACTOR**, at its sole cost.

2. PART 2: PRODUCTS

2.1. Materials

A. Fill materials will be soils, gravels, or rock fill approved by **MANAGER** and **CERTIFYING ENGINEER**. The materials shall be free of organic matter, debris, frozen material, and other deleterious materials, and shall be excavated, as required, as follows:

1. Overburden Fill – material as approved by the Manager and Certifying Engineer conforming to the following specifications:

U.S. Standard Sieve Size	Percent Passing by Dry Weight
60– inch	100
36-inch	80-100
3-inch	40 -100

2. Structural Fill - material as approved by **MANAGER** and **CERTIFYING ENGINEER** conforming to the following specification:

U.S. Standard Sieve Size	Percent Passing by Dry Weight
24 – inch	100
8-inch	40-100
No. 200	0 – 25
Plasticity Index: 30 maximum	

Acceptance of non-conforming materials: In cases where non-conformance to these material specifications occur the Design Engineer in tandem with the Manager can approve the material for use, if in their opinion, the specification deviation does not diminish functionality of a given design element and/or compromise the design intent. If non-conforming materials are accepted by the Design Engineer and Manager for use during construction, the DRMS will be contacted, within a week of discovery, to alert them to the acceptance and rationale behind acceptance of non-conforming materials.

3. PART 3: EXECUTION

3.1. Waste Removal

Waste material is defined as material too wet, too dry, frozen or containing ice or snow, containing organic or other deleterious matter, having poor characteristics of grading or compaction, having other characteristics that may result in undesirable settlement or other movement of the fill, or within the fill, or otherwise not meeting the requirements of the SPECIFICATIONS, provided that this definition permits drying, water, and any other processing or reprocessing to make the material stable and suitable prior to incorporating it into the fill as permitted in the SPECIFICATIONS or by the **MANAGER** and **CERTIFYING ENGINEER**.

A. **CONTRACTOR** shall excavate and remove waste in a manner that will minimize contamination with other soil horizons.

B. **CONTRACTOR** shall stockpile removed waste at locations designated by **MANAGER**

3.2. Excavation

A. **CONTRACTOR** shall perform excavation to the lines and grades shown on the DRAWINGS or as directed by **MANAGER**. No excavation shall begin until the **CONTRACTOR** has provided construction staking for the proposed work.

B. **CONTRACTOR** shall prevent the disturbance of surrounding areas during excavation. Where selective excavations are required to obtain materials for Structural Fill, the material removed from the excavations shall be taken directly to the fill areas or, if required, stockpiled by material types. The stockpiles shall be approved by **MANAGER**.

C. **CONTRACTOR** shall grade all excavations to ensure grades are maintained to provide adequate drainage at all times. Work shall be suspended by **CONTRACTOR** when, in the opinion of **MANAGER** and **CERTIFYING ENGINEER**, the site is overly wet, muddy, or otherwise unsuitable for proper maintenance, until directed otherwise by **MANAGER**, at no cost to **CC&V**.

D. In excavations where Structural Fill is to be placed on slopes steeper than 3H:1V, horizontal benches shall be excavated into the slope to allow fill to be placed in

horizontal lifts. The **CONTRACTOR** shall continuously bench and key embankment material into the existing material a minimum of 2 feet.

E. The **CONTRACTOR** will be responsible for the safety of temporary construction slopes. **CONTRACTOR** shall inspect all temporary and permanent open-cut excavations on a regular basis for signs of instability. Should signs of instability be noted, **CONTRACTOR** shall immediately undertake remedial measures and shall notify **MANAGER** immediately. Permanent cut slopes shall be left in smooth, safe, and stable condition at the end of the workday.

F. **CONTRACTOR** shall final grade excavations within the project to establish positive drainage to the Pregnant Solution Storage Area. In no case will depressions or bowls be permitted in the valley leach facility area.

G. **CONTRACTOR** shall conduct all excavation and shoring operations in compliance with applicable MSHA, Colorado State and Federal government laws and regulations.

3.3. Fill Placement

A. The following general guidelines shall be followed except as noted elsewhere in this Section.

1. No fill materials shall be placed until the foundation and subgrade preparations have been completed as specified herein, in section 3.5 of this SPECIFICATION. The procedures for fill placement shall be approved by **MANAGER** and **CERTIFYING ENGINEER** prior to start of fill placement.

2. No brush, roots, sod, frozen material, or other deleterious or unsuitable materials shall be incorporated in the fills. The suitability of all materials intended for use in the fill shall be subject to approval by **MANAGER** and **CERTIFYING ENGINEER**. Fill placement shall be temporarily stopped by **CONTRACTOR** due to weather conditions, if materials and installation do not meet the SPECIFICATIONS, at no cost to **CC&V**. Fill shall not be placed upon frozen material, such as snow or ice.

3. If the surface of the prepared foundation or the surface of any layer of the fill is too dry or too smooth to bond properly with the layer of material to be placed thereon, it shall be moisture-conditioned and/or worked with harrow, scarifier teeth, disc, or other suitable equipment to provide a satisfactory bonding surface before fill material is placed thereon. If the surface of the prepared foundation or the rolled surface of any layer is excessively wet for fill materials to be placed thereon, it shall be removed and allowed to dry or worked with a harrow, scarifier teeth, disc, or other suitable equipment to reduce the moisture content to an acceptable level or meet project SPECIFICATIONS as determined by **MANAGER** and **CERTIFYING ENGINEER**. It shall then be compacted before the next layer of fill material is placed. Determination of such dry or wet conditions shall be made by **CERTIFYING ENGINEER**.

