Environmental Department

Newmont Mining Corporation
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December 4, 2020

Mr. Elliot 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, CO 80203

Re: Project, Permit No. M-1980-244;

Second Adequacy Review and Supplemental Second Adequacy Review, Amendment Application (AM-13) Response to Comments

Mr. Russell,

Cripple Creek and Victor Gold Mining Company (CC&V) received notice of the Division of Reclamation, Mining, and Safety (DRMS) second adequacy review of the CC&V Amendment 13 (A-13) Permit application and the associated comments. CC&V has reviewed the comments issued in the 31 August 2020 and the 30 September 2020 letters from DRMS, prepared responses for each comment that requires an additional response and updated (A-13) permit documents as necessary and where indicated in this letter. The remainder of this letter presents those DRMS adequacy review comments that require additional response and CC&V's response. Some comments and responses reference comments and responses made during the first adequacy review and response period. Those comments and responses are not included in this letter but should be referenced as necessary for context. Attachments to this letter present relevant permit documents that are referenced throughout the letter as a result of DRMS comments and CC&V's subsequent responses.

Four hard copies and one electronic copy are being provided to DRMS. A copy of this response has been placed with Teller County Clerk and Recorder and the public libraries in Cripple Creek, Victor, Florissant and Woodland Park.

Regards,



Justin Bills
Sustainability & External Relations Manager
Cripple Creek and Victor Mining Company

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CC: T. Cazier – DRMS
M. Cunningham – DRMS

P. Lennberg - DRMS
B. Bowles – DRMS
L. Morgan – Teller County Planning Department
J. Raglin – CC&V
K. Blake – CC&V
P. Staub – Geosyntec
J. Gillen - Geosyntec

Enc.

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SECOND ADEQUACY REVIEW COMMENTS AND RESPONSES

RULE 3.1 - RECLAMATION PERFORMANCE STANDARDS

3.1.6 Water - General Requirements

DRMS Comment (itallics):

7. *Exhibit G, p. 9, Sec 3.2. The response requires additional clarification. Please clarify that deep diatreme groundwater is not anticipated to be developed for use in the future in light of the lack of groundwater. Also, pursuant to Rule 1.10.1(1), the applicant shall clearly describe where in the original application and supporting documents the information not included in the application, but necessary to render the amendment technically adequate, may be found.*

Newmont Response:

Groundwater use and development have been discussed in Section 14.9 of the Project Description in Amendment 11. Deep diatreme groundwater is not developed for use in this area and development for use is not anticipated due to the overall lack of groundwater; however, it is possible that shallow groundwater, if present, may be developed for beneficial use in the future.

DRMS Comment (italics):

8. *Exhibit G, p. 12, Sec 3.3. The response requires additional information. During previous site inspections the Division was informed that there were specific protocols for sampling and monitoring however the Division was never provided copies of those protocols. Please provide the specific protocols.*

Newmont Response:

CC&V does not have a specific documented protocol for sampling the LDS, however, details related to the LDS sampling and monitoring requirements are contained within the EPP in Exhibit U, in previous amendments. CC&V will continue to ensure effective management of the leak detection system sumps as outlined the Environmental Protection Plan and as described in previous permit amendments. Additionally, CC&V will ensure that if water is present within the leak detection sumps, it will be maintained at a level below the leak detection trench inlet to the sump. Should the LDS sumps be pumped, samples collected and analyzed for pH and WAD CN and the solution will be pumped onto the VLF as outlined in the EPP.

DRMS Comment (italics):

9. *Exhibit G, p. 12, Sec 3.3. The response requires additional information. What is the number and locations of underdrains, LDSs, HVSCSs, and LVSCSs to be sampled for VLF2 Phase 3?*

Newmont Response:

As part of the Phase 3 expansion, there will be one HVSCS, one LVSCS and four LDS locations. The LDS and LVSCS locations are depicted in the design drawings, which were previously provided as Attachment 1 to this permit amendment (design drawing numbers A04 and A08, respectively). The

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HVSCS functions within the PSSA, which is shown in detail within the design report. Due to the lack of groundwater within the backfilled pit, there is no underdrain included within the Phase 3 design.

DRMS Comment (italics):

12. *Exhibit G, p. 14 Sec 4. The Division did not formally concur with the findings presented in the demonstration of compliance that groundwater has not been affected by modern mining. The Division points to the pump-back system that was installed to mitigate the impacts of increasing sulfate concentrations in groundwater located in Arequa Gulch due to modern mining. Additionally, the increasing metals concentrations above monitoring standards in wells that previously did not have elevated concentrations, as shown in the 2nd Quarter 2020 Groundwater and Surface Water Monitoring Report, indicate that modern mining may have impacted groundwater. The Division is committed to working with CC&V together to resolve any groundwater issues that may exist at the site. No response is necessary at this time.*

Newmont Response:

Comment acknowledged.

DRMS Comment (italics):

16. *Tables G-2 and G-4. The response requires additional information. The Division is requesting a summary table that one can refer to that captures all the various standards that are used to evaluate concentrations in water and what those concentrations are referenced to. The Division feels it would be beneficial to have a summary table so one can refer to one place to get the majority of information rather than going to all the other areas within the permit documents. Searching through the permit file can lead to erroneous interpretation of a standard agreed upon at the site.*

Newmont Response:

As discussed with DRMS during a call on September 17, 2020, CC&V agrees with the Division that such a table would be beneficial. CC&V and DRMS have been successful in working toward the complex nature of establishing water quality standards within a historic mining district. CC&V is committed to continuing to work with the Division to establish appropriate site-specific protection limits into the future.

RULE 6.4 - SPECIFIC EXHIBIT REQUIREMENTS - 112 RECLAMATION OPERATION

6.4.1 EXHIBIT C - Pre-mining & Mining Plan Map(s) of Affected Lands

DRMS Comment (italics):

19. *Drawing C-1 errors and/or omissions. The response requires additional information and/or clarification. [Note: Many items listed in this comment were not addressed adequately and this may be due to the complex and sometimes confusing nature of the material. Writing comments to explain a mapping issue is difficult and is not always clear. It may be beneficial to arrange a meeting, video or in-person, to address the mapping issues listed below.]*
    a. *Veronic Pedesky property… The response is adequate.*
    b. *Property R0045180… The response is adequate.*

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c. *Property R0003403…The response is incomplete: Property R0003403 is actually located within the permit boundary according to Drawing C-1. The Teller County Assessor shows that it is owned by CR CK & Victor Narrow Gauge RR and therefore needs to be label as such on Drawing C-1.*
d. *Property S0056178… The response is adequate.*
e. *The property R0002309… The response is adequate.*
f. *Property S0056181… The response is adequate.*
g. *Property S0056183… The response is adequate.*
h. *The label on C-1 for Property R0002467… The response is adequate.*
i. *Properties R0003761, R0002492 and R0002495… The response is incomplete:*
   - *Property R0003761 (2 separate parcels) is labeled as a third party property. The Teller County Assessor has it listed as belonging to Cripple Creek & Victor Gold Mining Co LLC and it therefore should be labeled green.*
   - *Property R0002495 has two parcels. The southern parcel is labeled as third party (yellow) and should be labeled as CCV (green).*

j. *j. Property R0002494… The response is incomplete. Property R0002494 is a third party property and should be labeled yellow on Drawing C-1. This property is colored green on the most recent version of Drawing C-1.*
k. *Property S0005006… The response is incomplete. Property S0005006 is a third party property and should be colored yellow. It is labeled green on the latest version of Drawing C-1.*
l. *Property S0005007… The response is incomplete. Property S0005007 is a third party property and should be colored yellow. It is labeled green on the latest version of Drawing C-1.*
m. *Property R0048633… The response is adequate.*
n. *Property R0003603… The response is incomplete. The recent submittal of Drawing C-1 still shows Property R0003603 being owned by CC&V (green) and needs to be changed to third party (yellow).*
o. *Property R0054127… The response is incomplete. The hash marks are visible on Property R0054127 which is owned by the City of Cripple Creek. The hash mark symbol is not described in the legend and there is no label indicating property number or ownership. This property needs to be identified on Drawing C-1.*
p. *Property R0001994… The response is adequate.*
q. *Property R0001993… The response is adequate.*
r. *Properties N0025785 and N0025784… The response is incomplete. The triangle wedge of Property N0025785 is colored yellow and should be green indicating ownership by CC&V.*
s. *Property R0026792… The response is adequate.*
t. *Property N0025747 is labeled as N0025746… The response is incomplete. Property N0025747 is colored yellow on the most recent submittal of Drawing C-1 and should be colored green.*
u. *Properties R0002282, R0002719, R0002616 and R0002470… The response is adequate.*

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v. *Property R0001252…The response is incomplete. Property R0001252 was not added to Drawing C-1 and was not added to Exhibit T.*
w. *Property R0002447… The response is incomplete. Property R0002447 is green on the most recent submittal of Drawing C-1 and should be colored yellow.*
x. *Property R0055891… The response is adequate.*
y. *Property R0002258… The response is incomplete. Property R0002258 is green on the most recent submittal of Drawing C-1 and should be colored yellow.*
z. *Several properties on the southeast permit boundary… The response is adequate.*

Newmont Response:

Below are responses to specific comments. An updated Drawing C-1 has been included in Attachment 1 to this letter.

a. Acknowledged
b. Acknowledged
c. Drawing C-1 has been updated to show that Property R0003403 is owned by CC&V Railroad (brown).
d. Acknowledged
e. Acknowledged
f. Acknowledged
g. Acknowledged
h. Acknowledged
i. Drawing C-1 has been updated to show that Properties R0003761, R0002492 and R0002495 are owned by CC&V (green).
j. Drawing C-1 has been updated to show that Property R0002494 is a third-party property (yellow).
k. Drawing C-1 has been updated to show that Property S0005006 is a third-party property (yellow).
l. Drawing C-1 has been updated to show that Property S0005007 is a third-party property (yellow).
m. Acknowledged
n. Drawing C-1 has been updated to show that Property R0003603 is a third-party property (yellow).
o. This green hash mark symbol has been added to the legend to show that Property R0054127 is owned by the City of Cripple Creek.
p. Acknowledged
q. Acknowledged
r. Drawing C-1 has been updated to show that Property N0025785 is owned by CC&V (green).
s. Acknowledged
t. Drawing C-1 has been updated to show that Property N0025747 is owned by CC&V (green).

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u. Acknowledged

v. Drawing C-1 has been updated to show that Property R0001252 is a third-party property (yellow). Exhibit T has been updated to include an entry for R0001252 and the following information:

Owner of Record	Teller County Account No.	Owner of Record owns the Surface Estate ?	Owner of Record owns the Mineral Estate?
PRYOR, THOMAS J JR	R0001252	X	-
BOX 614			
FLORENCE, CO 81226			

w. Drawing C-1 has been updated to show that Property R0002447 is a third-party property (yellow).

x. Acknowledged

y. Drawing C-1 has been updated to show that Property R0002258 is a third-party property (yellow).

z. Acknowledged

DRMS Comment (italics):

20. Drawing C-1 errors and/or omissions. The response requires additional information and/or clarification. [Note: Many items listed in this comment were not addressed adequately and this may be due to the complex and sometimes confusing nature of the material. Writing comments to explain a mapping issue is difficult and is not always clear. It may be beneficial to arrange a meeting, video or in-person, to address the mapping issues listed below.]

a. *The thick dashed line on Drawing C1-a is the current CCMOD. The weight (or thickness) of this dashed lined is not the same as the weight of the dashed line in the legend for CCMOD. The weight of the dashed line needs to be the same in the legend as it is on the map to prevent confusion.*

b. *On Drawing C-1a, plate 1 of 4, the City Limit symbol in the legend contains a solid black line but the symbol used on the map contains a dashed line. These two symbols need to be consistent to prevent confusion.*

Newmont Response:

Drawing C-1a, including all plates, has been updated with line types that match between the legend and the plan for the CCMOD. Drawing C-1a has also been updated to better show the line type for the City Limits. The line type was the same; however, the line weight was slightly smaller in the legend causing the printed version to look like different. Drawing C-1a is included in Attachment 1.

DRMS Comment (italics):

22. Drawing C-2b, Existing Utilities. The response is incomplete.

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1) Relocated substation at the intersection of Squaw Gulch & Shelf Road: The response requires additional clarification. The substation is still shown on the revised Drawing C-2b, but no clarification of the substations relocation was provided in the response. Please confirm the substation was relocated to this site, or remove it from the Existing Utilities map;
2) The VLF2 underdrain ponds … The response is adequate.

Newmont Response:

Drawing C-2b has been updated by removing the substation linework and the associated utilities with that substation. The remaining utilities shown on the drawing have been cross-checked with aerial images and historic information. The updated Drawing C-2b is provided in Attachment 1.

DRMS Comment (italics):

23. Drawing C-3. The response requires additional information. Please describe and discuss the Booster Station which will be expanded with two additional booster pumps to support the Phase 3 expansion.

Newmont Response:

This response is to clarify the confusion of previous responses and comments. The booster station currently exists and is called out as "Booster Station on Squaw Valley Leach Facility" on Drawing C-2b, which presents existing utilities. The booster station will be receiving new pumps (not a new facility entirely); therefore, references to the booster station on Drawing C-3, which shows proposed utilities, has been removed to avoid confusion. The updated Drawing C-2b (showing a callout for the booster station) and updated the Drawing C-3 (now without a callout for the booster station as a proposed facility) are both included in Attachment 1. The booster pumps as DRMS indicates correctly, will be added to the station to support the VLF2 Phase 3 expansion.

6.4.2 EXHIBIT D - Mining Plan

DRMS Comment (italics):

26. Table D-1. The response requires additional clarification. The response corrected the 6-yr timeframe, but the revised schedule has VLF1 reclamation finished 5 years prior to the pad neutralization. Neutralization was to start in 2024, but now not till 2031, which is the same year the pad reclamation starts. Please update Table D-1 to correlate the reclamation sequence.

Newmont Response:

CC&V has corrected Table D-1, in Exhibit D – Mine Plan, to reflect the correct schedule for the planned VLF1 reclamation, as shown in the Table D-1 below.

Table D-1: Approximate Time Schedule of Construction, Operations and Reclamation

Activity	Duration in Years	Start Year	Complete Year
Install and Maintain Erosion Controls – Mine and Overburden Areas	29	Continuing	2041 or when revegetation is established
Clear and Grub Mine Areas	11	When needed	2022

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Activity	Duration in Years	Start Year	Complete Year
Construct Haul Roads	13	When needed	2025
Mining and Ore Loading VLF1	1	Continuing	Completed in 2016 but capacity still available, if needed
Mining and Ore Loading VLF2	10	2016	2025
Underground Exploration and Mining	9	2019	2025
Processing of Ore in HG Mill	9	2015	2024
Crusher and Conveyor Reclamation	1	2026	2026
Mine and Overburden Storage Area Reclamation	20	Continuing	2032
Complete the Leaching of Ore on the VLF1	12	Continuing	2024
Complete Neutralization of VLF1	6	2031	2037
Reclaim ADR1 Facilities	2	2039	2041
VLF1 Reclamation	2	2037	2039
Complete the Leaching of Ore on the VLF2	17	2016	2033
Complete Neutralization of VLF2	6	2033	2039
ADR2 Facilities Reclamation	2	2039	2041
VLF2 Reclamation	2	2039	2041
Post Closure Monitoring	5	2041	2046

Notes: 1. Actual mining schedule/sequence may vary due to changing mining or economic conditions.

DRMS Comment (italics):

27. *Table D-2. The response requires additional clarification. Please describe the mining sequence and discuss the planned layback.*

Newmont Response:

Table D-2 has been updated in Exhibit D – Mine Plan to reflect the correct/planned mining sequence. Table D-2 is excerpted from Exhibit D, below.

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Table D-2: Sequence of Mining Operations

Year	Main Cresson Mine Area		East Cresson Mine Areas			North Cresson Mine Area		Underground Mine Area
	Main Cresson[1]	South Cresson	Altman/ ECME	Wildhorse	WHEX	Schist Island	Globe Hill	Main Cresson[2]
2020		X			X	X	X	X
2021		X				X	X	
2022	X	X				X	X	
2023	X	X				X	X	
2024	X	X			X	X	X	
2025	X				X	X	X	
2026					X		X	
2027					X		X	
2028							X	
2029							X	
2030							X	
2031							X	
	Complete	2016-2025	Complete	Complete	2016-2027	2018-2025	2016-2031	TBD

Notes: 1. 1. Construction of exploration portal anticipated to begin 2020 (per TR-116). 2. WHEX = Wildhorse Extension, Altman/ECME = East Cresson Mine Altman. 4. Actual mining schedule/sequence may vary due to changing mining or economic conditions.

Pit layback sequencing will remain the same as planned prior to this amendment and will not influence the current liability for reclamation. The graph shown in Figure D-3, shown below, depicts the sequence for each pit phase by year in general mined tons. This long-term mining plan is subject to change with market conditions.

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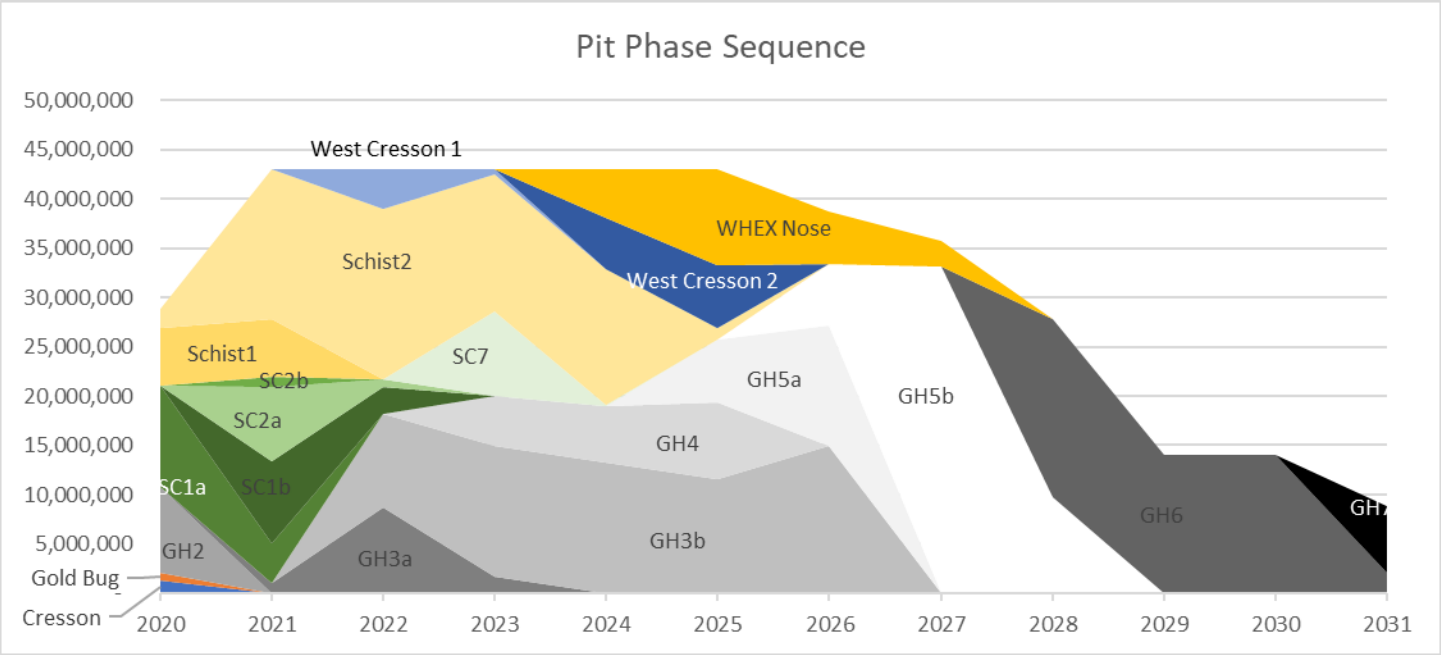


Figure D-3: Cresson Layback sequence 2020-2031. Pit layback sequencing remains the same and will not influence the current liability for reclamation. Displayed below is a graph representing the sequence for each pit phase by year in general mined tons. This long-term mining plan is subject to change with market conditions.

DRMS Comment (italics):

28. *Growth Medium. The response is incomplete:*
    a. *Table D-4, Growth Medium Storage Areas Stockpile 1: The response is adequate.*
    b. *Table D-4, Growth Medium Storage Areas Stockpile 33-34: The response is adequate.*
    c. *Table D-4: Growth Medium Storage Areas Stockpile 15: The response is adequate.*
    d. *Comparing AM-13 Table D-4: The response is adequate.*
    e. *Discrepancies between AM-11 Table 5-4 Growth Medium Storage Areas and AM-13 Table D-4: The response requires additional clarification. CC&V has adequately provided a demonstration on how the volume has been determined and/or verified for Stockpile 34. Please provide diagrams, figures, profiles, surveys, etc. for the remaining 13 stockpiles to demonstrate how their volume was determined and/or verified.*
    f. *If the Applicant proposes to construct new stockpiles… The response is adequate.*

Newmont Response:

a. Acknowledged.
b. Acknowledged.
c. Acknowledged.
d. Acknowledged.
e. All topsoil stockpile volumes are calculated using the same methodology as was presented for

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Stockpile 34. Due to the ever-changing nature of reclamation projects and mine expansion, CC&V and DRMS agreed in TR-115 that an annual report with stockpile accounting and changes for current stockpiles would be sufficient for volume verification. The volumes generated by this methodology are presented in Table D-4, and are provided to DRMS on an annual basis, or more frequently, as approved in TR-115. Additionally, topsoil stockpile footprints are provided in Figure C-4b.

f. .Acknowledged.

DRMS Comment (italics):

30. *Page 22, Section 6, Precious Metals Recovery Facility. The response requires additional information. The narrative in the first paragraph was updated to reference Drawing C-3, but Drawing C-3 does not show the extent of liner system as requested. Please provide a revised Drawing C-3 depicting the proposed VLF liner system limits.*

Newmont Response:

Drawing C-3 has been updated to show the proposed VLF2 Phase 3 liner area. Drawing C-3 is provided in Attachment 1.

DRMS Comment (italics):

31. *Section 7.4 Security and Signs. The response requires additional information. The updated Section 7.4 contains a bulleted list of three items which need to be included on the permit signs. The list does not contain the operation name as required by Rule 3.1.12(1)(a). Please update this section to reflect the requirements of the Rules.*

Newmont Response:

Section 7.4 of the Exhibit D – Mine Plan has been updated to include the following text:

"The entrances to the Cresson Project are posted with signs that are clearly visible from CR 82 and SH 67 and list the following information:

- Name of the Operator (CC&V)
- **The Operation Name**
- That DRMS Permit(s) have been issued
- The DRMS Permit No(s)…"

DRMS Comment (italics):

32. *Section 7.4 Security and Signs. The response is incomplete. In accordance with a prior commitment, please revise the revised statement within Section 1.5.1 of the Exhibit E Reclamation Plan to reflect the installation of a fence around the crest of all highwalls which are not reduced or backfilled. The Applicant's prior commitment is regardless of highwall height as it was previously determined vertical highwalls less than 100 feet were still a hazard.*

Newmont Response:

As approved in TR 91, CC&V has committed to installing an 8-foot wire fence at closure. The second paragraph within Section 1.5.1 has been revised to read,

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"Upon completion of mining and associated reclamation activities, an eight-foot high Post Mining Fence will be installed around the external crest of those portions of the remaining highwalls that are not backfilled or reduced. Where practicable, portions of the current perimeter fence will be left in place and the eight-foot high fence will be tied into these existing sections. Fences will be placed to control access to the crest and toe of highwall benches. Signs will be placed along the fencing to warn the general public of the hazard of the highwall after reclamation, as appropriate."

6.4.3 EXHIBIT E – Reclamation Plan

DRMS Comment (italics):

33. *Exhibit E, p. 4. The response requires additional information. The discussion of method and success of tree planting was submitted as part of the Amendment 13 application, Exhibit E, page 4. According to Rule 1.10(5), it is subject to review and must meet the requirements of the Rules. And, according to Rule 1.10(2), it is the applicant's responsibility to clearly describe where in the application or supporting documents the information not included in the application may be found. Please describe in detail where the information regarding the methods and success of tree planting can be found to address the issues raised.*

Newmont Response:

As discussed with DRMS during a call on September 17, 2020, CC&V agrees with the Division as to the benefit of establishing success criteria for tree planting during reclamation activities. As agreed during the September 17, 2020 discussion, CC&V will continue to work with the Division to determine appropriate tree planting success criteria into the future.

Specific discussion around tree planting at closure can be found in Sections 12.3.3 and 12.4.1 of the Amendment 10 Project Description.

DRMS Comment (italics):

34. *Rule 3.1.10(1). The response requires additional information. The discussion of method and success of tree planting was submitted as part of the Amendment 13 application, Exhibit E, page 4. According to Rule 1.10(5), it is subject to review and must meet the requirements of the Rules. And, according to Rule 1.10(2), it is the applicant's responsibility to clearly describe where in the application or supporting documents the information not included in the application may be found. Please describe in detail where the information regarding the methods and success of tree planting can be found to address the issues raised.*

Newmont Response:

As discussed with DRMS during a call on September 17, 2020, CC&V agrees with the Division as to the benefit of establishing success criteria for tree planting during reclamation activities. As agreed during the September 17, 2020 discussion, CC&V will continue to work with the Division to determine appropriate tree planting success criteria into the future.

Specific discussion around tree planting at closure can be found in Sections 12.3.3 and 12.4.1 of the Amendment 10 Project Description.

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DRMS Comment (italics):

36. *Section 1.4.1 Grading and Ripping. The response requires additional information. Although the revision to Section 1.4.1, regarding a future revision should rock plating be proposed, is not within the rock plating paragraph, the Division deems this portion of the response adequate. Please revise the language within 1.5.2 Overburden Storage Areas – SGOSA regarding the prior commitment on rock plated slopes.*

Newmont Response:

Section 1.5.2 has been revised. CC&V will commit to filing a Technical Revision prior to final reclamation denoting proposed locations for rock plating.

6.4.4 EXHIBIT F – Reclamation Plan Map

DRMS Comment (italics):

44. *Main Cresson final topography. The response requires additional information. Please describe the small lift on the pit floor which will support underground exploration operations. Please also address if this lift of backfilled material will be sufficient to allow precipitation and any runoff that enters the pit from becoming standing water prior to infiltrating into the diatreme.*

Newmont Response:

CC&V will place approximately 2.5 million tons of unconsolidated overburden in the bottom of the main Cresson to create a level surface for the exploration drift. At the thickest part, the backfill will be approximately 170 feet thick. The backfill will be comprised of overburden. As with other overburden at CC&V, the material has a high porosity, thus allowing precipitation to infiltrate, which will mitigate ponding

6.4.5 EXHIBIT L - Reclamation Costs

DRMS Comment (italics):

49. *Liability Percentage. The response requires the following additional information:*
    a. *Please explain and justify each liability percentage. The Division requests more details (acreages, volumes, etc.) then simply stating 77.81% of leach pads will be constructed at the end of 2020 versus design, therefore 77.81% of tasks associated with reclaiming the leach pads life of mine build out calculated in SRCE.*
    b. *Please discuss if the liability percentage is appropriate to be applied to the overall task or if each task needs to be broken down into subtasks and determined if the liability percentage correlates to percent of construction.*
    c. *The Division understands this approach with direct costs within the reclamation cost estimate, but 100% of indirect costs should be utilized. Please submit a revised summary table without percent liability on any line with the Indirect Costs section.*
    d. *Please commit to providing a similar explanation and justification within the annual financial warranty calculation whenever liability percentages are tied to reclamation tasks.*

Newmont Response:

a. The liability percentage is based upon percent build out against design capacity. The second and third pages of the submitted financial warranty calculation contain how those percentages were

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derived. Additionally, to satisfy this request, a new column has been added to the summary sheet to show the units (acreage, cubic yards, etc.) (See Attachment 2).

b. In general, the SRCE build out for each facility is based around a task per bench concept. The lower benches of a given facility may have a shorter and cheaper haul for topsoil; while benches on the upper portions may have a longer haul, thus are more expensive. For example, the haul distance for spreading topsoil on ECOSA more than quadruples for upper benches. In the estimate, CC&V is aggregating costs for like facilities and prorating them; thus, potentially overestimating for scenarios with a lower liability percentage and tracking closer to the SRCE estimate as the liability percentages increase. Nevertheless, if dilution were to occur, which CC&V believes is unlikely; the estimate has a contingency attached to it at a rate higher than what the Division has historically used to account for any miss-estimates.

c. The estimate has been revised to account for 100% of indirect costs (See Attachment 2).

d. CC&V will commit to providing the requested documentation in the annual update.

6.4.20 <u>EXHIBIT U</u> – DMO Environmental Protection Plan

DRMS Comment (italics):

56. *Table U-2, Environmental Protection Facilities – HGM Liner as an EPF. The response requires additional information. The Division has given considerable thought to your request to designate the HGM Liner as an EPF. Given the liner has the capacity to store water (a fact not made clear to the Division when it was approved) and that water may include impacted water and/or process water, the Division is inclined to agree that it should in fact be designated as an EPF. Pursuant to Rule 7.3.1(3) "Such facilities shall be appropriately designed for their intended purpose and shall consider site specific conditions and on or off-site impacts to human health, property and the environment." And Rule 7.4.2(2)(b) "... embankment construction for facilities designed to hold or contain toxic or acid-forming materials or designated chemicals used in the extractive metallurgical process or acid mine drainage-forming materials ". However, the Division is unaware of any means to verify whether the HGM liner is functioning as an EPF in that there appears to be no way to know if it is intact or leaking. As such, the Division requires the following information to properly understand and characterize the facility:*

    a. *As-Constructed drawings showing the layout and topography of the lined surface. This should show the storage volume, floor and sill elevations, and how it ties into adjacent lined areas,*

    b. *As-Constructed drawings showing how the sump system is integrated into the HGM liner,*

    c. *As-Constructed drawings showing the spatial relationship of the HGM liner and the fire suppression system water lines around in the mill area,*

    d. *Water quality data (consistent with the full suite of parameters sampled elsewhere on site) for water stored on the liner,*

    e. *A description of how water contained on the HGM liner is managed, including how the volume is determined and the ultimate disposition of water contained stored on the liner,*

    f. *Does CC&V have a water balance method for the contained/stored water volume?*

Once the Division has reviewed this information, it can be determined what if any actions are necessary to designate the HGM liner as an EPF. Please be aware additional actions may include additional subgrade water management procedures and an updated reclamation plan to show how water will not be stored on the HGM liner after mine closure.

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Newmont Response:

CC&V agrees with the Division that the HGM Liner should be designated as an EPF. Per our conversation with the Division during the November 16, 2020 workshop, held between Newmont and the Division, we agree and commit to working with the Division on updating management policies and procedures for the HGM area as an EPF at this facility. The updates will be coordinated with the Division and formalized in a Technical Revision. This Technical Revision will also incorporate updates pursuant to our responses provided for comments 66 and 67 in this letter.

DRMS Comment (italics):

57. *Table U-2, p. 10, Environmental Protection Facilities. The response requires additional clarification. (Division rationale in blue italics):*
    a. *Carlton Adsorption/Desorption Recovery (ADR1) – CC&V and the Division agree this is an EPF separate from the AGVLF/VLF1,*
    b. ~~*Squaw Gulch ADR (ADR2)*~~ *– the Division concurs ADR2 was constructed over the VLF2/SGVLF liner and is not a separate EPF,*
    c. *Enrichment Circuit (Carlton) & Assay Laboratory – CC&V and the Division agree,*
    d. *High Grade Mill (not the liner) – the distinction between the HGM or the liner being the EPF is the subject of Comment #56 above,*
    e. *Process Solution Enhancement (PSE) Liner, – CC&V and the Division agree this is an EPF separate from the AGVLF/VLF1,*
    f. *AGVLF/VLF1 (including the leak detection system and lined toe berms) – CC&V and the Division agree,*
    g. *AGVLF - Underdrain/Pumpback System – the Division stipulates as is discussed in Comment #12 above the pumpback system is an EPF,*
    h. *External Storage Pond (ESP) – CC&V and the Division agree,*
    i. *Off liner pregnant and barren solution pipelines – CC&V and the Division agree,*
    j. *SGVLF/VLF2 (including the leak detection system and ADR2) – CC&V and the Division agree,*
    k. *VLF2 Underdrain Pond – the Division stipulates this is an EPF as it is periodically sampled for water quality,*
    l. ~~*Buckley Annex/Bulk Emulsion Facility*~~ *– the Division has reviewed this facility and determined it does not involve designated chemicals and another agency (ATF) is responsible for chemical oversight/control.*

    Please include all 10 of these facilities in Table U-2 (excepting the distinction between the HGM and the HGM liner).

Newmont Response:

a. Acknowledged.
b. Acknowledged.
c. Acknowledged.

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d. The Division and CC&V agreed, during a November 16, 2020 workshop, that the HGM is an EPF, regardless of the detailed history of this facility, and that both the Division and CC&V will commit to developing the details of the management and monitoring procedures for this facility under a future Technical Revision. The Technical Revision will also address topics discussed in Comment 66 and 67 responses, provided in this letter.
e. Acknowledged.
f. Acknowledged.
g. Acknowledged (as in the response to Comment 12, above).
h. Acknowledged.
i. Acknowledged.
j. Acknowledged.
k. Acknowledged.
l. Acknowledged.

Table U-2 has been updated in Exhibit U - Environmental Protection Plan. An excerpt of Exhibit U, representing the updated Table U-2, is provided as Attachment 3.

DRMS Comment (italics):

62. *Section 14 Specification Changes. The response is incomplete. The revised 02200 Earthworks specification still indicates the maximum size for DCF is 1-1/2 inch minus (see 117th page of 231 in AM13 PAR Resp_Att13-Part2Appendices.pdf, p. 4 Section 6 table -, Rev 1 7/24/20). If CC&V does not wish to submit a technical revision in the future to change this as previously discussed, please resubmit a corrected specification.*

Newmont Response:

Please see the revised Earthworks Specification provided in Attachment 4.

DRMS Comment (italics):

66. *Exhibit U - Section 18.1. The response is incomplete. CC&V determines the volume of the HVSCS through continual monitoring of the pond level wells in each PSSA except for VLF1 Phase 5 where there is no pond level well, so an average pump level is used. The Division understands the Applicant needs operation flexibility to reduce the pond level during an exceedance of 80% and has further added that sustained manner includes a reasonable timeframe after operational controls fail, or may fail, to reduce the pond level. Please address the following additional adequacy items:*
    a. *As the pump level is affected by the drawdown cone of depression, please provide the calculated maximum difference between the Phase 5 pump levels and the actual pond level. Please provide the calculated maximum pond level total capacity percentage when the pump levels reach 80%.*
    b. *Please commit to determining the VLF1 Phase 5 pond level by the using the highest pump level instead of calculating an average of the pump levels.*
    c. *Please discuss if VLF2 Phase 3 PSSA will contain a pond level well.*
    d. *As VLF1 Phases 1, 4, and 5 PSSA drain to a lower PSSA if total capacity is exceeded, a "sustained manner" and "reasonable timeframe" is acceptable at this time. As VLF1 Phase II, VLF2 Phase 1, and the proposed VLF2 Phase 3 PSSAs are the lowest or only PSSAs within the*

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system, the Division will require immediate notification if the pond level well exceeds 80% at any time. Please revise the permit criteria for the HVSCS scenario to reflect this. To reduce confusion, the Applicant may wish to include VLF1 Phases 1, 4, and 5 PSSAs so that all HVSCS have the same permit criteria (with a note regarding the highest pump level of VLF 1 Phase 5 PSSA rather than pond well level).

Newmont Response:

As discussed with the Division in the November 16, 2020 workshop, Newmont commits to providing a Technical Revision to refine monitoring procedures and clearly define what a "sustained manner" and a "reasonable timeframe" means with respect to these procedures. This Technical Revision will address the information above and also include the information discussed in comments numbered 56 and 67.

c. A separate pond level well will be installed in the Phase 3 PSSA to monitor the HVSCS pond level. This well will be installed at a distance from the HVSCS pumps as to avoid influence from the pumps' cone of influence (similar to VLF1 phases 1, 2, 4 and VLF2 Phase 1). The final location of this well will be included in the CQA documentation.

DRMS Comment (italics):

67. *<u>Exhibit U - Section 18.1.</u> The response requires additional information. Please discuss how the LVSCS level is accurately determined and address if the drawdown cone of depression affects the actual level of the LVSCS. As the LVSCSs are fully contained and are designed to maintain a low hydraulic head on the primary PSSA liner, the Division will require immediate notification if the pond level exceeds two feet at any time. Please remove "in a sustained manner" from the permit criteria for the LVSCS scenario.*

Newmont Response:

As discussed with the Division in the 16 November 2020 workshop, Newmont commits to providing a Technical Revision to refine the monitoring procedures discussed above. As with responses to comments 56 and 66 above, one technical revision will be generated to include the information discussed in this comment and response.

<u>APPENDIX 1</u>

DRMS Comment (italics):

71. *<u>Section 2.3 – Underground Workings.</u> The response requires additional clarification. Please confirm remediation of underground workings encountered at the final buildout of the Schist Island pit will be presented as a section of VLF2 Phase 3 Record of Construction Report(s) similar to previous QA/QC reports of VLF1 and VLF2.*

Newmont Response:

CC&V commits to performing an audit of existing or remediated underground workings once the full buildout of the Schist Island pit (i.e., the VLF2 Phase 3 footprint) is complete and prior to backfilling. The Engineer of Record (EoR) will perform the audit by inspecting workings that have undergone remediation previously and will oversee additional remediation measures regardless of size of the workings. The EoR will review the audit findings and assess whether existing remediation is adequate and/or oversee required additional remediation, if necessary. Documentation from this assessment will be included in the CQA

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Report.

DRMS Comment (italics):

73. *Section 4.1, p. 7, 2nd paragraph. The response was not adequate. The Division noted the revised "Detailed Design for Permitting" document dated July 2020 has significant revisions, yet retains the original verbiage stating "mine placed pit backfill materials prior to construction of the VLF composite liner are considered to be out of the scope of this project". The Division considers any surface undergoing preparation for placement of an EPF to be within the scope of the project whether it is clearing, grubbing and grading as with the two existing VLFs, or grading as with the SGOSA material. Please remove the "out of scope" verbiage.*

Newmont Response:

CC&V agrees that the backfill material placement below the Phase 3 liner is part of the scope, as discussed in the November 16, 2020 workshop with DRMS. It is noted the bulk backfill below the "high effort compaction zone" is to be placed using mine equipment, as material is available and with a variable schedule lasting several months. Additionally, to ensure effective placement of the bulk backfill, CC&V will implement operator training to aid in recognition of oversized material (greater than 5') and to manage larger material within spec (~5' boulders) to reduce the potential of loading multiple ~5' rocks within the same truck and placing these large particles adjacent to each other. Additionally, to ensure backfill material is within the specification, CC&V will conduct monthly photographic analyses of loaded material to be used during the bulk backfill operations.

The EoR will designate a CC&V employee(s) to observe, record, and photograph bulk backfill placement under the EoR's direction. The designee will record photographs of dumping operations and complete an inspection template developed by the EoR on a weekly basis. The EoR will perform spot checks on site and review placement records with the CC&V designee on a quarterly basis.

To confirm expected settlement, CC&V will conduct quarterly settlement monitoring at the constructed PSSA surface using one or more appropriate monitoring/surveying technologies.

CC&V agrees the placement of this material is within the scope of the overall project covered within this Amendment 13 application, the design report has been updated accordingly. The EoR will include documentation of the activities described above within the CQA report.

DRMS Comment (italics):

75. *Section 4.4, method specification. The response was not adequate. Please see Comments C, G and K below for specifics. If CC&V wishes to maintain the "low compaction effort" approach, the Division may seek outside consultation review of the proposed approach.*

Newmont Response:

Please see responses to comments C, G and K, below.

DRMS Comment (italics):

77. *Section 4.6 – Leak Detection System. This section also states the LDS will be constructed on a 1% grade. Please address how LDS will maintain a 1% grade with the projected settlement of the*

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backfilled Schist Island Pit and, if projected, the graded SGOSA.

Newmont Response:

Per CC&V's discussion with the Division during the November 24, 2020 teleconference to discuss additional input from the Division, the Division requested that CC&V re-open comment number 77, though the Division accepted the initial response to Comment 77 in the first round of adequacy review comments. The Division's follow-up comment request was for CC&V and the EoR to verify that the 2% LDS grade included in the design would maintain positive flow if modeled settlement occurred after the VLF was constructed and loaded with ore.

As such, CC&V provides the following response:

With a minimum 2% constructed flowline slope of the leak detection trench, the leak detection trench will maintain a slope that will provide positive drainage towards the sump after the leach pad has been loaded with ore.

DRMS Comment (italics):

81. *Section 5.2, Schist Island Backfill Settlement. The Division has questions related to the settlement analysis related to boundary conditions. Please provide the following:*
    a. *Describe the model assumptions such as development length for strain (reference Appendix D.1 - Geomembrane Pull Out and the assumed 300 foot height of slope) and boundary conditions,*
    b. *Describe the finite element grid spacing and provide justification for the approach; and*
    c. *Why are the isolines near the surface of the stacked ore vertical?*

    If CC&V wishes to maintain the "low compaction effort" approach, the Division may seek outside consultation review of the proposed approach.

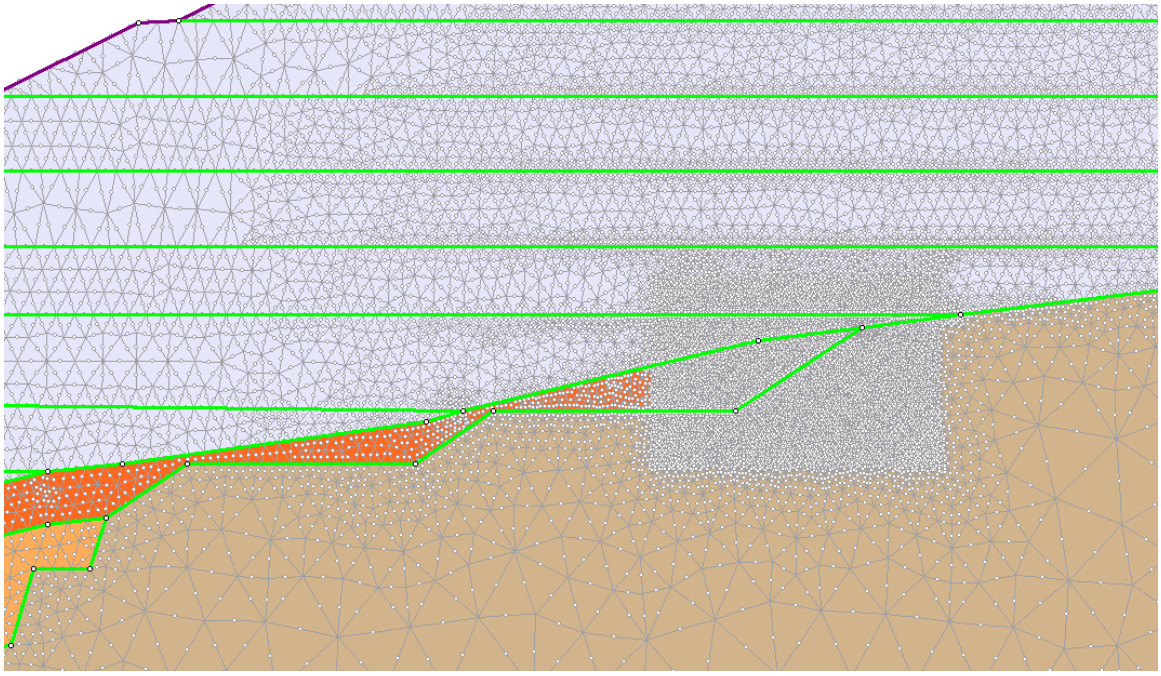
Newmont Response:

a. The purpose of the Geomembrane Pull Out calculation is solely to aid in the design of the anchor trench. This calculation verifies that the anchor trench design will hold the geomembrane's own weight before any ore is placed on the pad. The results of the Pull Out Calculation shows the anchor trench can hold 300 vertical feet of geomembrane before the weight of the geomembrane pulls the geomembrane out of the anchor trench. This calculation is independent of the settlement evaluation and the strains presented do not correspond to the strains presented in the settlement evaluation.

b. Grid spacing of the finite elements within the settlement models ranged from nominal lengths of approximately 60 feet to as small as 2.5 inches. The mesh was developed, and iteratively refined, so that smaller grid sizes were developed in high strain locations (i.e., near the interface of the pit highwalls that transition from competent bedrock to thick pit backfill). For example, along the base of the VLF2 Phase 3 area, near the interface of intact rock and pit backfill, the grid size was significantly reduced so that strains over a smaller grid length could be evaluated and related back to the allowable strains specified in the technical specification. An example of the finite element grid for the Section 1 settlement model is presented in the image below. Note that this mesh refinement procedure was performed for all sections evaluated.