4. The distribution of materials shall be such that the fill is free from voids, lenses, pockets, streaks, or layers of material differing substantially in texture or gradation from the surrounding material. The material of a fill shall be as described in Section 2.1 of this specification.
5. Unless otherwise approved by **MANAGER** and **CERTIFYING ENGINEER**, the entire fill surface shall be at or near the same elevation at all times during construction. At all times during construction, the surface of the fill shall be graded and maintained by the **CONTRACTOR** to prevent ponding of water and to allow for storm water drainage.
6. Except as otherwise specified or approved by **MANAGER** and **CERTIFYING ENGINEER**, the **CONTRACTOR** shall dump and spread fill in such a manner so that no excessive gaps are left between successively dumped loads of materials. The fill shall be leveled prior to compaction by means of a dozer or grader, or other suitable approved equipment, to obtain a surface free from depressions.
7. Except in areas approved by **MANAGER** and **CERTIFYING ENGINEER** where space is limited or otherwise specified, **CONTRACTOR** shall place fill by routing the hauling and spreading units approximately parallel to the axis of the fill. As far as practical, hauling units shall be so routed that they do not follow in the same paths, but split their tracks evenly across the surface of the fill to enhance compaction.
8. **CONTRACTOR** shall apply water required for moisture conditioning on the fill or in the borrow areas.

   CONTRACTOR shall maintain fill materials within the moisture content range required to permit proper compaction to the specified density with the equipment being used. The moisture content of the fill materials, prior to and during compaction, shall be uniform throughout each layer of the material.

   Prior to mixing of wet and dry material on the fill to obtain the proper moisture content, approval shall be obtained from **CERTIFYING ENGINEER**. Mixed material shall have a uniform distribution of the moisture content prior to placement on the subsequent lift.

   When materials spread on the fill are too dry for proper compaction, **CONTRACTOR** shall spray water on each layer of the fill and shall work the moisture into the fill by harrowing or other approved means, until a uniform distribution of moisture is obtained. Material that is too wet for proper compaction, as determined by **CERTIFYING ENGINEER**, shall be removed from the fill and/or spread out and permitted to dry, assisted by disking and harrowing or mixing in dry material when permitted by **CERTIFYING ENGINEER**, if necessary, until the moisture content is reduced to an amount suitable for obtaining the specified degree of compaction, at no cost to **CC&V.**

9. After each layer of fill material has been placed, spread, and moisture-conditioned, the layer shall be compacted by passing compaction equipment over the entire surface of the layer a sufficient number of times to obtain the required density, as specified herein. Compaction shall be accomplished with equipment and by methods approved by **CERTIFYING ENGINEER**. If such equipment or methods are found unsatisfactory for the intended use, **CONTRACTOR** shall replace the unsatisfactory equipment with other types or adjust methods until proper compaction is achieved.
10. For Structural Fill with less than 30 percent rock materials above 3/4-inch size, the **CQA MONITOR** will measure the ambient air temperature on an hourly basis. If the ambient air temperature is less than thirty-two degrees Fahrenheit for more than one hour over the preceding twenty-four (24) hours, the **CQA MONITOR** will measure the temperature of the fill to determine if the fill is frozen. "Frozen" is defined as a mean temperature of thirty-two degrees Fahrenheit (32°F) or less. The **CQA MONITOR** will measure the temperature at a depth of three (3) inches and six (6) inches, recording the lower of the two. Six (6) measurements will be taken per acre, and if the average is below thirty-two degrees Fahrenheit (32°F), the fill will be considered frozen. If the fill is determined to be frozen the **CONTRACTOR** may either remove and replace the frozen fill or wait until subsequent temperature monitoring indicates the fill is unfrozen at no cost to **CC&V**.
11. Overburden slopes shall be compacted using a method specification and graded to meet the grades and dimensions shown on the DRAWINGS. The Bedding Fill subgrade surface will be prepared as identified in Section 2200 of the SPECIFICATIONS.

B. Overburden Fill

1. Areas to receive Overburden Fill will include, but are not limited to, backfilling existing pits to within 35 feet of the proposed geomembrane surface.
2. Overburden Fill material shall be overburden waste placed with in maximum 25-foot thick lifts, and compacted utilizing loaded haulage equipment.
3. Maximum rock size for overburden fill shall be 5 feet.
4. Prior to commencement of Overburden Fill, the **CONTRACTOR** shall complete task training to ensure that material meeting the specification is borrowed and placed. This training will include visually identifying oversized material and visually verifying that the material being loaded and placed is reasonably graded to avoid placement of gap graded material with excessive voids.

C. Structural Fill

1. Areas to receive Structural Fill will include, but are not limited to, slope reductions, and miscellaneous site grading.
2. **CONTRACTOR** shall condition Structural Fill to a moisture content that allows compaction to the required density and that results in a firm, unyielding surface

capable of allowing the movement of vehicles and equipment over the surface without causing rutting or other deleterious effects.

3. **CONTRACTOR** shall place Structural Fill materials with less than 30 percent rock materials above 3/4-inch size in maximum 12-inch loose lifts, and compact to 95 percent of maximum dry density (ASTM D698). The moisture content shall be within +3% to -3% of the optimum moisture content.
4. **CONTRACTOR** shall condition, place and compact Structural Fill containing more than 30 percent rock materials above 3/4-inch size (rock fill) by a method compaction technique. The compaction equipment shall consist of a minimum 10-ton (static drum weight) vibratory smooth-drum compactor. The number of passes and loose lift thickness shall be subject to **CERTIFYING ENGINEER's** approval, at no additional cost to **CC&V**. The method specifications may be changed at any time, at the discretion of **CERTIFYING ENGINEER**, based upon changes in material characteristics, field conditions, and/or compaction equipment.
5. Maximum rock size for rock fill shall be two-thirds of the compacted lift thickness, unless otherwise approved by **MANAGER**, **DESIGN ENGINEER,** and **CERTIFYING ENGINEER**. **CONTRACTOR** shall remove oversize materials from fills at no additional cost to **CC&V**.