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Per the specifications, the limiting tensile properties of the LLDPE geomembrane are 250 percent over a 2.5-inch gauge length when tested using ASTM D6693. By refining the finite element grid spacing in areas of high strain to approximately 2.5-inch elements, we were able to compare estimated strains from the settlement model to prescriptive criteria in the Technical Specifications.

c. Isolines near the surface of the settlement graphics included in Appendix G are primarily vertical because the settlement is a "trough" toward the center of the pit backfill. In general, this is a function of how settlement is presented in the graphics and very little settlement is occurring at the surface of the VLF from compression of the pit backfill.

DRMS Comment (italics):

82. <u>Section 5.2.3 Results & Section 5.2.4 Conclusion.</u> The Division has questions related to the settlement analysis related to potential restricted movement of the geomembrane relative to the drain cover fill (DCF) above and the soil liner fill (SLF) below, based on the comments from the "mulit-layer interface direct shear testing (ASTM D 6243)" notes 1 and 2 in Appendix B, Figure B-2. Please see Comment I below for specific questions.

Newmont Response:

Please see response to Comment I, below.

DRMS Comment (italics):

84. VLF2 Phase 3 Issued for Permitting Drawings. The response is incomplete. Please address items b, and g below:

*a. **A01,** General Arrangement. The response references Drawing A27. However, based on Comment 84g, the response removed drawings 25 and 26. The new drawing submitted to address this particular comment was numbered Drawing A25 and is adequate. No further response is necessary.*

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b. ***A08**, PSSA Layout. The response requires additional clarification. The revised Drawing A08 removed the "Transmittal Trough" note and the darker shading on the drawing makes it unclear as to whether this feature is still in the proposed design. Please clarify if the trough has been removed from the design and if so, why.*

c. ***A10**, Stage C Grading Plan. The response is adequate.*

d. ***A15**, Leak Detection and Erosion Control Details. The response is adequate.*

e. ***A16**, VLF Sections and Details, Sheet 1. The response is adequate.*

f. ***A23**, LVSC Riser Details. Section U. The response is adequate.*

g. ***A25 and A26.** These two drawings were eliminated in the revised submittal. However, this is the only reference the Division can find in response to our April 23, 2020 AM-13 Stormwater Preliminary Adequacy Review. Please provide a written commitment to address adequacy issues in the aforementioned letter through a technical revision (TR) and include a schedule for when the Division can expect this TR.*

Newmont Response:

a. Acknowledged

b. Based upon the revised grading plan, the "transmittal trough" has been eliminated from the grading plan. In the revised grading plan, the western edge of the Phase 3 pad shifted east and the elevation of the crest of the PSSA was lowered. Based upon this geometry, the Phase 3 pad ties in along the Phase 2 perimeter at a higher elevation than the proposed crest of the PSSA and a trough could not be included.

c. Acknowledged

d. Acknowledged

e. Acknowledged

f. Acknowledged

g. CC&V commits to addressing the stormwater related adequacy review items presented in the April 23, 2020 Stormwater Preliminary Adequacy Review through a technical revision. CC&V is working with the Division to address these comments and anticipates providing this technical revision to the Division in 2021.

DRMS Comment (italics):

85. Appendix E - Technical Specifications. The response is incomplete.

a. 02200 Earthworks. The response is incomplete. See Comment #62 above.

b. 02210 Underground Working Remediation. The response is incomplete. The revised specifications included: 03300 – Cast-in-Place Concrete, 03310 - Cemented Rockfill, 03320 - Concrete Plug, and 03330 - Flowable Fill, but not 02210 – Underground Working Remediation. Please include the specification that ties the new Drawing A025 and the newly provided specifications together.

Newmont Response:

a. Please see the revised Earthworks Specification provided in Attachment 4

b. Please see the Technical Specifications – Underground Workings provided in Attachment 5.

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DRMS Comment (italics):

86. *Appendix F - Slope Stability Results. The Division continues to review CC&V's response to Item a. The response to Items b and c are adequate.*
    a. *[Part a] The Division acknowledges the submittal of the additional requested stability analysis section. Please see Comment C below.*
    b. *The response is adequate.*
    c. *The response is adequate.*

Newmont Response:

Please see response to Comment C, below.

APPENDIX 3

DRMS Comment (italics):

88. *Stormwater Management Plan. See Comment 84g above.*

Newmont Response:

See response to Comment 84g, above.

APPENDIX 7

DRMS Comment (italics):

89. *Quality Assurance Project Plan. The Division accepts CC&V's commitment to updating the text of the QAPP to include, "Water levels at both Arequa Gulch Valley Leach Facility (VLF1) and VLF2 are recorded weekly by site personnel and are continuously recorded electronically".*

Newmont Response:

Comment acknowledged.

APPENDIX 8

DRMS Comment (italics):

90. *Wildlife Protection Plan. The response is incomplete. CC&V submitted a revised Wildlife Protection Plan (WPP). Please address the following additional adequacy items:*
    a. *The Division has identified at least the following items which have been removed from the previous approved TR-91 Wildlife Protection Plan:*
        - *Section 2.1: Bottom of the wildlife fence around lined ponds should be buried a minimum of six inches.*
        - *Section 2.1: Lined ponds will also have textured lining to aid in egress should wildlife become entrapped.*
        - *Section 2.2: Specifying areas of standing process solution with a surface area larger than three foot by three foot surface must be corrected as soon as reasonably possible.*
        - *Section 2.2: In areas where standing process solution cannot be avoided, measures such as fencing, birdballs, and/or netting must be deployed.*

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- *Appendix A, #6: In the event of a small animal or bird mortality, S&ER personnel, in conference with CPW, will evaluate the potential that the animal or bird may have been exposed to chemical processes. If it is determined that there is a high probability the animal or bird was exposed to harmful chemicals or other processes, the animal will be sent to Colorado State University for necropsy.*
- *Appendix A, #7: In the event of an ungulate mortality, S&ER personnel will contact CPW and make arrangements for the transport of the animal to a location recommended by CPW.*

Please address if CC&V has intended to revise the WPP with the deleted sections above. There was no discussion, justification, nor concurrence from Colorado Parks & Wildlife regarding these changes. Please present a document which identifies all of the revisions being proposed in the new WPP, provide justification of each change, and submit documentation that CPW was consulted and concurs with each revision. Please note, the Division is aware of formatting changes and minor modifications to the WPP, however, the adequacy item above is regarding the substantive revisions.

b. *It appears Appendix A is not referred to within the WPP. Please revise Sections 5.1, Section 5.2, and other portions of the WPPP as necessary, referencing the use of Appendix A.*

c. *As previously requested, the final report following a wildlife mortality incident shall be copied to the Division. Please revise Section 5 or Appendix A, accordingly.*

Newmont Response:

CC&V has elected to submit the currently approved version of the Wildlife Protection Plan (WPP) and not make the proposed changes during the review of AM-13. CC&V will work collaboratively with Colorado Parks and Wildlife as well as the Division to review and make proposed changes. Please see the current version of the WPP in Attachment 6.

APPENDIX 12

DRMS Comment (italics):

92. *<u>Appendix 12, Emergency Response Plan.</u> The response requires additional clarification. In Appendix 12, page 37 of 38, Company Emergency Contact List, Meg Burt, Environmental Manager, is listed as a company emergency contact. As far as the Division is aware Meg Burt is no longer working at the mine. Additionally, it has been noted that the date of next review for the document was 25 June 2019, as indicated at the bottom of the page.*

Newmont Response:

Please see the updated version of the Emergency Response Plan in Attachment 7. The date for the next review of the document has been updated.

<u>ADDITIONAL COMMENTS</u>

DRMS Comment (italics):

A. *Exhibit F – Areas where Reclamation in not required. Drawings F-1, F-5, and F-6 (dated 7/30/2020) have an area labeled "East Cresson Mine (ECMC)" which the legend indicated is and "Area where Reclamation in not required". As this area was disturbed under activities approved under M-1980-244 and/or previous permitted operations consolidated under M-1980-244, and a release request has neither been submitted nor approved for this area, it is still subject to meeting the approved reclamation plan. Furthermore, recent inspections have identified significant erosion and a drill pad requiring additional reclamation be performed prior to release from*

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reclamation liability. Please revise Drawings F-1, F-5, and F-6 to depict this area differently from undisturbed areas.

Newmont Response:

All Reclamation Plan Maps (Exhibit F), including Drawings F-1, F-5, and F-6, have been revised to indicate that this area will become Forested, Natural, or Areas partially Reclaimed and not Released. Revised Exhibit F maps are provided in Attachment 8.

DETAILED DESIGN FOR PERMITTING, REVISION 1

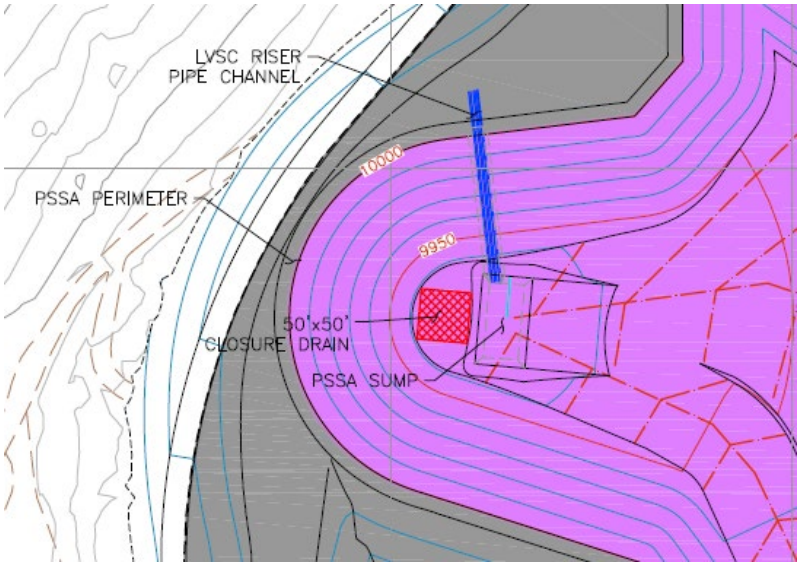
DRMS Comment (italics):

B. *Section 4.9. Reclamation/ Closure. Please clarify at what phase of the new VLF construction the vertical drill shafts to be extended through the composite liner surface to promote any flows into the diatreme zone will be installed.*

Newmont Response:

After the heap has been detoxified via rinsing and the water level within the PSSA has been reduced to a maximum depth of 8', vertical shafts (boreholes) will be drilled through the ore to puncture the composite liner system, geomembrane and soil liner fill layers. This will allow water within the reclaimed heap to drain into the diatreme. This is the similar plan as to what has been approved at the other VLFs at CC&V.

The issued for construction drawings will include a target location for the closure drain, as shown in the image below:



DRMS Comment (italics):

C. *Section 5.1.3 Material Properties. Based on the expanded narrative in the revised report, it has become clear to the Division that inappropriate minimum Factors of Safety were set for the stability analyses. As the new VLF is a critical structure (as are the other two VLFs), the "Critical*

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Structures" row of Table 1. Recommended Minimum Factors of Safety for Slope Stability Analyses for Operations and Reclamation in Section 30 of the "Policies of The Mined Land Reclamation Board" apply; and as it has become apparent in the expanded narrative, the selected strength parameters are not based on Strength Measurements Resulting from Multiple Tests, but on generalized or assumed values. This approach requires the minimum factors of safety (FoS) be taken from the first column of safety factors. Therefore, the FoS for static conditions must be greater than or equal to 1.5 and the FoS for seismic conditions must be greater than or equal to 1.3. Based on Table 5.2 – Summary of Calculated Factors of Safety, Sections 1 and 4 do not meet these criteria. Furthermore, given the very loose specification for overburden backfill and the statement in the report that the material can come from different sources, different parent rocks, etc., it is unlikely only a few strength tests could provide confidence in a selected cohesion or friction angle. Please provide a revised slope stability analysis demonstrating compliance with the more conservative MLRB Policy, Section 30.

Newmont Response:

CC&V agrees that the VLF should be classified as a "critical structures" per the Division's guidance on stability and geotechnical analyses, but believe the lower limiting factors of safety (minimum factor of safety of 1.3 and 1.15 for static and pseudostatic conditions, respectively) can be utilized in consideration of the background work, data, and understanding of the shear strength associated with the materials that largely define the overall slope stability. Assuming competent foundation conditions (intact bedrock or backfilled rockfill within the pit), which are present for this proposed facility, in general the slope stability of lined heap leach pads is largely defined by the shear strength of the ore and the interface shear strength along the base geomembrane liner (i.e. the limiting shear strength of the "geomembrane liner containment system"). The shear strength of these two materials within the stability models are well understood and have been documented with multiple shear strength tests. Specific details regarding the shear strength properties of these materials include:

Ore: Properties of the ore were based on the results of the strength tests completed for composite mixtures of different resource ore streams mixed with minor amounts of tailings. Since the durability of the ore, clay content, and the mix ratios of ore and tailings might change throughout facility operation, suitably conservative strength parameters were assumed. A significant amount of testing has recently been completed and the document summarizing this work is included with these responses as Attachment 9. Within the Attached data, a summary table (Table A.1 of the Technical Memorandum) includes additional shear strength test data from 2017 and 2013 that were completed on ore samples from CC&V.

In addition, the ore strength parameters used in the current stability evaluation are consistent with recent stability analyses for permitted leach facilities at CC&V.

Geomembrane Interface: A detailed testing program was completed in 2019 as part of the VLF2 Phase 2 expansion that year. This testing program included 7 large-scale direct shear tests to accurately measure the interface shear strength across a wide range of potential stress levels. Typically, 3 or 4 shear strength tests are completed to estimate the failure envelope of the geomembrane interface, but in this testing program 7 shear points were completed to provide a more detailed assessment of the interface strength. Data from this testing program is considered robust and we believe provides a high degree of confidence in the shear strength assumed in the stability analysis. Laboratory data was included in Appendix C and the failure envelope considered in the stability analysis (non-linear failure envelope) was presented in Figure 5.1.

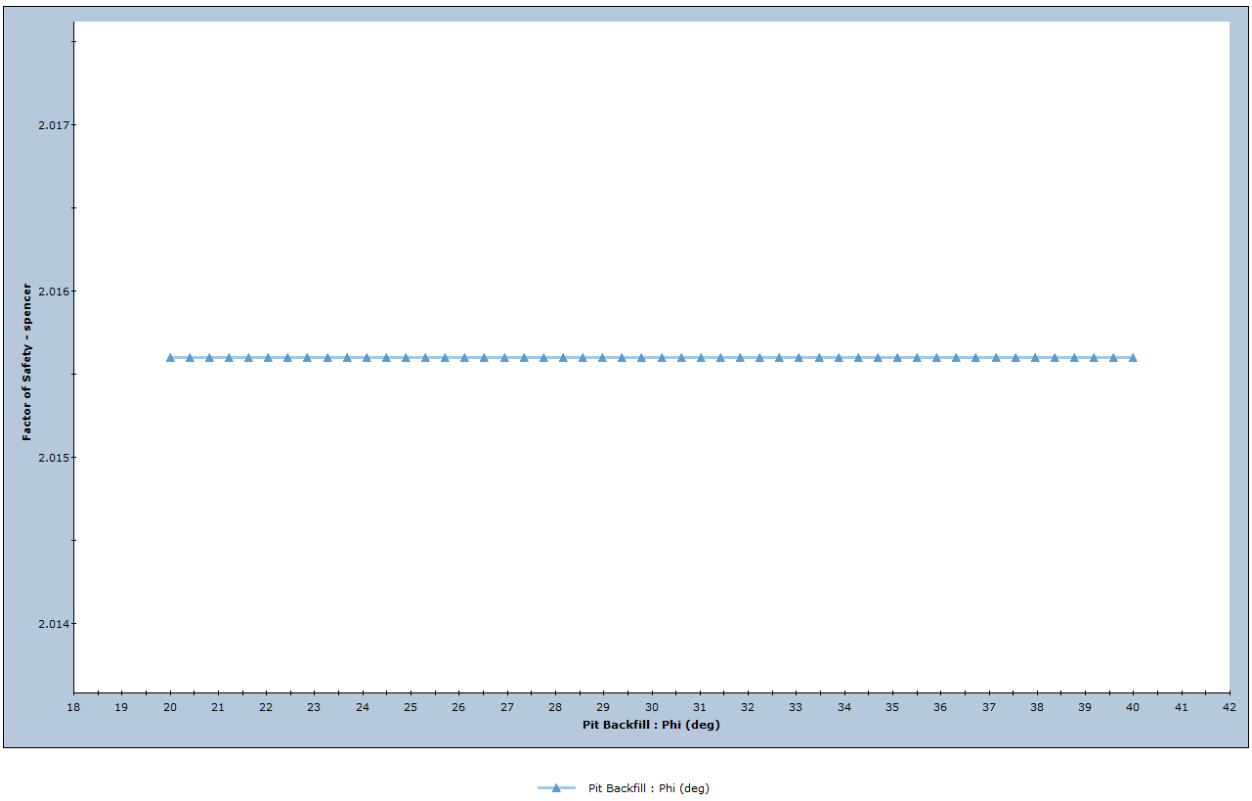
Foundation (Pit Backfill): The shear strength of this material was assumed but it is not of critical importance for global stability of the VLF. 35 degrees was assumed, which is likely very conservative given the expected

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coarse nature of the pit backfill. Laboratory testing of a rockfill is difficult if not impossible due to the large particle sizes. Based on this information, we do not believe that the assumed, conservative, shear strength of the pit backfill should force the entire stability evaluation of the overlying VLF Phase 3 slopes into the more conservative prescriptive requirements.

At the request of DRMS, we evaluated the sensitivity of the calculated factors of safety to changes in the shear strength of the VLF foundation. Section 1 through the VLF was evaluated, and the shear strength of the Schist Island pit backfill was varied from a frictional strength (i.e., phi) of 20 degrees to 40 degrees. For the proposed material gradation and placement criteria, 20 degree frictional strength is not realistic, but this strength was utilized within the model to assess if unsatisfactory performance could be simulated. Results of the sensitivity analysis indicate that the strength of the pit backfill does not influence the global stability of the VLF. A plot of the factor of safety versus the pit backfill friction angle, as generated from the modeling software, is presented in the image below. As can be noted in the image below, varying the friction angle of the Foundation (Pit Backfill) material (values on the x-axis in the image) has no influence on the factor of safety (values on the y-axis in the image).



DRMS Comment (italics):

D. *Table 5.1 – Stability Evaluation Material Properties. There were significant revisions to the Design Report with some sections completely re-written and others essentially the same. The verbiage supporting Table 5-1 was not significantly revised, but the moist unit weight changed for every material but the composite liner interface. The ore weight was reduced by 4%, the foundation backfill weight was increased by 4% and the intact foundation material weight was increased by 25% when compared to the Table 5.1 values from the December 2019 report. No*

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explanation for the difference was provided. Similar discrepancies are found in Table 5.3 – Material Properties. Furthermore, there is an inconsistency between Table 5.1 and 5.3 in that different densities are proposed for the low and high compaction zones in Table 5.3, but not in Table 5.1. If CC&V wishes to maintain the "low compaction effort" approach, the stability analysis should reflect the different densities and provide a rationale for each selected material density as it has changed between December and July without any discussion. Please revise Tables 5.1 and 5.3 to be consistent and provide rationale for the selected material densities. The stability analyses will need to be revised accordingly.

Newmont Response:

The Revision 0 submittal utilized unit weights that were historically used for other VLF and OSA stability evaluations. As part of the Revision 1 submittal, the historic unit weights were reviewed in detail to ensure they were consistent with as-built data and the current understanding of materials and material placement. For example, the unit weight of competent, intact frock is typically around 150 pounds per cubic foot (pcf), and the unit weights historically used for this material were significantly underestimated. It should be noted that the unit weight of the intact rock foundation has no bearing on the stability models as critical failure surfaces all follow the base liner system. In addition, the unit weight of the intact rock foundation does not significantly impact the settlement models as the maximum deformation and strain are within the pit backfill above the intact rock.

Typically, variations in the moist unit weight of materials within stability and settlement models have little impact on the calculated factor of safety, and that is the case for the presented geotechnical evaluations. To support this assertion, the calculated factors of safety and the estimated deformations for the Section 1 stability models were compared when the variable unit weights were used. The results of the comparative study are presented in Table 1 and Table 2, below. The comparative evaluation indicates that the minor modifications to the unit weight have negligible impact on the calculated factors of safety or estimated deformation.

Table 1: Slope Stability Sensitivity Analysis for Variations in Unit Weight (Section 1 Model)

Material	**Unit Weight (lb/ft^3)**		**Calculated Factor of Safety (Static)**		**Calculated Factor of Safety (Pseudostatic)**	
	Rev 0	Rev 1	Rev 0	Rev 1	Rev 0	Rev 1
Ore	125	120	1.39	1.40	1.18	1.20
Composite Liner Interface	120	120				
Foundation (Schist Island Pit Backfill and SGOSA Fill)	120	125				
Foundation (Intact Rock)	120	150				

Table 2: Settlement Sensitivity Analysis for Variations in Unit Weight (Section 1 Model)

Material	**Unit Weight (lb/ft^3)**	**Calculated Max Strain (%)**	**Calculated Max Displacement (ft)**

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	Rev 0	Rev 1	Rev 0	Rev 1	Rev 0	Rev 1
Ore	125	120				
Pit Backfill (Low Compactive Effort)	120	125	46.8	44.9	3.6	3.4
Foundation (Intact Rock)	120	150				

DRMS Comment (italics):

E. *Section 5.2.2 Back Analysis of Mill Platform Fill. In the third paragraph, the narrative states "The difference between the as-built survey from 2016 and the 2018 survey, approximately 0.41 feet across the area that was excavated". Elsewhere in the submittal, it indicates the 0.41-foot settlement is an average. The Division recalls informal discussions related to the recertification of the liner near the mill indicating the settlement was at least a foot in areas. Please provide the maximum and minimum settlement depths and discuss whether the difference correlated well with the depth of ore placed on the area where the top of the soil liner fill was resurveyed in support of your back analysis.*

Newmont Response:

A figure of the Mill Platform Fill has been developed to more clearly present the survey data utilized in the development of the subgrade modulus for a well-compacted, coarse backfill, and is included as Attachment 10. The plan view of the area exhumed presents a grid of measured settlement along the exhumed base geomembrane. Section A, perpendicular to the slope presents the Mill Platform Fill and ore thicknesses down the center of the exhumed area. This is the primary section that was utilized for the estimate of the foundation modulus. Section B, parallel to the slope, presents the variable ore thickness in the exhumed area. The settlement data correlates well with the ore thicknesses. For example, maximum settlement (1 to 1.1 foot) was estimated along the northern margin of the exhumed area where ore thickness were approximately 60 feet and minimum settlement (negligible to 0.1 foot) was measured along the southern margin of the exhumed area where the ore tapered out.

In general, the estimated settlement of the Mill Platform Fill beneath the VLF2 slopes from placement of ore was variable across the exhumed area and likely influenced by: (1) ore loadings, (2) the movement that occurred during slope instability, and (3) the mechanical removal of the ore to expose the base geomembrane. The average settlement across the entire area was 0.41-feet, and the generalized section, Section A, was considered reasonable to back-estimate the subgrade modulus of a well-compacted, coarse backfill.

DRMS Comment (italics):

F. *Section 5.2.4. Material Properties. The seventh paragraph on p. 19 discusses varying the Poisson's ratio between 0.2 and 0.4, finally selecting 0.3 for the model. Please address the sensitivity in the results using the range between 0.2 and 0.4.*

Newmont Response:

In general, the magnitude of estimated settlement is sensitive to variations in Poisson's ratio whereas the estimated strain was over a 2.5-inch gauge length, and was relatively insensitive. For example, we varied

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Poisson's ratio from 0.2 to 0.4 for the Section 1 Low Compactive Effort model, and resulting displacements ranged from 4.1 feet to 2.5 feet. The reported value for a Poisson's ratio of 0.3 (as shown in Appendix G of the design report) was 3.4 feet. In terms of maximum strain along the geomembrane liner, the strains varied from 43 percent to 46 percent, and the reported value was 45 percent for a Poisson's ratio of 0.3.

DRMS Comment (italics):

G. Section 5.2.7. Conclusion. *In the fourth paragraph on p. 20, Newfields states they believe they can achieve 95% standard proctor, similar to that achieved at the mill pad where 2 to 2.5-foot lifts were used (and hydraulic machinery was used to break up rock greater than two feet in size), using 5-foot lifts with a material meeting a very loose specification (all material smaller than 5 feet, with 0 to 25% fines). How is a proctor optimum density to be evaluated/determined with a material that is 75 to 100 percent rock greater than 3 inches? With such large rock and potentially large voids, how does Newfields propose to demonstrate a 95% standard proctor compaction is achieved?*

Newmont Response:

The high effort compaction zone, the upper 35' of the pit backfill, should be compacted to the same degree as the fill material at the mill pad using material meeting the Structural Fill specifications:

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

Based on our previous experience, we believe 95 percent standard proctor compaction can be achieved using the following specification which has been used successfully on other mine sites.

Material Properties: Materials shall be considered suitable for use as fill provided they are reasonably graded such that large void spaces do not result and do not contain particles larger than larger than two-thirds (2/3) the lift thickness. The fill shall be free of roots, grass and other organic material and consist of inorganic soil

Placement Methods: Fill for mass grading operations shall be placed in lifts not to exceed five feet if placed and compacted with CAT 785 mine haul trucks or larger. The type of compaction equipment, and number of passes, shall be approved by the Engineer in writing based on an acceptable field fill compaction performance test.

Construction and monitoring of the field test shall be performed per U.S. Army Corps of Engineers' guidelines for test fill construction. The test fill may be located so that it is incorporated within the limits of the compacted fill areas. The moisture content of the minus three-quarter (¾) inch material shall be within two (2) percent of optimum moisture prior to placement.

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The data to be collected during construction of the test fill and submitted to the Engineer for approval shall include:

- Amount of settlement after every two (2) passes of ten (10) ton minimum (static drum weight) vibratory, smooth-drum roller compactor, or a loaded haul truck to a maximum of fifteen (15) passes. If deemed necessary by the engineer a water replacement method test may be required to assess compaction for fill.

- A curve showing change in settlement versus number of passes shall be produced from the data. This curve will be used to determine the required minimum number of passes for acceptable compaction. In general, the minimum number of passes will be that number to achieve eighty (80) percent of the total settlement obtained after ten (10) complete passes of the compaction equipment. Final determination by the Engineer of the lift thickness and minimum required passes will be based on review of the test data.

If there is a significant change in equipment being used for compaction or material properties of the Structural Fill, the EoR will require a new test pad to be constructed to update the placement procedures.

DRMS Comment (italics):

H. Appendix B, Borehole BH-05. The log for BH-05 indicates groundwater was encountered 35 feet below ground surface. Please comment on how this water may be perched and based on the surrounding geology whether or not the area might be fed from the unlined area to the southeast of the new VLF pad, potentially necessitating an underdrain.

Newmont Response:

The localized perched groundwater that was encountered at BH-05 was from locally ponded surface water from the surrounding area, as shown in the figure below. At the time of the investigation, this area was predominantly flat and did not contain any diversion channels to route precipitation and runoff away from the area. Although it is not apparent in the photographs we have from the investigation, directly behind the white Authentic Drilling Truck was a large puddle of standing water.



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Figure: BH-05 Surface Conditions during Investigation

The ponded water seeped through the upper 35 feet of higher permeability material before encountering a lower permeability lens. The following is a list of soils encountered in BH-05 from the ground surface to 60.5 foot depth:

- 0-20 ft poorly graded gravel with silt and sand (GP-GM);
- 20-30 ft clayey SAND with gravel (SC);
- 30-35 ft poorly graded SAND (SP) (Weathered phonolite);
- 35-60.5 ft clayey SAND with gravel (SC) (Weathered Phonolite)

The localized groundwater in this area is perched as indicated by sample recovery. Samples above 35 feet were moist. The figure below presents a photo of the sample collected directly above perched groundwater at 30-30.3 ft depth.



Figure: BH05 Sample 30-30.2 ft Depth

No sample was collected at 35 feet, however the split spoon used was wet when pulled out of the boring. The next sample from 40-40.1 ft depth came up wet as shown in the figure below, indicating depth of groundwater.

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Figure: BH05 Sample 40-40.1 ft Depth

The ground water is present at 40 feet, but not at 45 feet as shown in the next figure.



Figure: BH05 Sample 45-45.2 ft Depth

The outside of the sample was wetted, and the inside remained moist indicating that water was flowing into the borehole from a higher elevation. The localized groundwater likely fluctuates and is directly dependent on seasonal rains in the area. Developing surface drainage channels within this relatively flat area would most likely mitigate the surface water from seeping into the ground in this area.

DRMS Comment (italics):

I. *Appendix C.2 – 2019 Interface Shear Test. Figure B-2 notes 1 and 2 indicate shear stresses of 1,000 psf and less resulted in "Shear failure at the interface between the aggregate [DCF] and*

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shiny side of Agru 80-mil Microspike", whereas of 7,500 psf or greater resulted in "Shear failure at the interface between the low perm soil [SLF] and dull side of Agru 80-mil Microspike." Please comment on theories as to why the demarcation for stresses between 1,000 and 7,500 psf and how that might help or hinder the slippage of the geomembrane over long distances of developed strain resulting from differential settlement.

Newmont Response:

The location of the shear surface identified in the interface shear strength test was typical of this type containment system (crushed rock vs geomembrane vs low permeability soil). At low stresses, full shear strength between the textured geomembrane and overlying coarse aggregate is not developed since the normal stress on the geomembrane shear surface is low. In this type of loading scenario, you have shearing analogous with rolling spheres along a rigid surface. At these stress levels, the underlying shear interface between the geomembrane and the low-permeability soil is higher primarily because of adhesion between the geomembrane and the fine-grained, moderately cohesive soil (typical plasticity index and liquid limit for Soil Liner Fill is approximately 20 – 25 and 35 – 40, respectively). For this reason, initial loading of the geomembrane surface, such as during placement of the drainage aggregate, is important as this is one of the most critical loading scenarios along the containment surface. In consideration of this, the evaluation utilizes a non-linear failure envelope to account for this shear strength reduction at low normal loads (as presented in Figure 5.1), so the shear strength at low normal loads is not overestimated.

As the normal force along the geomembrane increases, the interface begins to dimple as well as more stress to lock individual aggregate particles together and the shear surface switches to the underlying interface between the geomembrane and the finer-grained low permeability soil.

DRMS Comment (italics):

J. *Appendix D.1 – Geomembrane Pull Out. Does the 300 foot "Height of Slope" input parameter indicate the uniform development of strain over the 600 or 750-foot length of liner (depending on 2H:1V or 2.5H:1V slope) or just provide an input for the weight of ore providing stress on the anchor trench?*

Newmont Response:

The purpose of the Geomembrane Pull Out calculation is solely to aid in the design of the anchor trench. This calculation verifies that the anchor trench design presented will hold the geomembrane's own weight before any ore is placed on the pad. The results of the Pull Out Calculation shows the anchor trench can hold 300 vertical feet of geomembrane before the weight of the geomembrane pulls the geomembrane out of the anchor trench. The Phase 3 Design includes anchor trenches every 100 vertical feet. To be conservative, the calculations assume no drain cover fill on the liner yet since there will be a period of time that the geomembrane is not covered.

DRMS Comment (italics):

K. *Appendix E - Technical Specification 02200. Section 3.6.B.3, proposes a developing a specification for method compaction of Overburden Fill. Given the very loose size specification (100% passing a 5-foot sieve, with 0 to 25% fines), it seems unlikely to successfully develop a method specification that would result in any significant level of confidence that any consistent level of compaction could be achieved. The potential for significant voids into which up to 25 percent of the fill could eventually settle into appears to be beyond this approach. Please provide some discussion how such a method specification could be developed to any significant level of*

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confidence.

Newmont Response:

Based upon information and observations made during mining operations, the 5' diameter rocks are not commonly observed after blasting. The specification for the overburden material presented in the design was developed to be inclusive of the occasional large diameter rock. A test pad will not be constructed for the low compaction effort zone. The overburden material will be placed in 25' lifts with minimal compaction. Knowing this, the modulus number used when modeling settlement of the low compaction zone was conservatively selected based on the assumption that no compactive effort would be made during placement of the backfill material. Additionally, since the facility is lined, the migration of fines is minimal since there is no driving forces, such as water, to mobilize the fines within the fill.

DRMS Comment (italics):

L. *Appendix F – Slope Stability Figures F.1 and F.2. The south "leg" of Section 1 runs over the area where the six boreholes presented in Appendix B were drilled. Those boreholes indicate the majority of the subgrade is not competent bedrock, yet no stability analyses were provided for this section. Please provide a slope stability analysis for the south "leg" of section 1.*

Newmont Response:

The stability along the south leg of Section 1 was evaluated. Existing and pre-mine ground surfaces, graded pad surface, and Phase 3 ore surface were considered in development of the stability model for this section; similar to the other stability section. The overall slope of section was made 2.5H:1V and the base grades along the geomembrane surface for this section were manually adjusted in the stability model to be representative of worst-case conditions along this aspect of the VLF slopes.

The subsurface model was developed using existing borehole data and survey of the original ground surface prior to mining activity in this area. Historic survey data indicates that there is between 100 and 400 feet of fill underneath this section, and the borehole data from BH-03 and BH-05 indicates that the fill thickness pinches out near these boring locations.

The fill in this location was predominantly classified as medium dense to dense, poorly to well graded gravel with silt and sand material. Some pockets of loose gravelly material were documented but based on the location in which those zones were identified, they will not impact the overall stability of the VLF slopes. The fill material was from mine development and similar to material found within the Squaw Gulch Overburden Storage Area (SGOSA) and East Cresson OSA (ECOSA). As such, the material parameters assumed for the existing fill material are consistent with the material properties of SGOSA material used in the VLF2 Phase 3 Detailed Design Report (Section 4 stability evaluation).

Results of the stability evaluation for this section indicate calculated factors of safety of 1.9 and 1.6 for static and pseudostatic loading conditions, respectively. Output graphics from these models are included in Attachment 11.

DRMS Comment (italics):

M. *Appendix F.2 – Stability Graphics. The pdf version of all the stability graphics which include a "Composite Liner Interface" shows "jschmidt" added this blue line to each figure. Please explain why this was added after the software generated the graphic results.*

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Newmont Response:

Comments added within Adobe were added to the Revision 1 re-submittal to add clarity to the stability graphics. The blue line and "Composite Liner Interface" were added using the "Comments" feature because it is easier to add lines and callouts in Adobe than the stability program. Appendix F of the Design Report has been updated so that the blue line and composite liner interface callout do not show up in the comment sections, and the revised Appendix F is included as Attachment 12.

DRMS Comment (italics):

N. *Appendix G – Settlement Analysis. Please explain why the isolines near the surface of the orestack in the Phase 3 Valley Leach Facility Settlement Analysis graphics figures are perpendicular to the surface.*

Newmont Response:

This appears to be the same comment from DRMS as Comment 81c. Please refer to our response to Comment 81c, above.

DRMS Comment (italics):

O. *Follow-up. During a conference call with CC&V and Newfields personnel on September 29, 2020 it was stated Newmont had used similar construction techniques at the Yanacocha and Peñasquito mines. If these sites are to be referenced as successful implementation of this approach, please provide: type of facility involved; material specifications; material placement details; indicate whether or not liners (and what type) were involved; configuration of the liner with respect to prepared subgrade and backfill; long term monitoring used to confirm continued success; and any other details that might support this approach for the current proposed VLF construction. There was mention of a site where the proposed compaction effort was verified. It was not clear to the Division if this was at Ynacocha or Peñasquito, but providing the documentation and details supporting this verification effort would be helpful.*

Newmont Response:

As reviewed and discussed during the November 16, 2020 workshop with DRMS, construction techniques and facility design overviews for Yanacocha tailings storage facility, Peñesquito tailings storage facility and the Twin Creeks Fuel Island CC&V demonstrated similar construction approaches have been successfully implemented elsewhere. A copy of this presentation is provided in Attachment 13.

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List of Attachments

Attachment Number	Description
1	Revised Exhibit C Drawings (as applicable)
2	Revised pages from Exhibit L
3	Revised Table U-2 from Exhibit U
4	Revised Earthwork Specification
5	Specification for Underground Workings
6	Current Wildlife Protection Plan (WPP)
7	Revised Emergency Response Plan (ERP)
8	Revised Exhibit F
9	Technical Memorandum – VLF2 Tailings Study Laboratory Testing & Stability Re-Evaluation
10	Figure - Mill Platform Settlement After Ore Loading (2017)
11	Phase 3 VLF Stability Analysis Output Figures
12	Revised Phase 3 VLF Design Appendix F – Slope Stability Results
13	Newmont Presentation Slides - Rockfill Construction Projects Summary

ATTACHMENT 2

	A	B	C	E	F	G	H
2	**2020 Finaincal Warranty Calculation**						
3							
4							
5	**Activity**	**Inflated or Bottom-up**	**LOM Unit**	**U. Cost $ Full Build out Cost**	**Liability Percentage**	**Pro Rated Units Or Qty**	**U. Cost $ TOTALS 2020FW**
6							
7	**Direct Costs**						
8							
9	**1.0) Roads, Railroads, Airstrips**						**$2,719,497**
10	**Reclamation Area**						
11	Road Maintenance	bottom-up	1.00	$2,719,497	100%	0	$2,719,497
12	**2.0) Drill Sites, Drill Pads, Exploration Trenches**						
13	**Reclamation Area**						
14	Exploration-Earthworks/Recontouring (unit cy)						
15	Exploration-Revegetation/Stabilization (unit acres)						
16	Exploration Roads & Drill Pads-Earthworks/Recontouring (unit cy)						
17	Exploration Roads & Drill Pads-Revegetation/Stabilization (unit acres)						
18	**3.0) Drill Hole Abandonment**		**EA**				**$132,020**
19	Exploration Hole Abandonment (unit ea.)						
20	Well Abandonment (unit ea.)	bottom-up	71.00	$1,859.44	100%	71	$132,020
21	**4.0) Pits, Borrow Areas & Trenches -**		**CY**				**$ -**
22			**Acre**				
23	Pits-Earthworks/Berm Construction (unit cy)						
24	Pits-Revegetation/Berm Construction (unit acres)						
25	Backfill Areas-Earthworks/Rip (unit acres)						
26	Backfill Areas-Revegetation/Stabilization(unit acres)						
27	Generic Material Hauling-Earthworks/Recontouring (unit cy)						
28	Generic Material Hauling-Revegetation/Stabilization (unit acres)						
29	**4.1) Portals/Adits Underground Mines**						
30							
31	**5.0) Non-Process Ponds & Reservoirs**		**CY**				**$386,129**
32	**Reclamation Area**		**Acres**				**$18,665**
33	Process Ponds-Earthworks/Recontouring (unit cy)	bottom-up	175,796.52	$2.09	100%	175,796.52	$367,464
34	Process Ponds-Revegetation/Stabilization (unit acres)	bottom-up	11.60	$1,609.05	100%	11.60	$18,665
35	**6.1) Water Treatment/Management Heap Leach Pads**						**$70,746,700**
36	**Treatment Volume**						
37	Heaps (number of)	mixed	1.00	$90,268,487	77.81%	1	$70,236,723
38	Drilling to perforate liner	inflated	1.00	$509,977.00	100%	1	$509,977
39	**6.2) Water Treatment/Management Pit Lakes**						
40	**Treatment Volume**						
41	Monitoring						
42	**6.3) Water Treatment/Management Waste Dump Seepage**						
43	**Treatment Volume**						
44							
45	**6.4) Water Treatment/Management Tails Storage Facility**						
46	**Treatment Volume**						
47							
48	**7.0) Heap Leach Pad Reclamation - Regrading Oversteep Slopes**		**CY**				**$27,867,107**
49	**Reclamation**		**Acre**				
50	Heaps-Earthwork/Recontouring (unit cy)	bottom-up	6,641,561.00	$0.57	77.81%	5,167,711.33	$2,664,164
51	Heaps- Generic Hauling	bottom-up	24,884,418.76	$1.24	77.81%	19,362,239.20	$23,941,717
52	Heaps-Revegetation/Stabilization (unit acres)	bottom-up	1,207.27	$1,572.62	77.81%	939.36	$1,261,226
53	**8.0) Waste Rock Dump, Stockpile, Landfill Reclamation**		**CY**				**$13,793,668**
54	**Reclamation Area**		**Acre**				
55	Waste Rock Dumps-Earthwork/Recontouring (unit cy) including generic hauling	bottom-up	13,290,533.00	$0.62	80.91%	10,752,787.27	$7,982,834
56	Waste Rock Dumps-Revegetation/Stabilization (acres)	bottom-up	1,679.32	$1,572.52	80.91%	1,358.66	$2,385,694
57	Landfills-Earthwork/Recontouring (unit cy)		-				
58	Landfills-Revegetation/Stabilization (acres)		-				
59	Tree Plantings (Includes Waste Dumps and Heap Leach)	inflated	2,032.80	$1,727.43	100%	2,032.80	$3,425,140
60	**9.0) Tailing Storage Facility Reclamation**						
61	**Reclamation Area**						
62	Tailings-Earthwork/Recontouring (unit cy)						
63	Tailings-Revegetation/Stabilization (acres)						
64	**10.0) Drainage/Diversion Channels**						**$12,915,100**
65	**Reclamation Area**						
66	Construct Stormwater		1	$16,274,652.00	79%		$12,915,100
67	**11.0) Facilities Demolition**						**$11,029,587**
68	Foundations & Building Areas Earthworks/Recountouring (cubic yards)- included in 8.0	bottom-up	65,252.00	$3.03	100%	65,252.00	$203,053
69	Foundations & Building Areas Revegetation/Stabilization (acres) - included in 8.0	bottom-up	11.50	$4,431	100%	11.50	$51,843
70	Foundations & Building Demolition (cubic feet)	bottom-up	17,020,302.00	$0.31	100%	17,020,302.00	$5,403,742
71	Yards, etc-Earthworks/Recontouring (unit cy) - Includes Ancillary Area Enhancement	bottom-up	1,154,340.00	$0.17	100%	1,154,340.00	$60,709
72	Yards, etc-Revegetation/Stabilization (acres)- Includes Ancillary Area Enhancement	bottom-up	1,549.80	$1,572.62	100%	1,549.80	$2,574,221
73	Other Demo -Mill Conveyor (feet) and Septic System (each)	bottom-up	1.00	$75,071.00	100%	1.00	$75,071
74	Fence Removal (feet)	bottom-up	12,285.00	$3.89	100%	12,285.00	$47,789
75	Fence Installation (feet)	bottom-up	22,542.00	$83.09	100%	22,542.00	$1,872,930
76	Pipe Removal (feet)	bottom-up	44,904.00	$8.55	100%	44,904.00	$383,970
77	Powerline and Substation Removal (miles)	bottom-up	9.13	$43,518.62	100%	9.13	$308,982
78	Tire Disposal	inflated	50.00	$945.54	100%	50.00	$47,277
79	**12.0) Facilities/Equipment Disposition and/or Salvage**						
80							
81	**13.0) Inventory Disposition**						
82							
83	**14.0) Post Closure Monitoring**						**$1,951,802**
84	Reclamation-Monitoring & Maintenance (number of)	bottom-up	1	$584,231	100%		$584,231
85	Ground & Surface Water Monitoring (number of)	bottom-up	1	$1,192,571	100%		$1,192,571
86	Weed control	bottom-up	1	$175,000	100%		$175,000
87	**Total Direct Costs**						**$141,541,611.4863**
88							
89	**Indirect Costs**						
90							
91	**15.0) Socio-Economic Costs**						
92							
93	**16.0) Consultant Services**						
94							
95	**17.0) Contractor's Overhead & Profit (if not included in direct costs)**						**$20,745,408**
96	Construction Support	bottom-up	1.00	$2,936,909.0	100%		$2,936,909
97	Contractor Profit		1	$17,808,498.00	100%		$17,808,499
98							
99	**18.0) Owners Management (post closure)**						$22,152,387
100	Viewshed Management and Safety Signs	inflated	1	$27,232	100%		$27,232
101	Engineering, Design and Construction		1	$10,239,886	100%		$10,239,887
102	Insurance		1	$1,111,127	100%		$1,111,127
103	Performance Bond		1	$1,869,892	100%		$1,869,892
104	Contractor Adminstration		1	$8,904,249	100%		$8,904,249
105	**19.0) Mobilization and Demobilization (if not included in direct costs)**						**$599,177**
106	Mob-Demob		1.0	$599,177.00	100%		$599,177
107	**Subtotal-Incremental**						**$185,038,584**
108							
109	**20.0) Contingency at 5%**						**$11,575,525**
110			1	$11,575,524.00	100%		$11,575,525
111	**Total-C&R-LOM-Incremental**						**$196,614,108**

This worksheet should be used for calculations
and/or explanations related to the facility/closure category
required to back-up unit rates or calculations.

SEE SCRE MODEL CALCULATION

FOR FASB PERCENTAGE COMPLETE (from Engineering)

	Design (Tons)	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
VLF 1 (tons)	**371,890,097**	371,890,097	371,890,097	371,890,097	371,890,097	371,890,097	371,890,097	371,890,097	371,890,097	371,890,097		
% Complete		100%	100%	100%	100%	100%	100%	100%	100%	100%		
VLF 2 (tons)	**240,000,000**	85,572,387	104,213,546	122,803,774	141,394,002	159,984,230	178,625,389	196,026,154	205,974,478	208,000		
% Complete		36%	43%	51%	59%	67%	74%	82%	86%	100.0000%		
Both VLF1&2	611,890,097	**75%**	**77.81%**	**81%**	**84%**	**87%**	**90%**	**93%**	**94%**	**100%**		

This worksheet should be used for calculations
and/or explanations related to the facility/closure category
required to back-up unit rates or calculations.

SEE SCRE MODEL CALCULATION

FOR FASB CALCULATION (from Engineering)

	Design (tons)	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
ECOSA (tons)	**239,840,000**	131,436,447	139,250,620	155,861,029	173,399,787	185,052,381	196,616,552	206,360,143	218,451,351	230,458,045	237,617,069	
% Complete		55%	58%	65%	72%	77%	82%	86%	91%	96%	99%	
SGOSA (tons)	**199,969,736**	**199,969,736**	199,969,736	199,969,736	199,969,736	199,969,736	199,969,736	199,969,736	199,969,736	199,969,736	199,969,736	
% Complete		100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	

Total Waste Dumps	439,809,736	**75%**	**77%**	**81%**	**85%**	**88%**	**90%**	**92%**	**95%**	**98%**	**99%**

Enter Data Below in Green and Blue Spaces

STANDARDIZED RECLAMATION COST ESTIMATOR

Version 1.4.1
Build 017b (revised to work with Excel 2016 - 24 Oct 2016)

Approved for use in Nevada, August 1, 2012

COST DATA FILE INFORMATION

File Name:	SRCE_AM13_FW_V4.xlsm
Cost Data File:	SRCE_Cost_data-USR_1_12_DRMS_BONDING.xlsm
Cost Data Date:	Created 9/12/2019
Cost Data Basis:	User Data
Data Cost Units:	Imperial
Author/Source:	CC&V C&R costs for bonding

PROJECT INFORMATION

Property/Mine Name:	CC&V
Property Code:	
Project Name:	AM-13 BP2020 Financial warranty calculation
Date of Submittal:	December 2019
Average Altitude:	9900 ft.
Select One:	○ Notice or Sm Exploration Plan ○ Lg Exploration Plan ◉ Mine Operation
Select One:	◉ Private Land ○ Public or Public/Private
Cost Estimate Type:	Surety
Cost Basis Category:	CC&V Bonding
Cost Basis Description:	**Labor = 2019 Newmont CC&V rate if available; otherwise 2018 Nevada bond rate. Equipment = 2019 Newmont CC&V operating + maintenance cost + Cashman lease if available; otherwise 2018 Nevada bond rate. + DRMS reveg costs**

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Closure Cost Estimate
Cost Summary

Project Name: AM-13 BP2020 Financial warranty calculation
Project Date: December 2019
Model Version: Version 1.4.1
File Name: SRCE_AM13_FW_V4.xlsm

A. Earthwork/Recontouring	Labor (1)	Equipment (2)	Materials	Total
Exploration	$0	$0	$0	$0
Exploration Roads & Drill Pads	$0	$0	$0	$0
Roads	$0	$0	$0	$0
Well Abandonment	$41,711	$87,589	$2,720	$132,020
Pits	$0	$0	N/A	$0
Quarries & Borrow Areas	$0	$0	$0	$0
Underground Openings	$0	$0	$0	$0
Process Ponds	$125,105	$242,357	$0	$367,462
Heaps	$1,111,338	$2,662,054	$0	$3,773,392
Waste Rock Dumps	$2,436,961	$5,766,426	$0	$8,203,387
Landfills	$0	$0	$0	$0
Tailings	$0	$0	$0	$0
Foundation & Buildings Areas	$56,364	$141,220	$0	$197,584
Yards, Etc.	$74,357	$124,394	$0	$198,751
Drainage & Sediment Control	$0	$0	$0	$0
Generic Material Hauling	$7,281,279	$23,489,174	$0	$30,770,453
Other User Costs (from Other User sheet)	$0	$0	$0	$0
Other** **Construct Closure Stormwater**			**$16,274,652**	$16,274,652
Subtotal	**$11,127,115**	**$32,513,214**	**$16,277,372**	**$59,917,701**
Mob/Demob if included in Other User sheet	$599,177	$0	$0	$599,177
Mob/Demob				$0
Subtotal "A"	**$11,726,292**	**$32,513,214**	**$16,277,372**	**$60,516,878**

B. Revegetation/Stabilization	Labor (1)	Equipment (2)	Materials	Total
Exploration	$0	$0	$0	$0
Exploration Roads & Drill Pads	$0	$0	$0	$0
Roads	$0	$0	$0	$0
Well Abandonment				N/A
Pits	$0	$0	$0	$0
Quarries & Borrow Areas	$0	$0	$0	$0
Underground Openings				N/A
Process Ponds	$4,294	$2,273	$12,098	$18,665
Heaps	$418,079	$221,317	$1,259,183	$1,898,579
Waste Rock Dumps	$581,513	$307,828	$1,751,419	$2,640,760
Landfills	$0	$0	$0	$0
Tailings	$0	$0	$0	$0
Foundation & Buildings Areas	$25,453	$13,474	$12,030	$50,957
Yards, Etc.	$536,695	$284,109	$1,616,442	$2,437,246
Drainage & Sediment Control	$0	$0	$0	$0
Generic Material Hauling	$0	$0	$0	$0
Other User Costs (from Other User sheet)	$110,938	$0	$3,400,573	$3,511,511
Other**				$0
Subtotal "B"	**$1,676,971**	**$829,001**	**$8,051,745**	**$10,557,718**

C. Detoxification/Water Treatment/Disposal of Wastes**	Labor (1)	Equipment (2)	Materials	Total
Process Ponds/Sludge				$0
Heaps	**$32,348,305**	**$1,915,935**	**$56,004,246**	$90,268,487
Dumps (Waste & Landfill)				$0
Tailings				$0
Surplus Water Disposal				$0
Monitoring				$0
Miscellaneous				$0
Solid Waste - On Site	$0	$0	N/A	$0
Solid Waste - Off Site				$0
Hazardous Materials				$0
Hydrocarbon Contaminated Soils	$0	$0	$0	$0
Other User Costs (from Other User sheet)	$0	$0	$0	$0
Other** **Drill Liner**	**$509,977**			$509,977
Subtotal "C"	**$32,858,282**	**$1,915,935**	**$56,004,246**	**$90,778,464**

D. Structure, Equipment and Facility Removal, and Misc.	Labor (1)	Equipment (2)	Materials	Total
Foundation & Buildings Areas	$3,332,778	$2,015,814	$0	$5,348,592
Other Demolition	$51,951	$23,120	$0	$75,071
Equipment Removal	$183,176	$130,152	$110,200	$423,528
Fence Removal	$37,101	$10,688		$47,789
Fence Installation	$293,222	$46,774	$1,532,934	$1,872,930
Culvert Removal	$0	$0	N/A	$0
Pipe Removal	$336,030	$47,940	N/A	$383,970
Powerline Removal	$397,325			$397,325
Transformer Removal	$0			$0
Rip-rap, rock lining, gabions	$0	$0	$0	$0
Other Misc. Costs	$0	$0	$0	$0
Other User Costs (from Other User sheet)	$0	$0	$47,277	$47,277
Other**				$0
Subtotal "D"	**$4,631,583**	**$2,274,488**	**$1,690,411**	**$8,596,482**

E. Monitoring	Labor (1)	Equipment (2)	Materials	Total
Reclamation Monitoring and Maintenance	$285,629	$161,522	$137,080	$584,231
Ground and Surface Water Monitoring	$423,177	$113,373	$656,020	$1,192,571

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Closure Cost Estimate
Cost Summary
Project Name: AM-13 BP2020 Financial warranty calculation
Project Date: December 2019
Model Version: Version 1.4.1
File Name: SRCE_AM13_FW_V4.xlsm

Other User Costs (from Other User sheet)	$0	$0	$175,000	$175,000
Subtotal "E"	**$708,806**	**$274,895**	**$968,100**	**$1,951,802**

F. Construction Management & Support	**Labor**	**Equipment [2]**	**Materials**	**Total**
Construction Management	$2,452,800	$484,109	N/A	$2,936,909
Construction Support	$0	$0	$0	$0
Road Maintenance	$945,332	$1,774,165	$0	$2,719,497
Other User Costs (from Other User sheet)	$6,210	$0	$21,021	$27,232
Other**				$0
Subtotal "F"	**$3,404,342**	**$2,258,274**	**$21,021**	**$5,683,638**

Subtotal Operational & Maintenance Costs	**Labor [1]**	**Equipment [2]**	**Materials [3]**	**Total**
Subtotal A through F	**$55,006,277**	**$40,065,808**	**$83,012,896**	**$178,084,982**

** Other Operator supplied costs - additional documentation required.

Indirect Costs			**Include?**	**Total**
1. Engineering, Design and Construction (ED&C) Plan (7)				$10,239,886
2. Contingency (8)				$11,575,524
3. Insurance (9)	$1,111,127			$1,111,127
4. Performance Bond (10)				$1,869,892
5. Contractor Profit (11)				$17,808,498
6. Contract Administration (12)				$8,904,249
7. Government Indirect Cost (13)				
Subtotal Add-On Costs				**$51,509,176**
Total Indirect Costs as % of Direct Cost				29%
GRAND TOTAL				**$229,594,158**

Administrative Cost Rates (%)

	Cost Ranges for Indirect Cost Percentages				
	<=	**<=**	**<=**	**>**	
1. Engineering, Design and Construction (ED&C) Plan (7)	$500,000	$2,500,000	$25,000,000	$25,000,000	Small Plan
Variable Rate	6%	6%	0.0575	6%	0%
	<=	**<=**	**<=**	**>**	
2. Contingency (8)	$500,000	$5,000,000	$50,000,000	$50,000,000	Small Plan
Variable Rate	7%	7%	7%	7%	15%
3. Insurance (9)	2.0%	of labor costs			
4. Bond (10)	1.1%	of the O&M costs if O&M costs are >$100,000			
5. Contractor Profit (11)	10%	of the O&M costs			
	<=	**<=**	**<=**	**>**	
6. Contract Administration (12)	$1,000,000	$15,000,000	$25,000,000	$25,000,000	
Variable Rate	5%	5%	0.05	5%	
0	5%	$0			

RECLAMATION COST ESTIMATION SUMMARY SHEET FOOTNOTES

Indirect costs match DRMS TR113 O&P costs. 18.5% indirect, 5% adminstravite, and 5% contingency, grand total of 28.5%.

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Closure Cost Estimate
Other User

Project Name: AM-13 BP2020 Financial warranty calculation - Reclamation Plan
Date of Submittal: December 2019
File Name: SRCE_AM13_FW_V4.xlsm
Model Version: Version 1.4.1
Cost Data: User Data
Cost Data File: SRCE_Cost_data-USR_1_12_DRMS_BONDING.xlsm
Cost Estimate Type: Surety Cost Basis: CC&V Bonding

Other Cost Items Calculated Elsewhere

	Description (required)	ID Code	Facility Type	Quantity	Units	Total Capital Cost $	Material Unit Cost $	Labor Unit Cost $	Equipment/ Operating Unit Cost $	Cost Type (select)	Total Cost $	Comments
1	Safety signs			111			$189.38	$55.95		F. Construction Mgmt	$27,232	material unit cost escalated 3% for BP2020
2	Tire disposal			50			$945.54			D. Facility & Equipment	$47,277	material unit cost escalated 3% for BP2020
3	Tree planting; East Cresson Wildhorse			89			$1,025.28	$55.95		B. Revegetation	$95,905	Material Costs>>>User Mix 4>>> User 16
4	Tree planting; WHEX Grassy Valley			0			$1,025.28	$55.95		B. Revegetation	$0	Material Costs>>>User Mix 4>>> User 17
5	Tree planting; N Cresson			23			$1,025.28	$55.95		B. Revegetation	$24,868	Material Costs>>>User Mix 4>>> User 18
6	Tree planting; Main Cresson			59			$1,025.28	$55.95		B. Revegetation	$63,793	Material Costs>>>User Mix 4>>> User 19
7	Tree planting; E Cresson OSA			229			$1,025.28	$55.95		B. Revegetation	$247,602	Material Costs>>>User Mix 4>>> User 20
8	Tree planting; Squaw OSA			42			$1,025.28	$55.95		B. Revegetation	$45,304	Material Costs>>>User Mix 4>>> User 21
9	Tree planting; Arequa			115			$1,025.28	$55.95		B. Revegetation	$124,342	Material Costs>>>User Mix 4>>> User 22
10	Tree planting; Squaw			85			$1,025.28	$55.95		B. Revegetation	$91,905	Material Costs>>>User Mix 4>>> User 23
11	Tree planting; mill platform			35			$1,025.28	$55.95		B. Revegetation	$37,843	Material Costs>>>User Mix 4>>> User 24
12	Tree planting; 3 4 Ajax			0			$1,025.28	$55.95		B. Revegetation	$0	Material Costs>>>User Mix 4>>> User 25
13	Tree planting;Victor & Ironclad			42			$1,025.28	$55.95		B. Revegetation	$45,304	Material Costs>>>User Mix 4>>> User 26
14	Tree planting; Building footprint			87			$1,025.28	$55.95		B. Revegetation	$94,175	Material Costs>>>User Mix 4>>> User 27
15	Tree planting; Ancillary			850			$1,025.28	$55.95		B. Revegetation	$919,155	Material Costs>>>User Mix 4>>> User 28
16	Tree planting; replant areas that fail			327			$1,025.28	$55.95		B. Revegetation	$353,671	Material Costs>>>User Mix 4>>> User 29
17	North Cresson Viewshed			1		$1,367,644				B. Revegetation	$1,367,644	
18	mob & demob			1				$599,177.01		Mob/Demob	$599,177	
19	Weed Treatment 5 years					$175,000				E. Monitoring	$175,000	User Tab 3
						$1,542,644	$2,101,228	$716,325	$0		$4,360,197	

Notes: Capital cost is lump sum (i.e. not multiplied by the quantity).
Material, Labor and Equipment/Operating costs are unit costs (i.e. multiplied by the quantity).
mob/demob = 1% of labor & equipment costs

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Closure Cost Estimate
Reclamation Quantities

Project Name: AM-13 BP2020 Financial warranty calculation - Reclamation Plan
Date of Submittal: December 2019
File Name: SRCE_AM13_FW_V4.xlsm
Model Version: Version 1.4.1
Data Cost File: SRCE_Cost_data-USR_1_12_DRMS_BONDING.xlsm
Cost Data: User Data
Cost Data File: SRCE_Cost_data-USR_1_12_DRMS_BONDING.xlsm
Cost Estimate Type: Surety Cost Basis: CC&V Bonding

Reclamation Quantity Summary

	Description	Total Regrade or Haul Volume cy	Total Regrade or Haul Cost $	Total Cover Volume cy	Cover Placement Cost $	Total Growth Media Volume cy	Growth Media Placement Cost $	Total Surface Area acres	Total Scarify Cost $	Total Revetation Cost $	TOTALS $	Unit Costs: Regrade Unit Cost $/CY	Material Haul or Backfill Unit Cost $/CY	Cover Unit Cost $/CY	Growth Media Unit Cost $/CY	Scarify Unit Cost $/CY	Area Unit Cost $/acre
1	Waste Rock Dumps	14,268,979	$ 5,283,557		$ -	1,354,516	$ 2,696,404	1679.32	$ 223,426	$ 2,640,760	$ 10,844,147	$0.37	N/A		$1.99	$133.05	$6,457.46
2	Tailings Impoundments		$ -		$ -		$ -		$ -	$ -	$ -		N/A				
3	Heap Leach Pads	9,316,085	$ 1,200,022		$ -	973,655	$ 2,416,792	1207.27	$ 156,578	$ 1,898,579	$ 5,671,971	$0.13	N/A		$2.48	$129.70	$4,698.18
5	Open Pits		$ -							$ -	$ -		N/A				
4	Quarries & Borrow Pits		$ -		$ -		$ -		$ -	$ -	$ -		N/A				
6	Roads		$ -				$ -		$ -	$ -	$ -		N/A				
7	Landfills		$ -		$ -		$ -		$ -	$ -	$ -		N/A				
8	Buildings			65,252	$ 186,634		$ -	11.5	$ 10,950	$ 50,957	$ 248,541		N/A	$2.86		$952.17	$21,612.23
9	Yards		$ -		$ -	1,154,340	$ -	1549.8	$ 198,751	$ 2,437,246	$ 2,635,997		N/A		$0.00	$128.24	$1,700.86
10	Ponds	166,414	$ 289,001			9,383	$ 17,293	11.6		$ 18,665	$ 324,959	N/A	$1.74		$1.84		$28,013.71
11	Exploration Roads		$ -				$ -		$ -	$ -	$ -		N/A				
12	Exploration Trenches		$ -							$ -	$ -		N/A				
13	Diversion Ditches		$ -							$ -	$ -		N/A				
14	Sediment Ponds		$ -				$ -		$ -	$ -	$ -						
15	Generic Haulage/Backfill	24,884,419	$ 30,770,453		$ -		$ -	5.66	$ -	$ -	$ 30,770,453	N/A	$1.24			$0.00	#########
16	Adit/Decline Backfilling1		$ -								$ -	N/A					
17	Shaft Backfilling		$ -								$ -	N/A					
	TOTALS	48,635,897	$ 37,543,033	65,252	$ 186,634	3,491,894	$ 5,130,489	4,465.15	$ 589,705	$ 7,046,207	$ 50,496,068						
	Average Costs	per CY	$0.77	per CY	$2.86	per CY	$1.47	per acre	$132.07	$11.95	$11,309	per acre					

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Closure Cost Estimate
Waste Rock Dumps

Project Name: AM-13 BP2020 Financial warranty calculation - Reclamation Plan
Date of Submittal: December 2019
File Name: SRCE_AM13_FW_V4.xlsm
Model Version: Version 1.4.1
Cost Data: User Data
Cost Data File: SRCE_Cost_data-USR_1_12_DRMS_BONDING.xlsm
Cost Estimate Type: Surety Cost Basis: CC&V Bonding

Waste Rock Dumps - Cost Summary

	Labor	Equipment	Materials	Totals
Grading Costs	$1,603,358	$3,680,199	N/A	$5,283,557
Cover Placement Cost	$0	$0	N/A	$0
Topsoil Placement Cost	$750,012	$1,946,392	N/A	$2,696,404
Ripping/Scarifying Cost	$83,591	$139,835	N/A	$223,426
Subtotal Earthworks	**$2,436,961**	**$5,766,426**	**$0**	**$8,203,387**
Revegetation Cost	$581,513	$307,828	$1,751,419	$2,640,760
TOTALS	**$3,018,474**	**$6,074,254**	**$1,751,419**	**$10,844,147**

Waste Rock Dumps - User Input

You must fill in ALL green cells in this section for each dump, lift or dump category

	Facility Description			Physical - MANDATORY									Cover				Growth Media			
	Description (required)	ID Code	Type	Underlying Ground Slope % Grade	Ungraded Slope _H:1V	Final Slope _H:1V	Final Top Slope % Grade	Lift (dump) Height ft	Mid-Bench Length ft	Average Flat Area Long Dimension (ripping distance) ft	Final (Regraded) Dump Footprint acres	Regrade Volume (1) (if calculated elsewhere) cy	Cover Thickness Slopes in	Cover Thickness Flat Areas in	Distance from Cover Borrow ft	Slope from Dump to Cover Borrow % grade	Slope Growth Media Thickness in	Flat Area Growth Media Thickness in	Distance from Growth Media Stockpile ft	Slope from Dump to Stockpile % grade
1	Ironclad Mine Area - Pile Leveling - Mass Grading		Waste Rock Dump	0.0	10.0	10.0	1.0	5	0			5933								
2	Ironclad Mine Area - Pile Leveling - Fine Grading		Waste Rock Dump	0.0	10.0	10.0	1.0	5	0			659								
3	Ironclad Mine Area - 40 ft Lift - Mass Grading		Waste Rock Dump	0.0	1.4	5.0	1.0	40	0			21753								
4	Ironclad Mine Area - 40 ft Lift - Fine Grading		Waste Rock Dump	0.0	1.4	5.0	1.0	40	0			2417								
5	Ironclad Mine Area - Topsoil		Waste Rock Dump	0.0	10.0	10.0	1.0	5	100	300	26.30	0					6.0	6.0	3,892	-7.7
6	Ironclad Mine Area - Topsoil - Dozer Spreading		Waste Rock Dump	0.0	10.0	10.0	1.0	5	100			21062								
7	SGOSA Mine Area - Pile Leveling - Mass Grading		Waste Rock Dump	0.0	10.0	10.0	1.0	5	0			2088								
8	SGOSA Mine Area - Pile Leveling - Fine Grading		Waste Rock Dump	0.0	10.0	10.0	1.0	5	0			232								
9	SGOSA Mine Area - 100 ft lift - Mass Grading		Waste Rock Dump	0.0	1.4	2.5	1.0	100	0			89713.8								
10	SGOSA Mine Area - 100 ft lift - Fine Grading		Waste Rock Dump	0.0	1.4	2.5	1.0	100	0			9968.2								
11	SGOSA Mine Area - 150 ft lift - Mass Grading		Waste Rock Dump	0.0	1.4	2.5	1.0	200	0			249154.2								
12	SGOSA Mine Area - 150 ft lift - Fine Grading		Waste Rock Dump	0.0	1.4	2.5	1.0	200	0			27683.8								
13	SGOSA Mine Area - 200 ft lift - Mass Grading		Waste Rock Dump	0.0	1.4	2.5	1.0	250	0			156486.6								
14	SGOSA Mine Area - 200 ft lift - Fine Grading		Waste Rock Dump	0.0	1.4	2.5	1.0	250	0			17387.4								
15	SGOSA Mine Area - 250 ft lift - Mass Grading		Waste Rock Dump	0.0	1.4	2.5	1.0	300	0			113624.1								
16	SGOSA Mine Area - 250 ft lift - Fine Grading		Waste Rock Dump	0.0	1.4	2.5	1.0	300	0			12624.9								
17	SGOSA Mine Area - 300 ft lift - Mass Grading		Waste Rock Dump	0.0	1.4	2.5	1.0	350	0			265932.9								
18	SGOSA Mine Area - 300 ft lift - Fine Grading		Waste Rock Dump	0.0	1.4	2.5	1.0	350	0			29548.1								
19	SGOSA Mine Area - Topsoil - Lift 1		Waste Rock Dump	0.0	10.0	10.0	1.0	100	1,000	245	5.76						6.0	6.0	4,897	-6.1
20	SGOSA Mine Area - Topsoil - Lift 1 - Dozer Spreading		Waste Rock Dump	0.0	10.0	10.0	1.0	100				18610								
21	SGOSA Mine Area - Topsoil - Lift 2		Waste Rock Dump	0.0	1.4	2.5	1.0	100	1,762	245	11.23						6.0	6.0	4,250	8.7
22	SGOSA Mine Area - Topsoil - Lift 2 - Dozer Spreading		Waste Rock Dump	0.0	1.4	2.5	1.0	100				14415								
23	SGOSA Mine Area - Topsoil - Lift 3		Waste Rock Dump	0.0	1.4	2.5	1.0	100	2,659	245	19.16						6.0	6.0	3,125	8.6
24	SGOSA Mine Area - Topsoil - Lift 3 - Dozer Spreading		Waste Rock Dump	0.0	1.4	2.5	1.0	100				24337								
25	SGOSA Mine Area - Topsoil - Lift 4		Waste Rock Dump	0.0	1.4	2.5	1.0	100	6,781	245	53.98						6.0	6.0	2,000	8.5
26	SGOSA Mine Area - Topsoil - Lift 4 - Dozer Spreading		Waste Rock Dump	0.0	1.4	2.5	1.0	100				46311								
27	SGOSA Mine Area - Topsoil - Lift 5		Waste Rock Dump	0.0	1.4	2.5	1.0	100	5,218	245	57.65						6.0	6.0	750	9.3
28	SGOSA Mine Area - Topsoil - Lift 5 - Dozer Spreading		Waste Rock Dump	0.0	1.4	2.5	1.0	100				47964								
29	North Cresson Mine Area - Pile Leveling - Mass Grading		Waste Rock Dump	0.0	10.0	10.0	1.0	5	0			27350								
30	North Cresson Mine Area - Pile Leveling - Fine Grading		Waste Rock Dump	0.0	10.0	10.0	1.0	5	0			3039								
31	North Cresson Mine Area - 200 ft lift - Mass Grading		Waste Rock Dump	0.0	1.4	2.5	1.0	250	0			1202605.2								
32	North Cresson Mine Area - 200 ft lift - Fine Grading		Waste Rock Dump	0.0	1.4	2.5	1.0	250	0			133622.8								
33	North Cresson Mine Area - 250 ft lift - Mass Grading		Waste Rock Dump	0.0	1.4	2.5	1.0	350	0			369452.7								
34	North Cresson Mine Area - 250 ft lift - Fine Grading		Waste Rock Dump	0.0	1.4	2.5	1.0	350	0			41050.3								
35	North Cresson Mine Area - Topsoil		Waste Rock Dump	0.0	10.0	10.0	1.0	5	3,000	300	55.90						6.0	6.0	5,000	8.4
36	North Cresson Mine Area - Topsoil - Dozer Spreading		Waste Rock Dump	0.0	10.0	10.0	1.0	5				44722								
37	North Cresson Mine Area - Topsoil - Lift 1		Waste Rock Dump	0.0	1.4	2.5	1.0	250	300	245	2.42						6.0	6.0	4,897	-6.1
38	North Cresson Mine Area - Topsoil - Lift 1 -Dozer Spreading		Waste Rock Dump	0.0	1.4	2.5	1.0	250				3759								
39	North Cresson Mine Area - Topsoil - Lift 2		Waste Rock Dump	0.0	1.4	2.5	1.0	250	1,110	245	6.93						6.0	6.0	4,250	8.7
40	North Cresson Mine Area - Topsoil - Lift 2 - Dozer Spreading		Waste Rock Dump	0.0	1.4	2.5	1.0	250				13915								
41	North Cresson Mine Area - Topsoil - Lift 3		Waste Rock Dump	0.0	1.4	2.5	1.0	250	2,191	245	11.01						6.0	6.0	3,125	8.6
42	North Cresson Mine Area - Topsoil - Lift 3 - Dozer Spreading		Waste Rock Dump	0.0	1.4	2.5	1.0	250				27467								
43	North Cresson Mine Area - Topsoil - Lift 4		Waste Rock Dump	0.0	1.4	2.5	1.0	250	1,000	245	10.31						6.0	6.0	2,000	8.5
44	North Cresson Mine Area - Topsoil - Lift 4 - Dozer Spreading		Waste Rock Dump	0.0	1.4	2.5	1.0	250				12536								
45	North Cresson Mine Area - Topsoil - Lift 5		Waste Rock Dump	0.0	1.4	2.5	1.0	250	50	245	1.42						6.0	6.0	750	9.3
46	North Cresson Mine Area - Topsoil - Lift 5 - Dozer Spreading		Waste Rock Dump	0.0	1.4	2.5	1.0	250				1436								
47	North Cresson Mine Area - Topsoil - Globe Hill HR		Waste Rock Dump	0.0	10.0	10.0	1.0	5	150	300	40.45						6.0	6.0	9,380	-2.0
48	North Cresson Mine Area - Topsoil - Globe Hill HR - Dozer Spreading		Waste Rock Dump	0.0	1.4	2.5	1.0	250				32404								
49	ECOSA Mine Area - 50 ft lift - Mass Grading		Waste Rock Dump	0.0	1.4	2.5	1.0	50	0			181413								
50	ECOSA Mine Area - 50 ft lift - Fine Grading		Waste Rock Dump	0.0	1.4	2.5	1.0	50	0			131268								
51	ECOSA Mine Area - 150 ft lift - Mass Grading		Waste Rock Dump	0.0	1.4	2.5	1.0	150	0			1123165								
52	ECOSA Mine Area - 150 ft lift - Fine Grading		Waste Rock Dump	0.0	1.4	2.5	1.0	150	0			124796								
53	ECOSA Mine Area - Topsoil - Lift 1		Waste Rock Dump	0.0	1.4	2.5	1.0	150	5,906	625	69.71	0					6.0	6.0	3,214	0.0
54	ECOSA Mine Area - Topsoil - Lift 1 - Dozer Spreading		Waste Rock Dump	0.0	1.4	2.5	1.0	150				59734								
55	ECOSA Mine Area - Topsoil - Lift 2		Waste Rock Dump	0.0	1.4	2.5	1.0	150	6,143	625	58.72	0					6.0	6.0	3,294	-5.2
56	ECOSA Mine Area - Topsoil - Lift 2 - Dozer Spreading		Waste Rock Dump	0.0	1.4	2.5	1.0	150				51030								
57	ECOSA Mine Area - Topsoil - Lift 3		Waste Rock Dump	0.0	1.4	2.5	1.0	150	6,655	635	62.82	0					6.0	6.0	3,698	-8.9
58	ECOSA Mine Area - Topsoil - Lift 3 - Dozer Spreading		Waste Rock Dump	0.0	1.4	2.5	1.0	150				54071								
59	ECOSA Mine Area - Topsoil - Lift 4		Waste Rock Dump	0.0	1.4	2.5	1.0	150	3,614	505	51.15	0					6.0	6.0	4,912	-9.2
60	ECOSA Mine Area - Topsoil - Lift 4 - Dozer Spreading		Waste Rock Dump	0.0	1.4	2.5	1.0	150				43302								
61	ECOSA Mine Area - Topsoil - Lift 5		Waste Rock Dump	0.0	1.4	2.5	1.0	150	7,172	315	36.46	0					6.0	6.0	6,407	-9.6

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Closure Cost Estimate
Waste Rock Dumps

Project Name: AM-13 BP2020 Financial warranty calculation - Reclamation Plan
Date of Submittal: December 2019
File Name: SRCE_AM13_FW_V4.xlsm
Model Version: Version 1.4.1
Cost Data: User Data
Cost Data File: SRCE_Cost_data-USR_1_12_DRMS_BONDING.xlsm
Cost Estimate Type: Surety Cost Basis: CC&V Bonding

Waste Rock Dumps - Cost Summary	Labor	Equipment	Materials	Totals
Grading Costs	$1,603,358	$3,680,199	N/A	$5,283,557
Cover Placement Cost	$0	$0	N/A	$0
Topsoil Placement Cost	$750,012	$1,946,392	N/A	$2,696,404
Ripping/Scarifying Cost	$83,591	$139,835	N/A	$223,426
Subtotal Earthworks	**$2,436,961**	**$5,766,426**	**$0**	**$8,203,387**
Revegetation Cost	$581,513	$307,828	$1,751,419	$2,640,760
TOTALS	**$3,018,474**	**$6,074,254**	**$1,751,419**	**$10,844,147**

62	ECOSA Mine Area - Topsoil - Lift 5 - Dozer Spreading		Waste Rock Dump	0.0	1.4	2.5	1.0	150				53926								
63	ECOSA Mine Area - Topsoil - Lift 6		Waste Rock Dump	0.0	1.4	2.5	1.0	150	1,500	300	24.92	0					6.0	6.0	9,080	-8.9
64	ECOSA Mine Area - Topsoil - Lift 6 - Dozer Spreading		Waste Rock Dump	0.0	1.4	2.5	1.0	150				20957								
65	East Cresson Mine Area - Pile Leveling - Mass Grading		Waste Rock Dump	0.0	10.0	10.0	1.0	5	0			473								
66	East Cresson Mine Area - Pile Leveling - Fine Grading		Waste Rock Dump	0.0	10.0	10.0	1.0	5	0			53								
67	East Cresson Mine Area - 40 lift - Mass Grading		Waste Rock Dump	0.0	1.4	2.5	1.0	40	0			12777								
68	East Cresson Mine Area - 40 lift - Fine Grading		Waste Rock Dump	0.0	1.4	2.5	1.0	40	0			1420								
69	East Cresson Mine Area - 50 lift - Mass Grading		Waste Rock Dump	0.0	1.4	2.5	1.0	50	0			763991								
70	East Cresson Mine Area - 50 lift - Fine Grading		Waste Rock Dump	0.0	1.4	2.5	1.0	50	0			84888								
71	East Cresson Mine Area - 50 lift - Mass Grading		Waste Rock Dump	0.0	1.4	4.5	1.0	50	0			672099								
72	East Cresson Mine Area - 50 lift - Fine Grading		Waste Rock Dump	0.0	1.4	4.5	1.0	50	0			74678								
73	East Cresson Mine Area - 150 lift - Mass Grading		Waste Rock Dump	0.0	1.4	2.5	1.0	150	0			231066								
74	East Cresson Mine Area - 150 lift - Fine Grading		Waste Rock Dump	0.0	1.4	2.5	1.0	150	0			25674								
75	East Cresson Mine Area - 400 lift - Mass Grading		Waste Rock Dump	0.0	1.4	2.5	1.0	400	0			1582312								
76	East Cresson Mine Area - 400 lift - Fine Grading		Waste Rock Dump	0.0	1.4	2.5	1.0	400	0			175812								
77	East Cresson Mine Area - Topsoil - Lift 2		Waste Rock Dump	0.0	1.4	2.5	1.0	150	824	675	12.44	0					6.0	6.0	3,294	-0.1
78	East Cresson Mine Area - Topsoil - Lift 2 - Dozer Spreading		Waste Rock Dump	0.0	1.4	2.5	1.0	150				10228								
79	East Cresson Mine Area - Topsoil - Lift 3		Waste Rock Dump	0.0	1.4	2.5	1.0	150	282	515	10.86	0					6.0	6.0	3,698	-0.1
80	East Cresson Mine Area - Topsoil - Lift 3 - Dozer Spreading		Waste Rock Dump	0.0	1.4	2.5	1.0	150				8575								
81	East Cresson Mine Area - Topsoil - Lift 4		Waste Rock Dump	0.0	1.4	2.5	1.0	150	6,264	545	57.93	0					6.0	6.0	4,912	-0.1
82	East Cresson Mine Area - Topsoil - Lift 4 - Dozer Spreading		Waste Rock Dump	0.0	1.4	2.5	1.0	150				50320								
83	East Cresson Mine Area - Topsoil - Lift 5		Waste Rock Dump	0.0	1.4	2.5	1.0	150	7,172	655	106.97	0					6.0	6.0	6,407	-0.1
84	East Cresson Mine Area - Topsoil - Lift 5 - Dozer Spreading		Waste Rock Dump	0.0	1.4	2.5	1.0	150				90226								
85	East Cresson Mine Area - Topsoil - Lift 6		Waste Rock Dump	0.0	1.4	2.5	1.0	150	1,500	300	110.79	0					6.0	6.0	9,080	-0.1
86	East Cresson Mine Area - Topsoil - Lift 6 - Dozer Spreading		Waste Rock Dump	0.0	1.4	2.5	1.0	150				90330								
87	East Cresson Mine Area - Topsoil - WHEX		Waste Rock Dump	0.0	1.4	2.5	1.0	150	500	300	199.30	0					6.0	6.0	1,506	-8.6
88	East Cresson Mine Area - Topsoil - WHEX - Dozer Spreading		Waste Rock Dump	0.0	1.4	2.5	1.0	150				161059								
89	East Cresson Mine Area - Topsoil - Ironclad		Waste Rock Dump	0.0	1.4	2.5	1.0	150	100	300	14.57	0					6.0	6.0	3,892	-7.7
90	East Cresson Mine Area - Topsoil - Ironclad - Dozer Spreading		Waste Rock Dump	0.0	1.4	2.5	1.0	150				12043								
91	Main Cresson Mine Area - Pile Leveling - Mass Grading		Waste Rock Dump	0.0	10.0	10.0	1.0	5	0			116523								
92	Main Cresson Mine Area - Pile Leveling - Fine Grading		Waste Rock Dump	0.0	10.0	10.0	1.0	5	0			12947								
93	Main Cresson Mine Area - 50 ft lift - Mass Grading		Waste Rock Dump	0.0	1.4	2.5	1.0	50	0			103266								
94	Main Cresson Mine Area - 50 ft lift - Fine Grading		Waste Rock Dump	0.0	1.4	2.5	1.0	50	0			11474								
95	Main Cresson Mine Area - 150 ft lift - Mass Grading		Waste Rock Dump	0.0	1.4	2.5	1.0	150	0			155109								
96	Main Cresson Mine Area - 150 ft lift - Fine Grading		Waste Rock Dump	0.0	1.4	2.5	1.0	150	0			177234								
97	Main Cresson Mine Area - 400 ft lift - Mass Grading		Waste Rock Dump	0.0	1.4	2.5	1.0	400	0			272666								
98	Main Cresson Mine Area - 400 ft lift - Fine Grading		Waste Rock Dump	0.0	1.4	2.5	1.0	400	0			30296								
99	Main Cresson Mine Area - 450 ft lift - Mass Grading		Waste Rock Dump	0.0	1.4	2.5	1.0	450	0			188837								
100	Main Cresson Mine Area - 450 ft lift - Fine Grading		Waste Rock Dump	0.0	1.4	2.5	1.0	450	0			20982								
101	Main Cresson Mine Area - 650 ft lift - Mass Grading		Waste Rock Dump	0.0	1.4	2.5	1.0	650	0			1238482								
102	Main Cresson Mine Area - 650 ft lift - Fine Grading		Waste Rock Dump	0.0	1.4	2.5	1.0	650	0			137609								
103	Main Cresson Mine Area - Topsoil - 10185		Waste Rock Dump	0.0	1.4	2.5	1.0	650	500	400	81.52	0					6.0	6.0	2,595	1.8
104	Main Cresson Mine Area - Topsoil - 10185 - Dozer Spreading		Waste Rock Dump	0.0	1.4	2.5	1.0	650				67115								
105	Main Cresson Mine Area - Topsoil - Ruby Road		Waste Rock Dump	0.0	1.4	2.5	1.0	150	2,500	300	71.80	0					6.0	6.0	5,001	-3.0
106	Main Cresson Mine Area - Topsoil - Ruby Road - Dozer Spreading		Waste Rock Dump	0.0	1.4	2.5	1.0	150				81481								
107	Main Cresson Mine Area - Topsoil - AJAX		Waste Rock Dump	0.0	2.0	2.5	1.0	25	1,500	100	33.00	0					6.0	6.0	2,525	5.0
108	Main Cresson Mine Area - Topsoil - AJAX - Dozer Spreading		Waste Rock Dump	0.0	2.0	2.5	1.0	25				48892								
109	Main Cresson Mine Area - Topsoil - Crusher		Waste Rock Dump	0.0	1.4	2.5	1.0	650	1,500	100	26.78	0					6.0	6.0	1,308	3.7
110	Main Cresson Mine Area - Topsoil - Crusher - Dozer Spreading		Waste Rock Dump	0.0	1.4	2.5	1.0	50				48892								
111	Main Cresson Mine Area - Topsoil - Pit Bottom		Waste Rock Dump	0.0	1.4	2.5	1.0	650	2	300	68.60	0					6.0	6.0	11,669	6.6
112	Main Cresson Mine Area - Topsoil - Pit Bottom - Dozer Spreading		Waste Rock Dump	0.0	10.0	10.0	1.0	10				55725								
113	Main Cresson Mine Area - Topsoil - South Cresson HR		Waste Rock Dump	0.0	1.4	2.5	1.0	650	2	300	29.69	0					6.0	6.0	3,917	9.3
114	Main Cresson Mine Area - Topsoil - South Cresson HR - Dozer Spreading		Waste Rock Dump	0.0	1.4	2.0	1.0	50				24265								
115	Main Cresson Mine Area - Topsoil - Cresson HR		Waste Rock Dump	0.0	1.4	2.5	1.0	650	2	300	29.73	0					6.0	6.0	9,024	7.4
116	Main Cresson Mine Area - Topsoil - Cresson HR - Dozer Spreading		Waste Rock Dump	0.0	1.4	2.0	1.0	50				24265								
117	Crusher Mine Area - Pile Leveling - Mass Grading		Waste Rock Dump	0.0	2.0	2.5	1.0	100	0			75737								
118	Crusher Mine Area - Pile Leveling - Fine Grading		Waste Rock Dump	0.0	2.0	2.5	1.0	100	0			8415								
119	Crusher Mine Area - Topsoil		Waste Rock Dump	0.0	1.4	2.5	1.0	35	500	100	43.31	0					6.0	6.0	5,332	4.5
120	Crusher Mine Area - Topsoil - Dozer Spreading		Waste Rock Dump	0.0	1.4	2.5	1.0	35				34759								
121	Crusher Mine Area - Delivery Road - Mass Grading		Waste Rock Dump	0.0	2.0	2.5	1.0	100	0			8867								
122	Crusher Mine Area - Delivery Road - Fine Grading		Waste Rock Dump	0.0	2.0	2.5	1.0	100	0			985								
123	Crusher Mine Area - Topsoil - Delivery Road		Waste Rock Dump	0.0	1.4	2.5	1.0	35	100	300	10.48	0					6.0	6.0	500	-3.6
124	Crusher Mine Area - Topsoil - Delivery Road - Dozer Spreading		Waste Rock Dump	0.0	1.4	2.5	1.0	35				8244								
125	Chicago Mine Area		Waste Rock Dump	0.0	1.0	3.0	1.0	35	0	150		3228								
126	Chicago Mine Area topsoil - Dozer Spreading		Waste Rock Dump	0.0	1.0	3.0	1.0			150	4.00	0					6.0	6.0	500	-3.6

Notes:
1. All Physical parameters must be input even if manual overrides for volume or area are used.
2. If Slope from facility to borrow source is >20, downhill travel time may be underestimated due to limitation of uphill travel time curves and downhill speed tables from CAT Handbook (see Productivty Sheet)

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Closure Cost Estimate
Waste Rock Dumps

Project Name: AM-13 BP2020 Financial warranty calculation - Reclamation Plan
Date of Submittal: December 2019
File Name: SRCE_AM13_FW_V4.xlsm
Model Version: Version 1.4.1
Cost Data: User Data
Cost Data File: SRCE_Cost_data-USR_1_12_DRMS_BONDING.xlsm
Cost Estimate Type: Surety Cost Basis: CC&V Bonding

Waste Rock Dumps - Cost Summary

	Labor	Equipment	Materials	Totals
Grading Costs	$1,603,358	$3,680,199	N/A	$5,283,557
Cover Placement Cost	$0	$0	N/A	$0
Topsoil Placement Cost	$750,012	$1,946,392	N/A	$2,696,404
Ripping/Scarifying Cost	$83,591	$139,835	N/A	$223,426
Subtotal Earthworks	**$2,436,961**	**$5,766,426**	**$0**	**$8,203,387**
Revegetation Cost	$581,513	$307,828	$1,751,419	$2,640,760
TOTALS	**$3,018,474**	**$6,074,254**	**$1,751,419**	**$10,844,147**

Waste Rock Dumps - User Input (cont.) — You must fill in ALL green cells and relevant blue cells in this section for each dump, lift or dump category