3.4. Equipment

CONTRACTOR may use any type of earthmoving or excavating equipment unless otherwise noted in the SPECIFICATIONS, provided the equipment is in a satisfactory condition, complies with applicable rules and regulations, is of such capacity that the construction schedule can be maintained as planned by **CONTRACTOR**, and is approved by **MANAGER.**

TABLES

Table 4
Cripple Creek & Victor Gold Mining Company
Valley Leach Facility 2
Phase 3 Stage A.1 Record of Construction
CQA Earthworks Testing Summary - Structural Fill (High Compaction Backfill)

SAMPLE NUMBER	DATE SAMPLED			ELEVATION (FT)	GRAIN SIZE DISTRIBUTION - PERCENT PASSING																		USCS	ATTERBERG LIMITS		
					24.0"	18.0"	12.0"	4.0"	3.0"	2.0"	1.5"	1.0"	0.75"	0.5"	0.375"	#4	#10	#16	#40	#50	#100	#200		PLASTIC LIMIT	LIQUID LIMIT	PLASTIC INDEX
					SPECIFICATION - PERCENT PASSING																			SPECIFICATION		
		NORTHING	EASTING		100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0-25		-	-	30 MAX.
HCBF-1-R	10/20/21	59,945.0	35,520.0	9,900.0	100	100	94	55.4	45.7	38.5	34.6	28.1	20.4	15.9	13.1	11.8	9	8.4	7.8	7.6	7.1	5	GW-GM	NP	NV	NP
HCBF-2-R	11/03/21	59,480.0	35,280.0	9,905.0	100	92.7	84.5	51	42.8	35.1	29.9	25.6	20.6	14.3	9.7	7.1	5.8	5	5	4.8	4.7	4.5	GW-GM	NP	NV	NP
HCBF-3-R	11/04/21	59,320.0	35,600.0	9,910.0	100	86.5	65.1	45	40.7	34.8	29.4	23.2	19.2	12.9	10.2	8.6	7.3	6	4.3	2.9	2.8	2.2	GP-GM	NP	NV	NP
HCBF-4-R	11/04/21	59,760.0	35,550.0	9,910.0	100	100	94.6	78.1	70.5	51.9	40.8	29.9	22.6	18	15.7	13.6	10.6	9	7.8	6.5	5.7	4.3	GP-GM	NP	NV	NP
HCBF-5-R	11/12/21	59,455.0	35,300.0	9,915.0	100	100	100	90.3	80.6	68.5	55.8	47.9	40.8	32.9	21.9	12.8	10.2	9.4	8.1	7	5.8	4.6	GW-GC	18	26	8
HCBF-6-R	11/17/21	59,250.0	35,350.0	9,920.0	100	100	86.8	50.9	39.1	30.7	25	19.7	13.2	10	8.6	7	6.8	5.9	5.5	5.3	5.1	4.5	GW-GM	NP	NV	NP
HCBF-7-R	11/18/21	59,150.0	35,660.0	9,920.0	100	100	84.2	60.8	51.5	40.3	34.9	25	18.6	11.9	9.1	7.4	3.6	2.9	2.7	2.6	2.6	2.4	GP	NP	NV	NP
HCBF-8-R	11/22/21	59,440.0	35,220.0	9,925.0	100	100	86.8	70.2	64.8	55.9	47.6	40.5	38.7	31.8	25.3	15.9	12	9.5	8.7	8.2	7	6.4	GW-GM	NP	NV	NP
HCBF-9-R	11/22/21	59,200.0	35,600.0	9,925.0	100	84.3	70.9	60.1	51.8	44.7	35	28.9	25.8	22.9	19.4	16.8	11.3	8.2	6.9	6.3	6.2	6.2	GP-GM	NP	NV	NP
HCBF-10-R	12/03/21	59,780.0	35,625.0	9,930.0	100	95.2	90.8	73.8	60.3	52.1	46	40.5	37.7	32.5	25	19.8	16.6	13	11.7	9.2	8	7.4	GC-GM	19	25	6
HCBF-11-R	12/03/21	59,170.0	35,855.0	9,935.0	100	100	88.1	70.9	64.5	56.7	50.6	44.1	38.9	34.5	28.9	24.9	20.3	19	15.6	11.8	9.5	6	GP-GM	NP	NV	NP
HCBF-12-R	12/08/21	59,600.0	35,780.0	9,945.0	100	100	95.6	86.3	80.9	75.1	70.6	61.4	53.8	44.3	34.3	19.7	15.8	10.6	7.2	6	5.4	4	GW	NP	NV	NP
HCBF-13-R	12/09/21	59,250.0	35,520.0	9,945.0	100	93.9	85.7	61	55.3	49.6	45.8	40.5	34.8	29.6	25.3	22.2	18.6	15.7	11.4	7.9	5	4.2	GP-GM	NP	NV	NP
HCBF-14-R	12/14/21	59,175.0	35,590.0	9,950.0	100	89.6	89.6	70.7	62.8	57.3	50.5	42.3	35.1	30.9	25.6	20.1	14	10.7	8.5	8	7.4	6.9	GW-GC	18	25	7
HCBF-15-R	12/16/21	59,615.0	35,380.0	9,955.0	100	100	96.8	76.5	65.9	40.9	28.5	22.1	16.4	10.9	9	6.9	5.2	3	1.6	1.4	1.4	1.3	GW	NP	NV	NP
HCBF-16-R	12/16/21	59,850.0	35,600.0	9,955.0	100	100	86.5	49.3	38.9	30.4	25.8	20	16.4	11.6	9.1	6.2	4.7	2.6	1.5	0.9	0.7	0.7	GW	NP	NV	NP
HCBF-17-R	01/05/22	59,220.0	36,000.0	9,970.0	100	100	84.6	61.8	56.2	49.8	45.6	30.9	23.8	18.6	15	13.5	11.7	8.4	5.6	4	2.1	1.5	GP	NP	NV	NP
HCBF-18-R	01/17/22	59,280.0	35,265.0	9,975.0	100	100	97.8	74	68.9	64.5	59.4	55	49.7	43.8	38.9	35.1	28.1	20.4	14.8	9.7	6.8	4.2	GP-GM	NP	NV	NP
HCBF-19-R	01/18/22	59,540.0	35,080.0	9,980.0	100	82.3	82.3	59.9	54.9	49.7	44.1	38.9	35.2	30.8	24.9	20.7	15.9	10.6	7.2	4.5	2.8	1.5	GW	NP	NV	NP
HCBF-20-R	02/04/22	59,300.0	35,280.0	9,995.0	100	93.4	85.7	68.4	62.4	56.8	51.8	40.9	33.8	28.3	22.8	18.6	12.5	9.1	6.7	4	2.9	1.7	GW	21	29	8
HCBF-21-R	02/07/22	59,520.0	35,120.0	10,000.0	100	97.2	90	58.7	51.3	42.9	37.9	30.4	26.4	20.9	17.6	14.7	10.8	7.5	4.2	1.9	1.8	1.8	GP	NP	NV	NP
HCBF-22-R	02/08/22	59,230.0	36,200.0	10,010.0	100	100	76.9	57.1	49.1	40.7	35.4	30.9	24.7	19.6	15.8	12	8.6	4.2	3	1.4	1.4	1.2	GW	NP	NV	NP
HCBF-23-R	02/23/22	59,200.0	35,200.0	10,005.0	100	78.7	65.3	58.9	55	51.8	47.3	44.1	40.8	36.5	33.3	28.7	24.6	20.9	14.2	11.6	9.1	6.8	GM	NP	NV	NP
HCBF-24-R	03/09/22	59,520.0	36,100.0	10,045.0	100	100	81.9	65.7	60.3	54.8	49.1	45.9	39.7	34.6	29.4	25	20.2	16.5	12.6	9	7.2	5.9	GP-GC	21	31	10
HCBF-25-R	04/01/22	58,960.0	36,400.0	10,095.0	100	93.5	82.9	66.5	59.3	52.9	46.1	40.7	35.3	31.4	25.8	19.6	15.3	11.7	6.8	5	4.9	4.8	GW-GM	NP	NV	NP
HCBF-26-R	04/26/22	58,780.0	36,025.0	10,060.0	100	100	95.2	75.8	64.7	55.3	48.7	42.6	37.1	33.8	28.4	23.8	20	15.3	11.8	8.4	5.7	4	GP-GM	NP	NV	NP
HCBF-27-R	04/28/22	58,750.0	36,100.0	10,070.0	100	100	84.9	59	52.6	47.1	42.3	37.5	33.7	29	25.9	20.8	16.2	12.7	10.1	9.3	8.1	7.5	GM	NP	NV	NP
HCBF-28-R	05/18/22	58,725.0	36,200.0	10,105.0	100	100	90.8	73.4	68	63.5	58.6	52.1	47.6	44.9	38.7	33.7	28.9	24	19.6	14.9	10.6	9	GM	NP	NV	NP
HCBF-29-R	05/24/22	58,680.0	36,320.0	10,115.0	100	89.4	80.6	71.9	64.8	56.3	49.8	44.6	40.1	35.5	29.7	24.9	19.4	15.3	10.8	8.4	6	5.5	GP-GM	NP	NV	NP

Notes:
1. Greyed out control samples were not used in Stage A.1 construction.

R - Record Sample
NP - Non Plastic; NV - No Value

Table 5
Cripple Creek & Victor Gold Mining Company
Valley Leach Facility 2
Phase 3 Stage A.1 Record of Construction
CQA Earthworks Testing Summary - Structural Fill

SAMPLE NUMBER	DATE SAMPLED	LOCATION			ELEVATION (FT)	NATURAL MOISTURE (%)	GRAIN SIZE DISTRIBUTION - PERCENT PASSING																	USCS	ATTERBERG LIMITS		
							24.0"	18.0"	12.0"	4.0"	3.0"	2.0"	1.5"	1.0"	0.75"	0.5"	0.375"	#4	#10	#16	#40	#50	#100	#200		PLASTIC LIMIT	LIQUID LIMIT	PLASTIC INDEX
							SPECIFICATION - PERCENT PASSING																		SPECIFICATION		
		PHASE	NORTHING	EASTING			100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0-25	-	-	30 MAX.
SF-1-R	06/06/22	3A	Test Pad #1; STA 5+00		8' BFG	-	100	100	80.4	46	38.6	31	23.7	19.6	15.4	13.9	12	10.8	10	9.6	9.3	9	8.9	8.8	GM	NP	NV	NP

Notes:

R - Record Sample
NP - Non Plastic; NV - No Value

Table 6
Cripple Creek & Victor Gold Mining Company
Valley Leach Facility 2
Phase 3 Stage A.1 Record of Construction
CQA Earthworks Testing Summary - Select Structural Fill

SAMPLE NUMBER	DATE SAMPLED	LOCATION			ELEVATION (FT)	NATURAL MOISTURE (%)	GRAIN SIZE DISTRIBUTION - PERCENT PASSING														USCS	ATTERBERG LIMITS		
							3.0"	2.0"	1.5"	1.0"	0.75"	0.5"	0.375"	#4	#10	#16	#40	#50	#100	#200		PLASTIC LIMIT	LIQUID LIMIT	PLASTIC INDEX
							SPECIFICATION - PERCENT PASSING															SPECIFICATION		
		PHASE	NORTHING	EASTING			100	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	NP
SSF-1-R	4/6/2022	3A	59,248	35,067.00	10,005'	-	100	70.1	58.6	46.9	33.8	28.4	25.6	22.1	18.5	16.9	15	13.9	11.5	9	GP-GM	NP	NV	NP
SSF-2-R	7/6/2022	3A	58,918	35,621.00	10,028'	-	100	99.2	90.9	62.2	44.2	27.3	21.7	16.1	10.5	8.4	5.8	5.1	4.1	3.2	GP	19	29	10

Notes:

R - Record Sample
NP - Non Plastic; NV - No Value

Table 7
Cripple Creek & Victor Gold Mining Company
Valley Leach Facility 2
Phase 3 Stage A.1 Record of Construction
CQA Earthworks Testing Summary - Soil Liner Fill