		Grading				Cover		Growth Media		Revegetation								
	Description (required)	Regrading Material Condition (select)	Regrading Material Type (select)	Regrading Equipment Fleet (select)	Slot/Side-by-Side (select)	Cover Material Type (select)	Cover Placement Equipment Fleet (select)	Growth Media Material Type (select)	Growth Media Equipment Fleet (select)	Seed Mix Slopes (select)	Seed Mix Flat Areas (select)	Mulch Slopes (select)	Mulch Flat Areas (select)	Fertilizer Slopes (select)	Fertilizer Flat Areas (select)	Slope Scarify/ Rip? (select)	Flat Area Scarify/ Rip? (select)	Scarify/ Ripping Fleet (select)
1	Ironclad Mine Area - Pile Leveling - Mass Grading	0.6	Granite - broken	Large	Yes													
2	Ironclad Mine Area - Pile Leveling - Fine Grading	0.6	Granite - broken	Small	No													
3	Ironclad Mine Area - 40 ft Lift - Mass Grading	1	Granite - broken	Large	Yes													
4	Ironclad Mine Area - 40 ft Lift - Fine Grading	1	Granite - broken	Small	No													
5	Ironclad Mine Area - Topsoil							Topsoil	Med Truck	User Mix 1	User Mix 1	Hydro Mulch	Hydro Mulch	Chemical	Chemical	Yes	Yes	Small Dozer
6	Ironclad Mine Area - Topsoil - Dozer Spreading	1.2	Topsoil	Small	No													
7	SGOSA Mine Area - Pile Leveling - Mass Grading	0.6	Granite - broken	Large	Yes													
8	SGOSA Mine Area - Pile Leveling - Fine Grading	0.6	Granite - broken	Small	No													
9	SGOSA Mine Area - 100 ft lift - Mass Grading	1	Granite - broken	Large	Yes													
10	SGOSA Mine Area - 100 ft lift - Fine Grading	1	Granite - broken	Small	No													
11	SGOSA Mine Area - 150 ft lift - Mass Grading	1	Granite - broken	Large	Yes													
12	SGOSA Mine Area - 150 ft lift - Fine Grading	1	Granite - broken	Small	No													
13	SGOSA Mine Area - 200 ft lift - Mass Grading	1	Granite - broken	Large	Yes													
14	SGOSA Mine Area - 200 ft lift - Fine Grading	1	Granite - broken	Small	No													
15	SGOSA Mine Area - 250 ft lift - Mass Grading	1	Granite - broken	Large	Yes													
16	SGOSA Mine Area - 250 ft lift - Fine Grading	1	Granite - broken	Small	No													
17	SGOSA Mine Area - 300 ft lift - Mass Grading	1	Granite - broken	Large	Yes													
18	SGOSA Mine Area - 300 ft lift - Fine Grading	1	Granite - broken	Small	No													
19	SGOSA Mine Area - Topsoil - Lift 1							Topsoil	Med Truck	User Mix 1	User Mix 1	Hydro Mulch	Hydro Mulch	Chemical	Chemical	Yes	Yes	Small Dozer
20	SGOSA Mine Area - Topsoil - Lift 1 - Dozer Spreading	1.2	Topsoil	Small	No													
21	SGOSA Mine Area - Topsoil - Lift 2							Topsoil	Med Truck	User Mix 1	User Mix 1	Hydro Mulch	Hydro Mulch	Chemical	Chemical	Yes	Yes	Small Dozer
22	SGOSA Mine Area - Topsoil - Lift 2 - Dozer Spreading	1.2	Topsoil	Small	No													
23	SGOSA Mine Area - Topsoil - Lift 3							Topsoil	Med Truck	User Mix 1	User Mix 1	Hydro Mulch	Hydro Mulch	Chemical	Chemical	Yes	Yes	Small Dozer
24	SGOSA Mine Area - Topsoil - Lift 3 - Dozer Spreading	1.2	Topsoil	Small	No													
25	SGOSA Mine Area - Topsoil - Lift 4							Topsoil	Med Truck	User Mix 1	User Mix 1	Hydro Mulch	Hydro Mulch	Chemical	Chemical	Yes	Yes	Small Dozer
26	SGOSA Mine Area - Topsoil - Lift 4 - Dozer Spreading	1.2	Topsoil	Small	No													
27	SGOSA Mine Area - Topsoil - Lift 5							Topsoil	Med Truck	User Mix 1	User Mix 1	Hydro Mulch	Hydro Mulch	Chemical	Chemical	Yes	Yes	Small Dozer
28	SGOSA Mine Area - Topsoil - Lift 5 - Dozer Spreading	1.2	Topsoil	Small	No													
29	North Cresson Mine Area - Pile Leveling - Mass Grading	0.6	Granite - broken	Large	Yes													
30	North Cresson Mine Area - Pile Leveling - Fine Grading	0.6	Granite - broken	Small	No													
31	North Cresson Mine Area - 200 ft lift - Mass Grading	1	Granite - broken	Large	Yes													
32	North Cresson Mine Area - 200 ft lift - Fine Grading	1	Granite - broken	Small	No													
33	North Cresson Mine Area - 250 ft lift - Mass Grading	1	Granite - broken	Large	Yes													
34	North Cresson Mine Area - 250 ft lift - Fine Grading	1	Granite - broken	Small	No													
35	North Cresson Mine Area - Topsoil							Topsoil	Med Truck	User Mix 1	User Mix 1	Hydro Mulch	Hydro Mulch	Chemical	Chemical	Yes	Yes	Small Dozer
36	North Cresson Mine Area - Topsoil - Dozer Spreading	1.2	Topsoil	Small	No													
37	North Cresson Mine Area - Topsoil - Lift 1							Topsoil	Med Truck	User Mix 1	User Mix 1	Hydro Mulch	Hydro Mulch	Chemical	Chemical	Yes	Yes	Small Dozer
38	North Cresson Mine Area - Topsoil - Lift 1 -Dozer Spreading	1.2	Topsoil	Small	No													
39	North Cresson Mine Area - Topsoil - Lift 2							Topsoil	Med Truck	User Mix 1	User Mix 1	Hydro Mulch	Hydro Mulch	Chemical	Chemical	Yes	Yes	Small Dozer
40	North Cresson Mine Area - Topsoil - Lift 2 - Dozer Spreading	1.2	Topsoil	Small	No													
41	North Cresson Mine Area - Topsoil - Lift 3							Topsoil	Med Truck	User Mix 1	User Mix 1	Hydro Mulch	Hydro Mulch	Chemical	Chemical	Yes	Yes	Small Dozer
42	North Cresson Mine Area - Topsoil - Lift 3 - Dozer Spreading	1.2	Topsoil	Small	No													
43	North Cresson Mine Area - Topsoil - Lift 4							Topsoil	Med Truck	User Mix 1	User Mix 1	Hydro Mulch	Hydro Mulch	Chemical	Chemical	Yes	Yes	Small Dozer
44	North Cresson Mine Area - Topsoil - Lift 4 - Dozer Spreading	1.2	Topsoil	Small	No													
45	North Cresson Mine Area - Topsoil - Lift 5							Topsoil	Med Truck	User Mix 1	User Mix 1	Hydro Mulch	Hydro Mulch	Chemical	Chemical	Yes	Yes	Small Dozer
46	North Cresson Mine Area - Topsoil - Lift 5 - Dozer Spreading	1.2	Topsoil	Small	No													
47	North Cresson Mine Area - Topsoil - Globe Hill HR							Topsoil	Med Truck	User Mix 1	User Mix 1	Hydro Mulch	Hydro Mulch	Chemical	Chemical	Yes	Yes	Small Dozer
48	North Cresson Mine Area - Topsoil - Globe Hill HR - Dozer S	1.2	Topsoil	Small	No													
49	ECOSA Mine Area - 50 ft lift - Mass Grading	1	Granite - broken	Large	Yes													
50	ECOSA Mine Area - 50 ft lift - Fine Grading	1	Granite - broken	Small	No													
51	ECOSA Mine Area - 150 ft lift - Mass Grading	1	Granite - broken	Large	Yes													
52	ECOSA Mine Area - 150 ft lift - Fine Grading	1	Granite - broken	Small	No													
53	ECOSA Mine Area - Topsoil - Lift 1							Topsoil	Med Truck	User Mix 1	User Mix 1	Hydro Mulch	Hydro Mulch	Chemical	Chemical	Yes	Yes	Small Dozer
54	ECOSA Mine Area - Topsoil - Lift 1 - Dozer Spreading	1.2	Topsoil	Small	No													
55	ECOSA Mine Area - Topsoil - Lift 2							Topsoil	Med Truck	User Mix 1	User Mix 1	Hydro Mulch	Hydro Mulch	Chemical	Chemical	Yes	Yes	Small Dozer
56	ECOSA Mine Area - Topsoil - Lift 2 - Dozer Spreading	1.2	Topsoil	Small	No													
57	ECOSA Mine Area - Topsoil - Lift 3							Topsoil	Med Truck	User Mix 1	User Mix 1	Hydro Mulch	Hydro Mulch	Chemical	Chemical	Yes	Yes	Small Dozer
58	ECOSA Mine Area - Topsoil - Lift 3 - Dozer Spreading	1.2	Topsoil	Small	No													

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Closure Cost Estimate
Waste Rock Dumps

Project Name: AM-13 BP2020 Financial warranty calculation - Reclamation Plan
Date of Submittal: December 2019
File Name: SRCE_AM13_FW_V4.xlsm
Model Version: Version 1.4.1
Cost Data: User Data
Cost Data File: SRCE_Cost_data-USR_1_12_DRMS_BONDING.xlsm
Cost Estimate Type: Surety Cost Basis: CC&V Bonding

Waste Rock Dumps - Cost Summary	Labor	Equipment	Materials	Totals
Grading Costs	$1,603,358	$3,680,199	N/A	$5,283,557
Cover Placement Cost	$0	$0	N/A	$0
Topsoil Placement Cost	$750,012	$1,946,392	N/A	$2,696,404
Ripping/Scarifying Cost	$83,591	$139,835	N/A	$223,426
Subtotal Earthworks	**$2,436,961**	**$5,766,426**	**$0**	**$8,203,387**
Revegetation Cost	$581,513	$307,828	$1,751,419	$2,640,760
TOTALS	**$3,018,474**	**$6,074,254**	**$1,751,419**	**$10,844,147**

59	ECOSA Mine Area - Topsoil - Lift 4							Topsoil	Med Truck	User Mix 1	User Mix 1	Hydro Mulch	Hydro Mulch	Chemical	Chemical	Yes	Yes	Small Dozer
60	ECOSA Mine Area - Topsoil - Lift 4 - Dozer Spreading	1.2	Topsoil	Small	No													
61	ECOSA Mine Area - Topsoil - Lift 5							Topsoil	Med Truck	User Mix 1	User Mix 1	Hydro Mulch	Hydro Mulch	Chemical	Chemical	Yes	Yes	Small Dozer
62	ECOSA Mine Area - Topsoil - Lift 5 - Dozer Spreading	1.2	Topsoil	Small	No													
63	ECOSA Mine Area - Topsoil - Lift 6							Topsoil	Med Truck	User Mix 1	User Mix 1	Hydro Mulch	Hydro Mulch	Chemical	Chemical	Yes	Yes	Small Dozer
64	ECOSA Mine Area - Topsoil - Lift 6 - Dozer Spreading	1.2	Topsoil	Small	No													
65	East Cresson Mine Area - Pile Leveling - Mass Grading	0.6	Granite - broken	Large	Yes													
66	East Cresson Mine Area - Pile Leveling - Fine Grading	0.6	Granite - broken	Small	No													
67	East Cresson Mine Area - 40 lift - Mass Grading	1	Granite - broken	Large	Yes													
68	East Cresson Mine Area - 40 lift - Fine Grading	1	Granite - broken	Small	No													
69	East Cresson Mine Area - 50 lift - Mass Grading	1	Granite - broken	Large	Yes													
70	East Cresson Mine Area - 50 lift - Fine Grading	1	Granite - broken	Small	No													
71	East Cresson Mine Area - 50 lift - Mass Grading	1	Granite - broken	Large	Yes													
72	East Cresson Mine Area - 50 lift - Fine Grading	1	Granite - broken	Small	No													
73	East Cresson Mine Area - 150 lift - Mass Grading	1	Granite - broken	Large	Yes													
74	East Cresson Mine Area - 150 lift - Fine Grading	1	Granite - broken	Small	No													
75	East Cresson Mine Area - 400 lift - Mass Grading	1	Granite - broken	Large	Yes													
76	East Cresson Mine Area - 400 lift - Fine Grading	1	Granite - broken	Small	No													
77	East Cresson Mine Area - Topsoil - Lift 2							Topsoil	Med Truck	User Mix 1	User Mix 1	Hydro Mulch	Hydro Mulch	Chemical	Chemical	Yes	Yes	Small Dozer
78	East Cresson Mine Area - Topsoil - Lift 2 - Dozer Spreading	1.2	Topsoil	Small	No													
79	East Cresson Mine Area - Topsoil - Lift 3							Topsoil	Med Truck	User Mix 1	User Mix 1	Hydro Mulch	Hydro Mulch	Chemical	Chemical	Yes	Yes	Small Dozer
80	East Cresson Mine Area - Topsoil - Lift 3 - Dozer Spreading	1.2	Topsoil	Small	No													
81	East Cresson Mine Area - Topsoil - Lift 4							Topsoil	Med Truck	User Mix 1	User Mix 1	Hydro Mulch	Hydro Mulch	Chemical	Chemical	Yes	Yes	Small Dozer
82	East Cresson Mine Area - Topsoil - Lift 4 - Dozer Spreading	1.2	Topsoil	Small	No													
83	East Cresson Mine Area - Topsoil - Lift 5							Topsoil	Med Truck	User Mix 1	User Mix 1	Hydro Mulch	Hydro Mulch	Chemical	Chemical	Yes	Yes	Small Dozer
84	East Cresson Mine Area - Topsoil - Lift 5 - Dozer Spreading	1.2	Topsoil	Small	No													
85	East Cresson Mine Area - Topsoil - Lift 6							Topsoil	Med Truck	User Mix 1	User Mix 1	Hydro Mulch	Hydro Mulch	Chemical	Chemical	Yes	Yes	Small Dozer
86	East Cresson Mine Area - Topsoil - Lift 6 - Dozer Spreading	1.2	Topsoil	Small	No													
87	East Cresson Mine Area - Topsoil - WHEX							Topsoil	Med Truck	User Mix 1	User Mix 1	Hydro Mulch	Hydro Mulch	Chemical	Chemical	Yes	Yes	Small Dozer
88	East Cresson Mine Area - Topsoil - WHEX - Dozer Spreadin	1.2	Topsoil	Small	No													
89	East Cresson Mine Area - Topsoil - Ironclad							Topsoil	Med Truck	User Mix 1	User Mix 1	Hydro Mulch	Hydro Mulch	Chemical	Chemical	Yes	Yes	Small Dozer
90	East Cresson Mine Area - Topsoil - Ironclad - Dozer Spread	1.2	Topsoil	Small	No													
91	Main Cresson Mine Area - Pile Leveling - Mass Grading	0.6	Granite - broken	Large	Yes													
92	Main Cresson Mine Area - Pile Leveling - Fine Grading	0.6	Granite - broken	Small	No													
93	Main Cresson Mine Area - 50 ft lift - Mass Grading	1	Granite - broken	Large	Yes													
94	Main Cresson Mine Area - 50 ft lift - Fine Grading	1	Granite - broken	Small	No													
95	Main Cresson Mine Area - 150 ft lift - Mass Grading	1	Granite - broken	Large	Yes													
96	Main Cresson Mine Area - 150 ft lift - Fine Grading	1	Granite - broken	Small	No													
97	Main Cresson Mine Area - 400 ft lift - Mass Grading	1	Granite - broken	Large	Yes													
98	Main Cresson Mine Area - 400 ft lift - Fine Grading	1	Granite - broken	Small	No													
99	Main Cresson Mine Area - 450 ft lift - Mass Grading	1	Granite - broken	Large	Yes													
100	Main Cresson Mine Area - 450 ft lift - Fine Grading	1	Granite - broken	Small	No													
101	Main Cresson Mine Area - 650 ft lift - Mass Grading	1	Granite - broken	Large	Yes													
102	Main Cresson Mine Area - 650 ft lift - Fine Grading	1	Granite - broken	Small	No													
103	Main Cresson Mine Area - Topsoil - 10185							Topsoil	Med Truck	User Mix 1	User Mix 1	Hydro Mulch	Hydro Mulch	Chemical	Chemical	Yes	Yes	Small Dozer
104	Main Cresson Mine Area - Topsoil - 10185 - Dozer Spreading	1.2	Topsoil	Small	No													
105	Main Cresson Mine Area - Topsoil - Ruby Road							Topsoil	Med Truck	User Mix 1	User Mix 1	Hydro Mulch	Hydro Mulch	Chemical	Chemical	Yes	Yes	Small Dozer
106	Main Cresson Mine Area - Topsoil - Ruby Road - Dozer Spre	1.2	Topsoil	Small	No													
107	Main Cresson Mine Area - Topsoil - AJAX							Topsoil	Med Truck	User Mix 1	User Mix 1	Hydro Mulch	Hydro Mulch	Chemical	Chemical	Yes	Yes	Small Dozer
108	Main Cresson Mine Area - Topsoil - AJAX - Dozer Spreading	1.2	Topsoil	Small	No													
109	Main Cresson Mine Area - Topsoil - Crusher							Topsoil	Med Truck	User Mix 1	User Mix 1	Hydro Mulch	Hydro Mulch	Chemical	Chemical	Yes	Yes	Small Dozer
110	Main Cresson Mine Area - Topsoil - Crusher - Dozer Spread	1.2	Topsoil	Small	No													
111	Main Cresson Mine Area - Topsoil - Pit Bottom							Topsoil	Med Truck	User Mix 1	User Mix 1	Hydro Mulch	Hydro Mulch	Chemical	Chemical	Yes	Yes	Small Dozer
112	Main Cresson Mine Area - Topsoil - Pit Bottom - Dozer Spre	1.2	Topsoil	Small	No													
113	Main Cresson Mine Area - Topsoil - South Cresson HR							Topsoil	Med Truck	User Mix 1	User Mix 1	Hydro Mulch	Hydro Mulch	Chemical	Chemical	Yes	Yes	Small Dozer
114	Main Cresson Mine Area - Topsoil - South Cresson HR - Doz	1.2	Topsoil	Small	No													
115	Main Cresson Mine Area - Topsoil - Cresson HR							Topsoil	Med Truck	User Mix 1	User Mix 1	Hydro Mulch	Hydro Mulch	Chemical	Chemical	Yes	Yes	Small Dozer
116	Main Cresson Mine Area - Topsoil - Cresson HR - Dozer Spr	1.2	Topsoil	Small	No													
117	Crusher Mine Area - Pile Leveling - Mass Grading	0.6	Granite - broken	Large	Yes													
118	Crusher Mine Area - Pile Leveling - Fine Grading	0.6	Granite - broken	Small	No													
119	Crusher Mine Area - Topsoil							Topsoil	Med Truck	User Mix 1	User Mix 1	Hydro Mulch	Hydro Mulch	Chemical	Chemical	Yes	Yes	Small Dozer
120	Crusher Mine Area - Topsoil - Dozer Spreading	1.2	Topsoil	Small	No													
121	Crusher Mine Area - Delivery Road - Mass Grading	0.6	Granite - broken	Large	Yes													
122	Crusher Mine Area - Delivery Road - Fine Grading	0.6	Granite - broken	Small	No													
123	Crusher Mine Area - Topsoil - Delivery Road							Topsoil	Med Truck	User Mix 1	User Mix 1	Hydro Mulch	Hydro Mulch	Chemical	Chemical	Yes	Yes	Small Dozer
124	Crusher Mine Area - Topsoil - Delivery Road - Dozer Spread	1.2	Topsoil	Small	No													
125	Chicago Mine Area	1	Granite - broken	Small	No													
126	Chicago Mine Area topsoil - Dozer Spreading							Topsoil	Med Truck	User Mix 1	User Mix 1	Hydro Mulch	Hydro Mulch	Chemical	Chemical	Yes	Yes	Small Dozer

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Closure Cost Estimate
Waste Rock Dumps

Project Name: AM-13 BP2020 Financial warranty calculation - Reclamation Plan
Date of Submittal: December 2019
File Name: SRCE_AM13_FW_V4.xlsm
Model Version: Version 1.4.1
Cost Data: User Data
Cost Data File: SRCE_Cost_data-USR_1_12_DRMS_BONDING.xlsm
Cost Estimate Type: Surety Cost Basis: CC&V Bonding

Waste Rock Dumps - Cost Summary

	Labor	Equipment	Materials	Totals
Grading Costs	$1,603,358	$3,680,199	N/A	$5,283,557
Cover Placement Cost	$0	$0	N/A	$0
Topsoil Placement Cost	$750,012	$1,946,392	N/A	$2,696,404
Ripping/Scarifying Cost	$83,591	$139,835	N/A	$223,426
Subtotal Earthworks	**$2,436,961**	**$5,766,426**	**$0**	**$8,203,387**
Revegetation Cost	$581,513	$307,828	$1,751,419	$2,640,760
TOTALS	**$3,018,474**	**$6,074,254**	**$1,751,419**	**$10,844,147**

Notes:
1. Material Types are used for density correction based on material densities in Caterpillar Performance Handbook material density table

Waste Rock Dumps - Calculations

Regrading Volume Calculation

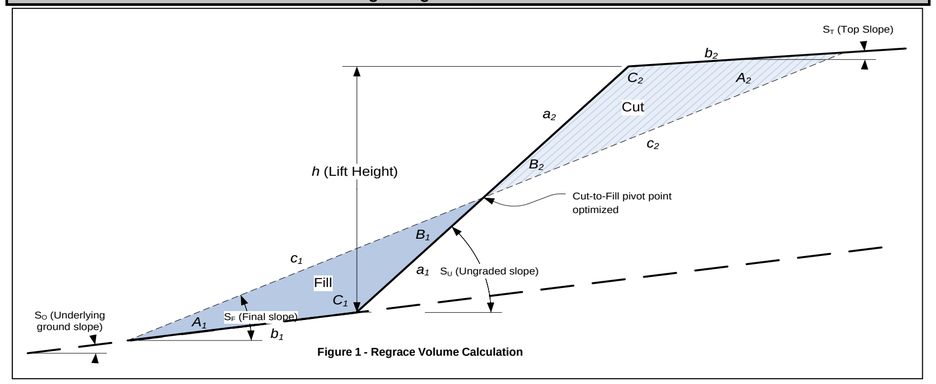


Figure 1 - Regrace Volume Calculation

Final Slope Area and Footprint Area Calculations

Final slope length = $c_1 + c_2$
Final slope area = Final slope length *x* Mid-bench Length
Final lift height (h_{final}) = ($c_1 + c_2$) *x* sin(Final slope)
Final slope width (d) = ($c_1 + c_2$) *x* cos(Final slope)
Final slope footprint = Final slope width *x* Mid-bench Length
Final flat area = Final footprint – Final slope footprint

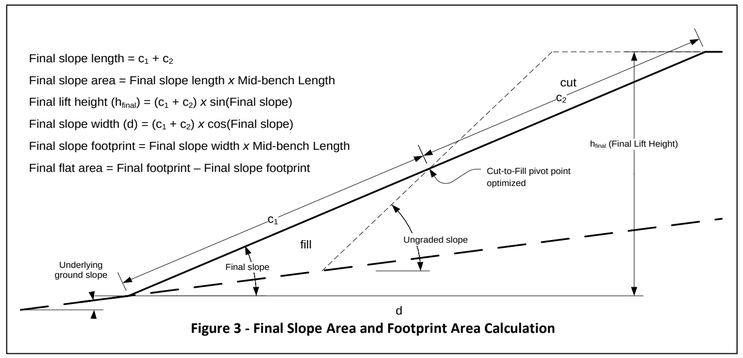


Figure 3 - Final Slope Area and Footprint Area Calculation

Regrading Push Distance Calculation

dozing distance: based on 2/3 final cut slope + 2/3 final fill slope (minimum = 50 ft)

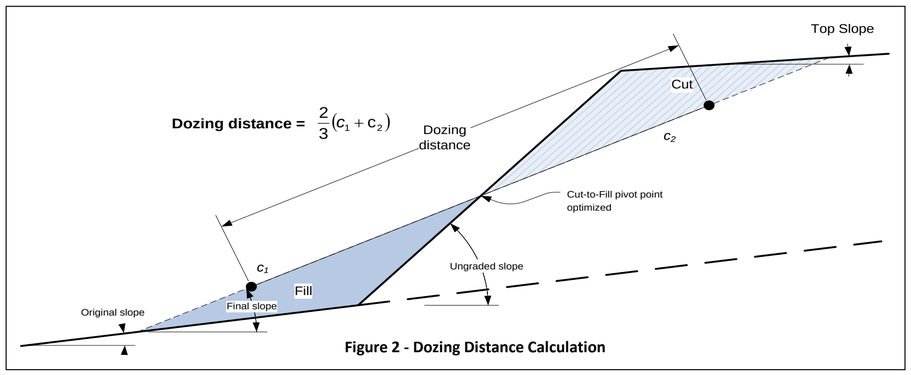


Figure 2 - Dozing Distance Calculation

Ripping/Scarifying Calculations

Minimum 1 hr ripping/scarifying time per dump

Slopes:
Number of passes = Final slope length ÷ Grader width
Travel distance = Number of passes x Mid-bench length
Total hours = (Travel distance ÷ Grader productivity) + (Number of passes x Grader maneuver time)
Minimum 1 hr

Flat Areas:
Flat area width = Final flat area ÷ Average long dimensions
Number of passes = Flat area width ÷ Grader width
Travel distance = Number of passes x Average long dimensions
Total hours = (Travel distance ÷ Grader productivity) + (Number of passes x Grader maneuver time)

Revegetation: Minimum 1 acre revegetation crew time per area

Waste Rock Dumps - Regrading Costs

Productivity = Dozer Productivity x Grade Correction x Density Correction x Operator (0.75) x Material x Visibility x Job Efficiency (0.83) x (Slot/Side-by-Side) x (Altitude Deration)

	Description (required)	Regrading Volume cy	Dozing Distance (see above) ft	Regrading Fleet	Uncorrected Dozer Productivity cy/hr	Grade Correction	Dozing Material	Density Correction	Side-by-Side or Slot Dozing	Total Hourly Productivity cy/hr	Total Dozer Hours hr	Total Labor Cost $	Total Equipment Cost $	Total Regrading Cost $
1	**Ironclad Mine Area - Pile Leveling - Mass Grading**	5,933	50	D10R	2,934	1.2	0.6	0.82	1.2	1,255	5	$280	$722	$1,002
2	**Ironclad Mine Area - Pile Leveling - Fine Grading**	659	50	D7R	1,076	1.2	0.6	0.82	1.0	395	2	$112	$187	$299
3	**Ironclad Mine Area - 40 ft Lift - Mass Grading**	21,753	91	D10R	1,763	1.6	1.0	0.82	1.2	1,676	13	$727	$1,877	$2,604
4	**Ironclad Mine Area - 40 ft Lift - Fine Grading**	2,417	91	D7R	675	1.6	1.0	0.82	1.0	551	4	$224	$374	$598
5	**Ironclad Mine Area - Topsoil**	0		**Select Fleet**								$0	$0	$0
6	**Ironclad Mine Area - Topsoil - Dozer Spreading**	21,062	50	D7R	1,076	1.2	1.2	1.44	1.0	1,389	15	$839	$1,404	$2,243
7	**SGOSA Mine Area - Pile Leveling - Mass Grading**	2,088	50	D10R	2,934	1.2	0.6	0.82	1.2	1,255	2	$112	$289	$401
8	**SGOSA Mine Area - Pile Leveling - Fine Grading**	232	50	D7R	1,076	1.2	0.6	0.82	1.0	395	1	$56	$94	$150
9	**SGOSA Mine Area - 100 ft lift - Mass Grading**	89,714	147	D10R	1,173	1.6	1.0	0.82	1.2	1,115	80	$4,476	$11,548	$16,024

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Closure Cost Estimate
Waste Rock Dumps

Project Name: AM-13 BP2020 Financial warranty calculation - Reclamation Plan
Date of Submittal: December 2019
File Name: SRCE_AM13_FW_V4.xlsm
Model Version: Version 1.4.1
Cost Data: User Data
Cost Data File: SRCE_Cost_data-USR_1_12_DRMS_BONDING.xlsm
Cost Estimate Type: Surety Cost Basis: CC&V Bonding

Waste Rock Dumps - Cost Summary	Labor	Equipment	Materials	Totals
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Topsoil Placement Cost	$750,012	$1,946,392	N/A	$2,696,404
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Subtotal Earthworks	**$2,436,961**	**$5,766,426**	**$0**	**$8,203,387**
Revegetation Cost	$581,513	$307,828	$1,751,419	$2,640,760
TOTALS	**$3,018,474**	**$6,074,254**	**$1,751,419**	**$10,844,147**

10	**SGOSA Mine Area - 100 ft lift - Fine Grading**	9,968	147	D7R	464	1.6	1.0	0.82	1.0	379	26	$1,455	$2,434	$3,889
11	**SGOSA Mine Area - 150 ft lift - Mass Grading**	249,154	293	D10R	652	1.6	1.0	0.82	1.2	620	402	$22,492	$58,029	$80,521
12	**SGOSA Mine Area - 150 ft lift - Fine Grading**	27,684	293	D7R	271	1.6	1.0	0.82	1.0	221	125	$6,994	$11,700	$18,694
13	**SGOSA Mine Area - 200 ft lift - Mass Grading**	156,487	367	D10R	539	1.6	1.0	0.82	1.2	512	306	$17,121	$44,171	$61,292
14	**SGOSA Mine Area - 200 ft lift - Fine Grading**	17,387	367	D7R	227	1.6	1.0	0.82	1.0	185	94	$5,259	$8,798	$14,057
15	**SGOSA Mine Area - 250 ft lift - Mass Grading**	113,624	440	D10R	462	1.6	1.0	0.82	1.2	439	259	$14,491	$37,387	$51,878
16	**SGOSA Mine Area - 250 ft lift - Fine Grading**	12,625	440	D7R	197	1.6	1.0	0.82	1.0	161	78	$4,364	$7,301	$11,665
17	**SGOSA Mine Area - 300 ft lift - Mass Grading**	265,933	513	D10R	405	1.6	1.0	0.82	1.2	385	691	$38,661	$99,746	$138,407
18	**SGOSA Mine Area - 300 ft lift - Fine Grading**	29,548	513	D7R	175	1.6	1.0	0.82	1.0	143	207	$11,582	$19,375	$30,957
19	**SGOSA Mine Area - Topsoil - Lift 1**	0		**Select Fleet**								$0	$0	$0
20	**SGOSA Mine Area - Topsoil - Lift 1 - Dozer Spreading**	18,610	50	D7R	1,076	1.2	1.2	1.44	1.0	1,389	13	$727	$1,217	$1,944
21	**SGOSA Mine Area - Topsoil - Lift 2**	90,254	147	**Select Fleet**	**Select Fleet**	1.6	**Dozing Materia**	**Material Type**	1.0	**Select Fleet**	**Select Fleet**		$0	$0
22	**SGOSA Mine Area - Topsoil - Lift 2 - Dozer Spreading**	14,415	147	D7R	464	1.6	1.2	1.44	1.0	799	18	$1,007	$1,685	$2,692
23	**SGOSA Mine Area - Topsoil - Lift 3**	136,200	147	**Select Fleet**	**Select Fleet**	1.6	**Dozing Materia**	**Material Type**	1.0	**Select Fleet**	**Select Fleet**		$0	$0
24	**SGOSA Mine Area - Topsoil - Lift 3 - Dozer Spreading**	24,337	147	D7R	464	1.6	1.2	1.44	1.0	799	30	$1,679	$2,808	$4,487
25	**SGOSA Mine Area - Topsoil - Lift 4**	347,338	147	**Select Fleet**	**Select Fleet**	1.6	**Dozing Materia**	**Material Type**	1.0	**Select Fleet**	**Select Fleet**		$0	$0
26	**SGOSA Mine Area - Topsoil - Lift 4 - Dozer Spreading**	46,311	147	D7R	464	1.6	1.2	1.44	1.0	799	58	$3,245	$5,429	$8,674
27	**SGOSA Mine Area - Topsoil - Lift 5**	267,278	147	**Select Fleet**	**Select Fleet**	1.6	**Dozing Materia**	**Material Type**	1.0	**Select Fleet**	**Select Fleet**		$0	$0
28	**SGOSA Mine Area - Topsoil - Lift 5 - Dozer Spreading**	47,964	147	D7R	464	1.6	1.2	1.44	1.0	799	60	$3,357	$5,616	$8,973
29	**North Cresson Mine Area - Pile Leveling - Mass Grading**	27,350	50	D10R	2,934	1.2	0.6	0.82	1.2	1,255	22	$1,231	$3,176	$4,407
30	**North Cresson Mine Area - Pile Leveling - Fine Grading**	3,039	50	D7R	1,076	1.2	0.6	0.82	1.0	395	8	$448	$749	$1,197
31	**North Cresson Mine Area - 200 ft lift - Mass Grading**	1,202,605	367	D10R	539	1.6	1.0	0.82	1.2	512	2,349	$131,427	$339,078	$470,505
32	**North Cresson Mine Area - 200 ft lift - Fine Grading**	133,623	367	D7R	227	1.6	1.0	0.82	1.0	185	722	$40,396	$67,579	$107,975
33	**North Cresson Mine Area - 250 ft lift - Mass Grading**	369,453	513	D10R	405	1.6	1.0	0.82	1.2	385	960	$53,712	$138,576	$192,288
34	**North Cresson Mine Area - 250 ft lift - Fine Grading**	41,050	513	D7R	175	1.6	1.0	0.82	1.0	143	287	$16,058	$26,863	$42,921
35	**North Cresson Mine Area - Topsoil**	0		**Select Fleet**								$0	$0	$0
36	**North Cresson Mine Area - Topsoil - Dozer Spreading**	44,722	50	D7R	1,076	1.2	1.2	1.44	1.0	1,389	32	$1,790	$2,995	$4,785
37	**North Cresson Mine Area - Topsoil - Lift 1**	96,022	367	**Select Fleet**	**Select Fleet**	1.6	**Dozing Materia**	**Material Type**	1.0	**Select Fleet**	**Select Fleet**		$0	$0
38	**North Cresson Mine Area - Topsoil - Lift 1 -Dozer Spreading**	3,759	367	D7R	227	1.6	1.2	1.44	1.0	391	10	$560	$936	$1,496
39	**North Cresson Mine Area - Topsoil - Lift 2**	355,282	367	**Select Fleet**	**Select Fleet**	1.6	**Dozing Materia**	**Material Type**	1.0	**Select Fleet**	**Select Fleet**		$0	$0
40	**North Cresson Mine Area - Topsoil - Lift 2 - Dozer Spreading**	13,915	367	D7R	227	1.6	1.2	1.44	1.0	391	36	$2,014	$3,370	$5,384
41	**North Cresson Mine Area - Topsoil - Lift 3**	701,282	367	**Select Fleet**	**Select Fleet**	1.6	**Dozing Materia**	**Material Type**	1.0	**Select Fleet**	**Select Fleet**		$0	$0
42	**North Cresson Mine Area - Topsoil - Lift 3 - Dozer Spreading**	27,467	367	D7R	227	1.6	1.2	1.44	1.0	391	70	$3,917	$6,552	$10,469
43	**North Cresson Mine Area - Topsoil - Lift 4**	320,074	367	**Select Fleet**	**Select Fleet**	1.6	**Dozing Materia**	**Material Type**	1.0	**Select Fleet**	**Select Fleet**		$0	$0
44	**North Cresson Mine Area - Topsoil - Lift 4 - Dozer Spreading**	12,536	367	D7R	227	1.6	1.2	1.44	1.0	391	32	$1,790	$2,995	$4,785
45	**North Cresson Mine Area - Topsoil - Lift 5**	16,004	367	**Select Fleet**	**Select Fleet**	1.6	**Dozing Materia**	**Material Type**	1.0	**Select Fleet**	**Select Fleet**		$0	$0
46	**North Cresson Mine Area - Topsoil - Lift 5 - Dozer Spreading**	1,436	367	D7R	227	1.6	1.2	1.44	1.0	391	4	$224	$374	$598
47	**North Cresson Mine Area - Topsoil - Globe Hill HR**	0		**Select Fleet**								$0	$0	$0
48	**North Cresson Mine Area - Topsoil - Globe Hill HR - Dozer S**	32,404	367	D7R	227	1.6	1.2	1.44	1.0	391	83	$4,644	$7,769	$12,413
49	**ECOSA Mine Area - 50 ft lift - Mass Grading**	181,413	73	D10R	2,127	1.6	1.0	0.82	1.2	2,022	90	$5,036	$12,992	$18,028
50	**ECOSA Mine Area - 50 ft lift - Fine Grading**	131,268	73	D7R	801	1.6	1.0	0.82	1.0	654	201	$11,246	$18,814	$30,060
51	**ECOSA Mine Area - 150 ft lift - Mass Grading**	1,123,165	220	D10R	832	1.6	1.0	0.82	1.2	791	1,420	$79,449	$204,977	$284,426
52	**ECOSA Mine Area - 150 ft lift - Fine Grading**	124,796	220	D7R	339	1.6	1.0	0.82	1.0	277	451	$25,233	$42,214	$67,447
53	**ECOSA Mine Area - Topsoil - Lift 1**	0		**Select Fleet**								$0	$0	$0
54	**ECOSA Mine Area - Topsoil - Lift 1 - Dozer Spreading**	59,734	220	D7R	339	1.6	1.2	1.44	1.0	583	102	$5,707	$9,547	$15,254
55	**ECOSA Mine Area - Topsoil - Lift 2**	0		**Select Fleet**								$0	$0	$0
56	**ECOSA Mine Area - Topsoil - Lift 2 - Dozer Spreading**	51,030	220	D7R	339	1.6	1.2	1.44	1.0	583	88	$4,924	$8,237	$13,161
57	**ECOSA Mine Area - Topsoil - Lift 3**	0		**Select Fleet**								$0	$0	$0
58	**ECOSA Mine Area - Topsoil - Lift 3 - Dozer Spreading**	54,071	220	D7R	339	1.6	1.2	1.44	1.0	583	93	$5,203	$8,705	$13,908
59	**ECOSA Mine Area - Topsoil - Lift 4**	0		**Select Fleet**								$0	$0	$0
60	**ECOSA Mine Area - Topsoil - Lift 4 - Dozer Spreading**	43,302	220	D7R	339	1.6	1.2	1.44	1.0	583	74	$4,140	$6,926	$11,066
61	**ECOSA Mine Area - Topsoil - Lift 5**	0		**Select Fleet**								$0	$0	$0
62	**ECOSA Mine Area - Topsoil - Lift 5 - Dozer Spreading**	53,926	220	D7R	339	1.6	1.2	1.44	1.0	583	92	$5,147	$8,611	$13,758
63	**ECOSA Mine Area - Topsoil - Lift 6**	0		**Select Fleet**								$0	$0	$0
64	**ECOSA Mine Area - Topsoil - Lift 6 - Dozer Spreading**	20,957	220	D7R	339	1.6	1.2	1.44	1.0	583	36	$2,014	$3,370	$5,384
65	**East Cresson Mine Area - Pile Leveling - Mass Grading**	473	50	D10R	2,934	1.2	0.6	0.82	1.2	1,255	1	$56	$144	$200
66	**East Cresson Mine Area - Pile Leveling - Fine Grading**	53	50	D7R	1,076	1.2	0.6	0.82	1.0	395	1	$56	$94	$150
67	**East Cresson Mine Area - 40 lift - Mass Grading**	12,777	59	D10R	2,549	1.6	1.0	0.82	1.2	2,423	5	$280	$722	$1,002
68	**East Cresson Mine Area - 40 lift - Fine Grading**	1,420	59	D7R	946	1.6	1.0	0.82	1.0	773	2	$112	$187	$299
69	**East Cresson Mine Area - 50 lift - Mass Grading**	763,991	73	D10R	2,127	1.6	1.0	0.82	1.2	2,022	378	$21,149	$54,564	$75,713
70	**East Cresson Mine Area - 50 lift - Fine Grading**	84,888	73	D7R	801	1.6	1.0	0.82	1.0	654	130	$7,274	$12,168	$19,442
71	**East Cresson Mine Area - 50 lift - Mass Grading**	672,099	105	D10R	1,561	1.6	1.0	0.82	1.2	1,484	453	$25,345	$65,391	$90,736
72	**East Cresson Mine Area - 50 lift - Fine Grading**	74,678	105	D7R	603	1.6	1.0	0.82	1.0	492	152	$8,504	$14,227	$22,731
73	**East Cresson Mine Area - 150 lift - Mass Grading**	231,066	220	D10R	832	1.6	1.0	0.82	1.2	791	292	$16,337	$42,150	$58,487
74	**East Cresson Mine Area - 150 lift - Fine Grading**	25,674	220	D7R	339	1.6	1.0	0.82	1.0	277	93	$5,203	$8,705	$13,908
75	**East Cresson Mine Area - 400 lift - Mass Grading**	1,582,312	586	D10R	362	1.6	1.0	0.82	1.2	344	4,600	$257,370	$664,010	$921,380
76	**East Cresson Mine Area - 400 lift - Fine Grading**	175,812	586	D7R	158	1.6	1.0	0.82	1.0	129	1,363	$76,260	$127,577	$203,837
77	**East Cresson Mine Area - Topsoil - Lift 2**	0		**Select Fleet**								$0	$0	$0
78	**East Cresson Mine Area - Topsoil - Lift 2 - Dozer Spreading**	10,228	220	D7R	339	1.6	1.2	1.44	1.0	583	18	$1,007	$1,685	$2,692
79	**East Cresson Mine Area - Topsoil - Lift 3**	0		**Select Fleet**								$0	$0	$0

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Closure Cost Estimate
Waste Rock Dumps

Project Name: AM-13 BP2020 Financial warranty calculation - Reclamation Plan
Date of Submittal: December 2019
File Name: SRCE_AM13_FW_V4.xlsm
Model Version: Version 1.4.1
Cost Data: User Data
Cost Data File: SRCE_Cost_data-USR_1_12_DRMS_BONDING.xlsm
Cost Estimate Type: Surety Cost Basis: CC&V Bonding

Waste Rock Dumps - Cost Summary

	Labor	Equipment	Materials	Totals
Grading Costs	$1,603,358	$3,680,199	N/A	$5,283,557
Cover Placement Cost	$0	$0	N/A	$0
Topsoil Placement Cost	$750,012	$1,946,392	N/A	$2,696,404
Ripping/Scarifying Cost	$83,591	$139,835	N/A	$223,426
Subtotal Earthworks	**$2,436,961**	**$5,766,426**	**$0**	**$8,203,387**
Revegetation Cost	$581,513	$307,828	$1,751,419	$2,640,760
TOTALS	**$3,018,474**	**$6,074,254**	**$1,751,419**	**$10,844,147**