SAMPLE NUMBER	DATE SAMPLED	LOCATION			ELEVATION (FT)	GRAIN SIZE DISTRIBUTION - PERCENT PASSING													USCS	ATTERBERG LIMITS			MOISTURE/DENSITY		PERMEABILITY (k=cm/s)
						2.0"	1.5"	1.0"	0.75"	0.5"	0.375"	#4	#10	#16	#40	#50	#100	#200		PLASTIC LIMIT	LIQUID LIMIT	PLASTIC INDEX	MAXIMUM DRY DENSITY (PCF)	OPTIMUM MOISTURE CONTENT (%)	
						SPECIFICATION - PERCENT PASSING														SPECIFICATION					SPECIFICATION
		PHASE	NORTHING	EASTING		100	-	-	-	-	-	-	-	-	-	-	-	15-65		-	-	10 MIN.			$1x10^{-6}$
SLF-1-C	10/14/21	Lower SLF Dump 1 Stockpile			Stockpile	100	98.2	93.4	91	88.6	86.9	79	67.4	61.8	53	50.1	44.7	39.5	SC	15	41	26	116.4	13.2	3.00E-07
SLF-2-C	10/14/21	Lower SLF Dump 1 Stockpile			Stockpile	100	98.0	91.2	87.5	83.9	82.4	73.2	62.4	57.4	49.4	46.7	41.5	37.0	SC	15	41	26	117.9	13.6	5.80E-07
SLF-3-C	01/05/20	Lower SLF Dump 1 Stockpile			Stockpile	100	98.0	94.3	91.8	89.2	87.8	81.2	66.8	60.5	52.0	49.5	44.8	40.4	SC	14	43	29	111.2	16.1	2.00E-08
SLF-4-C	01/06/22	Lower SLF Dump 1 Stockpile			Stockpile	100	98.3	95.2	93.5	91.2	90.2	78.8	65.6	60.0	52.2	49.8	45.0	41.2	SC	14	42	28	114.1	13.4	4.20E-07
SLF-5-C	01/06/22	Lower SLF Dump 1 Stockpile			Stockpile	100	97.5	93.0	91.0	88.0	86.6	76.2	63.7	58.0	49.1	46.5	41.5	36.5	SC	14	41	27	114.8	14.5	2.20E-08
SLF-6-C	01/06/22	Lower SLF Dump 1 Stockpile			Stockpile	100	99.2	96.7	94.6	91.9	90.2	78.8	66.6	60.3	50.5	47.5	42.0	37.4	SC	14	43	29	114.0	14.4	2.70E-08
SLF-7-C	01/06/22	Lower SLF Dump 1 Stockpile			Stockpile	100	99.1	95.1	92.6	88.2	85.5	77.0	64.1	58.2	48.6	45.6	40.3	35.0	SC	14	39	25	116.8	13.8	2.10E-07
SLF-8-C	01/06/22	Lower SLF Dump 1 Stockpile			Stockpile	100	98.7	95.0	92.9	90.2	88.0	79.5	67.4	61.1	51.0	48.0	42.5	38.5	SC	17	42	25	116.0	15.0	2.60E-07
SLF-9-C	01/06/22	Lower SLF Dump 1 Stockpile			Stockpile	100	98.8	93.5	90.6	87.7	85.9	76.0	63.7	58.3	50.5	48.0	43.4	38.9	SC	17	43	26	115.3	15.2	3.60E-08
SLF-10-C	05/20/22	Lower SLF Dump 1 Stockpile			Stockpile	100	94.7	90.0	86.9	82.9	80.4	66.5	55.8	51.8	45.3	43.3	39.4	35.7	GC	16	39	23	117.4	12.5	2.20E-07
SLF-11-C	05/20/22	Lower SLF Dump 1 Stockpile			Stockpile	100	96.1	90.6	87.2	83.5	81.9	74.4	63.0	56.6	44.9	41.3	35.1	30.6	SC	14	37	23	118.7	13.0	2.60E-07
SLF-12-C	06/06/22	Lower SLF Dump 1 Stockpile			Stockpile	100	96.5	93.9	91.8	87.6	85.6	75.0	61.7	51.8	35.9	31.3	24.8	18.6	SC	17	42	25	115.8	14.7	2.50E-07
SLF-13-C	06/07/22	Lower SLF Dump 1 Stockpile			Stockpile	100	98.2	95.4	93.0	87.9	84.9	76.8	64.8	56.4	38.5	32.7	24.8	20.3	SC	17.0	43.0	26	113.7	13.6	2.80E-07
SLF-14-C	06/16/22	Upper SLF Dump 1 Stockpile			Stockpile	100	99.1	90.4	84.4	74.9	70.2	56.7	44.0	38.2	28.3	25.0	19.8	16.1	GC	15.0	34.0	19	120.7	12.0	Pending
SLF-15-C	06/24/22	Upper SLF Dump 1 Stockpile			Stockpile	100	99.2	91.9	87.5	80.3	76.1	63.4	47.2	39.0	27.4	24.3	19.2	15.4	SC	12.0	39.0	27	122.5	11.6	Pending
SLF-16-C	06/16/22	Lower SLF Dump 1 Stockpile			Stockpile	100	99.2	95.4	92.4	87.4	83.5	74.7	61.7	53.1	37.7	33.5	26.6	22.2	SC	17.0	35.0	18	113.1	13.0	1.20E-07
SLF-17-C	06/17/22	Lower SLF Dump 1 Stockpile			Stockpile	100	100	96.6	94.7	90.1	88.1	74.9	64.8	56.5	43.5	39.7	32.8	27.5	SC	18.0	38.0	20	111.7	13.8	Pending
SLF-18-C	06/21/22	Upper SLF Dump 1 Stockpile			Stockpile	100	98.8	92.1	88.3	83.1	80.0	69.4	56.5	49.6	38.5	35.5	30.8	26.9	SC	15.0	42.0	27	120.0	11.4	Pending
SLF-19-C	06/21/22	Upper SLF Dump 1 Stockpile			Stockpile	100	97.2	93.1	89.0	84.1	81.8	67.4	55.6	48.8	38.2	35.3	30.7	26.8	SC	13.0	39.0	26	119.0	12.6	Pending
SLF-20-R	06/24/22	PSSA	59,807.0	35,563.0	9985'	100	100	100	99.9	98.9	97.6	83.8	71.6	65.9	56.3	53.5	48.3	43.4	SC	18.0	44.0	26	110.0	16.8	-
SLF-21-C	06/28/22	Upper SLF Dump 1 Stockpile			Stockpile	100	98.3	94.6	90.9	85.0	82.6	72.5	59.4	51.7	37.7	33.5	26.8	22.4	SC	19.0	36.0	17	118.1	13.3	Pending
SLF-22-C	06/28/23	Upper SLF Dump 1 Stockpile			Stockpile	100	100	96.7	92.6	88.4	85.7	71.5	58.2	50.9	37.6	33.6	27.1	22.7	SC	19.0	34.0	15	113.8	14.4	Pending
SLF-23-C	07/06/22	Upper SLF Dump 1 Stockpile			Stockpile	100	98.4	96.3	94.0	88.7	86.5	69.6	55.8	49.0	38.4	35.3	29.8	25.6	SC	17.0	31.0	14	114.0	14.0	Pending
SLF-24-C	07/06/22	Upper SLF Dump 1 Stockpile			Stockpile	100	99.5	95.5	93.8	90.9	89.5	76.5	63.0	55.5	42.4	38.6	32.2	27.3	SC	17.0	31.0	14	113.1	13.8	Pending
SLF-25-R	07/13/22	PSSA	59,397.0	35,755.0	9955'	100	98.9	95.2	93.3	90.6	88.7	76.8	62.2	55.0	44.0	40.8	35.1	30.1	SC	18.0	41.0	23.0	115.6	12.9	2.70E-07
SLF-26-R	07/13/22	PSSA	59,481.0	35,156.0	9970'	100	97.6	93.2	90.4	87.6	86.9	78.0	68.3	63.8	56.3	54.0	49.6	45.8	SC	20.0	41.0	21.0	115.5	15.1	-
SLF-27-C	07/13/22	Upper SLF Dump 1 Stockpile			Stockpile	100	97.5	92.0	91.0	89.8	89.6	71.8	58.6	52.6	43.1	40.2	35.2	31.2	SC	15.0	32.0	17.0	114.8	12.8	Pending
SLF-28-C	07/27/22	Upper SLF Dump 1 Stockpile			Stockpile	100	100	96.6	92.3	90.3	89.7	71.9	60.5	55.0	45.3	42.3	37.3	33.7	SC	14.0	37.0	23.0	114.9	13.4	Pending
SLF-29-R	08/08/22	3A	59,010.0	35,325.0	10,015'	100	98.8	93.0	89.6	86.4	83.9	72.7	68.0	62.9	52.6	46.8	40.2	38.1	SC	13.0	37.0	24.0	115.9	13.5	-
SLF-30-C	08/10/22	Upper SLF Dump 1 Stockpile			Stockpile	100	97.8	93.7	91.1	87.3	85.4	73.9	68.0	62.0	53.2	48.1	42.9	37.8	SC	16.0	37.0	21.0	112.9	16.1	Pending

Notes:
1. Greyed out control samples were not used in Stage A.1 construction.

R - Record Sample; C - Control Sample; FG - Finished Grade
NP - Non Plastic; NV - No Value; NT - Not Tested

Table 8
Cripple Creek & Victor Gold Mining Company
Valley Leach Facility 2
Phase 3 Stage A.1 Record of Construction
CQA Earthworks Testing Summary - Low Volume Solution Collection Fill

SAMPLE NUMBER	DATE SAMPLED	LOCATION		ELEVATION (FT)	NATURAL MOISTURE (%)	GRAIN SIZE DISTRIBUTION - PERCENT PASSING														USCS	ATTERBERG LIMITS		
						3.0"	2.0"	1.5"	1.0"	0.75"	0.5"	0.375"	#4	#10	#16	#40	#50	#100	#200		PLASTIC LIMIT	LIQUID LIMIT	PLASTIC INDEX
						SPECIFICATION - PERCENT PASSING															SPECIFICATION		
		PHASE	Liner Panel Number			100	100	100	100	-	-	40-70	5-55	-	-	-	-	-	0-10		-	-	NP
LVSCF-01-C	07/11/22	PSSA	Stockpile	FG	-				100	97.3	75.6	61.4	42.2	25.1	18.6	12	10.5	8.1	6.4	GW-GM	NP	NV	NP
LVSCF-02-C	07/12/22	PSSA	Stockpile	FG	-				100	98.4	83.9	69.3	47.3	29.9	22.7	14.5	12.7	9.7	7.4	GP-GM	NP	NV	NP
LVSCF-03-C	07/14/22	PSSA	Stockpile	FG	-				100	96.9	72.6	59.1	42.3	29.2	23.2	14.7	12.6	9.5	7.4	GW-GM	NP	NV	NP
LVSCF-04-C	07/21/22	PSSA	Stockpile	FG	-				100	90.6	50.0	40.9	24.8	16.1	13.2	9.2	8.2	6.5	5.1	GP-GM	NP	NV	NP
LVSCF-05-C	07/26/22	PSSA	Stockpile	FG	-				100	93.1	68.4	55.8	35.8	23.8	19.4	13.4	11.8	9.1	7.1	GP-GM	NP	NV	NP
LVSCF-06-R	08/29/22	PSSA	S-232	FG	-				100	95.5	77.5	67.6	43.7	30.4	25.0	17.0	14.9	11.6	9.1	GP-GM	NP	NV	NP
LVSCF-07-R	09/01/22	PSSA	S-77	FG	-				100	95.2	73.6	61.9	29.7	20.0	16.8	12.2	10.8	8.3	6.4	GP-GM	NP	NV	NP
LVSCF-08-R	09/19/22	PSSA	S-175	FG	-				100	94.2	72.5	61.0	47.6	33.9	27.7	17.9	15.2	10.7	8.0	GW-GM	NP	NV	NP
LVSCF-09-R	09/22/22	PSSA	S-188	FG	-				100	97.0	77.7	67.2	44.6	31.5	26.2	18.1	15.3	11.7	8.7	GP-GM	NP	NV	NP

Notes:
1. Samples with a Plasticity Index less than 5 are reported as Non Plastic

R - Record Sample
NP - Non Plastic; NV - No Value

Table 9
Cripple Creek & Victor Gold Mining Company
Valley Leach Facility 2
Phase 3 Stage A.1 Record of Construction
CQA Earthworks Testing Summary - Drain Cover Fill (Crushed Ore)