80	**East Cresson Mine Area - Topsoil - Lift 3 - Dozer Spreading**	8,575	220	D7R	339	1.6	1.2	1.44	1.0	583	15	$839	$1,404	$2,243
81	**East Cresson Mine Area - Topsoil - Lift 4**	0		**Select Fleet**								$0	$0	$0
82	**East Cresson Mine Area - Topsoil - Lift 4 - Dozer Spreading**	50,320	220	D7R	339	1.6	1.2	1.44	1.0	583	86	$4,812	$8,050	$12,862
83	**East Cresson Mine Area - Topsoil - Lift 5**	0		**Select Fleet**								$0	$0	$0
84	**East Cresson Mine Area - Topsoil - Lift 5 - Dozer Spreading**	90,226	220	D7R	339	1.6	1.2	1.44	1.0	583	155	$8,672	$14,508	$23,180
85	**East Cresson Mine Area - Topsoil - Lift 6**	0		**Select Fleet**								$0	$0	$0
86	**East Cresson Mine Area - Topsoil - Lift 6 - Dozer Spreading**	90,330	220	D7R	339	1.6	1.2	1.44	1.0	583	155	$8,672	$14,508	$23,180
87	**East Cresson Mine Area - Topsoil - WHEX**	0		**Select Fleet**								$0	$0	$0
88	**East Cresson Mine Area - Topsoil - WHEX - Dozer Spreadin**	161,059	220	D7R	339	1.6	1.2	1.44	1.0	583	276	$15,442	$25,834	$41,276
89	**East Cresson Mine Area - Topsoil - Ironclad**	0		**Select Fleet**								$0	$0	$0
90	**East Cresson Mine Area - Topsoil - Ironclad - Dozer Spread**	12,043	220	D7R	339	1.6	1.2	1.44	1.0	583	21	$1,175	$1,966	$3,141
91	**Main Cresson Mine Area - Pile Leveling - Mass Grading**	116,523	50	D10R	2,934	1.2	0.6	0.82	1.2	1,255	93	$5,203	$13,425	$18,628
92	**Main Cresson Mine Area - Pile Leveling - Fine Grading**	12,947	50	D7R	1,076	1.2	0.6	0.82	1.0	395	33	$1,846	$3,089	$4,935
93	**Main Cresson Mine Area - 50 ft lift - Mass Grading**	103,266	73	D10R	2,127	1.6	1.0	0.82	1.2	2,022	51	$2,853	$7,362	$10,215
94	**Main Cresson Mine Area - 50 ft lift - Fine Grading**	11,474	73	D7R	801	1.6	1.0	0.82	1.0	654	18	$1,007	$1,685	$2,692
95	**Main Cresson Mine Area - 150 ft lift - Mass Grading**	155,109	220	D10R	832	1.6	1.0	0.82	1.2	791	196	$10,966	$28,293	$39,259
96	**Main Cresson Mine Area - 150 ft lift - Fine Grading**	177,234	220	D7R	339	1.6	1.0	0.82	1.0	277	640	$35,808	$59,904	$95,712
97	**Main Cresson Mine Area - 400 ft lift - Mass Grading**	272,666	586	D10R	362	1.6	1.0	0.82	1.2	344	793	$44,368	$114,470	$158,838
98	**Main Cresson Mine Area - 400 ft lift - Fine Grading**	30,296	586	D7R	158	1.6	1.0	0.82	1.0	129	235	$13,148	$21,996	$35,144
99	**Main Cresson Mine Area - 450 ft lift - Mass Grading**	188,837	660	D10R	327	1.6	1.0	0.82	1.2	311	607	$33,962	$87,620	$121,582
100	**Main Cresson Mine Area - 450 ft lift - Fine Grading**	20,982	660	D7R	144	1.6	1.0	0.82	1.0	118	178	$9,959	$16,661	$26,620
101	**Main Cresson Mine Area - 650 ft lift - Mass Grading**	1,238,482	953	D10R	239	1.6	1.0	0.82	1.2	227	5,456	$305,263	$787,574	$1,092,837
102	**Main Cresson Mine Area - 650 ft lift - Fine Grading**	137,609	953	D7R	108	1.6	1.0	0.82	1.0	88	1,564	$87,506	$146,390	$233,896
103	**Main Cresson Mine Area - Topsoil - 10185**	0		**Select Fleet**								$0	$0	$0
104	**Main Cresson Mine Area - Topsoil - 10185 - Dozer Spreading**	67,115	953	D7R	108	1.6	1.2	1.44	1.0	186	361	$20,198	$33,790	$53,988
105	**Main Cresson Mine Area - Topsoil - Ruby Road**	0		**Select Fleet**								$0	$0	$0
106	**Main Cresson Mine Area - Topsoil - Ruby Road - Dozer Spre**	81,481	220	D7R	339	1.6	1.2	1.44	1.0	583	140	$7,833	$13,104	$20,937
107	**Main Cresson Mine Area - Topsoil - AJAX**	0		**Select Fleet**								$0	$0	$0
108	**Main Cresson Mine Area - Topsoil - AJAX - Dozer Spreading**	48,892	50	D7R	1,076	1.6	1.2	1.44	1.0	1,852	26	$1,455	$2,434	$3,889
109	**Main Cresson Mine Area - Topsoil - Crusher**	0		**Select Fleet**								$0	$0	$0
110	**Main Cresson Mine Area - Topsoil - Crusher - Dozer Spread**	48,892	73	D7R	801	1.6	1.2	1.44	1.0	1,379	35	$1,958	$3,276	$5,234
111	**Main Cresson Mine Area - Topsoil - Pit Bottom**	0		**Select Fleet**								$0	$0	$0
112	**Main Cresson Mine Area - Topsoil - Pit Bottom - Dozer Spre**	55,725	50	D7R	1,076	1.2	1.2	1.44	1.0	1,389	40	$2,238	$3,744	$5,982
113	**Main Cresson Mine Area - Topsoil - South Cresson HR**	0		**Select Fleet**								$0	$0	$0
114	**Main Cresson Mine Area - Topsoil - South Cresson HR - Doz**	24,265	66	D7R	867	1.6	1.2	1.44	1.0	1,492	16	$895	$1,498	$2,393
115	**Main Cresson Mine Area - Topsoil - Cresson HR**	0		**Select Fleet**								$0	$0	$0
116	**Main Cresson Mine Area - Topsoil - Cresson HR - Dozer Spr**	24,265	66	D7R	867	1.6	1.2	1.44	1.0	1,492	16	$895	$1,498	$2,393
117	**Crusher Mine Area - Pile Leveling - Mass Grading**	75,737	164	D10R	1,069	1.6	0.6	0.82	1.2	610	124	$6,938	$17,899	$24,837
118	**Crusher Mine Area - Pile Leveling - Fine Grading**	8,415	164	D7R	426	1.6	0.6	0.82	1.0	209	40	$2,238	$3,744	$5,982
119	**Crusher Mine Area - Topsoil**	0		**Select Fleet**								$0	$0	$0
120	**Crusher Mine Area - Topsoil - Dozer Spreading**	34,759	51	D7R	1,060	1.6	1.2	1.44	1.0	1,824	19	$1,063	$1,778	$2,841
121	**Crusher Mine Area - Delivery Road - Mass Grading**	8,867	164	D10R	1,069	1.6	0.6	0.82	1.2	610	15	$839	$2,165	$3,004
122	**Crusher Mine Area - Delivery Road - Fine Grading**	985	164	D7R	426	1.6	0.6	0.82	1.0	209	5	$280	$468	$748
123	**Crusher Mine Area - Topsoil - Delivery Road**	0		**Select Fleet**								$0	$0	$0
124	**Crusher Mine Area - Topsoil - Delivery Road - Dozer Spread**	8,244	51	D7R	1,060	1.6	1.2	1.44	1.0	1,824	5	$280	$468	$748
125	**Chicago Mine Area**	3,228	53	D7R	1,028	1.6	1.0	0.82	1.0	840	4	$224	$374	$598
126	**Chicago Mine Area topsoil - Dozer Spreading**	0		**Select Fleet**								$0	$0	$0
		14,268,979									28,657	**$1,603,358**	**$3,680,199**	**$5,283,557**

Waste Rock Dumps - Cover and Growth Media Costs

		Cover (lower layer)								Growth Media Placement							
	Description (required)	Cover Volume cy	Cover Replacement Fleet	Fleet Productivity LCY/hr	Number of Trucks/ Scrapers	Total Fleet Hours	Cover Labor Cost $	Cover Equipment Cost $	Total Cover Cost $	Growth Media Volume cy	Growth Media Replacement Fleet	Fleet Productivity BCY/hr	Number of Trucks/ Scrapers	Total Fleet Hours	Total Labor Cost $	Total Equipment Cost $	Total Growth Media Cost $
1	**Ironclad Mine Area - Pile Leveling - Mass Grading**						$0	$0	$0						$0	$0	$0
2	**Ironclad Mine Area - Pile Leveling - Fine Grading**						$0	$0	$0						$0	$0	$0
3	**Ironclad Mine Area - 40 ft Lift - Mass Grading**						$0	$0	$0						$0	$0	$0
4	**Ironclad Mine Area - 40 ft Lift - Fine Grading**						$0	$0	$0						$0	$0	$0
5	**Ironclad Mine Area - Topsoil**						$0	$0	$0	21,062	740/988G/D8R	695	6	30	$13,428	$34,367	$47,795
6	**Ironclad Mine Area - Topsoil - Dozer Spreading**						$0	$0	$0						$0	$0	$0
7	**SGOSA Mine Area - Pile Leveling - Mass Grading**						$0	$0	$0						$0	$0	$0
8	**SGOSA Mine Area - Pile Leveling - Fine Grading**						$0	$0	$0						$0	$0	$0
9	**SGOSA Mine Area - 100 ft lift - Mass Grading**						$0	$0	$0						$0	$0	$0
10	**SGOSA Mine Area - 100 ft lift - Fine Grading**						$0	$0	$0						$0	$0	$0
11	**SGOSA Mine Area - 150 ft lift - Mass Grading**						$0	$0	$0						$0	$0	$0
12	**SGOSA Mine Area - 150 ft lift - Fine Grading**						$0	$0	$0						$0	$0	$0
13	**SGOSA Mine Area - 200 ft lift - Mass Grading**						$0	$0	$0						$0	$0	$0

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Project Name: AM-13 BP2020 Financial warranty calculation - Reclamation Plan
Date of Submittal: December 2019
File Name: SRCE_AM13_FW_V4.xlsm
Model Version: Version 1.4.1
Cost Data: User Data
Cost Data File: SRCE_Cost_data-USR_1_12_DRMS_BONDING.xlsm
Cost Estimate Type: Surety Cost Basis: CC&V Bonding

Waste Rock Dumps - Cost Summary	Labor	Equipment	Materials	Totals
Grading Costs	$1,603,358	$3,680,199	N/A	$5,283,557
Cover Placement Cost	$0	$0	N/A	$0
Topsoil Placement Cost	$750,012	$1,946,392	N/A	$2,696,404
Ripping/Scarifying Cost	$83,591	$139,835	N/A	$223,426
Subtotal Earthworks	**$2,436,961**	**$5,766,426**	**$0**	**$8,203,387**
Revegetation Cost	$581,513	$307,828	$1,751,419	$2,640,760
TOTALS	**$3,018,474**	**$6,074,254**	**$1,751,419**	**$10,844,147**

14	**SGOSA Mine Area - 200 ft lift - Fine Grading**						$0	$0	$0						$0	$0	$0
15	**SGOSA Mine Area - 250 ft lift - Mass Grading**						$0	$0	$0						$0	$0	$0
16	**SGOSA Mine Area - 250 ft lift - Fine Grading**						$0	$0	$0						$0	$0	$0
17	**SGOSA Mine Area - 300 ft lift - Mass Grading**						$0	$0	$0						$0	$0	$0
18	**SGOSA Mine Area - 300 ft lift - Fine Grading**						$0	$0	$0						$0	$0	$0
19	**SGOSA Mine Area - Topsoil - Lift 1**						$0	$0	$0	18,610	740/988G/D8R	700	6	27	$12,085	$30,930	$43,015
20	**SGOSA Mine Area - Topsoil - Lift 1 - Dozer Spreading**						$0	$0	$0						$0	$0	$0
21	**SGOSA Mine Area - Topsoil - Lift 2**						$0	$0	$0	9,648	740/988G/D8R	694	5	14	$5,483	$14,133	$19,616
22	**SGOSA Mine Area - Topsoil - Lift 2 - Dozer Spreading**						$0	$0	$0						$0	$0	$0
23	**SGOSA Mine Area - Topsoil - Lift 3**						$0	$0	$0	16,569	740/988G/D8R	657	4	25	$8,393	$21,838	$30,231
24	**SGOSA Mine Area - Topsoil - Lift 3 - Dozer Spreading**						$0	$0	$0						$0	$0	$0
25	**SGOSA Mine Area - Topsoil - Lift 4**						$0	$0	$0	46,133	740/988G/D8R	609	3	76	$21,261	$56,049	$77,310
26	**SGOSA Mine Area - Topsoil - Lift 4 - Dozer Spreading**						$0	$0	$0						$0	$0	$0
27	**SGOSA Mine Area - Topsoil - Lift 5**						$0	$0	$0	47,964	740/988G/D8R	552	2	86	$19,247	$51,726	$70,973
28	**SGOSA Mine Area - Topsoil - Lift 5 - Dozer Spreading**						$0	$0	$0						$0	$0	$0
29	**North Cresson Mine Area - Pile Leveling - Mass Grading**						$0	$0	$0						$0	$0	$0
30	**North Cresson Mine Area - Pile Leveling - Fine Grading**						$0	$0	$0						$0	$0	$0
31	**North Cresson Mine Area - 200 ft lift - Mass Grading**						$0	$0	$0						$0	$0	$0
32	**North Cresson Mine Area - 200 ft lift - Fine Grading**						$0	$0	$0						$0	$0	$0
33	**North Cresson Mine Area - 250 ft lift - Mass Grading**						$0	$0	$0						$0	$0	$0
34	**North Cresson Mine Area - 250 ft lift - Fine Grading**						$0	$0	$0						$0	$0	$0
35	**North Cresson Mine Area - Topsoil**						$0	$0	$0	44,722	740/988G/D8R	629	5	71	$27,807	$71,677	$99,484
36	**North Cresson Mine Area - Topsoil - Dozer Spreading**						$0	$0	$0						$0	$0	$0
37	**North Cresson Mine Area - Topsoil - Lift 1**						$0	$0	$0	3,759	740/988G/D8R	700	6	5	$2,238	$5,728	$7,966
38	**North Cresson Mine Area - Topsoil - Lift 1 -Dozer Spreading**						$0	$0	$0						$0	$0	$0
39	**North Cresson Mine Area - Topsoil - Lift 2**						$0	$0	$0	13,915	740/988G/D8R	694	5	20	$7,833	$20,191	$28,024
40	**North Cresson Mine Area - Topsoil - Lift 2 - Dozer Spreading**						$0	$0	$0						$0	$0	$0
41	**North Cresson Mine Area - Topsoil - Lift 3**						$0	$0	$0	27,467	740/988G/D8R	657	4	42	$14,099	$36,687	$50,786
42	**North Cresson Mine Area - Topsoil - Lift 3 - Dozer Spreading**						$0	$0	$0						$0	$0	$0
43	**North Cresson Mine Area - Topsoil - Lift 4**						$0	$0	$0	12,536	740/988G/D8R	609	3	21	$5,875	$15,487	$21,362
44	**North Cresson Mine Area - Topsoil - Lift 4 - Dozer Spreading**						$0	$0	$0						$0	$0	$0
45	**North Cresson Mine Area - Topsoil - Lift 5**						$0	$0	$0	1,436	740/988G/D8R	552	2	2	$448	$1,203	$1,651
46	**North Cresson Mine Area - Topsoil - Lift 5 - Dozer Spreading**						$0	$0	$0						$0	$0	$0
47	**North Cresson Mine Area - Topsoil - Globe Hill HR**						$0	$0	$0	32,404	740/988G/D8R	641	6	50	$22,380	$57,278	$79,658
48	**North Cresson Mine Area - Topsoil - Globe Hill HR - Dozer S**						$0	$0	$0						$0	$0	$0
49	**ECOSA Mine Area - 50 ft lift - Mass Grading**						$0	$0	$0						$0	$0	$0
50	**ECOSA Mine Area - 50 ft lift - Fine Grading**						$0	$0	$0						$0	$0	$0
51	**ECOSA Mine Area - 150 ft lift - Mass Grading**						$0	$0	$0						$0	$0	$0
52	**ECOSA Mine Area - 150 ft lift - Fine Grading**						$0	$0	$0						$0	$0	$0
53	**ECOSA Mine Area - Topsoil - Lift 1**						$0	$0	$0	59,734	740/988G/D8R	651	3	92	$25,737	$67,849	$93,586
54	**ECOSA Mine Area - Topsoil - Lift 1 - Dozer Spreading**						$0	$0	$0						$0	$0	$0
55	**ECOSA Mine Area - Topsoil - Lift 2**						$0	$0	$0	51,030	740/988G/D8R	674	4	76	$25,513	$66,387	$91,900
56	**ECOSA Mine Area - Topsoil - Lift 2 - Dozer Spreading**						$0	$0	$0						$0	$0	$0
57	**ECOSA Mine Area - Topsoil - Lift 3**						$0	$0	$0	54,071	740/988G/D8R	600	5	90	$35,249	$90,858	$126,107
58	**ECOSA Mine Area - Topsoil - Lift 3 - Dozer Spreading**						$0	$0	$0						$0	$0	$0
59	**ECOSA Mine Area - Topsoil - Lift 4**						$0	$0	$0	43,302	740/988G/D8R	690	7	62	$31,220	$79,457	$110,677
60	**ECOSA Mine Area - Topsoil - Lift 4 - Dozer Spreading**						$0	$0	$0						$0	$0	$0
61	**ECOSA Mine Area - Topsoil - Lift 5**						$0	$0	$0	53,926	740/988G/D8R	644	8	84	$46,998	$119,078	$166,076
62	**ECOSA Mine Area - Topsoil - Lift 5 - Dozer Spreading**						$0	$0	$0						$0	$0	$0
63	**ECOSA Mine Area - Topsoil - Lift 6**						$0	$0	$0	20,957	740/988G/D8R	669	11	31	$22,548	$56,595	$79,143
64	**ECOSA Mine Area - Topsoil - Lift 6 - Dozer Spreading**						$0	$0	$0						$0	$0	$0
65	**East Cresson Mine Area - Pile Leveling - Mass Grading**						$0	$0	$0						$0	$0	$0
66	**East Cresson Mine Area - Pile Leveling - Fine Grading**						$0	$0	$0						$0	$0	$0
67	**East Cresson Mine Area - 40 lift - Mass Grading**						$0	$0	$0						$0	$0	$0
68	**East Cresson Mine Area - 40 lift - Fine Grading**						$0	$0	$0						$0	$0	$0
69	**East Cresson Mine Area - 50 lift - Mass Grading**						$0	$0	$0						$0	$0	$0
70	**East Cresson Mine Area - 50 lift - Fine Grading**						$0	$0	$0						$0	$0	$0
71	**East Cresson Mine Area - 50 lift - Mass Grading**						$0	$0	$0						$0	$0	$0
72	**East Cresson Mine Area - 50 lift - Fine Grading**						$0	$0	$0						$0	$0	$0
73	**East Cresson Mine Area - 150 lift - Mass Grading**						$0	$0	$0						$0	$0	$0
74	**East Cresson Mine Area - 150 lift - Fine Grading**						$0	$0	$0						$0	$0	$0
75	**East Cresson Mine Area - 400 lift - Mass Grading**						$0	$0	$0						$0	$0	$0
76	**East Cresson Mine Area - 400 lift - Fine Grading**						$0	$0	$0						$0	$0	$0
77	**East Cresson Mine Area - Topsoil - Lift 2**						$0	$0	$0	10,228	740/988G/D8R	636	3	16	$4,476	$11,800	$16,276
78	**East Cresson Mine Area - Topsoil - Lift 2 - Dozer Spreading**						$0	$0	$0						$0	$0	$0
79	**East Cresson Mine Area - Topsoil - Lift 3**						$0	$0	$0	8,575	740/988G/D8R	609	3	14	$3,917	$10,325	$14,242
80	**East Cresson Mine Area - Topsoil - Lift 3 - Dozer Spreading**						$0	$0	$0						$0	$0	$0
81	**East Cresson Mine Area - Topsoil - Lift 4**						$0	$0	$0	50,320	740/988G/D8R	545	3	92	$25,737	$67,849	$93,586
82	**East Cresson Mine Area - Topsoil - Lift 4 - Dozer Spreading**						$0	$0	$0						$0	$0	$0
83	**East Cresson Mine Area - Topsoil - Lift 5**						$0	$0	$0	90,226	740/988G/D8R	644	4	140	$46,998	$122,291	$169,289

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Closure Cost Estimate
Waste Rock Dumps

Project Name: AM-13 BP2020 Financial warranty calculation - Reclamation Plan
Date of Submittal: December 2019
File Name: SRCE_AM13_FW_V4.xlsm
Model Version: Version 1.4.1
Cost Data: User Data
Cost Data File: SRCE_Cost_data-USR_1_12_DRMS_BONDING.xlsm
Cost Estimate Type: Surety Cost Basis: CC&V Bonding

Waste Rock Dumps - Cost Summary

	Labor	Equipment	Materials	Totals
Grading Costs	$1,603,358	$3,680,199	N/A	$5,283,557
Cover Placement Cost	$0	$0	N/A	$0
Topsoil Placement Cost	$750,012	$1,946,392	N/A	$2,696,404
Ripping/Scarifying Cost	$83,591	$139,835	N/A	$223,426
Subtotal Earthworks	**$2,436,961**	**$5,766,426**	**$0**	**$8,203,387**
Revegetation Cost	$581,513	$307,828	$1,751,419	$2,640,760
TOTALS	**$3,018,474**	**$6,074,254**	**$1,751,419**	**$10,844,147**

84	**East Cresson Mine Area - Topsoil - Lift 5 - Dozer Spreading**						$0	$0	$0						$0	$0	$0
85	**East Cresson Mine Area - Topsoil - Lift 6**						$0	$0	$0	90,330	740/988G/D8R	674	5	134	$52,481	$135,277	$187,758
86	**East Cresson Mine Area - Topsoil - Lift 6 - Dozer Spreading**						$0	$0	$0						$0	$0	$0
87	**East Cresson Mine Area - Topsoil - WHEX**						$0	$0	$0	161,059	740/988G/D8R	597	3	269	$75,253	$198,385	$273,638
88	**East Cresson Mine Area - Topsoil - WHEX - Dozer Spreadin**						$0	$0	$0						$0	$0	$0
89	**East Cresson Mine Area - Topsoil - Ironclad**						$0	$0	$0	12,043	740/988G/D8R	695	6	17	$7,609	$19,474	$27,083
90	**East Cresson Mine Area - Topsoil - Ironclad - Dozer Spread**						$0	$0	$0						$0	$0	$0
91	**Main Cresson Mine Area - Pile Leveling - Mass Grading**						$0	$0	$0						$0	$0	$0
92	**Main Cresson Mine Area - Pile Leveling - Fine Grading**						$0	$0	$0						$0	$0	$0
93	**Main Cresson Mine Area - 50 ft lift - Mass Grading**						$0	$0	$0						$0	$0	$0
94	**Main Cresson Mine Area - 50 ft lift - Fine Grading**						$0	$0	$0						$0	$0	$0
95	**Main Cresson Mine Area - 150 ft lift - Mass Grading**						$0	$0	$0						$0	$0	$0
96	**Main Cresson Mine Area - 150 ft lift - Fine Grading**						$0	$0	$0						$0	$0	$0
97	**Main Cresson Mine Area - 400 ft lift - Mass Grading**						$0	$0	$0						$0	$0	$0
98	**Main Cresson Mine Area - 400 ft lift - Fine Grading**						$0	$0	$0						$0	$0	$0
99	**Main Cresson Mine Area - 450 ft lift - Mass Grading**						$0	$0	$0						$0	$0	$0
100	**Main Cresson Mine Area - 450 ft lift - Fine Grading**						$0	$0	$0						$0	$0	$0
101	**Main Cresson Mine Area - 650 ft lift - Mass Grading**						$0	$0	$0						$0	$0	$0
102	**Main Cresson Mine Area - 650 ft lift - Fine Grading**						$0	$0	$0						$0	$0	$0
103	**Main Cresson Mine Area - Topsoil - 10185**						$0	$0	$0	67,115	740/988G/D8R	688	3	98	$27,416	$72,274	$99,690
104	**Main Cresson Mine Area - Topsoil - 10185 - Dozer Spreading**						$0	$0	$0						$0	$0	$0
105	**Main Cresson Mine Area - Topsoil - Ruby Road**						$0	$0	$0	59,128	740/988G/D8R	618	4	95	$31,892	$82,983	$114,875
106	**Main Cresson Mine Area - Topsoil - Ruby Road - Dozer Spre**						$0	$0	$0						$0	$0	$0
107	**Main Cresson Mine Area - Topsoil - AJAX**						$0	$0	$0	26,870	740/988G/D8R	668	3	40	$11,190	$29,500	$40,690
108	**Main Cresson Mine Area - Topsoil - AJAX - Dozer Spreading**						$0	$0	$0						$0	$0	$0
109	**Main Cresson Mine Area - Topsoil - Crusher**						$0	$0	$0	48,892	740/988G/D8R	536	2	91	$20,366	$54,734	$75,100
110	**Main Cresson Mine Area - Topsoil - Crusher - Dozer Spread**						$0	$0	$0						$0	$0	$0
111	**Main Cresson Mine Area - Topsoil - Pit Bottom**						$0	$0	$0	55,725	740/988G/D8R	656	7	85	$42,802	$108,933	$151,735
112	**Main Cresson Mine Area - Topsoil - Pit Bottom - Dozer Spre**						$0	$0	$0						$0	$0	$0
113	**Main Cresson Mine Area - Topsoil - South Cresson HR**						$0	$0	$0	24,265	740/988G/D8R	582	4	42	$14,099	$36,687	$50,786
114	**Main Cresson Mine Area - Topsoil - South Cresson HR - Doz**						$0	$0	$0						$0	$0	$0
115	**Main Cresson Mine Area - Topsoil - Cresson HR**						$0	$0	$0	24,265	740/988G/D8R	666	6	36	$16,114	$41,240	$57,354
116	**Main Cresson Mine Area - Topsoil - Cresson HR - Dozer Spr**						$0	$0	$0						$0	$0	$0
117	**Crusher Mine Area - Pile Leveling - Mass Grading**						$0	$0	$0						$0	$0	$0
118	**Crusher Mine Area - Pile Leveling - Fine Grading**						$0	$0	$0						$0	$0	$0
119	**Crusher Mine Area - Topsoil**						$0	$0	$0	34,759	740/988G/D8R	654	4	53	$17,792	$46,296	$64,088
120	**Crusher Mine Area - Topsoil - Dozer Spreading**						$0	$0	$0						$0	$0	$0
121	**Crusher Mine Area - Delivery Road - Mass Grading**						$0	$0	$0						$0	$0	$0
122	**Crusher Mine Area - Delivery Road - Fine Grading**						$0	$0	$0						$0	$0	$0
123	**Crusher Mine Area - Topsoil - Delivery Road**						$0	$0	$0	8,244	740/988G/D8R	610	2	13	$2,909	$7,819	$10,728
124	**Crusher Mine Area - Topsoil - Delivery Road - Dozer Spread**						$0	$0	$0						$0	$0	$0
125	**Chicago Mine Area**						$0	$0	$0						$0	$0	$0
126	**Chicago Mine Area topsoil - Dozer Spreading**						$0	$0	$0	3,227	740/988G/D8R	610	2	5	$1,119	$3,007	$4,126
							$0	**$0**	**$0**	1,354,516				2,144	**$750,012**	**$1,946,392**	**$2,696,404**

Waste Rock Dumps - Scarifying/Revegetation Costs

	Description (required)	Slope Area acres	Flat Area acres	Total Surface Area acres	Final Slope Length ft	Flat Area Long Dimension ft	Ripping/ Scarifying Fleet	Slope Scarifying/ Ripping Hours hrs	Flat Area Scarifying/ Ripping Hours hrs	Scarifying/ Ripping Labor Costs $	Scarifying/ Ripping Equipment Cost $	Total Scarifying/ Ripping Costs $	Revegetation Labor Cost $	Revegetation Equipment Cost $	Revgetation Material Cost $	Total Revegetation Cost $
1	**Ironclad Mine Area - Pile Leveling - Mass Grading**	0.00		0.00	50					$0	$0	$0	$0	$0	$0	$0
2	**Ironclad Mine Area - Pile Leveling - Fine Grading**	0.00		0.00	50					$0	$0	$0	$0	$0	$0	$0
3	**Ironclad Mine Area - 40 ft Lift - Mass Grading**	0.00		0.00	208					$0	$0	$0	$0	$0	$0	$0
4	**Ironclad Mine Area - 40 ft Lift - Fine Grading**	0.00		0.00	208					$0	$0	$0	$0	$0	$0	$0
5	**Ironclad Mine Area - Topsoil**	0.11	26.00	26.11	50	300	D7R	0	24	$1,343	$2,246	$3,589	$9,042	$4,786	$27,233	$41,061
6	**Ironclad Mine Area - Topsoil - Dozer Spreading**	0.11		0.11	50					$0	$0	$0	$0	$0	$0	$0
7	**SGOSA Mine Area - Pile Leveling - Mass Grading**	0.00		0.00	50					$0	$0	$0	$0	$0	$0	$0
8	**SGOSA Mine Area - Pile Leveling - Fine Grading**	0.00		0.00	50					$0	$0	$0	$0	$0	$0	$0
9	**SGOSA Mine Area - 100 ft lift - Mass Grading**	0.00		0.00	271					$0	$0	$0	$0	$0	$0	$0
10	**SGOSA Mine Area - 100 ft lift - Fine Grading**	0.00		0.00	271					$0	$0	$0	$0	$0	$0	$0
11	**SGOSA Mine Area - 150 ft lift - Mass Grading**	0.00		0.00	542					$0	$0	$0	$0	$0	$0	$0
12	**SGOSA Mine Area - 150 ft lift - Fine Grading**	0.00		0.00	542					$0	$0	$0	$0	$0	$0	$0
13	**SGOSA Mine Area - 200 ft lift - Mass Grading**	0.00		0.00	677					$0	$0	$0	$0	$0	$0	$0
14	**SGOSA Mine Area - 200 ft lift - Fine Grading**	0.00		0.00	677					$0	$0	$0	$0	$0	$0	$0
15	**SGOSA Mine Area - 250 ft lift - Mass Grading**	0.00		0.00	812					$0	$0	$0	$0	$0	$0	$0
16	**SGOSA Mine Area - 250 ft lift - Fine Grading**	0.00		0.00	812					$0	$0	$0	$0	$0	$0	$0
17	**SGOSA Mine Area - 300 ft lift - Mass Grading**	0.00		0.00	948					$0	$0	$0	$0	$0	$0	$0

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Closure Cost Estimate
Waste Rock Dumps

Project Name: AM-13 BP2020 Financial warranty calculation - Reclamation Plan
Date of Submittal: December 2019
File Name: SRCE_AM13_FW_V4.xlsm
Model Version: Version 1.4.1
Cost Data: User Data
Cost Data File: SRCE_Cost_data-USR_1_12_DRMS_BONDING.xlsm
Cost Estimate Type: Surety Cost Basis: CC&V Bonding

Waste Rock Dumps - Cost Summary	Labor	Equipment	Materials	Totals
Grading Costs	$1,603,358	$3,680,199	N/A	$5,283,557
Cover Placement Cost	$0	$0	N/A	$0
Topsoil Placement Cost	$750,012	$1,946,392	N/A	$2,696,404
Ripping/Scarifying Cost	$83,591	$139,835	N/A	$223,426
Subtotal Earthworks	**$2,436,961**	**$5,766,426**	**$0**	**$8,203,387**
Revegetation Cost	$581,513	$307,828	$1,751,419	$2,640,760
TOTALS	**$3,018,474**	**$6,074,254**	**$1,751,419**	**$10,844,147**

18	**SGOSA Mine Area - 300 ft lift - Fine Grading**	0.00		0.00	948					$0	$0	$0	$0	$0	$0	$0
19	**SGOSA Mine Area - Topsoil - Lift 1**	23.07		23.07	1,005	245	D7R	20		$1,119	$1,872	$2,991	$7,989	$4,229	$24,062	$36,280
20	**SGOSA Mine Area - Topsoil - Lift 1 - Dozer Spreading**	0.00		0.00	1,005					$0	$0	$0	$0	$0	$0	$0
21	**SGOSA Mine Area - Topsoil - Lift 2**	10.96	1.00	11.96	271	245	D7R	9	1	$560	$936	$1,496	$4,141	$2,192	$12,475	$18,808
22	**SGOSA Mine Area - Topsoil - Lift 2 - Dozer Spreading**	0.00		0.00	271					$0	$0	$0	$0	$0	$0	$0
23	**SGOSA Mine Area - Topsoil - Lift 3**	16.54	4.00	20.54	271	245	D7R	14	4	$1,007	$1,685	$2,692	$7,113	$3,765	$21,423	$32,301
24	**SGOSA Mine Area - Topsoil - Lift 3 - Dozer Spreading**	0.00		0.00	271					$0	$0	$0	$0	$0	$0	$0
25	**SGOSA Mine Area - Topsoil - Lift 4**	42.19	15.00	57.19	271	245	D7R	36	14	$2,798	$4,680	$7,478	$19,805	$10,484	$59,649	$89,938
26	**SGOSA Mine Area - Topsoil - Lift 4 - Dozer Spreading**	0.00		0.00	271					$0	$0	$0	$0	$0	$0	$0
27	**SGOSA Mine Area - Topsoil - Lift 5**	32.46	27.00	59.46	271	245	D7R	28	25	$2,965	$4,961	$7,926	$20,591	$10,901	$62,017	$93,509
28	**SGOSA Mine Area - Topsoil - Lift 5 - Dozer Spreading**	0.00		0.00	271					$0	$0	$0	$0	$0	$0	$0
29	**North Cresson Mine Area - Pile Leveling - Mass Grading**	0.00		0.00	50					$0	$0	$0	$0	$0	$0	$0
30	**North Cresson Mine Area - Pile Leveling - Fine Grading**	0.00		0.00	50					$0	$0	$0	$0	$0	$0	$0
31	**North Cresson Mine Area - 200 ft lift - Mass Grading**	0.00		0.00	677					$0	$0	$0	$0	$0	$0	$0
32	**North Cresson Mine Area - 200 ft lift - Fine Grading**	0.00		0.00	677					$0	$0	$0	$0	$0	$0	$0
33	**North Cresson Mine Area - 250 ft lift - Mass Grading**	0.00		0.00	948					$0	$0	$0	$0	$0	$0	$0
34	**North Cresson Mine Area - 250 ft lift - Fine Grading**	0.00		0.00	948					$0	$0	$0	$0	$0	$0	$0
35	**North Cresson Mine Area - Topsoil**	3.44	52.00	55.44	50	300	D7R	3	47	$2,798	$4,680	$7,478	$19,199	$10,164	$57,824	$87,187
36	**North Cresson Mine Area - Topsoil - Dozer Spreading**	0.00		0.00	50					$0	$0	$0	$0	$0	$0	$0
37	**North Cresson Mine Area - Topsoil - Lift 1**	4.66		4.66	677	245	D7R	4		$224	$374	$598	$1,614	$854	$4,861	$7,329
38	**North Cresson Mine Area - Topsoil - Lift 1 -Dozer Spreading**	0.00		0.00	677					$0	$0	$0	$0	$0	$0	$0
39	**North Cresson Mine Area - Topsoil - Lift 2**	17.25		17.25	677	245	D7R	15		$839	$1,404	$2,243	$5,974	$3,162	$17,992	$27,128
40	**North Cresson Mine Area - Topsoil - Lift 2 - Dozer Spreading**	0.00		0.00	677					$0	$0	$0	$0	$0	$0	$0
41	**North Cresson Mine Area - Topsoil - Lift 3**	34.05		34.05	677	245	D7R	29		$1,623	$2,714	$4,337	$11,792	$6,242	$35,514	$53,548
42	**North Cresson Mine Area - Topsoil - Lift 3 - Dozer Spreading**	0.00		0.00	677					$0	$0	$0	$0	$0	$0	$0
43	**North Cresson Mine Area - Topsoil - Lift 4**	15.54		15.54	677	245	D7R	13		$727	$1,217	$1,944	$5,382	$2,849	$16,208	$24,439
44	**North Cresson Mine Area - Topsoil - Lift 4 - Dozer Spreading**	0.00		0.00	677					$0	$0	$0	$0	$0	$0	$0
45	**North Cresson Mine Area - Topsoil - Lift 5**	0.78	1.00	1.78	677	245	D7R	1	1	$112	$187	$299	$616	$326	$1,856	$2,798
46	**North Cresson Mine Area - Topsoil - Lift 5 - Dozer Spreading**	0.00		0.00	677					$0	$0	$0	$0	$0	$0	$0
47	**North Cresson Mine Area - Topsoil - Globe Hill HR**	0.17	40.00	40.17	50	300	D7R	0	36	$2,014	$3,370	$5,384	$13,911	$7,364	$41,897	$63,172
48	**North Cresson Mine Area - Topsoil - Globe Hill HR - Dozer S**	0.00		0.00	677					$0	$0	$0	$0	$0	$0	$0
49	**ECOSA Mine Area - 50 ft lift - Mass Grading**	0.00		0.00	135					$0	$0	$0	$0	$0	$0	$0
50	**ECOSA Mine Area - 50 ft lift - Fine Grading**	0.00		0.00	135					$0	$0	$0	$0	$0	$0	$0
51	**ECOSA Mine Area - 150 ft lift - Mass Grading**	0.00		0.00	406					$0	$0	$0	$0	$0	$0	$0
52	**ECOSA Mine Area - 150 ft lift - Fine Grading**	0.00		0.00	406					$0	$0	$0	$0	$0	$0	$0
53	**ECOSA Mine Area - Topsoil - Lift 1**	55.05	19.00	74.05	406	625	D7R	47	17	$3,581	$5,990	$9,571	$25,644	$13,575	$77,234	$116,453
54	**ECOSA Mine Area - Topsoil - Lift 1 - Dozer Spreading**	0.00		0.00	406					$0	$0	$0	$0	$0	$0	$0
55	**ECOSA Mine Area - Topsoil - Lift 2**	57.26	6.00	63.26	406	625	D7R	49	5	$3,021	$5,054	$8,075	$21,907	$11,597	$65,980	$99,484
56	**ECOSA Mine Area - Topsoil - Lift 2 - Dozer Spreading**	0.00		0.00	406					$0	$0	$0	$0	$0	$0	$0
57	**ECOSA Mine Area - Topsoil - Lift 3**	62.03	5.00	67.03	406	635	D7R	53	4	$3,189	$5,335	$8,524	$23,213	$12,288	$69,912	$105,413
58	**ECOSA Mine Area - Topsoil - Lift 3 - Dozer Spreading**	0.00		0.00	406					$0	$0	$0	$0	$0	$0	$0
59	**ECOSA Mine Area - Topsoil - Lift 4**	33.68	20.00	53.68	406	505	D7R	29	18	$2,630	$4,399	$7,029	$18,589	$9,840	$55,988	$84,417
60	**ECOSA Mine Area - Topsoil - Lift 4 - Dozer Spreading**	0.00		0.00	406					$0	$0	$0	$0	$0	$0	$0
61	**ECOSA Mine Area - Topsoil - Lift 5**	66.85		66.85	406	315	D7R	57		$3,189	$5,335	$8,524	$23,150	$12,255	$69,725	$105,130
62	**ECOSA Mine Area - Topsoil - Lift 5 - Dozer Spreading**	0.00		0.00	406					$0	$0	$0	$0	$0	$0	$0
63	**ECOSA Mine Area - Topsoil - Lift 6**	13.98	12.00	25.98	406	300	D7R	12	11	$1,287	$2,153	$3,440	$8,997	$4,763	$27,097	$40,857
64	**ECOSA Mine Area - Topsoil - Lift 6 - Dozer Spreading**	0.00		0.00	406					$0	$0	$0	$0	$0	$0	$0
65	**East Cresson Mine Area - Pile Leveling - Mass Grading**	0.00		0.00	50					$0	$0	$0	$0	$0	$0	$0
66	**East Cresson Mine Area - Pile Leveling - Fine Grading**	0.00		0.00	50					$0	$0	$0	$0	$0	$0	$0
67	**East Cresson Mine Area - 40 lift - Mass Grading**	0.00		0.00	108					$0	$0	$0	$0	$0	$0	$0
68	**East Cresson Mine Area - 40 lift - Fine Grading**	0.00		0.00	108					$0	$0	$0	$0	$0	$0	$0
69	**East Cresson Mine Area - 50 lift - Mass Grading**	0.00		0.00	135					$0	$0	$0	$0	$0	$0	$0
70	**East Cresson Mine Area - 50 lift - Fine Grading**	0.00		0.00	135					$0	$0	$0	$0	$0	$0	$0
71	**East Cresson Mine Area - 50 lift - Mass Grading**	0.00		0.00	234					$0	$0	$0	$0	$0	$0	$0
72	**East Cresson Mine Area - 50 lift - Fine Grading**	0.00		0.00	234					$0	$0	$0	$0	$0	$0	$0
73	**East Cresson Mine Area - 150 lift - Mass Grading**	0.00		0.00	406					$0	$0	$0	$0	$0	$0	$0
74	**East Cresson Mine Area - 150 lift - Fine Grading**	0.00		0.00	406					$0	$0	$0	$0	$0	$0	$0
75	**East Cresson Mine Area - 400 lift - Mass Grading**	0.00		0.00	1,083					$0	$0	$0	$0	$0	$0	$0
76	**East Cresson Mine Area - 400 lift - Fine Grading**	0.00		0.00	1,083					$0	$0	$0	$0	$0	$0	$0
77	**East Cresson Mine Area - Topsoil - Lift 2**	7.68	5.00	12.68	406	675	D7R	7	4	$615	$1,030	$1,645	$4,392	$2,325	$13,225	$19,942
78	**East Cresson Mine Area - Topsoil - Lift 2 - Dozer Spreading**	0.00		0.00	406					$0	$0	$0	$0	$0	$0	$0
79	**East Cresson Mine Area - Topsoil - Lift 3**	2.63	8.00	10.63	406	515	D7R	2	7	$504	$842	$1,346	$3,681	$1,949	$11,087	$16,717
80	**East Cresson Mine Area - Topsoil - Lift 3 - Dozer Spreading**	0.00		0.00	406					$0	$0	$0	$0	$0	$0	$0
81	**East Cresson Mine Area - Topsoil - Lift 4**	58.38	4.00	62.38	406	545	D7R	50	4	$3,021	$5,054	$8,075	$21,602	$11,435	$65,063	$98,100
82	**East Cresson Mine Area - Topsoil - Lift 4 - Dozer Spreading**	0.00		0.00	406					$0	$0	$0	$0	$0	$0	$0
83	**East Cresson Mine Area - Topsoil - Lift 5**	66.85	45.00	111.85	406	655	D7R	57	39	$5,371	$8,986	$14,357	$38,734	$20,504	$116,660	$175,898
84	**East Cresson Mine Area - Topsoil - Lift 5 - Dozer Spreading**	0.00		0.00	406					$0	$0	$0	$0	$0	$0	$0
85	**East Cresson Mine Area - Topsoil - Lift 6**	13.98	98.00	111.98	406	300	D7R	12	89	$5,651	$9,454	$15,105	$38,778	$20,528	$116,795	$176,101
86	**East Cresson Mine Area - Topsoil - Lift 6 - Dozer Spreading**	0.00		0.00	406					$0	$0	$0	$0	$0	$0	$0
87	**East Cresson Mine Area - Topsoil - WHEX**	4.66	195.00	199.66	406	300	D7R	4	177	$10,127	$16,942	$27,069	$69,143	$36,601	$208,246	$313,990

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Closure Cost Estimate
Waste Rock Dumps

Project Name: AM-13 BP2020 Financial warranty calculation - Reclamation Plan
Date of Submittal: December 2019
File Name: SRCE_AM13_FW_V4.xlsm
Model Version: Version 1.4.1
Cost Data: User Data
Cost Data File: SRCE_Cost_data-USR_1_12_DRMS_BONDING.xlsm
Cost Estimate Type: Surety Cost Basis: CC&V Bonding

Waste Rock Dumps - Cost Summary

	Labor	Equipment	Materials	Totals
Grading Costs	$1,603,358	$3,680,199	N/A	$5,283,557
Cover Placement Cost	$0	$0	N/A	$0
Topsoil Placement Cost	$750,012	$1,946,392	N/A	$2,696,404
Ripping/Scarifying Cost	$83,591	$139,835	N/A	$223,426
Subtotal Earthworks	**$2,436,961**	**$5,766,426**	**$0**	**$8,203,387**
Revegetation Cost	$581,513	$307,828	$1,751,419	$2,640,760
TOTALS	**$3,018,474**	**$6,074,254**	**$1,751,419**	**$10,844,147**

88	**East Cresson Mine Area - Topsoil - WHEX - Dozer Spreadin**	0.00		0.00	406					$0	$0	$0	$0	$0	$0	$0
89	**East Cresson Mine Area - Topsoil - Ironclad**	0.93	14.00	14.93	406	300	D7R	1	13	$783	$1,310	$2,093	$5,170	$2,736	$15,572	$23,478
90	**East Cresson Mine Area - Topsoil - Ironclad - Dozer Spreadi**	0.00		0.00	406					$0	$0	$0	$0	$0	$0	$0
91	**Main Cresson Mine Area - Pile Leveling - Mass Grading**	0.00		0.00	50					$0	$0	$0	$0	$0	$0	$0
92	**Main Cresson Mine Area - Pile Leveling - Fine Grading**	0.00		0.00	50					$0	$0	$0	$0	$0	$0	$0
93	**Main Cresson Mine Area - 50 ft lift - Mass Grading**	0.00		0.00	135					$0	$0	$0	$0	$0	$0	$0
94	**Main Cresson Mine Area - 50 ft lift - Fine Grading**	0.00		0.00	135					$0	$0	$0	$0	$0	$0	$0
95	**Main Cresson Mine Area - 150 ft lift - Mass Grading**	0.00		0.00	406					$0	$0	$0	$0	$0	$0	$0
96	**Main Cresson Mine Area - 150 ft lift - Fine Grading**	0.00		0.00	406					$0	$0	$0	$0	$0	$0	$0
97	**Main Cresson Mine Area - 400 ft lift - Mass Grading**	0.00		0.00	1,083					$0	$0	$0	$0	$0	$0	$0
98	**Main Cresson Mine Area - 400 ft lift - Fine Grading**	0.00		0.00	1,083					$0	$0	$0	$0	$0	$0	$0
99	**Main Cresson Mine Area - 450 ft lift - Mass Grading**	0.00		0.00	1,218					$0	$0	$0	$0	$0	$0	$0
100	**Main Cresson Mine Area - 450 ft lift - Fine Grading**	0.00		0.00	1,218					$0	$0	$0	$0	$0	$0	$0
101	**Main Cresson Mine Area - 650 ft lift - Mass Grading**	0.00		0.00	1,760					$0	$0	$0	$0	$0	$0	$0
102	**Main Cresson Mine Area - 650 ft lift - Fine Grading**	0.00		0.00	1,760					$0	$0	$0	$0	$0	$0	$0
103	**Main Cresson Mine Area - Topsoil - 10185**	20.20	63.00	83.20	1,760	400	D7R	18	56	$4,140	$6,926	$11,066	$28,812	$15,252	$86,777	$130,841
104	**Main Cresson Mine Area - Topsoil - 10185 - Dozer Spreading**	0.00		0.00	1,760					$0	$0	$0	$0	$0	$0	$0
105	**Main Cresson Mine Area - Topsoil - Ruby Road**	23.30	50.00	73.30	406	300	D7R	20	45	$3,637	$6,084	$9,721	$25,384	$13,437	$76,452	$115,273
106	**Main Cresson Mine Area - Topsoil - Ruby Road - Dozer Spre**	0.00		0.00	406					$0	$0	$0	$0	$0	$0	$0
107	**Main Cresson Mine Area - Topsoil - AJAX**	2.31	31.00	33.31	67	100	D7R	2	32	$1,902	$3,182	$5,084	$11,535	$6,106	$34,742	$52,383
108	**Main Cresson Mine Area - Topsoil - AJAX - Dozer Spreading**	0.00		0.00	67					$0	$0	$0	$0	$0	$0	$0
109	**Main Cresson Mine Area - Topsoil - Crusher**	60.61		60.61	1,760	100	D7R	52		$2,909	$4,867	$7,776	$20,989	$11,111	$63,216	$95,316
110	**Main Cresson Mine Area - Topsoil - Crusher - Dozer Spreadi**	0.00		0.00	135					$0	$0	$0	$0	$0	$0	$0
111	**Main Cresson Mine Area - Topsoil - Pit Bottom**	0.10	69.00	69.10	1,760	300	D7R	1	63	$3,581	$5,990	$9,571	$23,930	$12,667	$72,072	$108,669
112	**Main Cresson Mine Area - Topsoil - Pit Bottom - Dozer Spre**	0.00		0.00	100					$0	$0	$0	$0	$0	$0	$0
113	**Main Cresson Mine Area - Topsoil - South Cresson HR**	0.10	30.00	30.10	1,760	300	D7R	1	27	$1,567	$2,621	$4,188	$10,424	$5,518	$31,395	$47,337
114	**Main Cresson Mine Area - Topsoil - South Cresson HR - Doz**	0.00		0.00	112					$0	$0	$0	$0	$0	$0	$0
115	**Main Cresson Mine Area - Topsoil - Cresson HR**	0.10	30.00	30.10	1,760	300	D7R	1	27	$1,567	$2,621	$4,188	$10,424	$5,518	$31,395	$47,337
116	**Main Cresson Mine Area - Topsoil - Cresson HR - Dozer Spr**	0.00		0.00	112					$0	$0	$0	$0	$0	$0	$0
117	**Crusher Mine Area - Pile Leveling - Mass Grading**	0.00		0.00	270					$0	$0	$0	$0	$0	$0	$0
118	**Crusher Mine Area - Pile Leveling - Fine Grading**	0.00		0.00	270					$0	$0	$0	$0	$0	$0	$0
119	**Crusher Mine Area - Topsoil**	1.09	42.00	43.09	95	100	D7R	1	43	$2,462	$4,118	$6,580	$14,922	$7,899	$44,943	$67,764
120	**Crusher Mine Area - Topsoil - Dozer Spreading**	0.00		0.00	95					$0	$0	$0	$0	$0	$0	$0
121	**Crusher Mine Area - Delivery Road - Mass Grading**	0.00		0.00	270					$0	$0	$0	$0	$0	$0	$0
122	**Crusher Mine Area - Delivery Road - Fine Grading**	0.00		0.00	270					$0	$0	$0	$0	$0	$0	$0
123	**Crusher Mine Area - Topsoil - Delivery Road**	0.22	10.00	10.22	95	300	D7R	0	9	$504	$842	$1,346	$3,539	$1,873	$10,660	$16,072
124	**Crusher Mine Area - Topsoil - Delivery Road - Dozer Spread**	0.00		0.00	95					$0	$0	$0	$0	$0	$0	$0
125	**Chicago Mine Area**	0.00		0.00	112					$0	$0	$0	$0	$0	$0	$0
126	**Chicago Mine Area topsoil - Dozer Spreading**	0.00	4.00	4.00		150	D7R	0	4	$224	$374	$598	$1,385	$733	$4,172	$6,290
		753.32	926.00	1,679.32				648	846	**$83,591**	**$139,835**	**$223,426**	**$581,513**	**$307,828**	**$1,751,419**	**$2,640,760**

Notes: 1) Minimum total ripping hours = 1 (i.e. If total ripping hrs (slope + flat) < 1, then one hour of fleet time is assumed, regardless of acres shown in in scarifying table.)

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Closure Cost Estimate
Heap Leach

Project Name: AM-13 BP2020 Financial warranty calculation - Reclamation Plan
Date of Submittal: December 2019
File Name: SRCE_AM13_FW_V4.xlsm
Model Version: Version 1.4.1
Cost Data: User Data
Cost Data File: SRCE_Cost_data-USR_1_12_DRMS_BONDING.xlsm
Cost Estimate Type: Surety Cost Basis: CC&V Bonding

Heap Leach Pads - Cost Summary

	Labor	Equipment	Materials	Totals
Drain Installation	$0	$0	$0	$0
Grading Costs	$373,635	$826,387	N/A	$1,200,022
Cover Placement Cost	$0	$0	N/A	$0
Topsoil Placement Cost	$679,123	$1,737,669	N/A	$2,416,792
Ripping/Scarifying Cost	$58,580	$97,998	N/A	$156,578
Subtotal Earthworks	**$1,111,338**	**$2,662,054**	**$0**	**$3,773,392**
Revegetation Cost	$418,079	$221,317	$1,259,183	$1,898,579
TOTALS	**$1,529,417**	**$2,883,371**	**$1,259,183**	**$5,671,971**

Heap Leach Pads - User Input

You must fill in ALL green cells and relevant blue cells in this section for each heap, lift or heap category

	Facility Description			Physical (1) - MANDATORY									Cover				Growth Media			
	Description (required)	ID Code	Type	Underlying Ground Slope % grade	Ungraded Slope _H:1V	Final Slope _H:1V	Final Top Slope % grade	Lift (heap) Height ft	Mid-Bench Length ft	Average Flat Area Long Dimension (ripping distance) ft	Final (Regraded) Heap Footprint acres	Regrade Volume (if calculated elsewhere) cy	Cover Thickness Slopes in	Cover Thickness Flat Areas in	Distance from Cover Borrow ft	Slope from Heap to Cover Borrow % grade	Slope Growth Media Thickness in	Flat Area Growth Media Thickness in	Distance from Growth Material Stockpile ft	Slope from Heap to Stockpile % grade
1	AGVLF - Pile Leveling - Mass Grading		Heap Leach	0.0	10.0	10.0	1.0	5				31764.6								
2	AGVLF - Pile Leveling - Fine Grading		Heap Leach	0.0	10.0	10.0	1.0	5				3529.4								
3	AGVLF - 20 ft face - Mass Grading		Heap Leach	0.0	1.4	2.5	1.0	100				884101.5								
4	AGVLF - 20 ft face - Fine Grading			0.0	1.4	2.5	1.0	100				98233.5								
5	AGVLF - 100 ft face - Mass Grading			0.0	1.4	2.5	1.0	100				1244119.5								
6	AGVLF - 100 ft face - Fine Grading			0.0	1.4	2.5	1.0	100				138235.5								
7	AGVLF - 200 ft face - Mass Grading			0.0	1.4	2.5	1.0	200				267529.5								
8	AGVLF - 200 ft face - Fine Grading			0.0	1.4	2.5	1.0	200				29725.5								
9	AGVLF - Topsoil			0.0	1.4	2.5	1.0	175	200	350	32.77	0					6.0	6.0	2,000	-0.6
10	AGVLF - Topsoil - Dozer Spreading			0.0	1.4	2.5	1.0	175				26557								
11	AGVLF - Topsoil - Lift 1			0.0	1.4	2.5	0.0	150	3104	175	19.57	0					6.0	6.0	3,087	3.9
12	AGVLF - Topsoil - Lift 1 - Dozer Spreading			0.0	1.4	2.5	0.0	150				23223								
13	AGVLF - Topsoil - Lift 2			0.0	1.4	2.5	0.0	141	4295	355	33.82	0					6.0	6.0	3,196	-0.7
14	AGVLF - Topsoil - Lift 2 - Dozer Spreading			0.0	1.4	2.5	0.0	141				30224								
15	AGVLF - Topsoil - Lift 3			0.0	1.4	2.5	0.0	118	5370	355	46.87	0					6.0	6.0	4,268	-3.3
16	AGVLF - Topsoil - Lift 3 - Dozer Spreading			0.0	1.4	2.5	0.0	118				40095								
17	AGVLF - Topsoil - Lift 4			0.0	1.4	2.5	0.0	207	5769	415	52.92	0					6.0	6.0	6,312	-5.5
18	AGVLF - Topsoil - Lift 4 - Dozer Spreading			0.0	1.4	2.5	0.0	207				59506								
19	AGVLF - Topsoil - Lift 5			0.0	1.4	2.5	0.0	113	7392	465	71.41	0					6.0	6.0	7,462	-6.2
20	AGVLF - Topsoil - Lift 5 - Dozer Spreading			0.0	1.4	2.5	0.0	113				60616								
21	AGVLF - Topsoil - Lift 6			0.0	1.4	2.5	0.0	133	7598	685	91.43	0					6.0	6.0	8,747	-6.8
22	AGVLF - Topsoil - Lift 6 - Dozer Spreading			0.0	1.4	2.5	0.0	133				77411								
23	AGVLF - Topsoil - Lift 7			0.0	1.4	2.5	0.0	118	1500	700	129.07	0					6.0	6.0	10,490	-6.8
24	AGVLF - Topsoil - Lift 7 - Dozer Spreading			0.0	1.4	2.5	0.0	118				104752								
25	AGVLF - Topsoil - Lift 8			0.0	1.4	2.5	0.0	200	5999	415	47.28	0					6.0	6.0	2,805	-9.1
26	AGVLF - Topsoil - Lift 8 - Dozer Spreading			0.0	1.4	2.5	0.0	200				59879								
27	AGVLF - Topsoil - Lift 9			0.0	1.4	2.5	0.0	106	4569	415	49.64	0					6.0	6.0	1,859	-8.0
28	AGVLF - Topsoil - Lift 9 - Dozer Spreading			0.0	1.4	2.5	0.0	106				41737								
29	SGVLF - 100 ft face - Mass Grading			0.0	1.4	2.5	0.0	100				1797311								
30	SGVLF - 100 ft face - Fine Grading			0.0	1.4	2.5	0.0	100				199701								
31	SGVLF - Topsoil - Lift 1			0.0	1.4	2.5	0.0	100	1333	245	16.10						6.0	6.0	6,269	7.1
32	SGVLF - Topsoil - Lift 1 - Dozer Spreading			0.0	1.4	2.5	0.0	100				13456								
33	SGVLF - Topsoil - Lift 2			0.0	1.4	2.5	0.0	100	2122	245	14.80						6.0	6.0	4,774	5.4
34	SGVLF - Topsoil - Lift 2 - Dozer Spreading			0.0	1.4	2.5	0.0	100				12686								
35	SGVLF - Topsoil - Lift 3			0.0	1.4	2.5	0.0	100	3018	245	19.50						6.0	6.0	3,710	3.9
36	SGVLF - Topsoil - Lift 3 - Dozer Spreading			0.0	1.4	2.5	0.0	100				16792								
37	SGVLF - Topsoil - Lift 4			0.0	1.4	2.5	0.0	100	3495	245	30.40						6.0	6.0	3,178	1.9
38	SGVLF - Topsoil - Lift 4 - Dozer Spreading			0.0	1.4	2.5	0.0	100				25752								
39	SGVLF - Topsoil - Lift 5			0.0	1.4	2.5	0.0	100	7354	245	47.90						6.0	6.0	2,868	-2.0
40	SGVLF - Topsoil - Lift 5 - Dozer Spreading			0.0	1.4	2.5	0.0	100				41227								
41	SGVLF - Topsoil - Lift 6			0.0	1.4	2.5	0.0	100	9098	245	83.80						6.0	6.0	3,821	-4.2
42	SGVLF - Topsoil - Lift 6 - Dozer Spreading			0.0	1.4	2.5	0.0	100				70800								
43	SGVLF - Topsoil - Lift 7			0.0	1.4	2.5	0.0	100	10110	245	63.80						6.0	6.0	2,908	-8.9
44	SGVLF - Topsoil - Lift 7 - Dozer Spreading			0.0	1.4	2.5	0.0	100				55023								
45	SGVLF - Topsoil - Lift 8			0.0	1.4	2.5	0.0	100	9370	245	55.70						6.0	6.0	4,903	-7.3
46	SGVLF - Topsoil - Lift 8 - Dozer Spreading			0.0	1.4	2.5	0.0	100				48228								
47	SGVLF - Topsoil - Lift 9			0.0	1.4	2.5	0.0	100	8446	245	49.99						6.0	6.0	5,285	-8.7
48	SGVLF - Topsoil - Lift 9 - Dozer Spreading			0.0	1.4	2.5	0.0	100				43297								
49	SGVLF - Topsoil - Lift 10			0.0	1.4	2.5	0.0	100	7206	245	44.70						6.0	6.0	7,928	-7.1
50	SGVLF - Topsoil - Lift 10 - Dozer Spreading			0.0	1.4	2.5	0.0	100				38594								
51	SGVLF - Topsoil - Lift 11			0.0	1.4	2.5	0.0	100	6573	245	44.90						6.0	6.0	7,725	-8.5
52	SGVLF - Topsoil - Lift 11 - Dozer Spreading			0.0	1.4	2.5	0.0	100				38532								
53	SGVLF - Topsoil - Lift 12			0.0	1.4	2.5	0.0	100	2012	245	33.10						6.0	6.0	8,359	-9.1
54	SGVLF - Topsoil - Lift 12 - Dozer Spreading			0.0	1.4	2.5	0.0	100				27409								
55	SGVLF - Topsoil - Lift 13			0.0	1.4	2.5	0.0	100	1500	245	21.49						6.0	6.0	9,638	-8.4
56	SGVLF - Topsoil - Lift 13 - Dozer Spreading			0.0	1.4	2.5	0.0	100				17859								

Notes:
1. All Physical parameters must be input even if manual overrides for volume or area are used.
2. If Slope from facility to borrow source is >20, downhill travel time may be underestimated due to limitation of uphill travel time curves and downhill speed tables from CAT Handbook (see Productivty Sheet)

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Closure Cost Estimate
Heap Leach

Project Name: AM-13 BP2020 Financial warranty calculation - Reclamation Plan
Date of Submittal: December 2019
File Name: SRCE_AM13_FW_V4.xlsm
Model Version: Version 1.4.1
Cost Data: User Data
Cost Data File: SRCE_Cost_data-USR_1_12_DRMS_BONDING.xlsm
Cost Estimate Type: Surety Cost Basis: CC&V Bonding

Heap Leach Pads - Cost Summary	Labor	Equipment	Materials	Totals
Drain Installation	$0	$0	$0	$0
Grading Costs	$373,635	$826,387	N/A	$1,200,022
Cover Placement Cost	$0	$0	N/A	$0
Topsoil Placement Cost	$679,123	$1,737,669	N/A	$2,416,792
Ripping/Scarifying Cost	$58,580	$97,998	N/A	$156,578
Subtotal Earthworks	**$1,111,338**	**$2,662,054**	**$0**	**$3,773,392**
Revegetation Cost	$418,079	$221,317	$1,259,183	$1,898,579
TOTALS	**$1,529,417**	**$2,883,371**	**$1,259,183**	**$5,671,971**

Heap Leach Pads - User Input (cont.) — You must fill in ALL green cells and relevant blue cells in this section for each heap, lift or heap category

		Grading				Cover		Growth Media		Revegetation								
	Description (required)	Regrading Material Condition (select)	Regrading Material Type (select)	Regrading Equipment Fleet (select)	Slot/ Side-by-Side (select)	Cover Material Type (select)	Cover Placement Equipment Fleet (select)	Growth Media Material Type (select)	Growth Media Equipment Fleet (select)	Seed Mix Slopes (select)	Seed Mix Flat Areas (select)	Mulch Slopes (select)	Mulch Flat Areas (select)	Fertilizer Slopes (select)	Fertilizer Flat Areas (select)	Slope Scarify/ Rip? (select)	Flat Area Scarify/ Rip? (select)	Scarifying/ Ripping Fleet (select)
1	AGVLF - Pile Leveling - Mass Grading	0.6	Granite - broken	Large	Yes													
2	AGVLF - Pile Leveling - Fine Grading	0.6	Granite - broken	Small	No													
3	AGVLF - 20 ft face - Mass Grading	1	Granite - broken	Large	Yes													
4	AGVLF - 20 ft face - Fine Grading	1	Granite - broken	Small	No													
5	AGVLF - 100 ft face - Mass Grading	1	Granite - broken	Large	Yes													
6	AGVLF - 100 ft face - Fine Grading	1	Granite - broken	Small	No													
7	AGVLF - 200 ft face - Mass Grading	1	Granite - broken	Large	Yes													
8	AGVLF - 200 ft face - Fine Grading	1	Granite - broken	Small	No													
9	AGVLF - Topsoil							Topsoil	Med Truck	User Mix 1	User Mix 1	Hydro Mulch	Hydro Mulch	Chemical	Chemical	Yes	Yes	Small Dozer
10	AGVLF - Topsoil - Dozer Spreading	1.2	Topsoil	Small	No													
11	AGVLF - Topsoil - Lift 1							Topsoil	Med Truck	User Mix 1	User Mix 1	Hydro Mulch	Hydro Mulch	Chemical	Chemical	Yes	Yes	Small Dozer
12	AGVLF - Topsoil - Lift 1 - Dozer Spreading	1.2	Topsoil	Small	No													
13	AGVLF - Topsoil - Lift 2							Topsoil	Med Truck	User Mix 1	User Mix 1	Hydro Mulch	Hydro Mulch	Chemical	Chemical	Yes	Yes	Small Dozer
14	AGVLF - Topsoil - Lift 2 - Dozer Spreading	1.2	Topsoil	Small	No													
15	AGVLF - Topsoil - Lift 3							Topsoil	Med Truck	User Mix 1	User Mix 1	Hydro Mulch	Hydro Mulch	Chemical	Chemical	Yes	Yes	Small Dozer
16	AGVLF - Topsoil - Lift 3 - Dozer Spreading	1.2	Topsoil	Small	No													
17	AGVLF - Topsoil - Lift 4							Topsoil	Med Truck	User Mix 1	User Mix 1	Hydro Mulch	Hydro Mulch	Chemical	Chemical	Yes	Yes	Small Dozer
18	AGVLF - Topsoil - Lift 4 - Dozer Spreading	1.2	Topsoil	Small	No													
19	AGVLF - Topsoil - Lift 5							Topsoil	Med Truck	User Mix 1	User Mix 1	Hydro Mulch	Hydro Mulch	Chemical	Chemical	Yes	Yes	Small Dozer
20	AGVLF - Topsoil - Lift 5 - Dozer Spreading	1.2	Topsoil	Small	No													
21	AGVLF - Topsoil - Lift 6							Topsoil	Med Truck	User Mix 1	User Mix 1	Hydro Mulch	Hydro Mulch	Chemical	Chemical	Yes	Yes	Small Dozer
22	AGVLF - Topsoil - Lift 6 - Dozer Spreading	1.2	Topsoil	Small	No													
23	AGVLF - Topsoil - Lift 7							Topsoil	Med Truck	User Mix 1	User Mix 1	Hydro Mulch	Hydro Mulch	Chemical	Chemical	Yes	Yes	Small Dozer
24	AGVLF - Topsoil - Lift 7 - Dozer Spreading	1.2	Topsoil	Small	No													
25	AGVLF - Topsoil - Lift 8							Topsoil	Med Truck	User Mix 1	User Mix 1	Hydro Mulch	Hydro Mulch	Chemical	Chemical	Yes	Yes	Small Dozer
26	AGVLF - Topsoil - Lift 8 - Dozer Spreading	1.2	Topsoil	Small	No													
27	AGVLF - Topsoil - Lift 9							Topsoil	Med Truck	User Mix 1	User Mix 1	Hydro Mulch	Hydro Mulch	Chemical	Chemical	Yes	Yes	Small Dozer
28	AGVLF - Topsoil - Lift 9 - Dozer Spreading	1.2	Topsoil	Small	No													
29	SGVLF - 100 ft face - Mass Grading	1	Granite - broken	Large	Yes													
30	SGVLF - 100 ft face - Fine Grading	1	Granite - broken	Small	No													
31	SGVLF - Topsoil - Lift 1							Topsoil	Med Truck	User Mix 1	User Mix 1	Hydro Mulch	Hydro Mulch	Chemical	Chemical	Yes	Yes	Small Dozer
32	SGVLF - Topsoil - Lift 1 - Dozer Spreading	1.2	Topsoil	Small	No													
33	SGVLF - Topsoil - Lift 2							Topsoil	Med Truck	User Mix 1	User Mix 1	Hydro Mulch	Hydro Mulch	Chemical	Chemical	Yes	Yes	Small Dozer
34	SGVLF - Topsoil - Lift 2 - Dozer Spreading	1.2	Topsoil	Small	No													
35	SGVLF - Topsoil - Lift 3							Topsoil	Med Truck	User Mix 1	User Mix 1	Hydro Mulch	Hydro Mulch	Chemical	Chemical	Yes	Yes	Small Dozer
36	SGVLF - Topsoil - Lift 3 - Dozer Spreading	1.2	Topsoil	Small	No													
37	SGVLF - Topsoil - Lift 4							Topsoil	Med Truck	User Mix 1	User Mix 1	Hydro Mulch	Hydro Mulch	Chemical	Chemical	Yes	Yes	Small Dozer
38	SGVLF - Topsoil - Lift 4 - Dozer Spreading	1.2	Topsoil	Small	No													
39	SGVLF - Topsoil - Lift 5							Topsoil	Med Truck	User Mix 1	User Mix 1	Hydro Mulch	Hydro Mulch	Chemical	Chemical	Yes	Yes	Small Dozer
40	SGVLF - Topsoil - Lift 5 - Dozer Spreading	1.2	Topsoil	Small	No													
41	SGVLF - Topsoil - Lift 6							Topsoil	Med Truck	User Mix 1	User Mix 1	Hydro Mulch	Hydro Mulch	Chemical	Chemical	Yes	Yes	Small Dozer
42	SGVLF - Topsoil - Lift 6 - Dozer Spreading	1.2	Topsoil	Small	No													
43	SGVLF - Topsoil - Lift 7							Topsoil	Med Truck	User Mix 1	User Mix 1	Hydro Mulch	Hydro Mulch	Chemical	Chemical	Yes	Yes	Small Dozer
44	SGVLF - Topsoil - Lift 7 - Dozer Spreading	1.2	Topsoil	Small	No													
45	SGVLF - Topsoil - Lift 8							Topsoil	Med Truck	User Mix 1	User Mix 1	Hydro Mulch	Hydro Mulch	Chemical	Chemical	Yes	Yes	Small Dozer
46	SGVLF - Topsoil - Lift 8 - Dozer Spreading	1.2	Topsoil	Small	No													
47	SGVLF - Topsoil - Lift 9							Topsoil	Med Truck	User Mix 1	User Mix 1	Hydro Mulch	Hydro Mulch	Chemical	Chemical	Yes	Yes	Small Dozer
48	SGVLF - Topsoil - Lift 9 - Dozer Spreading	1.2	Topsoil	Small	No													
49	SGVLF - Topsoil - Lift 10							Topsoil	Med Truck	User Mix 1	User Mix 1	Hydro Mulch	Hydro Mulch	Chemical	Chemical	Yes	Yes	Small Dozer
50	SGVLF - Topsoil - Lift 10 - Dozer Spreading	1.2	Topsoil	Small	No													
51	SGVLF - Topsoil - Lift 11							Topsoil	Med Truck	User Mix 1	User Mix 1	Hydro Mulch	Hydro Mulch	Chemical	Chemical	Yes	Yes	Small Dozer
52	SGVLF - Topsoil - Lift 11 - Dozer Spreading	1.2	Topsoil	Small	No													
53	SGVLF - Topsoil - Lift 12							Topsoil	Med Truck	User Mix 1	User Mix 1	Hydro Mulch	Hydro Mulch	Chemical	Chemical	Yes	Yes	Small Dozer
54	SGVLF - Topsoil - Lift 12 - Dozer Spreading	1.2	Topsoil	Small	No													
55	SGVLF - Topsoil - Lift 13							Topsoil	Med Truck	User Mix 1	User Mix 1	Hydro Mulch	Hydro Mulch	Chemical	Chemical	Yes	Yes	Small Dozer
56	SGVLF - Topsoil - Lift 13 - Dozer Spreading	1.2	Topsoil	Small	No													

Notes:

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Closure Cost Estimate
Heap Leach

Project Name: AM-13 BP2020 Financial warranty calculation - Reclamation Plan
Date of Submittal: December 2019
File Name: SRCE_AM13_FW_V4.xlsm
Model Version: Version 1.4.1
Cost Data: User Data
Cost Data File: SRCE_Cost_data-USR_1_12_DRMS_BONDING.xlsm
Cost Estimate Type: Surety Cost Basis: CC&V Bonding

Heap Leach Pads - Cost Summary

	Labor	Equipment	Materials	Totals
Drain Installation	$0	$0	$0	$0
Grading Costs	$373,635	$826,387	N/A	$1,200,022
Cover Placement Cost	$0	$0	N/A	$0
Topsoil Placement Cost	$679,123	$1,737,669	N/A	$2,416,792
Ripping/Scarifying Cost	$58,580	$97,998	N/A	$156,578
Subtotal Earthworks	**$1,111,338**	**$2,662,054**	**$0**	**$3,773,392**
Revegetation Cost	$418,079	$221,317	$1,259,183	$1,898,579
TOTALS	**$1,529,417**	**$2,883,371**	**$1,259,183**	**$5,671,971**

1. Material Types are used for density correction based on material densities in Caterpillar Performance Handbook material density table

Heap Leach Pads - User Input (cont.)

		Solution Collection Ditch Fill							Piping			
	Description (required)	Collection Ditch Length ft	Collection Ditch Top Width ft	Collection Ditch Depth ft	Volume (if calculated elsewhere) cy	Distance from Borrow ft	Slope to Borrow % grade	Drain Rock Equipment Fleet (select)	Solid Pipe Length ft	Solid Pipe Type (select)	Drainage Pipe Length ft	Drainage Pipe Type (select)
1	**AGVLF - Pile Leveling - Mass Grading**											
2	**AGVLF - Pile Leveling - Fine Grading**											
3	**AGVLF - 20 ft face - Mass Grading**											
4	**AGVLF - 20 ft face - Fine Grading**											
5	**AGVLF - 100 ft face - Mass Grading**											
6	**AGVLF - 100 ft face - Fine Grading**											
7	**AGVLF - 200 ft face - Mass Grading**											
8	**AGVLF - 200 ft face - Fine Grading**											
9	**AGVLF - Topsoil**											
10	**AGVLF - Topsoil - Dozer Spreading**											
11	**AGVLF - Topsoil - Lift 1**											
12	**AGVLF - Topsoil - Lift 1 - Dozer Spreading**											
13	**AGVLF - Topsoil - Lift 2**											
14	**AGVLF - Topsoil - Lift 2 - Dozer Spreading**											
15	**AGVLF - Topsoil - Lift 3**											
16	**AGVLF - Topsoil - Lift 3 - Dozer Spreading**											
17	**AGVLF - Topsoil - Lift 4**											
18	**AGVLF - Topsoil - Lift 4 - Dozer Spreading**											
19	**AGVLF - Topsoil - Lift 5**											
20	**AGVLF - Topsoil - Lift 5 - Dozer Spreading**											
21	**AGVLF - Topsoil - Lift 6**											
22	**AGVLF - Topsoil - Lift 6 - Dozer Spreading**											
23	**AGVLF - Topsoil - Lift 7**											
24	**AGVLF - Topsoil - Lift 7 - Dozer Spreading**											
25	**AGVLF - Topsoil - Lift 8**											
26	**AGVLF - Topsoil - Lift 8 - Dozer Spreading**											
27	**AGVLF - Topsoil - Lift 9**											
28	**AGVLF - Topsoil - Lift 9 - Dozer Spreading**											
29	**SGVLF - 100 ft face - Mass Grading**											
30	**SGVLF - 100 ft face - Fine Grading**											
31	**SGVLF - Topsoil - Lift 1**											
32	**SGVLF - Topsoil - Lift 1 - Dozer Spreading**											
33	**SGVLF - Topsoil - Lift 2**											
34	**SGVLF - Topsoil - Lift 2 - Dozer Spreading**											
35	**SGVLF - Topsoil - Lift 3**											
36	**SGVLF - Topsoil - Lift 3 - Dozer Spreading**											
37	**SGVLF - Topsoil - Lift 4**											
38	**SGVLF - Topsoil - Lift 4 - Dozer Spreading**											
39	**SGVLF - Topsoil - Lift 5**											
40	**SGVLF - Topsoil - Lift 5 - Dozer Spreading**											
41	**SGVLF - Topsoil - Lift 6**											
42	**SGVLF - Topsoil - Lift 6 - Dozer Spreading**											
43	**SGVLF - Topsoil - Lift 7**											
44	**SGVLF - Topsoil - Lift 7 - Dozer Spreading**											
45	**SGVLF - Topsoil - Lift 8**											
46	**SGVLF - Topsoil - Lift 8 - Dozer Spreading**											
47	**SGVLF - Topsoil - Lift 9**											
48	**SGVLF - Topsoil - Lift 9 - Dozer Spreading**											
49	**SGVLF - Topsoil - Lift 10**											
50	**SGVLF - Topsoil - Lift 10 - Dozer Spreading**											
51	**SGVLF - Topsoil - Lift 11**											
52	**SGVLF - Topsoil - Lift 11 - Dozer Spreading**											
53	**SGVLF - Topsoil - Lift 12**											
54	**SGVLF - Topsoil - Lift 12 - Dozer Spreading**											
55	**SGVLF - Topsoil - Lift 13**											
56	**SGVLF - Topsoil - Lift 13 - Dozer Spreading**											

Notes:

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Closure Cost Estimate
Heap Leach

Project Name: AM-13 BP2020 Financial warranty calculation - Reclamation Plan
Date of Submittal: December 2019
File Name: SRCE_AM13_FW_V4.xlsm
Model Version: Version 1.4.1
Cost Data: User Data
Cost Data File: SRCE_Cost_data-USR_1_12_DRMS_BONDING.xlsm
Cost Estimate Type: Surety Cost Basis: CC&V Bonding

Heap Leach Pads - Cost Summary	Labor	Equipment	Materials	Totals
Drain Installation	$0	$0	$0	$0
Grading Costs	$373,635	$826,387	N/A	$1,200,022
Cover Placement Cost	$0	$0	N/A	$0
Topsoil Placement Cost	$679,123	$1,737,669	N/A	$2,416,792
Ripping/Scarifying Cost	$58,580	$97,998	N/A	$156,578
Subtotal Earthworks	**$1,111,338**	**$2,662,054**	**$0**	**$3,773,392**
Revegetation Cost	$418,079	$221,317	$1,259,183	$1,898,579
TOTALS	**$1,529,417**	**$2,883,371**	**$1,259,183**	**$5,671,971**

Heap Leach Pads - Calculations

Regrading Volume Calculation

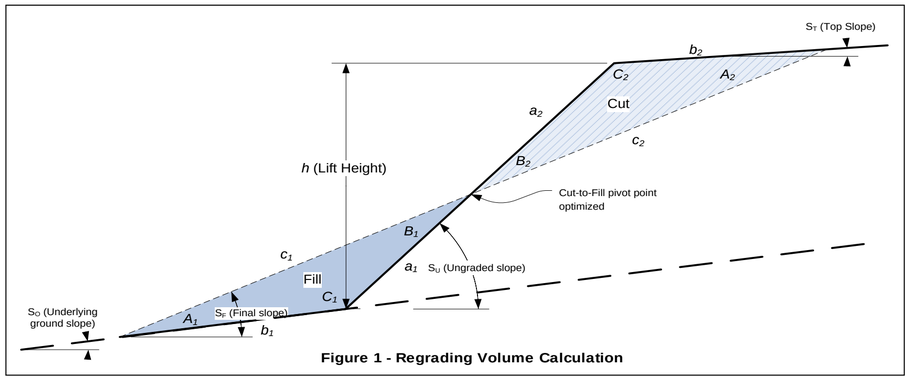


Figure 1 - Regrading Volume Calculation

Regrading Push Distance Calculation

dozing distance: based on 2/3 final cut slope + 2/3 final fill slope (minimum = 50 ft)

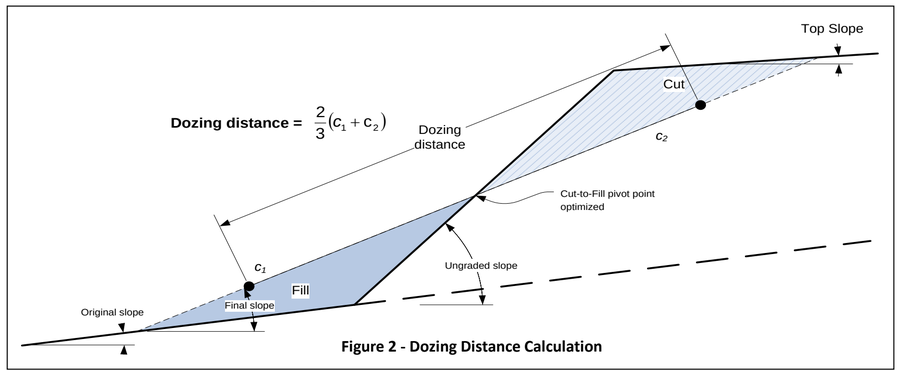


Figure 2 - Dozing Distance Calculation

Ripping/Scarifying Calculations

Minimum 1 hr ripping/scarifying per area

Slopes:
Number of passes = Final slope length ÷ Grader width
Travel distance = Number of passes x Mid-bench length
Total hours = (Travel distance ÷ Grader productivity) + (Number of passes x Grader maneuver time)

Flat Areas:
Flat area width = Final flat area ÷ Average long dimensions
Number of passes = Flat area width ÷ Grader width
Travel distance = Number of passes x Average long dimensions
Total hours = (Travel distance ÷ Grader productivity) + (Number of passes x Grader maneuver time)

Revegetation: Minimum 1 acre revegetation crew time per area

Final Slope Area and Footprint Area Calculations

Final slope length = $c_1 + c_2$
Final slope area = Final slope length *x* Mid-bench Length
Final lift height (h_{final}) = ($c_1 + c_2$) *x* sin(Final slope)
Final slope width (d) = ($c_1 + c_2$) *x* cos(Final slope)
Final slope footprint = Final slope width *x* Mid-bench Length
Final flat area = Final footprint – Final slope footprint

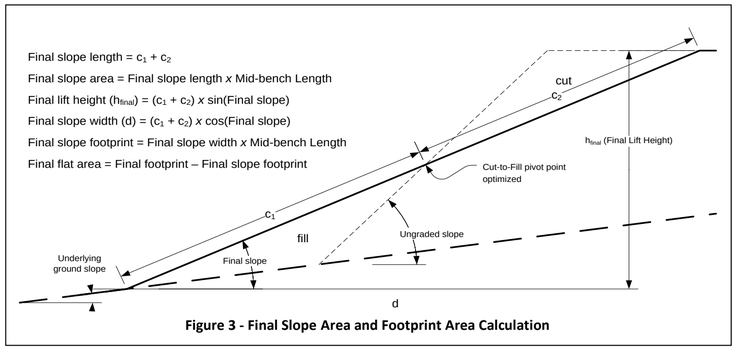


Figure 3 - Final Slope Area and Footprint Area Calculation

Solution Collection Ditch Calculations

Use when existing heap material is not suitable drain rock
Assume to be constructed in existing solution channels
Assume 2H:1V ditch sideslopes
Drain rock assumed to be Gravel - Dry at 2,550 lb/cy (1,510 kg/m3) from CAT Handbook 35th Ed.

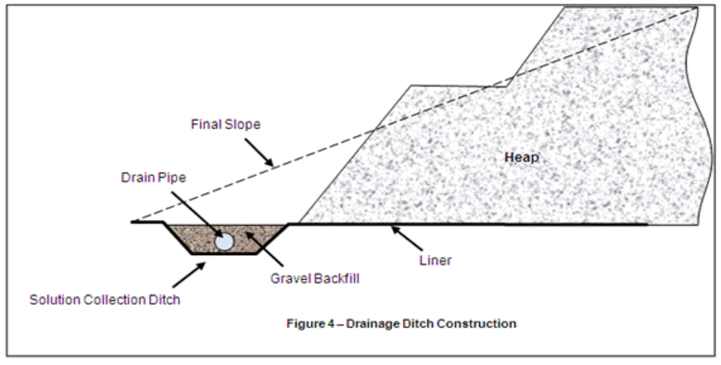


Figure 4 – Drainage Ditch Construction

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Closure Cost Estimate
Heap Leach

Project Name: AM-13 BP2020 Financial warranty calculation - Reclamation Plan
Date of Submittal: December 2019
File Name: SRCE_AM13_FW_V4.xlsm
Model Version: Version 1.4.1
Cost Data: User Data
Cost Data File: SRCE_Cost_data-USR_1_12_DRMS_BONDING.xlsm
Cost Estimate Type: Surety Cost Basis: CC&V Bonding

Heap Leach Pads - Cost Summary

	Labor	Equipment	Materials	Totals
Drain Installation	$0	$0	$0	$0
Grading Costs	$373,635	$826,387	N/A	$1,200,022
Cover Placement Cost	$0	$0	N/A	$0
Topsoil Placement Cost	$679,123	$1,737,669	N/A	$2,416,792
Ripping/Scarifying Cost	$58,580	$97,998	N/A	$156,578
Subtotal Earthworks	**$1,111,338**	**$2,662,054**	**$0**	**$3,773,392**
Revegetation Cost	$418,079	$221,317	$1,259,183	$1,898,579
TOTALS	**$1,529,417**	**$2,883,371**	**$1,259,183**	**$5,671,971**

Heap Leach Pad - Drainage Channel Fill & Drainage Pipe Installation

		Drain Rock Placement								Drainpipe Installation				
	Description (required)	Drain Rock Volume cy	Drain Rock Fleet	Fleet Productivity LCY/hr	Number of Trucks/ Scrapers	Total Fleet Hours hrs	Drainage Labor Cost $	Drainage Equipment Cost $	Total Drainage Cost $	Piping Crew Hours hrs	Piping Labor Cost $	Piping Equipment Cost $	Piping Material Cost $	Total Pipe Installation Cost $
1	**AGVLF - Pile Leveling - Mass Grading**	0					$0	$0	$0		$0	$0	$0	$0
2	**AGVLF - Pile Leveling - Fine Grading**	0					$0	$0	$0		$0	$0	$0	$0
3	**AGVLF - 20 ft face - Mass Grading**	0					$0	$0	$0		$0	$0	$0	$0
4	**AGVLF - 20 ft face - Fine Grading**	0					$0	$0	$0		$0	$0	$0	$0
5	**AGVLF - 100 ft face - Mass Grading**	0					$0	$0	$0		$0	$0	$0	$0
6	**AGVLF - 100 ft face - Fine Grading**	0					$0	$0	$0		$0	$0	$0	$0
7	**AGVLF - 200 ft face - Mass Grading**	0					$0	$0	$0		$0	$0	$0	$0
8	**AGVLF - 200 ft face - Fine Grading**	0					$0	$0	$0		$0	$0	$0	$0
9	**AGVLF - Topsoil**	0					$0	$0	$0		$0	$0	$0	$0
10	**AGVLF - Topsoil - Dozer Spreading**	0					$0	$0	$0		$0	$0	$0	$0
11	**AGVLF - Topsoil - Lift 1**	0					$0	$0	$0		$0	$0	$0	$0
12	**AGVLF - Topsoil - Lift 1 - Dozer Spreading**	0					$0	$0	$0		$0	$0	$0	$0
13	**AGVLF - Topsoil - Lift 2**	0					$0	$0	$0		$0	$0	$0	$0
14	**AGVLF - Topsoil - Lift 2 - Dozer Spreading**	0					$0	$0	$0		$0	$0	$0	$0
15	**AGVLF - Topsoil - Lift 3**	0					$0	$0	$0		$0	$0	$0	$0
16	**AGVLF - Topsoil - Lift 3 - Dozer Spreading**	0					$0	$0	$0		$0	$0	$0	$0
17	**AGVLF - Topsoil - Lift 4**	0					$0	$0	$0		$0	$0	$0	$0
18	**AGVLF - Topsoil - Lift 4 - Dozer Spreading**	0					$0	$0	$0		$0	$0	$0	$0
19	**AGVLF - Topsoil - Lift 5**	0					$0	$0	$0		$0	$0	$0	$0
20	**AGVLF - Topsoil - Lift 5 - Dozer Spreading**	0					$0	$0	$0		$0	$0	$0	$0
21	**AGVLF - Topsoil - Lift 6**	0					$0	$0	$0		$0	$0	$0	$0
22	**AGVLF - Topsoil - Lift 6 - Dozer Spreading**	0					$0	$0	$0		$0	$0	$0	$0
23	**AGVLF - Topsoil - Lift 7**	0					$0	$0	$0		$0	$0	$0	$0
24	**AGVLF - Topsoil - Lift 7 - Dozer Spreading**	0					$0	$0	$0		$0	$0	$0	$0
25	**AGVLF - Topsoil - Lift 8**	0					$0	$0	$0		$0	$0	$0	$0
26	**AGVLF - Topsoil - Lift 8 - Dozer Spreading**	0					$0	$0	$0		$0	$0	$0	$0
27	**AGVLF - Topsoil - Lift 9**	0					$0	$0	$0		$0	$0	$0	$0
28	**AGVLF - Topsoil - Lift 9 - Dozer Spreading**	0					$0	$0	$0		$0	$0	$0	$0
29	**SGVLF - 100 ft face - Mass Grading**	0					$0	$0	$0		$0	$0	$0	$0
30	**SGVLF - 100 ft face - Fine Grading**	0					$0	$0	$0		$0	$0	$0	$0
31	**SGVLF - Topsoil - Lift 1**	0					$0	$0	$0		$0	$0	$0	$0
32	**SGVLF - Topsoil - Lift 1 - Dozer Spreading**	0					$0	$0	$0		$0	$0	$0	$0
33	**SGVLF - Topsoil - Lift 2**	0					$0	$0	$0		$0	$0	$0	$0
34	**SGVLF - Topsoil - Lift 2 - Dozer Spreading**	0					$0	$0	$0		$0	$0	$0	$0
35	**SGVLF - Topsoil - Lift 3**	0					$0	$0	$0		$0	$0	$0	$0
36	**SGVLF - Topsoil - Lift 3 - Dozer Spreading**	0					$0	$0	$0		$0	$0	$0	$0
37	**SGVLF - Topsoil - Lift 4**	0					$0	$0	$0		$0	$0	$0	$0
38	**SGVLF - Topsoil - Lift 4 - Dozer Spreading**	0					$0	$0	$0		$0	$0	$0	$0
39	**SGVLF - Topsoil - Lift 5**	0					$0	$0	$0		$0	$0	$0	$0
40	**SGVLF - Topsoil - Lift 5 - Dozer Spreading**	0					$0	$0	$0		$0	$0	$0	$0
41	**SGVLF - Topsoil - Lift 6**	0					$0	$0	$0		$0	$0	$0	$0
42	**SGVLF - Topsoil - Lift 6 - Dozer Spreading**	0					$0	$0	$0		$0	$0	$0	$0
43	**SGVLF - Topsoil - Lift 7**	0					$0	$0	$0		$0	$0	$0	$0
44	**SGVLF - Topsoil - Lift 7 - Dozer Spreading**	0					$0	$0	$0		$0	$0	$0	$0
45	**SGVLF - Topsoil - Lift 8**	0					$0	$0	$0		$0	$0	$0	$0
46	**SGVLF - Topsoil - Lift 8 - Dozer Spreading**	0					$0	$0	$0		$0	$0	$0	$0
47	**SGVLF - Topsoil - Lift 9**	0					$0	$0	$0		$0	$0	$0	$0
48	**SGVLF - Topsoil - Lift 9 - Dozer Spreading**	0					$0	$0	$0		$0	$0	$0	$0
49	**SGVLF - Topsoil - Lift 10**	0					$0	$0	$0		$0	$0	$0	$0
50	**SGVLF - Topsoil - Lift 10 - Dozer Spreading**	0					$0	$0	$0		$0	$0	$0	$0
51	**SGVLF - Topsoil - Lift 11**	0					$0	$0	$0		$0	$0	$0	$0
52	**SGVLF - Topsoil - Lift 11 - Dozer Spreading**	0					$0	$0	$0		$0	$0	$0	$0
53	**SGVLF - Topsoil - Lift 12**	0					$0	$0	$0		$0	$0	$0	$0
54	**SGVLF - Topsoil - Lift 12 - Dozer Spreading**	0					$0	$0	$0		$0	$0	$0	$0
55	**SGVLF - Topsoil - Lift 13**	0					$0	$0	$0		$0	$0	$0	$0
56	**SGVLF - Topsoil - Lift 13 - Dozer Spreading**	0					$0	$0	$0		$0	$0	$0	$0
						0	**$0**	**$0**	**$0**		**$0**	**$0**	**$0**	**$0**