SAMPLE NUMBER	DATE SAMPLED	LOCATION		ELEVATION (FT)	NATURAL MOISTURE (%)	GRAIN SIZE DISTRIBUTION - PERCENT PASSING														USCS	ATTERBERG LIMITS		
						3.0"	2.0"	1.5"	1.0"	0.75"	0.5"	0.375"	#4	#10	#16	#40	#50	#100	#200		PLASTIC LIMIT	LIQUID LIMIT	PLASTIC INDEX
						SPECIFICATION - PERCENT PASSING															SPECIFICATION		
		PHASE	Liner Panel Number			100	97	-	-	40	-	-	5-35	-	-	-	-	-	0-8		-	-	NP
DCFO-1-C	10/05/22	3A	Stockpile	Stockpile	-	100	98.3	93.1	76.6	61.5	40	30.3	17.8	9.6	7.3	4.6	3.9	2.7	1.8	GW	NP	NV	NP
DCFO-2-R	10/20/22	3A	P-4017 80-mil	FG	-	100	99.2	96.4	82.7	69.8	52.5	43.5	22.8	13.8	10.6	6.5	5.5	3.7	2.2	GW	NP	NV	NP
DCFO-3-R	10/24/22	PSSA	P-208 100-mil	FG	-	100	98.8	97.6	80.3	66.1	50.9	43.7	28.2	17.3	13.2	7.9	6.6	4.6	3.1	GW	NP	NV	NP
DCFO-4-R	10/26/22	PSSA	P-102 100-mil	FG	-	100	98.4	93.9	70.4	50.8	31.8	24.7	14.3	8	6.1	3.9	3.4	2.3	1.4	GW	NP	NV	NP
DCFO-5-R	10/27/22	PSSA	P-68 100-mil	FG	-	100	98.6	95.2	77.2	58	38.1	29.3	16.6	10.2	8	5.2	4.4	3	1.9	GW	NP	NV	NP
DCFO-6-R	11/15/22	PSSA	P-93 100-mil	FG	-	100	100	97.6	81.6	65.6	46.6	39.2	25.8	17.8	14.7	9.9	8.7	6.5	4.9	GP	NP	NV	NP
DCFO-7-R	11/22/22	3A	P-4032 80-mil	FG	-	100	99.2	98.1	83	69.1	52.1	44.7	32.1	21.1	16.5	10.3	8.8	6.5	4.8	GW	NP	NV	NP
DCFO-8-R	11/30/22	3A	P-4129 80-mil	FG	-	100	100	98.4	85.3	71	54.5	45.7	26.2	17.9	13.2	9.2	8.3	6.5	5.1	GP-GM	NP	NV	NP
DCFO-9-R	12/02/22	PSSA	P-208 100-mil	FG	-	100	98.4	95	76.5	62.5	46	37.9	25.3	16.6	13.4	9.5	8.5	6.9	5.7	GP-GM	NP	NV	NP
DCFO-10-R	12/07/22	PSSA	P-171 100-mil	FG	-	100	98.5	94.2	61.5	49.4	35	28	17.1	10.9	8.7	6.1	5.4	4.4	3.6	GW	NP	NV	NP

Notes:
1. Samples with a Plasticity Index less than 5 are reported as Non Plastic

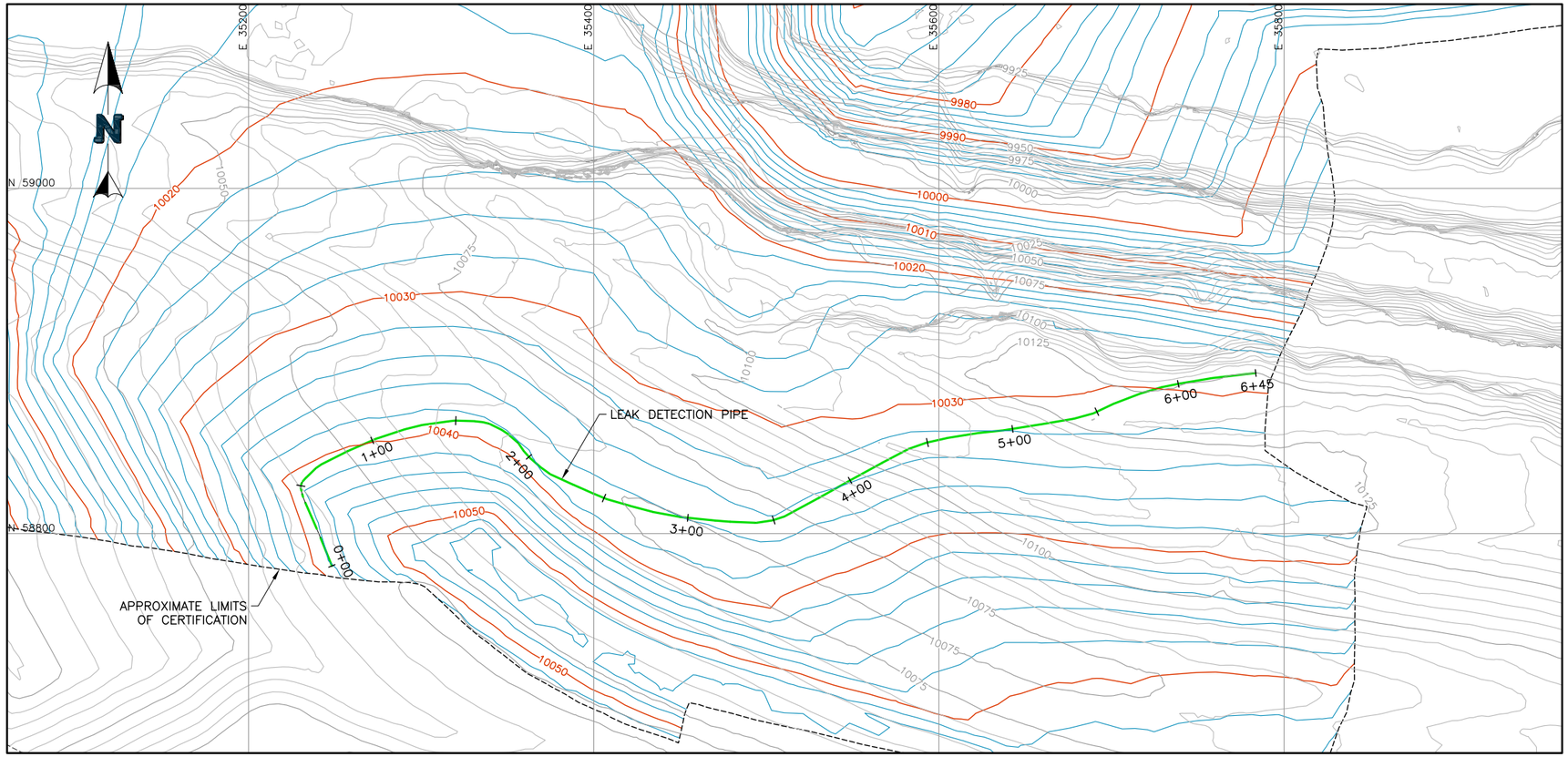
R - Record Sample
NP - Non Plastic; NV - No Value