Heap Leach Pad - Regrading Costs

Productivity = Dozer Productivity x Grade Correction x Density Correction x Operator (0.75) x Material x Visibility x Job Efficiency (0.83) x (Slot/Side-by-Side) x (Altitude Deration)

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Closure Cost Estimate
Heap Leach

Project Name: AM-13 BP2020 Financial warranty calculation - Reclamation Plan
Date of Submittal: December 2019
File Name: SRCE_AM13_FW_V4.xlsm
Model Version: Version 1.4.1
Cost Data: User Data
Cost Data File: SRCE_Cost_data-USR_1_12_DRMS_BONDING.xlsm
Cost Estimate Type: Surety Cost Basis: CC&V Bonding

Heap Leach Pads - Cost Summary

	Labor	Equipment	Materials	Totals
Drain Installation	$0	$0	$0	$0
Grading Costs	$373,635	$826,387	N/A	$1,200,022
Cover Placement Cost	$0	$0	N/A	$0
Topsoil Placement Cost	$679,123	$1,737,669	N/A	$2,416,792
Ripping/Scarifying Cost	$58,580	$97,998	N/A	$156,578
Subtotal Earthworks	**$1,111,338**	**$2,662,054**	**$0**	**$3,773,392**
Revegetation Cost	$418,079	$221,317	$1,259,183	$1,898,579
TOTALS	**$1,529,417**	**$2,883,371**	**$1,259,183**	**$5,671,971**

	Description (required)	Regrading Volume cy	Dozing Distance (see above) ft	Regrading Fleet	Uncorrected Dozer Productivity cy/hr	Grade Correction	Dozing Material	Density Correction	Side-by-Side or Slot Dozing	Total Hourly Productivity cy/hr	Total Dozer Hours hr	Total Labor Cost $	Total Equipment Cost $	Total Regrading Cost $
1	**AGVLF - Pile Leveling - Mass Grading**	31,765	50	D10R	2,934	1.2	0.6	0.82	1.2	1,255	25	$1,399	$3,609	$5,008
2	**AGVLF - Pile Leveling - Fine Grading**	3,529	50	D7R	1,076	1.2	0.6	0.82	1.0	395	9	$504	$842	$1,346
3	**AGVLF - 20 ft face - Mass Grading**	884,102	147	D10R	1,173	1.6	1.0	0.82	1.2	1,115	793	$44,368	$114,470	$158,838
4	**AGVLF - 20 ft face - Fine Grading**	98,234	147	D7R	464	1.6	1.0	0.82	1.0	379	259	$14,491	$24,242	$38,733
5	**AGVLF - 100 ft face - Mass Grading**	1,244,120	147	D10R	1,173	1.6	1.0	0.82	1.2	1,115	1,116	$62,440	$161,095	$223,535
6	**AGVLF - 100 ft face - Fine Grading**	138,236	147	D7R	464	1.6	1.0	0.82	1.0	379	365	$20,422	$34,164	$54,586
7	**AGVLF - 200 ft face - Mass Grading**	267,530	293	D10R	652	1.6	1.0	0.82	1.2	620	431	$24,114	$62,215	$86,329
8	**AGVLF - 200 ft face - Fine Grading**	29,726	293	D7R	271	1.6	1.0	0.82	1.0	221	135	$7,553	$12,636	$20,189
9	**AGVLF - Topsoil**	0		Dozing Material!								$0	$0	$0
10	**AGVLF - Topsoil - Dozer Spreading**	26,557	257	D7R	300	1.6	1.2	1.44	1.0	516	51	$2,853	$4,774	$7,627
11	**AGVLF - Topsoil - Lift 1**	0		Dozing Material!								$0	$0	$0
12	**AGVLF - Topsoil - Lift 1 - Dozer Spreading**	23,223	219	D7R	340	1.6	1.2	1.44	1.0	585	40	$2,238	$3,744	$5,982
13	**AGVLF - Topsoil - Lift 2**	0		Dozing Material!								$0	$0	$0
14	**AGVLF - Topsoil - Lift 2 - Dozer Spreading**	30,224	206	D7R	357	1.6	1.2	1.44	1.0	614	49	$2,742	$4,586	$7,328
15	**AGVLF - Topsoil - Lift 3**	0		Dozing Material!								$0	$0	$0
16	**AGVLF - Topsoil - Lift 3 - Dozer Spreading**	40,095	172	D7R	411	1.6	1.2	1.44	1.0	707	57	$3,189	$5,335	$8,524
17	**AGVLF - Topsoil - Lift 4**	0		Dozing Material!								$0	$0	$0
18	**AGVLF - Topsoil - Lift 4 - Dozer Spreading**	59,506	302	D7R	265	1.6	1.2	1.44	1.0	456	130	$7,274	$12,168	$19,442
19	**AGVLF - Topsoil - Lift 5**	0		Dozing Material!								$0	$0	$0
20	**AGVLF - Topsoil - Lift 5 - Dozer Spreading**	60,616	165	D7R	424	1.6	1.2	1.44	1.0	730	83	$4,644	$7,769	$12,413
21	**AGVLF - Topsoil - Lift 6**	0		Dozing Material!								$0	$0	$0
22	**AGVLF - Topsoil - Lift 6 - Dozer Spreading**	77,411	194	D7R	374	1.6	1.2	1.44	1.0	644	120	$6,714	$11,232	$17,946
23	**AGVLF - Topsoil - Lift 7**	0		Dozing Material!								$0	$0	$0
24	**AGVLF - Topsoil - Lift 7 - Dozer Spreading**	104,752	172	D7R	411	1.6	1.2	1.44	1.0	707	148	$8,281	$13,853	$22,134
25	**AGVLF - Topsoil - Lift 8**	0		Dozing Material!								$0	$0	$0
26	**AGVLF - Topsoil - Lift 8 - Dozer Spreading**	59,879	292	D7R	272	1.6	1.2	1.44	1.0	468	128	$7,162	$11,981	$19,143
27	**AGVLF - Topsoil - Lift 9**	0		Dozing Material!								$0	$0	$0
28	**AGVLF - Topsoil - Lift 9 - Dozer Spreading**	41,737	155	D7R	445	1.6	1.2	1.44	1.0	766	54	$3,021	$5,054	$8,075
29	**SGVLF - 100 ft face - Mass Grading**	1,797,311	146	D10R	1,180	1.6	1.0	0.82	1.2	1,122	1,602	$89,632	$231,249	$320,881
30	**SGVLF - 100 ft face - Fine Grading**	199,701	146	D7R	467	1.6	1.0	0.82	1.0	381	524	$29,318	$49,046	$78,364
31	**SGVLF - Topsoil - Lift 1**	67,884	146	Dozing Material!	Select Fleet	1.6	Dozing Materia	ozing Materia	1.0	Select Fleet	Select Fleet	Select Fleet	Select Fleet	Select Fleet
32	**SGVLF - Topsoil - Lift 1 - Dozer Spreading**	13,456	146	D7R	467	1.6	1.2	1.44	1.0	804	17	$951	$1,591	$2,542
33	**SGVLF - Topsoil - Lift 2**	108,065	146	Dozing Material!	Select Fleet	1.6	Dozing Materia	ozing Materia	1.0	Select Fleet	Select Fleet	Select Fleet	Select Fleet	Select Fleet
34	**SGVLF - Topsoil - Lift 2 - Dozer Spreading**	12,686	146	D7R	467	1.6	1.2	1.44	1.0	804	16	$895	$1,498	$2,393
35	**SGVLF - Topsoil - Lift 3**	153,694	146	Dozing Material!	Select Fleet	1.6	Dozing Materia	ozing Materia	1.0	Select Fleet	Select Fleet	Select Fleet	Select Fleet	Select Fleet
36	**SGVLF - Topsoil - Lift 3 - Dozer Spreading**	16,792	146	D7R	467	1.6	1.2	1.44	1.0	804	21	$1,175	$1,966	$3,141
37	**SGVLF - Topsoil - Lift 4**	177,986	146	Dozing Material!	Select Fleet	1.6	Dozing Materia	ozing Materia	1.0	Select Fleet	Select Fleet	Select Fleet	Select Fleet	Select Fleet
38	**SGVLF - Topsoil - Lift 4 - Dozer Spreading**	25,752	146	D7R	467	1.6	1.2	1.44	1.0	804	32	$1,790	$2,995	$4,785
39	**SGVLF - Topsoil - Lift 5**	374,509	146	Dozing Material!	Select Fleet	1.6	Dozing Materia	ozing Materia	1.0	Select Fleet	Select Fleet	Select Fleet	Select Fleet	Select Fleet
40	**SGVLF - Topsoil - Lift 5 - Dozer Spreading**	41,227	146	D7R	467	1.6	1.2	1.44	1.0	804	51	$2,853	$4,774	$7,627
41	**SGVLF - Topsoil - Lift 6**	463,324	146	Dozing Material!	Select Fleet	1.6	Dozing Materia	ozing Materia	1.0	Select Fleet	Select Fleet	Select Fleet	Select Fleet	Select Fleet
42	**SGVLF - Topsoil - Lift 6 - Dozer Spreading**	70,800	146	D7R	467	1.6	1.2	1.44	1.0	804	88	$4,924	$8,237	$13,161
43	**SGVLF - Topsoil - Lift 7**	514,861	146	Dozing Material!	Select Fleet	1.6	Dozing Materia	ozing Materia	1.0	Select Fleet	Select Fleet	Select Fleet	Select Fleet	Select Fleet
44	**SGVLF - Topsoil - Lift 7 - Dozer Spreading**	55,023	146	D7R	467	1.6	1.2	1.44	1.0	804	68	$3,805	$6,365	$10,170
45	**SGVLF - Topsoil - Lift 8**	477,176	146	Dozing Material!	Select Fleet	1.6	Dozing Materia	ozing Materia	1.0	Select Fleet	Select Fleet	Select Fleet	Select Fleet	Select Fleet
46	**SGVLF - Topsoil - Lift 8 - Dozer Spreading**	48,228	146	D7R	467	1.6	1.2	1.44	1.0	804	60	$3,357	$5,616	$8,973
47	**SGVLF - Topsoil - Lift 9**	430,120	146	Dozing Material!	Select Fleet	1.6	Dozing Materia	ozing Materia	1.0	Select Fleet	Select Fleet	Select Fleet	Select Fleet	Select Fleet
48	**SGVLF - Topsoil - Lift 9 - Dozer Spreading**	43,297	146	D7R	467	1.6	1.2	1.44	1.0	804	54	$3,021	$5,054	$8,075
49	**SGVLF - Topsoil - Lift 10**	366,972	146	Dozing Material!	Select Fleet	1.6	Dozing Materia	ozing Materia	1.0	Select Fleet	Select Fleet	Select Fleet	Select Fleet	Select Fleet
50	**SGVLF - Topsoil - Lift 10 - Dozer Spreading**	38,594	146	D7R	467	1.6	1.2	1.44	1.0	804	48	$2,686	$4,493	$7,179
51	**SGVLF - Topsoil - Lift 11**	334,736	146	Dozing Material!	Select Fleet	1.6	Dozing Materia	ozing Materia	1.0	Select Fleet	Select Fleet	Select Fleet	Select Fleet	Select Fleet
52	**SGVLF - Topsoil - Lift 11 - Dozer Spreading**	38,532	146	D7R	467	1.6	1.2	1.44	1.0	804	48	$2,686	$4,493	$7,179
53	**SGVLF - Topsoil - Lift 12**	102,463	146	Dozing Material!	Select Fleet	1.6	Dozing Materia	ozing Materia	1.0	Select Fleet	Select Fleet	Select Fleet	Select Fleet	Select Fleet
54	**SGVLF - Topsoil - Lift 12 - Dozer Spreading**	27,409	146	D7R	467	1.6	1.2	1.44	1.0	804	34	$1,902	$3,182	$5,084
55	**SGVLF - Topsoil - Lift 13**	76,389	146	Dozing Material!	Select Fleet	1.6	Dozing Materia	ozing Materia	1.0	Select Fleet	Select Fleet	Select Fleet	Select Fleet	Select Fleet
56	**SGVLF - Topsoil - Lift 13 - Dozer Spreading**	17,859	146	D7R	467	1.6	1.2	1.44	1.0	804	22	$1,231	$2,059	$3,290
		9,316,085									6,678	**$373,635**	**$826,387**	**$1,200,022**

Heap Leach Pad - Cover and Growth Media Costs

Cover (lower layer)	Growth Media Placement

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Closure Cost Estimate
Heap Leach

Project Name: AM-13 BP2020 Financial warranty calculation - Reclamation Plan
Date of Submittal: December 2019
File Name: SRCE_AM13_FW_V4.xlsm
Model Version: Version 1.4.1
Cost Data: User Data
Cost Data File: SRCE_Cost_data-USR_1_12_DRMS_BONDING.xlsm
Cost Estimate Type: Surety Cost Basis: CC&V Bonding

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Revegetation Cost	$418,079	$221,317	$1,259,183	$1,898,579
TOTALS	**$1,529,417**	**$2,883,371**	**$1,259,183**	**$5,671,971**

	Description (required)	Cover Volume cy	Cover Replacement Fleet	Fleet Productivity LCY/hr	Number of Trucks/ Scrapers	Total Fleet Hours	Cover Labor Cost $	Cover Equipment Cost $	Total Cover Cost $	Growth Media Volume cy	Growth Media Replacement Fleet	Fleet Productivity BCY/hr	Number of Trucks/ Scrapers	Total Fleet Hours	Total Labor Cost $	Total Equipment Cost $	Total Growth Media Cost $
1	**AGVLF - Pile Leveling - Mass Grading**	0					$0	$0	$0	0					$0	$0	$0
2	**AGVLF - Pile Leveling - Fine Grading**	0					$0	$0	$0	0					$0	$0	$0
3	**AGVLF - 20 ft face - Mass Grading**	0					$0	$0	$0	0					$0	$0	$0
4	**AGVLF - 20 ft face - Fine Grading**	0					$0	$0	$0	0					$0	$0	$0
5	**AGVLF - 100 ft face - Mass Grading**	0					$0	$0	$0	0					$0	$0	$0
6	**AGVLF - 100 ft face - Fine Grading**	0					$0	$0	$0	0					$0	$0	$0
7	**AGVLF - 200 ft face - Mass Grading**	0					$0	$0	$0	0					$0	$0	$0
8	**AGVLF - 200 ft face - Fine Grading**	0					$0	$0	$0	0					$0	$0	$0
9	**AGVLF - Topsoil**	0					$0	$0	$0	26,557	740/988G/D8R	495	2	54	$12,085	$32,479	$44,564
10	**AGVLF - Topsoil - Dozer Spreading**	0					$0	$0	$0	0					$0	$0	$0
11	**AGVLF - Topsoil - Lift 1**	0					$0	$0	$0	23,223	740/988G/D8R	621	3	37	$10,351	$27,287	$37,638
12	**AGVLF - Topsoil - Lift 1 - Dozer Spreading**	0					$0	$0	$0	0					$0	$0	$0
13	**AGVLF - Topsoil - Lift 2**	0					$0	$0	$0	30,224	740/988G/D8R	643	3	47	$13,148	$34,662	$47,810
14	**AGVLF - Topsoil - Lift 2 - Dozer Spreading**	0					$0	$0	$0	0					$0	$0	$0
15	**AGVLF - Topsoil - Lift 3**	0					$0	$0	$0	40,095	740/988G/D8R	671	4	60	$20,142	$52,411	$72,553
16	**AGVLF - Topsoil - Lift 3 - Dozer Spreading**	0					$0	$0	$0	0					$0	$0	$0
17	**AGVLF - Topsoil - Lift 4**	0					$0	$0	$0	59,506	740/988G/D8R	690	6	86	$38,494	$98,517	$137,011
18	**AGVLF - Topsoil - Lift 4 - Dozer Spreading**	0					$0	$0	$0	0					$0	$0	$0
19	**AGVLF - Topsoil - Lift 5**	0					$0	$0	$0	60,616	740/988G/D8R	690	8	88	$49,236	$124,748	$173,984
20	**AGVLF - Topsoil - Lift 5 - Dozer Spreading**	0					$0	$0	$0	0					$0	$0	$0
21	**AGVLF - Topsoil - Lift 6**	0					$0	$0	$0	77,411	740/988G/D8R	688	9	112	$68,930	$174,004	$242,934
22	**AGVLF - Topsoil - Lift 6 - Dozer Spreading**	0					$0	$0	$0	0					$0	$0	$0
23	**AGVLF - Topsoil - Lift 7**	0					$0	$0	$0	104,752	740/988G/D8R	666	10	157	$105,410	$265,272	$370,682
24	**AGVLF - Topsoil - Lift 7 - Dozer Spreading**	0					$0	$0	$0	0					$0	$0	$0
25	**AGVLF - Topsoil - Lift 8**	0					$0	$0	$0	59,879	740/988G/D8R	572	4	105	$35,249	$91,719	$126,968
26	**AGVLF - Topsoil - Lift 8 - Dozer Spreading**	0					$0	$0	$0	0					$0	$0	$0
27	**AGVLF - Topsoil - Lift 9**	0					$0	$0	$0	41,737	740/988G/D8R	540	3	78	$21,821	$57,524	$79,345
28	**AGVLF - Topsoil - Lift 9 - Dozer Spreading**	0					$0	$0	$0	0					$0	$0	$0
29	**SGVLF - 100 ft face - Mass Grading**	0					$0	$0	$0	0					$0	$0	$0
30	**SGVLF - 100 ft face - Fine Grading**	0					$0	$0	$0	0					$0	$0	$0
31	**SGVLF - Topsoil - Lift 1**	0					$0	$0	$0	13,456	740/988G/D8R	694	5	20	$7,833	$20,191	$28,024
32	**SGVLF - Topsoil - Lift 1 - Dozer Spreading**	0					$0	$0	$0	0					$0	$0	$0
33	**SGVLF - Topsoil - Lift 2**	0					$0	$0	$0	12,686	740/988G/D8R	690	4	18	$6,043	$15,723	$21,766
34	**SGVLF - Topsoil - Lift 2 - Dozer Spreading**	0					$0	$0	$0	0					$0	$0	$0
35	**SGVLF - Topsoil - Lift 3**	0					$0	$0	$0	16,792	740/988G/D8R	577	3	29	$8,113	$21,387	$29,500
36	**SGVLF - Topsoil - Lift 3 - Dozer Spreading**	0					$0	$0	$0	0					$0	$0	$0
37	**SGVLF - Topsoil - Lift 4**	0					$0	$0	$0	25,752	740/988G/D8R	643	3	40	$11,190	$29,500	$40,690
38	**SGVLF - Topsoil - Lift 4 - Dozer Spreading**	0					$0	$0	$0	0					$0	$0	$0
39	**SGVLF - Topsoil - Lift 5**	0					$0	$0	$0	41,227	740/988G/D8R	601	3	69	$19,303	$50,887	$70,190
40	**SGVLF - Topsoil - Lift 5 - Dozer Spreading**	0					$0	$0	$0	0					$0	$0	$0
41	**SGVLF - Topsoil - Lift 6**	0					$0	$0	$0	70,800	740/988G/D8R	621	4	114	$38,270	$99,580	$137,850
42	**SGVLF - Topsoil - Lift 6 - Dozer Spreading**	0					$0	$0	$0	0					$0	$0	$0
43	**SGVLF - Topsoil - Lift 7**	0					$0	$0	$0	55,023	740/988G/D8R	698	5	79	$30,940	$79,753	$110,693
44	**SGVLF - Topsoil - Lift 7 - Dozer Spreading**	0					$0	$0	$0	0					$0	$0	$0
45	**SGVLF - Topsoil - Lift 8**	0					$0	$0	$0	48,228	740/988G/D8R	700	6	69	$30,884	$79,043	$109,927
46	**SGVLF - Topsoil - Lift 8 - Dozer Spreading**	0					$0	$0	$0	0					$0	$0	$0
47	**SGVLF - Topsoil - Lift 9**	0					$0	$0	$0	43,297	740/988G/D8R	650	7	67	$33,738	$85,865	$119,603
48	**SGVLF - Topsoil - Lift 9 - Dozer Spreading**	0					$0	$0	$0	0					$0	$0	$0
49	**SGVLF - Topsoil - Lift 10**	0					$0	$0	$0	38,594	740/988G/D8R	664	8	58	$32,451	$82,220	$114,671
50	**SGVLF - Topsoil - Lift 10 - Dozer Spreading**	0					$0	$0	$0	0					$0	$0	$0
51	**SGVLF - Topsoil - Lift 11**	0					$0	$0	$0	38,532	740/988G/D8R	690	10	55	$36,927	$92,930	$129,857
52	**SGVLF - Topsoil - Lift 11 - Dozer Spreading**	0					$0	$0	$0	0					$0	$0	$0
53	**SGVLF - Topsoil - Lift 12**	0					$0	$0	$0	27,409	740/988G/D8R	649	10	42	$28,199	$70,964	$99,163
54	**SGVLF - Topsoil - Lift 12 - Dozer Spreading**	0					$0	$0	$0	0					$0	$0	$0
55	**SGVLF - Topsoil - Lift 13**	0					$0	$0	$0	17,859	740/988G/D8R	690	12	26	$20,366	$51,003	$71,369
56	**SGVLF - Topsoil - Lift 13 - Dozer Spreading**	0					$0	$0	$0	0					$0	$0	$0
							$0	**$0**	**$0**	973,655				1,510	**$679,123**	**$1,737,669**	**$2,416,792**

Heap Leach Pad - Scarifying/Revegetation Costs

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Closure Cost Estimate
Heap Leach

Project Name: AM-13 BP2020 Financial warranty calculation - Reclamation Plan
Date of Submittal: December 2019
File Name: SRCE_AM13_FW_V4.xlsm
Model Version: Version 1.4.1
Cost Data: User Data
Cost Data File: SRCE_Cost_data-USR_1_12_DRMS_BONDING.xlsm
Cost Estimate Type: Surety Cost Basis: CC&V Bonding

Heap Leach Pads - Cost Summary

	Labor	Equipment	Materials	Totals
Drain Installation	$0	$0	$0	$0
Grading Costs	$373,635	$826,387	N/A	$1,200,022
Cover Placement Cost	$0	$0	N/A	$0
Topsoil Placement Cost	$679,123	$1,737,669	N/A	$2,416,792
Ripping/Scarifying Cost	$58,580	$97,998	N/A	$156,578
Subtotal Earthworks	**$1,111,338**	**$2,662,054**	**$0**	**$3,773,392**
Revegetation Cost	$418,079	$221,317	$1,259,183	$1,898,579
TOTALS	**$1,529,417**	**$2,883,371**	**$1,259,183**	**$5,671,971**

	Description (required)	Slope Area acres	Flat Area acres	Total Surface Area acres	Final Slope Length ft	Flat Area Long Dimension ft	Ripping/ Scarifying Fleet	Slope Scarifying/ Ripping Hours hrs	Flat Area Scarifying/ Ripping Hours hrs	Scarifying/ Ripping Labor Costs $	Scarifying/ Ripping Equipment Cost $	Total Scarifying/ Ripping Costs $	Revegetation Labor Cost $	Revegetation Equipment Cost $	Revgetation Material Cost $	Total Revegetation Cost $
1	**AGVLF - Pile Leveling - Mass Grading**	Slope Input!	Slope Input!							$0	$0	$0	$0	$0	$0	$0
2	**AGVLF - Pile Leveling - Fine Grading**	Slope Input!	Slope Input!							$0	$0	$0	$0	$0	$0	$0
3	**AGVLF - 20 ft face - Mass Grading**	Slope Input!	Slope Input!							$0	$0	$0	$0	$0	$0	$0
4	**AGVLF - 20 ft face - Fine Grading**	Slope Input!	Slope Input!							$0	$0	$0	$0	$0	$0	$0
5	**AGVLF - 100 ft face - Mass Grading**	Slope Input!	Slope Input!							$0	$0	$0	$0	$0	$0	$0
6	**AGVLF - 100 ft face - Fine Grading**	Slope Input!	Slope Input!							$0	$0	$0	$0	$0	$0	$0
7	**AGVLF - 200 ft face - Mass Grading**	Slope Input!	Slope Input!							$0	$0	$0	$0	$0	$0	$0
8	**AGVLF - 200 ft face - Fine Grading**	Slope Input!	Slope Input!							$0	$0	$0	$0	$0	$0	$0
9	**AGVLF - Topsoil**	2.18	30.70	32.88	474	350	D7R	2	28	$1,679	$2,808	$4,487	$11,386	$6,028	$34,293	$51,707
10	**AGVLF - Topsoil - Dozer Spreading**	Slope Input!	Slope Input!							$0	$0	$0	$0	$0	$0	$0
11	**AGVLF - Topsoil - Lift 1**	28.79	0.10	28.89	404	175	D7R	24	0	$1,343	$2,246	$3,589	$10,005	$5,296	$30,133	$45,434
12	**AGVLF - Topsoil - Lift 1 - Dozer Spreading**	Slope Input!	Slope Input!							$0	$0	$0	$0	$0	$0	$0
13	**AGVLF - Topsoil - Lift 2**	37.47	0.10	37.57	380	355	D7R	32	0	$1,790	$2,995	$4,785	$13,011	$6,887	$39,186	$59,084
14	**AGVLF - Topsoil - Lift 2 - Dozer Spreading**	Slope Input!	Slope Input!							$0	$0	$0	$0	$0	$0	$0
15	**AGVLF - Topsoil - Lift 3**	39.20	10.50	49.70	318	355	D7R	34	9	$2,406	$4,025	$6,431	$17,211	$9,111	$51,837	$78,159
16	**AGVLF - Topsoil - Lift 3 - Dozer Spreading**	Slope Input!	Slope Input!							$0	$0	$0	$0	$0	$0	$0
17	**AGVLF - Topsoil - Lift 4**	73.77	0.10	73.87	557	415	D7R	63	0	$3,525	$5,897	$9,422	$25,582	$13,542	$77,047	$116,171
18	**AGVLF - Topsoil - Lift 4 - Dozer Spreading**	Slope Input!	Slope Input!							$0	$0	$0	$0	$0	$0	$0
19	**AGVLF - Topsoil - Lift 5**	51.59	23.60	75.19	304	465	D7R	44	21	$3,637	$6,084	$9,721	$26,039	$13,783	$78,423	$118,245
20	**AGVLF - Topsoil - Lift 5 - Dozer Spreading**	Slope Input!	Slope Input!							$0	$0	$0	$0	$0	$0	$0
21	**AGVLF - Topsoil - Lift 6**	62.44	33.50	95.94	358	685	D7R	53	29	$4,588	$7,675	$12,263	$33,224	$17,588	$100,066	$150,878
22	**AGVLF - Topsoil - Lift 6 - Dozer Spreading**	Slope Input!	Slope Input!							$0	$0	$0	$0	$0	$0	$0
23	**AGVLF - Topsoil - Lift 7**	10.95	118.90	129.85	318	700	D7R	10	104	$6,378	$10,670	$17,048	$44,967	$23,804	$135,433	$204,204
24	**AGVLF - Topsoil - Lift 7 - Dozer Spreading**	Slope Input!	Slope Input!							$0	$0	$0	$0	$0	$0	$0
25	**AGVLF - Topsoil - Lift 8**	74.23	0.10	74.33	539	415	D7R	63	0	$3,525	$5,897	$9,422	$25,741	$13,626	$77,527	$116,894
26	**AGVLF - Topsoil - Lift 8 - Dozer Spreading**	Slope Input!	Slope Input!							$0	$0	$0	$0	$0	$0	$0
27	**AGVLF - Topsoil - Lift 9**	29.89	21.80	51.69	285	415	D7R	25	19	$2,462	$4,118	$6,580	$17,900	$9,475	$53,913	$81,288
28	**AGVLF - Topsoil - Lift 9 - Dozer Spreading**	Slope Input!	Slope Input!							$0	$0	$0	$0	$0	$0	$0
29	**SGVLF - 100 ft face - Mass Grading**	Slope Input!	Slope Input!							$0	$0	$0	$0	$0	$0	$0
30	**SGVLF - 100 ft face - Fine Grading**	Slope Input!	Slope Input!							$0	$0	$0	$0	$0	$0	$0
31	**SGVLF - Topsoil - Lift 1**	8.23	8.40	16.63	269	245	D7R	7	8	$839	$1,404	$2,243	$5,759	$3,049	$17,345	$26,153
32	**SGVLF - Topsoil - Lift 1 - Dozer Spreading**	Slope Input!	Slope Input!							$0	$0	$0	$0	$0	$0	$0
33	**SGVLF - Topsoil - Lift 2**	13.10	2.60	15.70	269	245	D7R	11	2	$727	$1,217	$1,944	$5,437	$2,878	$16,376	$24,691
34	**SGVLF - Topsoil - Lift 2 - Dozer Spreading**	Slope Input!	Slope Input!							$0	$0	$0	$0	$0	$0	$0
35	**SGVLF - Topsoil - Lift 3**	18.64	2.20	20.84	269	245	D7R	16	2	$1,007	$1,685	$2,692	$7,217	$3,820	$21,735	$32,772
36	**SGVLF - Topsoil - Lift 3 - Dozer Spreading**	Slope Input!	Slope Input!							$0	$0	$0	$0	$0	$0	$0
37	**SGVLF - Topsoil - Lift 4**	21.58	10.30	31.88	269	245	D7R	19	10	$1,623	$2,714	$4,337	$11,040	$5,844	$33,251	$50,135
38	**SGVLF - Topsoil - Lift 4 - Dozer Spreading**	Slope Input!	Slope Input!							$0	$0	$0	$0	$0	$0	$0
39	**SGVLF - Topsoil - Lift 5**	45.41	5.70	51.11	269	245	D7R	39	5	$2,462	$4,118	$6,580	$17,699	$9,370	$53,308	$80,377
40	**SGVLF - Topsoil - Lift 5 - Dozer Spreading**	Slope Input!	Slope Input!							$0	$0	$0	$0	$0	$0	$0
41	**SGVLF - Topsoil - Lift 6**	56.18	31.60	87.78	269	245	D7R	48	29	$4,308	$7,207	$11,515	$30,398	$16,092	$91,554	$138,044
42	**SGVLF - Topsoil - Lift 6 - Dozer Spreading**	Slope Input!	Slope Input!							$0	$0	$0	$0	$0	$0	$0
43	**SGVLF - Topsoil - Lift 7**	62.43	5.80	68.23	269	245	D7R	54	5	$3,301	$5,522	$8,823	$23,629	$12,508	$71,164	$107,301
44	**SGVLF - Topsoil - Lift 7 - Dozer Spreading**	Slope Input!	Slope Input!							$0	$0	$0	$0	$0	$0	$0
45	**SGVLF - Topsoil - Lift 8**	57.86	1.90	59.76	269	245	D7R	50	2	$2,909	$4,867	$7,776	$20,695	$10,955	$62,329	$93,979
46	**SGVLF - Topsoil - Lift 8 - Dozer Spreading**	Slope Input!	Slope Input!							$0	$0	$0	$0	$0	$0	$0
47	**SGVLF - Topsoil - Lift 9**	52.16	1.50	53.66	269	245	D7R	45	1	$2,574	$4,306	$6,880	$18,582	$9,837	$55,968	$84,387
48	**SGVLF - Topsoil - Lift 9 - Dozer Spreading**	Slope Input!	Slope Input!							$0	$0	$0	$0	$0	$0	$0
49	**SGVLF - Topsoil - Lift 10**	44.50	3.30	47.80	269	245	D7R	38	3	$2,294	$3,838	$6,132	$16,553	$8,763	$49,856	$75,172
50	**SGVLF - Topsoil - Lift 10 - Dozer Spreading**	Slope Input!	Slope Input!							$0	$0	$0	$0	$0	$0	$0
51	**SGVLF - Topsoil - Lift 11**	40.59	7.20	47.79	269	245	D7R	35	7	$2,350	$3,931	$6,281	$16,549	$8,761	$49,844	$75,154
52	**SGVLF - Topsoil - Lift 11 - Dozer Spreading**	Slope Input!	Slope Input!							$0	$0	$0	$0	$0	$0	$0
53	**SGVLF - Topsoil - Lift 12**	12.42	21.60	34.02	269	245	D7R	11	20	$1,734	$2,902	$4,636	$11,781	$6,237	$35,483	$53,501
54	**SGVLF - Topsoil - Lift 12 - Dozer Spreading**	Slope Input!	Slope Input!							$0	$0	$0	$0	$0	$0	$0
55	**SGVLF - Topsoil - Lift 13**	9.26	12.90	22.16	269	245	D7R	8	12	$1,119	$1,872	$2,991	$7,674	$4,063	$23,112	$34,849
56	**SGVLF - Topsoil - Lift 13 - Dozer Spreading**	Slope Input!	Slope Input!							$0	$0	$0	$0	$0	$0	$0
		852.87	354.40	1,207.27				731	316	**$58,580**	**$97,998**	**$156,578**	**$418,079**	**$221,317**	**$1,259,183**	**$1,898,579**

1) Minimum total ripping hours = 1 (i.e. If total ripping hrs (slope + flat) < 1, then one hour of fleet time is assumed, regardless of acres shown in in scarifying table.)

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Closure Cost Estimate
Haul Material

Project Name: AM-13 BP2020 Financial warranty calculation - Reclamation Plan
Date of Submittal: December 2019
File Name: SRCE_AM13_FW_V4.xlsm
Model Version: Version 1.4.1
Cost Data: User Data
Cost Data File: SRCE_Cost_data-USR_1_12_DRMS_BONDING.xlsm
Cost Estimate Type: Surety Cost Basis: CC&V Bonding

Generic Material Hauling - Cost Summary

	Labor	Equipment	Materials	Totals
Hauling/Crush/Screen/Compact	$7,281,279	$23,489,174	N/A	$30,770,453
Cover Placement Cost	$0	$0	N/A	$0
Topsoil Placement Cost	$0	$0	N/A	$0
Ripping/Scarifying Cost	$0	$0	N/A	$0
Subtotal Earthworks	**$7,281,279**	**$23,489,174**	**$0**	**$30,770,453**
Revegetation Cost	$0	$0	$0	$0
TOTALS	**$7,281,279**	**$23,489,174**	**$0**	**$30,770,453**

Generic Material Hauling - User Input

	Facility Description			Physical		Hauled Material			Crushing & Screening					Cover			Growth Media		
	Description (required)	ID Code	Type	Final Surface Area acres	Average Ripping Distance ft	Material Volume Required cy	Distance from Borrow Source (1) ft	Slope to Borrow Source % grade	Crush Material	Screen Material	Loss to Crushing/ Screening %	Distance to Placement Location (2) ft	Slope to Placement % grade	Cover Thickness in	Distance to Cover Borrow ft	Slope to Borrow % grade	Growth Media Thickness in	Distance to Growth Material Stockpile ft	Slope to Stockpile % grade
1	AGVLF - 9400					340,405	4,374	8.2											
2	AGVLF - 9500					437,763	3,782	5.8											
3	AGVLF - 9600					669,112	2,074	3.9											
4	AGVLF - 9700					924,083	1,628	-4.9											
5	AGVLF - 9800					511,553	3,194	-7.5											
6	AGVLF - 9900					291,740	4,981	-8.8											
7	AGVLF - 10000					84,553	6,981	-8.6											
8	AGVLF - 9920					6,599,307	4,606	5.2											
9	AGVLF - 10020					4,040,912	4,269	2.3											
10	AGVLF - 10100					3,919,057	1,495	-4.0											
11	AGVLF - 10190					3,562,003	3,784	-6.6											
12	AGVLF - 10280					3,477,782	6,052	-7.6											
13	Remove ROM			1.68		12,587	1,126	2.0											
14	Remove DCF and Liner			1.68	2	12,587	1,126	2.0											
15	20 Years of mucking Carlton Tunnel sediment ponds					383	835	-1.0											
16	Cresson underground portal Backfill			1.00		592	9,300	10.0											

Notes:
1. Input distance to crusher if material to be crushed
2. Input distance from crusher to placement if material to be crushed
3. If Slope from facility to borrow source is >20, downhill travel time may be underestimated due to limitation of uphill travel time curves and downhill speed tables from CAT Handbook (see Productivty Sheet)

Generic Material Hauling - User Input (cont.)

		Hauling Material				Cover			Growth Media			Revegetation				
	Description (required)	Haul Material Type (select)	Material Hauling Fleet (select)	Each Fleet Size (from/to crusher) (user override)	Compact After Placement?	Cover Material Type (select)	Cover Placement Equipment Fleet (select)	Maximum Fleet Size (user override)	Growth Media Material Type (select)	Growth Media Equipment Fleet (select)	Maximum Fleet Size (user override)	Seed Mix (select)	Mulch Type (select)	Fertilizer Type (select)	Scarify/ Rip? (select)	Scarifying/ Ripping Fleet (select)
1	AGVLF - 9400	Granite - brok	XLarge Truck		No											
2	AGVLF - 9500	Granite - brok	XLarge Truck		No											
3	AGVLF - 9600	Granite - brok	XLarge Truck		No											
4	AGVLF - 9700	Granite - brok	XLarge Truck		No											
5	AGVLF - 9800	Granite - brok	XLarge Truck		No											
6	AGVLF - 9900	Granite - brok	XLarge Truck		No											
7	AGVLF - 10000	Granite - brok	XLarge Truck		No											
8	AGVLF - 9920	Granite - brok	XLarge Truck		No											
9	AGVLF - 10020	Granite - brok	XLarge Truck		No											
10	AGVLF - 10100	Granite - brok	XLarge Truck		No											
11	AGVLF - 10190	Granite - brok	XLarge Truck		No											
12	AGVLF - 10280	Granite - brok	XLarge Truck		No											
13	Remove ROM	Granite - brok	XLarge Truck		No											
14	Remove DCF and Liner	Granite - brok	XLarge Truck		No											
15	20 Years of mucking Carlton Tunnel sediment ponds	Alluvium	Small Truck		No											
16	Cresson underground portal Backfill	Granite - brok	Med Truck		No											

Notes:
1. Material Types are used for density correction based on material densities in Caterpillar Performance Handbook material density table

Generic Material Hauling - Load, Haul, Place and Grade

	Material Haulage	Crush and/or Compact

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Closure Cost Estimate
Haul Material

Project Name: AM-13 BP2020 Financial warranty calculation - Reclamation Plan
Date of Submittal: December 2019
File Name: SRCE_AM13_FW_V4.xlsm
Model Version: Version 1.4.1
Cost Data: User Data
Cost Data File: SRCE_Cost_data-USR_1_12_DRMS_BONDING.xlsm
Cost Estimate Type: Surety Cost Basis: CC&V Bonding

Generic Material Hauling - Cost Summary

	Labor	Equipment	Materials	Totals
Hauling/Crush/Screen/Compact	$7,281,279	$23,489,174	N/A	$30,770,453
Cover Placement Cost	$0	$0	N/A	$0
Topsoil Placement Cost	$0	$0	N/A	$0
Ripping/Scarifying Cost	$0	$0	N/A	$0
Subtotal Earthworks	**$7,281,279**	**$23,489,174**	**$0**	**$30,770,453**
Revegetation Cost	$0	$0	$0	$0
TOTALS	**$7,281,279**	**$23,489,174**	**$0**	**$30,770,453**

	Description (required)	Material Volume to Crusher cy	Final Material Volume cy	Material Haulage Fleet	Fleet Productivity LCY/hr	Number of Trucks/ Scrapers	Total Fleet Hours	Hauling Labor Cost $	Hauling Equipment Cost $	Total Crush/ Screen Cost $	Compact Labor Cost $	Compact Equipment Cost $	Total Load/Haul/ Place Cost $
1	**AGVLF - 9400**	340,405	340,405	777D/992G/D7R	1,099	4	310	$104,067	$324,809	$0	$0	$0	$428,876
2	**AGVLF - 9500**	437,763	437,763	777D/992G/D7R	783	2	559	$125,104	$411,351	$0	$0	$0	$536,455
3	**AGVLF - 9600**	669,112	669,112	777D/992G/D7R	971	2	689	$154,198	$507,014	$0	$0	$0	$661,212
4	**AGVLF - 9700**	924,083	924,083	777D/992G/D7R	956	2	967	$216,415	$711,586	$0	$0	$0	$928,001
5	**AGVLF - 9800**	511,553	511,553	777D/992G/D7R	905	3	565	$158,059	$503,878	$0	$0	$0	$661,937
6	**AGVLF - 9900**	291,740	291,740	777D/992G/D7R	923	4	316	$106,081	$331,095	$0	$0	$0	$437,176
7	**AGVLF - 10000**	84,553	84,553	777D/992G/D7R	1,093	6	77	$34,465	$104,695	$0	$0	$0	$139,160
8	**AGVLF - 9920**	6,599,307	6,599,307	777D/992G/D7R	755	2	8,741	$1,956,236	$6,432,240	$0	$0	$0	$8,388,476
9	**AGVLF - 10020**	4,040,912	4,040,912	777D/992G/D7R	798	2	5,064	$1,133,323	$3,726,446	$0	$0	$0	$4,859,769
10	**AGVLF - 10100**	3,919,057	3,919,057	777D/992G/D7R	976	2	4,015	$898,557	$2,954,518	$0	$0	$0	$3,853,075
11	**AGVLF - 10190**	3,562,003	3,562,003	777D/992G/D7R	959	3	3,714	$1,038,992	$3,312,219	$0	$0	$0	$4,351,211
12	**AGVLF - 10280**	3,477,782	3,477,782	777D/992G/D7R	1,011	5	3,440	$1,347,276	$4,140,797	$0	$0	$0	$5,488,073
13	**Remove ROM**	12,587	12,587	777D/992G/D7R	556	1	23	$3,861	$13,338	$0	$0	$0	$17,199
14	**Remove DCF and Liner**	12,587	12,587	777D/992G/D7R	556	1	23	$3,861	$13,338	$0	$0	$0	$17,199
15	**20 Years of mucking Carlton Tunnel sediment ponds**	383	383	725/966G/D7R	408	2	1	$224	$432	$0	$0	$0	$656
16	**Cresson underground portal Backfill**	592	592	740/988G/D8R	657	8	1	$560	$1,418	$0	$0	$0	$1,978
		24,884,419	24,884,419				28,505	**$7,281,279**	**$23,489,174**	**$0**	**$0**	**$0**	**$30,770,453**

Notes: Final Material Volume includes allowance for additional material hauled to crushing/screening plant based on Loss to Crushing/Screening input above.