Table 10
Cripple Creek and Victor Gold Mining Company
Valley Leach Facility 2
Phase 3 Stage A.1 Record of Construction
CQA Earthworks Testing Summary - Leak Detection Fill

SAMPLE NUMBER	DATE SAMPLED	LOCATION			ELEVATION (FT)	NATURAL MOISTURE (%)	GRAIN SIZE DISTRIBUTION - PERCENT PASSING											USCS	ATTERBERG LIMITS		
							1.0"	0.75"	0.5"	0.375"	#4	#10	#16	#40	#50	#100	#200		PLASTIC LIMIT	LIQUID LIMIT	PLASTIC INDEX
							SPECIFICATION - PERCENT PASSING												SPECIFICATION		
		PHASE	NORTHING	EASTING			100	-	-	40-70	5-50	-	-	0-20	-	-	0-10		-	-	NP
LDF-1-R	08/31/22	3A	58,808.8	35,458.8	FG	-	100	95.2	68.9	58.7	41	25.7	19.8	12.6	10.9	8.2	6.3	GWGM	NP	NV	NP

Notes:

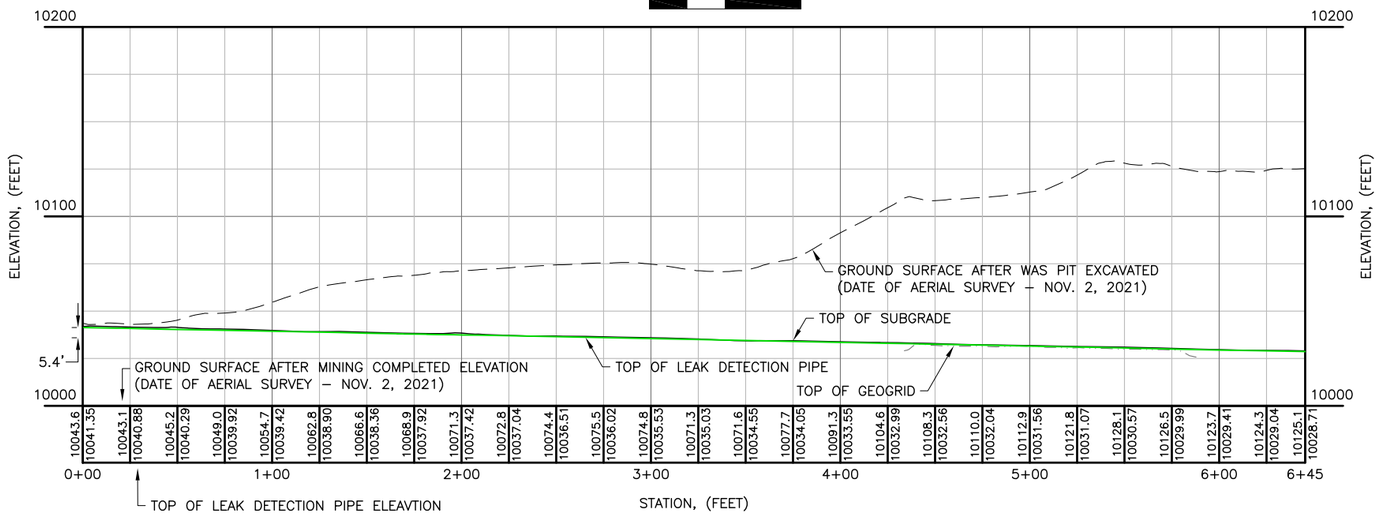
R - Record Sample; NT - Not Tested
NP - Non Plastic; NV - No Value



LEGEND:

- NOVEMBER 2, 2021 GROUND CONTOURS
- SUBGRADE AS-BUILT CONTOURS
- LEAK DETECTION PIPE

0 40 80 FEET



0 40 80 FEET HORIZONTAL

0 40 80 FEET VERTICAL

NO EXAGGERATION

NewFields	CLIENT CRIPPLE CREEK & VICTOR GOLD MINING COMPANY
PROJECT	VLF3 PHASE 3 STAAGE A.1
TITLE: LEAK DETECTION TRENCH AS-BUILT PLAN AND PROFILE	FILENAME 0106.056.098F; FIGURE NO. 6; REVISION 0

P:\Projects\0106.056 VLF2 Phase 3a CQA\A-CAD\FIGS\0106.056.098F.dwg-9/13/2023 2:06 PM

STATE OF COLORADO

Russell - DNR, Elliott <elliott.russell@state.co.us>

TR 135 - AR3 Response to Comments

Norma Townley <Norma.Townley2@newmont.com> Mon, Sep 18, 2023 at 3:42 PM
To: Elliott Russell - DNR <elliott.russell@state.co.us>
Cc: "Cazier -, Tim" <Tim.Cazier@state.co.us>, Justin McBryde <McbrydeJ@tellercounty.gov>, Johnna Gonzalez <Johnna.Gonzalez@newmont.com>, Katie Blake <Katie.Blake@newmont.com>, Norma Townley <Norma.Townley2@newmont.com>

Elliott, attached please find our AR3 Response to Comments on TR 135 along with attachments. If you have questions or concerns please reach out to Johnna.Gonzalez@Newmont.com or Katie.Blake@Newmont.com. Thank you.

Newmont
CRIPPLE CREEK & VICTOR

Norma Townley

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7 attachments

- **2023Sept18_AR3response_TR135_final.docx.pdf** 1595K
- **01400 Earthwork CQA.pdf** 222K
- **01400-1 Earthwork CQA.pdf** 167K
- **02200 Earthworks.pdf** 301K
- **02200-1 Earthworks.pdf** 171K
- **Tables 4-10 - CQA Earthworks Laboratory Testing Summaries.pdf** 291K
- **Figure 6.pdf** 235K