Generic Material Hauling - Cover and Growth Media Costs

		Cover Placement								Growth Media Placement							
	Description (required)	Cover Volume cy	Cover Placement Fleet	Cover Fleet Productivity LCY/hr	Number of Trucks/ Scrapers	Total Fleet Hours	Total Labor Cost $	Total Equipment Cost $	Total Cover Placement Cost $	Growth Media Volume cy	Growth Media Placement Fleet	Growth Media Fleet Productivity LCY/hr	Number of Trucks/ Scrapers	Total Fleet Hours	Total Labor Cost $	Total Equipment Cost $	Total Growth Media Cost $
1	**AGVLF - 9400**						$0	$0	$0	0					$0	$0	$0
2	**AGVLF - 9500**						$0	$0	$0	0					$0	$0	$0
3	**AGVLF - 9600**						$0	$0	$0	0					$0	$0	$0
4	**AGVLF - 9700**						$0	$0	$0	0					$0	$0	$0
5	**AGVLF - 9800**						$0	$0	$0	0					$0	$0	$0
6	**AGVLF - 9900**						$0	$0	$0	0					$0	$0	$0
7	**AGVLF - 10000**						$0	$0	$0	0					$0	$0	$0
8	**AGVLF - 9920**						$0	$0	$0	0					$0	$0	$0
9	**AGVLF - 10020**						$0	$0	$0	0					$0	$0	$0
10	**AGVLF - 10100**						$0	$0	$0	0					$0	$0	$0
11	**AGVLF - 10190**						$0	$0	$0	0					$0	$0	$0
12	**AGVLF - 10280**						$0	$0	$0	0					$0	$0	$0
13	**Remove ROM**						$0	$0	$0	0					$0	$0	$0
14	**Remove DCF and Liner**						$0	$0	$0	0					$0	$0	$0
15	**20 Years of mucking Carlton Tunnel sediment ponds**						$0	$0	$0	0					$0	$0	$0
16	**Cresson underground portal Backfill**						$0	$0	$0	0					$0	$0	$0
							$0	**$0**	**$0**						**$0**	**$0**	**$0**

Generic Material Hauling - Scarifying/Revegetation Costs

	Description (required)	Total Surface Area acres	Ripping/ Scarifying Fleet	Scarifying/ Ripping Hours hrs	Scarifying/ Ripping Labor Cost $	Scarifying/ Ripping Equipment Cost $	Total Scarifying/ Ripping Cost $	Revegetation Labor Cost $	Revegetation Equipment Cost $	Revgetation Material Cost $	Total Revegetation Cost $
1	**AGVLF - 9400**	0.10	**Select Fleet**		$0	$0	$0	$0	$0	$0	$0
2	**AGVLF - 9500**	0.10	**Select Fleet**		$0	$0	$0	$0	$0	$0	$0
3	**AGVLF - 9600**	0.10	**Select Fleet**		$0	$0	$0	$0	$0	$0	$0
4	**AGVLF - 9700**	0.10	**Select Fleet**		$0	$0	$0	$0	$0	$0	$0
5	**AGVLF - 9800**	0.10	**Select Fleet**		$0	$0	$0	$0	$0	$0	$0
6	**AGVLF - 9900**	0.10	**Select Fleet**		$0	$0	$0	$0	$0	$0	$0
7	**AGVLF - 10000**	0.10	**Select Fleet**		$0	$0	$0	$0	$0	$0	$0
8	**AGVLF - 9920**	0.10	**Select Fleet**		$0	$0	$0	$0	$0	$0	$0

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Closure Cost Estimate
Haul Material

Project Name: AM-13 BP2020 Financial warranty calculation - Reclamation Plan
Date of Submittal: December 2019
File Name: SRCE_AM13_FW_V4.xlsm
Model Version: Version 1.4.1
Cost Data: User Data
Cost Data File: SRCE_Cost_data-USR_1_12_DRMS_BONDING.xlsm
Cost Estimate Type: Surety Cost Basis: CC&V Bonding

Generic Material Hauling - Cost Summary

	Labor	Equipment	Materials	Totals
Hauling/Crush/Screen/Compact	$7,281,279	$23,489,174	N/A	$30,770,453
Cover Placement Cost	$0	$0	N/A	$0
Topsoil Placement Cost	$0	$0	N/A	$0
Ripping/Scarifying Cost	$0	$0	N/A	$0
Subtotal Earthworks	**$7,281,279**	**$23,489,174**	**$0**	**$30,770,453**
Revegetation Cost	$0	$0	$0	$0
TOTALS	**$7,281,279**	**$23,489,174**	**$0**	**$30,770,453**

9	**AGVLF - 10020**	0.10	**Select Fleet**		$0	$0	$0	$0	$0	$0	$0
10	**AGVLF - 10100**	0.10	**Select Fleet**		$0	$0	$0	$0	$0	$0	$0
11	**AGVLF - 10190**	0.10	**Select Fleet**		$0	$0	$0	$0	$0	$0	$0
12	**AGVLF - 10280**	0.10	**Select Fleet**		$0	$0	$0	$0	$0	$0	$0
13	**Remove ROM**	1.68	**Select Fleet**		$0	$0	$0	$0	$0	$0	$0
14	**Remove DCF and Liner**	1.68	**Select Fleet**		$0	$0	$0	$0	$0	$0	$0
15	**20 Years of mucking Carlton Tunnel sediment ponds**	0.10	**Select Fleet**		$0	$0	$0	$0	$0	$0	$0
16	**Cresson underground portal Backfill**	1.00	**Select Fleet**		$0	$0	$0	$0	$0	$0	$0
		5.66			**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**

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Closure Cost Estimate
Foundations & Buildings

Project Name: AM-13 BP2020 Financial warranty calculation - Reclamation Plan
Date of Submittal: December 2019
File Name: SRCE_AM13_FW_V4.xlsm
Model Version: Version 1.4.1
Cost Data: User Data
Cost Data File: SRCE_Cost_data-USR_1_12_DRMS_BONDING.xlsm
Cost Estimate Type: Surety Cost Basis: CC&V Bonding

Buildings & Foundation Demolition Cost Summary	Labor	Equipment	Materials	Totals
Building Demolition Cost	$2,556,952	$1,872,233	N/A	$4,429,185
Wall Demolition Cost	$750,601	$56,894	N/A	$807,495
Slab Demolition	$25,225	$86,687	N/A	$111,912
Subtotal Demolition	**$3,332,778**	**$2,015,814**	**$0**	**$5,348,592**
Cover Placement Cost	$52,276	$134,358	N/A	$186,634
Growth Media Placement Cost	$0	$0	N/A	$0
Ripping/Scarifying Cost	$4,088	$6,862	N/A	$10,950
Subtotal Earthworks	**$56,364**	**$141,220**	**$0**	**$197,584**
Revegetation Cost	$25,453	$13,474	$12,030	$50,957
TOTALS	**$3,414,595**	**$2,170,508**	**$12,030**	**$5,597,133**

Buildings & Foundation - User Input — You must fill in ALL green cells and relevant blue cells in this section for each building or facility

	Facility Description			Physical - MANDATORY								Foundation Cover (1)			Growth Media (1) (entire footprint)		
	Description (required)	ID Code	Type	Length ft	Width ft	Eve Height ft	Slab Thickness in	Foundation Wall Thickness in	Foundation Wall Height ft	Average Flat Area Long Dimension (ripping distance) ft	Building Area Footprint (including surrounding facilities) acres	Foundation Cover Thickness in	Distance from Foundation Cover Borrow Area ft	Slope from Facility to Borrow Area % grade	Growth Media Thickness in	Distance from Growth Media Stockpile ft	Slope from Facility to Stockpile % grade
1	Primary crushers			78	48	112	12	6	1	78	0.00	60	8,300	5.0			
2	Crane above pocket			85	33	50	12	6	1	85	0.06	60	10,300	3.0			
3	Secondary crusher MCC			53	21	15	12	6	1	53	0.03	60	10,300	3.0			
4	Secondary crushers			120	67	107	12	6	1	120	0.18	60	10,300	3.0			
5	Screen Bldg			72	32	86	12	6	1	72	0.05	60	10,300	3.0			
6	Screen MCCs			40	18	15	12	6	1	40	0.02	60	5,100	3.0			
7	Crusher Maint			40	40	17	12	6	1	40	0.04	60	5,100	3.0			
8	Security			65	40	10	12	6	1	65	0.06	60	5,100	3.0			
9	MCC for phase II pumps			21	11	12	12	6	1	21	0.01	60	5,100	3.0			
10	Laboratory			150	69	52	12	6	1	150	0.24	60	5,100	3.0			
11	Project mgr trailer			57	12	10	6			57	0.02	60	20,000	6.0			
12	Project trailer			40	53	10	6			53	0.05	60	11,400	1.0			
13	Fire trailer			20	10	10	6			20	0.00	60	10,300	3.0			
14	Process maint trailer			60	25	10	6			60	0.03	60	10,300	3.0			
15	Crusher Maint addition			25	40	17	12	6	1	40	0.02	60	10,300	3.0			
16	Crusher Maint lean to			10	40	13	12	6	1	40	0.01	60	10,300	3.0			
17	AGADR 1995			165	100	52	12	8	3	165	0.38	60	10,300	3.0			
18	Pipe access gallery			60	10	10	12	8	3	60	0.01	60	10,300	3.0			
19	carbon strip & regen			107	25	45	12	8	3	107	0.06	60	10,300	3.0			
20	Process maint trailer			60	25	12	6			60	0.03	60	10,300	3.0			
21	AGADR north			165	43	44	12	8	3	165	0.16	60	10,300	3.0			
22	AGADR south			108	70	57	12	8	3	108	0.17	60	10,300	3.0			
23	Etrain			142	42	53	12	8	3	142	0.14	60	10,300	3.0			
24	MCC fume scrubber			37	16	16	12	8	3	37	0.01	60	10,300	3.0			
25	enrichment pump station			60	30	38	12	8	3	60	0.04	60	5,100	3.0			
26	Ph V Preg pump MCC			22	22	17	12	8	3	22	0.01	60	5,100	3.0			
27	Ph V Preg enrich MCC			42	22	17	12	8	3	42	0.02	60	5,100	3.0			
28	Ph V Preg enrich LVSC			20	10	12	12	8	3	20	0.00	60	5,100	3.0			
29	Victor maint light vehicle shop			80	56	12	12	6	1	80	0.10	60	5,100	3.0			
30	truck wash			75	45	41	12	6	1	75	0.08	60	8,300	5.0			
31	truck shop			305	95	65	12	6	1	305	0.67	60	5,100	3.0			
32	Mill maint warehouse			57	200	47	12	6	1	200	0.26	60	5,100	3.0			
33	agglomerator			20	76	34	12	6	3	76	0.03	60	5,100	3.0			
34	sump pump			16	15	13	12	6	3	16	0.01	60	8,300	5.0			
35	conveyor shed			85	13	21	12	6	1	85	0.03	60	8,300	5.0			
36	process corridor			15	175	24	12	6	3	175	0.06	60	8,300	5.0			
37	Buckley main bldg			60	40	12	12	6	1	60	0.06	60	8,300	5.0			
38	AGVLF AGADR			142	42	53	12	8	3	142	0.14	60	8,300	5.0			
39	MCC & fume scrubber			37	16	16	12	8	3	37	0.01	60	5,100	3.0			
40	enrichment pump station			60	30	38	12	8	3	60	0.04	60	10,300	3.0			
41	Ph V Preg pump MCC			22	22	17	12	8	3	22	0.01	60	10,300	3.0			
42	Ph V Preg enrich MCC			42	22	17	12	8	3	42	0.02	60	10,300	3.0			
43	Ph V Preg enrich LVSC			20	10	12	12	8	3	20	0.00	60	10,300	3.0			
44	Squaw MCC			60	27	12	12	8	3	60	0.04	60	10,300	3.0			
45	warehouse			104	80	32	12	8	3	104	0.19	60	10,300	3.0			
46	LVSC pump			151	10	12	12	8	3	151	0.03	60	10,300	3.0			
47	SGADR			165	200	62	12	8	3	200	0.76	60	10,300	3.0			
48	SGADR utility			60	30	17	12	8	3	60	0.04	60	10,300	3.0			
49	security			143	20	10	12	8	3	143	0.07	60	10,300	3.0			
50	modular office 1			60	66	10	6	8	3	66	0.09	60	10,300	3.0			
51	modular office 2			60	66	10	6	8	3	66	0.09	60	10,300	3.0			
52	modular office 3			12	66	10	6	8	3	66	0.02	60	5,100	3.0			
53	substation			107	100	15	12	8	3	107	0.25	60	5,100	3.0			
54	auxiliary A			66	20	10	12	8	3	66	0.03	60	5,100	3.0			
55	auxiliary B			20	20	10	12	8	3	20	0.01	60	5,100	3.0			
56	auxiliary C			46	20	10	12	8	3	46	0.02	60	5,100	3.0			
57	High grade mill			335	200	86	12	8	3	335	1.54	60	5,100	3.0			

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Project Name: AM-13 BP2020 Financial warranty calculation - Reclamation Plan
Date of Submittal: December 2019
File Name: SRCE_AM13_FW_V4.xlsm
Model Version: Version 1.4.1
Cost Data: User Data
Cost Data File: SRCE_Cost_data-USR_1_12_DRMS_BONDING.xlsm
Cost Estimate Type: Surety Cost Basis: CC&V Bonding

Buildings & Foundation Demolition Cost Summary				
	Labor	**Equipment**	**Materials**	**Totals**
Building Demolition Cost	$2,556,952	$1,872,233	N/A	$4,429,185
Wall Demolition Cost	$750,601	$56,894	N/A	$807,495
Slab Demolition	$25,225	$86,687	N/A	$111,912
Subtotal Demolition	**$3,332,778**	**$2,015,814**	**$0**	**$5,348,592**
Cover Placement Cost	$52,276	$134,358	N/A	$186,634
Growth Media Placement Cost	$0	$0	N/A	$0
Ripping/Scarifying Cost	$4,088	$6,862	N/A	$10,950
Subtotal Earthworks	**$56,364**	**$141,220**	**$0**	**$197,584**
Revegetation Cost	$25,453	$13,474	$12,030	$50,957
TOTALS	**$3,414,595**	**$2,170,508**	**$12,030**	**$5,597,133**

58	**offices**			**96**	**80**	**10**	**12**	**6**	**1**	**96**	**0.18**	**60**	**10,300**	**3.0**			
59	**Buckley garage**			**100**	**76**	**18**	**12**	**6**	**1**	**100**	**0.17**	**60**	**10,300**	**3.0**			
60	**Ironclad office**			**100**	**48**	**13**	**12**	**6**	**1**	**100**	**0.11**	**60**	**5,100**	**3.0**			
61	**maint annex**			**75**	**25**	**65**	**12**	**6**	**1**	**75**	**0.04**	**60**	**5,100**	**3.0**			
62	**lab addition**			**30**	**15**	**10**	**12**	**6**	**1**	**30**	**0.01**	**60**	**5,100**	**3.0**			
63	**ROM Silo**			**9**	**9**	**12**	**12**	**6**	**1**	**12**	**0.00**	**60**	**5,100**	**3.0**			
64	**Converor Support**			**4**	**6**	**9**	**12**	**48**	**9**	**12**	**0.00**	**60**	**5,100**	**3.0**			
65	**Under ground contractor double wide**			**24**	**60**	**12**	**6**	**6**	**1**	**60**	**0.03**	**60**	**9,300**	**10.0**			
66	**Newmont double wide**			**24**	**60**	**12**	**6**	**6**	**1**	**60**	**0.03**	**60**	**9,300**	**10.0**			
67	**Underground Fixed Maintenance shop**			**40**	**60**	**18**	**12**	**6**	**1**	**60**	**0.06**	**60**	**9,300**	**10.0**			
68	**Mobile Maintenaince shop**			**50**	**100**	**18**	**12**	**6**	**1**	**100**	**0.11**	**60**	**9,300**	**10.0**			
69	**Lube bay and washbay**			**50**	**80**	**18**	**12**	**6**	**1**	**80**	**0.09**	**60**	**9,300**	**10.0**			
70	**Lube bay and washbay apron**			**124**	**40**	**1**	**12**	**6**	**1**	**124**	**0.11**	**60**	**9,300**	**10.0**			
71	**Compressor Housing**			**45**	**45**	**12**	**6**	**6**	**1**	**45**	**0.05**	**60**	**9,300**	**10.0**			
72	**Shotcrete plant**			**55**	**150**	**12**	**6**	**6**	**1**	**150**	**0.19**	**60**	**9,300**	**10.0**			
73	**Substation**			**135**	**80**	**12**	**6**	**6**	**1**	**135**	**0.25**	**60**	**9,300**	**10.0**			

Notes:
1. Foundation cover only calculated to cover slab. Growth media estimated over entire footprint area
2. If Slope from facility to borrow source is >20, downhill travel time may be underestimated due to limitation of uphill travel time curves and downhill speed tables from CAT Handbook (see Productivty Sheet)

Buildings & Foundation - User Input (cont.) — **You must fill in ALL green cells and relevant blue cells in this section for each building or facility**

		Construction Materials		**Slab Demolition**		**Foundation Cover**			**Growth Media**			**Revegetation**				
	Description (required)	**Building Type** (select)	**Foundation Wall Type** (select)	**Slab Demo Method** (select)	**Slab Breaking Equipment Fleet** (select)	**Cover Material Type** (select)	**Cover Placement Equipment Fleet** (select)	**Maximum Fleet Size** (user override)	**Growth Media Material Type** (select)	**Growth Media Placement Equipment Fleet** (select)	**Maximum Fleet Size** (user override)	**Seed Mix** (select)	**Mulch** (select)	**Fertilizer** (select)	**Scarify/ Rip?** (select)	**Ripping Fleet** (select)
1	**Primary crushers**	**Lg. steel**	**Conc 6 in (150 mm) thick**	**Break & bury**	**Med Excavator**	**Alluvium**	**Med Truck**					**User Mix 1**	**Hydro Mulch**	**Chemical**	**Yes**	**Small Dozer**
2	**Crane above pocket**	**Lg. steel**	**Conc 6 in (150 mm) thick**	**Break & bury**	**Med Excavator**	**Alluvium**	**Med Truck**					**User Mix 1**	**Hydro Mulch**	**Chemical**	**Yes**	**Small Dozer**
3	**Secondary crusher MCC**	**Lg. steel**	**Conc 6 in (150 mm) thick**	**Break & bury**	**Med Excavator**	**Alluvium**	**Med Truck**					**User Mix 1**	**Hydro Mulch**	**Chemical**	**Yes**	**Small Dozer**
4	**Secondary crushers**	**Lg. steel**	**Conc 6 in (150 mm) thick**	**Break & bury**	**Med Excavator**	**Alluvium**	**Med Truck**					**User Mix 1**	**Hydro Mulch**	**Chemical**	**Yes**	**Small Dozer**
5	**Screen Bldg**	**Lg. steel**	**Conc 6 in (150 mm) thick**	**Break & bury**	**Med Excavator**	**Alluvium**	**Med Truck**					**User Mix 1**	**Hydro Mulch**	**Chemical**	**Yes**	**Small Dozer**
6	**Screen MCCs**	**Lg. steel**	**Conc 6 in (150 mm) thick**	**Break & bury**	**Med Excavator**	**Alluvium**	**Med Truck**					**User Mix 1**	**Hydro Mulch**	**Chemical**	**Yes**	**Small Dozer**
7	**Crusher Maint**	**Lg. steel**	**Conc 6 in (150 mm) thick**	**Break & bury**	**Med Excavator**	**Alluvium**	**Med Truck**					**User Mix 1**	**Hydro Mulch**	**Chemical**	**Yes**	**Small Dozer**
8	**Security**	**Lg. steel**	**Conc 6 in (150 mm) thick**	**Break & bury**	**Med Excavator**	**Alluvium**	**Med Truck**					**User Mix 1**	**Hydro Mulch**	**Chemical**	**Yes**	**Small Dozer**
9	**MCC for phase II pumps**	**Lg. steel**	**Conc 6 in (150 mm) thick**	**Break & bury**	**Med Excavator**	**Alluvium**	**Med Truck**					**User Mix 1**	**Hydro Mulch**	**Chemical**	**Yes**	**Small Dozer**
10	**Laboratory**	**Lg. steel**	**Conc 6 in (150 mm) thick**	**Break & bury**	**Med Excavator**	**Alluvium**	**Med Truck**					**User Mix 1**	**Hydro Mulch**	**Chemical**	**Yes**	**Small Dozer**
11	**Project mgr trailer**	**Sm. wood**		**Break & bury**	**Med Excavator**	**Alluvium**	**Med Truck**					**User Mix 1**	**Hydro Mulch**	**Chemical**	**Yes**	**Small Dozer**
12	**Project trailer**	**Sm. wood**		**Break & bury**	**Med Excavator**	**Alluvium**	**Med Truck**					**User Mix 1**	**Hydro Mulch**	**Chemical**	**Yes**	**Small Dozer**
13	**Fire trailer**	**Sm. wood**		**Break & bury**	**Med Excavator**	**Alluvium**	**Med Truck**					**User Mix 1**	**Hydro Mulch**	**Chemical**	**Yes**	**Small Dozer**
14	**Process maint trailer**	**Sm. wood**		**Break & bury**	**Med Excavator**	**Alluvium**	**Med Truck**					**User Mix 1**	**Hydro Mulch**	**Chemical**	**Yes**	**Small Dozer**
15	**Crusher Maint addition**	**Lg. steel**	**Conc 6 in (150 mm) thick**	**Break & bury**	**Med Excavator**	**Alluvium**	**Med Truck**					**User Mix 1**	**Hydro Mulch**	**Chemical**	**Yes**	**Small Dozer**
16	**Crusher Maint lean to**	**Lg. steel**	**Conc 6 in (150 mm) thick**	**Break & bury**	**Med Excavator**	**Alluvium**	**Med Truck**					**User Mix 1**	**Hydro Mulch**	**Chemical**	**Yes**	**Small Dozer**
17	**AGADR 1995**	**Lg. steel**	**Conc 8 in (200 mm) thick**	**Break & bury**	**Med Excavator**	**Alluvium**	**Med Truck**					**User Mix 1**	**Hydro Mulch**	**Chemical**	**Yes**	**Small Dozer**
18	**Pipe access gallery**	**Lg. steel**	**Conc 8 in (200 mm) thick**	**Break & bury**	**Med Excavator**	**Alluvium**	**Med Truck**					**User Mix 1**	**Hydro Mulch**	**Chemical**	**Yes**	**Small Dozer**
19	**carbon strip & regen**	**Lg. steel**	**Conc 8 in (200 mm) thick**	**Break & bury**	**Med Excavator**	**Alluvium**	**Med Truck**					**User Mix 1**	**Hydro Mulch**	**Chemical**	**Yes**	**Small Dozer**
20	**Process maint trailer**	**Sm. wood**		**Break & bury**	**Med Excavator**	**Alluvium**	**Med Truck**					**User Mix 1**	**Hydro Mulch**	**Chemical**	**Yes**	**Small Dozer**
21	**AGADR north**	**Lg. steel**	**Conc 8 in (200 mm) thick**	**Break & bury**	**Med Excavator**	**Alluvium**	**Med Truck**					**User Mix 1**	**Hydro Mulch**	**Chemical**	**Yes**	**Small Dozer**
22	**AGADR south**	**Lg. steel**	**Conc 8 in (200 mm) thick**	**Break & bury**	**Med Excavator**	**Alluvium**	**Med Truck**					**User Mix 1**	**Hydro Mulch**	**Chemical**	**Yes**	**Small Dozer**
23	**Etrain**	**Lg. steel**	**Conc 8 in (200 mm) thick**	**Break & bury**	**Med Excavator**	**Alluvium**	**Med Truck**					**User Mix 1**	**Hydro Mulch**	**Chemical**	**Yes**	**Small Dozer**
24	**MCC fume scrubber**	**Lg. steel**	**Conc 8 in (200 mm) thick**	**Break & bury**	**Med Excavator**	**Alluvium**	**Med Truck**					**User Mix 1**	**Hydro Mulch**	**Chemical**	**Yes**	**Small Dozer**
25	**enrichment pump station**	**Lg. steel**	**Conc 8 in (200 mm) thick**	**Break & bury**	**Med Excavator**	**Alluvium**	**Med Truck**					**User Mix 1**	**Hydro Mulch**	**Chemical**	**Yes**	**Small Dozer**
26	**Ph V Preg pump MCC**	**Lg. steel**	**Conc 8 in (200 mm) thick**	**Break & bury**	**Med Excavator**	**Alluvium**	**Med Truck**					**User Mix 1**	**Hydro Mulch**	**Chemical**	**Yes**	**Small Dozer**
27	**Ph V Preg enrich MCC**	**Lg. steel**	**Conc 8 in (200 mm) thick**	**Break & bury**	**Med Excavator**	**Alluvium**	**Med Truck**					**User Mix 1**	**Hydro Mulch**	**Chemical**	**Yes**	**Small Dozer**
28	**Ph V Preg enrich LVSC**	**Lg. steel**	**Conc 8 in (200 mm) thick**	**Break & bury**	**Med Excavator**	**Alluvium**	**Med Truck**					**User Mix 1**	**Hydro Mulch**	**Chemical**	**Yes**	**Small Dozer**
29	**Victor maint light vehicle shop**	**Lg. steel**	**Conc 6 in (150 mm) thick**	**Break & bury**	**Med Excavator**	**Alluvium**	**Med Truck**					**User Mix 1**	**Hydro Mulch**	**Chemical**	**Yes**	**Small Dozer**

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Project Name: AM-13 BP2020 Financial warranty calculation - Reclamation Plan
Date of Submittal: December 2019
File Name: SRCE_AM13_FW_V4.xlsm
Model Version: Version 1.4.1
Cost Data: User Data
Cost Data File: SRCE_Cost_data-USR_1_12_DRMS_BONDING.xlsm
Cost Estimate Type: Surety Cost Basis: CC&V Bonding

Buildings & Foundation Demolition Cost Summary				
	Labor	**Equipment**	**Materials**	**Totals**
Building Demolition Cost	$2,556,952	$1,872,233	N/A	$4,429,185
Wall Demolition Cost	$750,601	$56,894	N/A	$807,495
Slab Demolition	$25,225	$86,687	N/A	$111,912
Subtotal Demolition	**$3,332,778**	**$2,015,814**	**$0**	**$5,348,592**
Cover Placement Cost	$52,276	$134,358	N/A	$186,634
Growth Media Placement Cost	$0	$0	N/A	$0
Ripping/Scarifying Cost	$4,088	$6,862	N/A	$10,950
Subtotal Earthworks	**$56,364**	**$141,220**	**$0**	**$197,584**
Revegetation Cost	$25,453	$13,474	$12,030	$50,957
TOTALS	**$3,414,595**	**$2,170,508**	**$12,030**	**$5,597,133**

30	**truck wash**	**Lg. steel**	**Conc 6 in (150 mm) thick**	**Break & bury**	**Med Excavator**	**Alluvium**	**Med Truck**					**User Mix 1**	**Hydro Mulch**	**Chemical**	**Yes**	**Small Dozer**
31	**truck shop**	**Lg. steel**	**Conc 6 in (150 mm) thick**	**Break & bury**	**Med Excavator**	**Alluvium**	**Med Truck**					**User Mix 1**	**Hydro Mulch**	**Chemical**	**Yes**	**Small Dozer**
32	**Mill maint warehouse**	**Lg. steel**	**Conc 6 in (150 mm) thick**	**Break & bury**	**Med Excavator**	**Alluvium**	**Med Truck**					**User Mix 1**	**Hydro Mulch**	**Chemical**	**Yes**	**Small Dozer**
33	**agglomerator**	**Lg. steel**	**Conc 6 in (150 mm) thick**	**Break & bury**	**Med Excavator**	**Alluvium**	**Med Truck**					**User Mix 1**	**Hydro Mulch**	**Chemical**	**Yes**	**Small Dozer**
34	**sump pump**	**Lg. steel**	**Conc 6 in (150 mm) thick**	**Break & bury**	**Med Excavator**	**Alluvium**	**Med Truck**					**User Mix 1**	**Hydro Mulch**	**Chemical**	**Yes**	**Small Dozer**
35	**conveyor shed**	**Lg. steel**	**Conc 6 in (150 mm) thick**	**Break & bury**	**Med Excavator**	**Alluvium**	**Med Truck**					**User Mix 1**	**Hydro Mulch**	**Chemical**	**Yes**	**Small Dozer**
36	**process corridor**	**Lg. steel**	**Conc 6 in (150 mm) thick**	**Break & bury**	**Med Excavator**	**Alluvium**	**Med Truck**					**User Mix 1**	**Hydro Mulch**	**Chemical**	**Yes**	**Small Dozer**
37	**Buckley main bldg**	**Lg. steel**	**Conc 6 in (150 mm) thick**	**Break & bury**	**Med Excavator**	**Alluvium**	**Med Truck**					**User Mix 1**	**Hydro Mulch**	**Chemical**	**Yes**	**Small Dozer**
38	**AGVLF AGADR**	**Lg. steel**	**Conc 8 in (200 mm) thick**	**Break & bury**	**Med Excavator**	**Alluvium**	**Med Truck**					**User Mix 1**	**Hydro Mulch**	**Chemical**	**Yes**	**Small Dozer**
39	**MCC & fume scrubber**	**Lg. steel**	**Conc 8 in (200 mm) thick**	**Break & bury**	**Med Excavator**	**Alluvium**	**Med Truck**					**User Mix 1**	**Hydro Mulch**	**Chemical**	**Yes**	**Small Dozer**
40	**enrichment pump station**	**Lg. steel**	**Conc 8 in (200 mm) thick**	**Break & bury**	**Med Excavator**	**Alluvium**	**Med Truck**					**User Mix 1**	**Hydro Mulch**	**Chemical**	**Yes**	**Small Dozer**
41	**Ph V Preg pump MCC**	**Lg. steel**	**Conc 8 in (200 mm) thick**	**Break & bury**	**Med Excavator**	**Alluvium**	**Med Truck**					**User Mix 1**	**Hydro Mulch**	**Chemical**	**Yes**	**Small Dozer**
42	**Ph V Preg enrich MCC**	**Lg. steel**	**Conc 8 in (200 mm) thick**	**Break & bury**	**Med Excavator**	**Alluvium**	**Med Truck**					**User Mix 1**	**Hydro Mulch**	**Chemical**	**Yes**	**Small Dozer**
43	**Ph V Preg enrich LVSC**	**Lg. steel**	**Conc 8 in (200 mm) thick**	**Break & bury**	**Med Excavator**	**Alluvium**	**Med Truck**					**User Mix 1**	**Hydro Mulch**	**Chemical**	**Yes**	**Small Dozer**
44	**Squaw MCC**	**Lg. steel**	**Conc 8 in (200 mm) thick**	**Break & bury**	**Med Excavator**	**Alluvium**	**Med Truck**					**User Mix 1**	**Hydro Mulch**	**Chemical**	**Yes**	**Small Dozer**
45	**warehouse**	**Lg. steel**	**Conc 8 in (200 mm) thick**	**Break & bury**	**Med Excavator**	**Alluvium**	**Med Truck**					**User Mix 1**	**Hydro Mulch**	**Chemical**	**Yes**	**Small Dozer**
46	**LVSC pump**	**Lg. steel**	**Conc 8 in (200 mm) thick**	**Break & bury**	**Med Excavator**	**Alluvium**	**Med Truck**					**User Mix 1**	**Hydro Mulch**	**Chemical**	**Yes**	**Small Dozer**
47	**SGADR**	**Lg. steel**	**Conc 8 in (200 mm) thick**	**Break & bury**	**Med Excavator**	**Alluvium**	**Med Truck**					**User Mix 1**	**Hydro Mulch**	**Chemical**	**Yes**	**Small Dozer**
48	**SGADR utility**	**Lg. steel**	**Conc 8 in (200 mm) thick**	**Break & bury**	**Med Excavator**	**Alluvium**	**Med Truck**					**User Mix 1**	**Hydro Mulch**	**Chemical**	**Yes**	**Small Dozer**
49	**security**	**Lg. steel**	**Conc 8 in (200 mm) thick**	**Break & bury**	**Med Excavator**	**Alluvium**	**Med Truck**					**User Mix 1**	**Hydro Mulch**	**Chemical**	**Yes**	**Small Dozer**
50	**modular office 1**	**Lg. steel**	**Conc 8 in (200 mm) thick**	**Break & bury**	**Med Excavator**	**Alluvium**	**Med Truck**					**User Mix 1**	**Hydro Mulch**	**Chemical**	**Yes**	**Small Dozer**
51	**modular office 2**	**Lg. steel**	**Conc 8 in (200 mm) thick**	**Break & bury**	**Med Excavator**	**Alluvium**	**Med Truck**					**User Mix 1**	**Hydro Mulch**	**Chemical**	**Yes**	**Small Dozer**
52	**modular office 3**	**Lg. steel**	**Conc 8 in (200 mm) thick**	**Break & bury**	**Med Excavator**	**Alluvium**	**Med Truck**					**User Mix 1**	**Hydro Mulch**	**Chemical**	**Yes**	**Small Dozer**
53	**substation**	**Lg. steel**	**Conc 8 in (200 mm) thick**	**Break & bury**	**Med Excavator**	**Alluvium**	**Med Truck**					**User Mix 1**	**Hydro Mulch**	**Chemical**	**Yes**	**Small Dozer**
54	**auxiliary A**	**Lg. steel**	**Conc 8 in (200 mm) thick**	**Break & bury**	**Med Excavator**	**Alluvium**	**Med Truck**					**User Mix 1**	**Hydro Mulch**	**Chemical**	**Yes**	**Small Dozer**
55	**auxiliary B**	**Lg. steel**	**Conc 8 in (200 mm) thick**	**Break & bury**	**Med Excavator**	**Alluvium**	**Med Truck**					**User Mix 1**	**Hydro Mulch**	**Chemical**	**Yes**	**Small Dozer**
56	**auxiliary C**	**Lg. steel**	**Conc 8 in (200 mm) thick**	**Break & bury**	**Med Excavator**	**Alluvium**	**Med Truck**					**User Mix 1**	**Hydro Mulch**	**Chemical**	**Yes**	**Small Dozer**
57	**High grade mill**	**Lg. steel**	**Conc 8 in (200 mm) thick**	**Break & bury**	**Med Excavator**	**Alluvium**	**Med Truck**					**User Mix 1**	**Hydro Mulch**	**Chemical**	**Yes**	**Small Dozer**
58	**offices**	**Lg. steel**	**Conc 6 in (150 mm) thick**	**Break & bury**	**Med Excavator**	**Alluvium**	**Med Truck**					**User Mix 1**	**Hydro Mulch**	**Chemical**	**Yes**	**Small Dozer**
59	**Buckley garage**	**Lg. steel**	**Conc 6 in (150 mm) thick**	**Break & bury**	**Med Excavator**	**Alluvium**	**Med Truck**					**User Mix 1**	**Hydro Mulch**	**Chemical**	**Yes**	**Small Dozer**
60	**Ironclad office**	**Lg. steel**	**Conc 6 in (150 mm) thick**	**Break & bury**	**Med Excavator**	**Alluvium**	**Med Truck**					**User Mix 1**	**Hydro Mulch**	**Chemical**	**Yes**	**Small Dozer**
61	**maint annex**	**Lg. steel**	**Conc 6 in (150 mm) thick**	**Break & bury**	**Med Excavator**	**Alluvium**	**Med Truck**					**User Mix 1**	**Hydro Mulch**	**Chemical**	**Yes**	**Small Dozer**
62	**lab addition**	**Lg. steel**	**Conc 6 in (150 mm) thick**	**Break & bury**	**Med Excavator**	**Alluvium**	**Med Truck**					**User Mix 1**	**Hydro Mulch**	**Chemical**	**Yes**	**Small Dozer**
63	**ROM Silo**	**Lg. steel**	**Conc 12 in (300 mm) thick**	**Break & bury**	**Med Excavator**	**Alluvium**	**Med Truck**					**User Mix 1**	**Hydro Mulch**	**Chemical**	**Yes**	**Small Dozer**
64	**Converor Support**	**Lg. masonry**	**Conc 12 in (300 mm) thick**	**Break & bury**	**Med Excavator**	**Alluvium**	**Med Truck**					**User Mix 1**	**Hydro Mulch**	**Chemical**	**Yes**	**Small Dozer**
65	**Under ground contractor double wide**	**Sm. wood**		**Break & bury**	**Med Excavator**	**Alluvium**	**Med Truck**					**User Mix 1**	**Hydro Mulch**	**Chemical**	**Yes**	**Small Dozer**
66	**Newmont double wide**	**Sm. wood**		**Break & bury**	**Med Excavator**	**Alluvium**	**Med Truck**					**User Mix 1**	**Hydro Mulch**	**Chemical**	**Yes**	**Small Dozer**
67	**Underground Fixed Maintenance shop**	**Lg. steel**	**Conc 6 in (150 mm) thick**	**Break & bury**	**Med Excavator**	**Alluvium**	**Med Truck**					**User Mix 1**	**Hydro Mulch**	**Chemical**	**Yes**	**Small Dozer**
68	**Mobile Maintenaince shop**	**Lg. steel**	**Conc 6 in (150 mm) thick**	**Break & bury**	**Med Excavator**	**Alluvium**	**Med Truck**					**User Mix 1**	**Hydro Mulch**	**Chemical**	**Yes**	**Small Dozer**
69	**Lube bay and washbay**	**Lg. steel**	**Conc 6 in (150 mm) thick**	**Break & bury**	**Med Excavator**	**Alluvium**	**Med Truck**					**User Mix 1**	**Hydro Mulch**	**Chemical**	**Yes**	**Small Dozer**
70	**Lube bay and washbay apron**	**Lg. steel**	**Conc 6 in (150 mm) thick**	**Break & bury**	**Med Excavator**	**Alluvium**	**Med Truck**					**User Mix 1**	**Hydro Mulch**	**Chemical**	**Yes**	**Small Dozer**
71	**Compressor Housing**	**Lg. steel**	**Conc 6 in (150 mm) thick**	**Break & bury**	**Med Excavator**	**Alluvium**	**Med Truck**					**User Mix 1**	**Hydro Mulch**	**Chemical**	**Yes**	**Small Dozer**
72	**Shotcrete plant**	**Lg. steel**	**Conc 6 in (150 mm) thick**	**Break & bury**	**Med Excavator**	**Alluvium**	**Med Truck**					**User Mix 1**	**Hydro Mulch**	**Chemical**	**Yes**	**Small Dozer**
73	**Substation**	**Lg. steel**	**Conc 6 in (150 mm) thick**	**Break & bury**	**Med Excavator**	**Alluvium**	**Med Truck**					**User Mix 1**	**Hydro Mulch**	**Chemical**	**Yes**	**Small Dozer**

Notes:
1. Material Types are used for density correction based on material densities in Caterpillar Performance Handbook material density table

Buildings & Foundation - Calculations

Building Volume Calculations

Using Means Heavy Construction Cost Data (2004) calculates cubic feet from building dimensions
Estimage slab thickness and wall thickness if not known
Assumes that all concrete slabs are reinforced
Productivity for crew from Means Heavy Construction Cost Data (2004) adjusted for supervision
(addressed in Misc. Costs) and Davis-Bacon Wage Rates
Demolition costs do not include hauling or disposing if debris - Use Waste Disposal module

Slab Demolition Calculations

Minimum 1 hr excavator time for slab demolition

Cover Volume Calculation

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Project Name: AM-13 BP2020 Financial warranty calculation - Reclamation Plan
Date of Submittal: December 2019
File Name: SRCE_AM13_FW_V4.xlsm
Model Version: Version 1.4.1
Cost Data: User Data
Cost Data File: SRCE_Cost_data-USR_1_12_DRMS_BONDING.xlsm
Cost Estimate Type: Surety Cost Basis: CC&V Bonding

Buildings & Foundation Demolition Cost Summary

	Labor	Equipment	Materials	Totals
Building Demolition Cost	$2,556,952	$1,872,233	N/A	$4,429,185
Wall Demolition Cost	$750,601	$56,894	N/A	$807,495
Slab Demolition	$25,225	$86,687	N/A	$111,912
Subtotal Demolition	**$3,332,778**	**$2,015,814**	**$0**	**$5,348,592**
Cover Placement Cost	$52,276	$134,358	N/A	$186,634
Growth Media Placement Cost	$0	$0	N/A	$0
Ripping/Scarifying Cost	$4,088	$6,862	N/A	$10,950
Subtotal Earthworks	**$56,364**	**$141,220**	**$0**	**$197,584**
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TOTALS	**$3,414,595**	**$2,170,508**	**$12,030**	**$5,597,133**

Foundation area x cover thickness
If "Bury in Place" is selected as slab demolition method, cover thickness is adjusted such that
total cover (cover + growth media) equals value entered in "Minimum thickness of cover over unbroken slab" cell above

Ripping/Scarifying Calculations

Flat area width = Final flat area ÷ Average long dimensions
Number of passes = Flat area width ÷ Grader width
Travel distance = Number of passes x Average long dimensions
Total hours = (Travel distance ÷ Grader productivity) + (Number of passes x Grader maneuver time)

Revegetation

Minimum 1 acre revegetation crew time per area

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Project Name: AM-13 BP2020 Financial warranty calculation - Reclamation Plan
Date of Submittal: December 2019
File Name: SRCE_AM13_FW_V4.xlsm
Model Version: Version 1.4.1
Cost Data: User Data
Cost Data File: SRCE_Cost_data-USR_1_12_DRMS_BONDING.xlsm
Cost Estimate Type: Surety Cost Basis: CC&V Bonding

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Cover Placement Cost	$52,276	$134,358	N/A	$186,634
Growth Media Placement Cost	$0	$0	N/A	$0
Ripping/Scarifying Cost	$4,088	$6,862	N/A	$10,950
Subtotal Earthworks	**$56,364**	**$141,220**	**$0**	**$197,584**
Revegetation Cost	$25,453	$13,474	$12,030	$50,957
TOTALS	**$3,414,595**	**$2,170,508**	**$12,030**	**$5,597,133**

Building & Foundation Demolition Costs

Uses RS Means Heavy Construction Cost Data for building and wall demolition cost calculations. Uses CAT Handbook for slab breaking production.

								Building Demolition			Wall Demolition			Slab Demolition			Total Costs		
	Description (required)	Building Footprint (slab area) sqft	Building Volume cu ft	Wall Length ft	Wall Area sq ft	Slab Demolition Fleet	Slab Volume cy	Total Labor Cost $	Total Equipment Cost $	Total Building Demolition Cost $	Total Labor Cost $	Total Equipment Cost $	Total Wall Demolition Cost $	Total Labor Cost $	Total Equipment Cost $	Total Slab Breaking Cost $	Total Labor Cost $	Total Equipment Cost $	Total Demolition Costs $
1	**Primary crushers**	3,744	419,328	252	252	345B	139	$62,899	$46,126	$109,025	$4,927	$375	$5,302	$257	$884	$1,141	$68,083	$47,385	$115,468
2	**Crane above pocket**	2,805	140,250	236	236	345B	104	$21,038	$15,428	$36,466	$4,614	$352	$4,966	$190	$654	$844	$25,842	$16,434	$42,276
3	**Secondary crusher MCC**	1,113	16,695	148	148	345B	41	$2,504	$1,836	$4,340	$2,893	$221	$3,114	$112	$385	$497	$5,509	$2,442	$7,951
4	**Secondary crushers**	8,040	860,280	374	374	345B	298	$129,042	$94,631	$223,673	$7,312	$557	$7,869	$560	$1,923	$2,483	$136,914	$97,111	$234,025
5	**Screen Bldg**	2,304	198,144	208	208	345B	85	$29,722	$21,796	$51,518	$4,066	$310	$4,376	$157	$538	$695	$33,945	$22,644	$56,589
6	**Screen MCCs**	720	10,800	116	116	345B	27	$1,620	$1,188	$2,808	$2,268	$173	$2,441	$112	$385	$497	$4,000	$1,746	$5,746
7	**Crusher Maint**	1,600	27,200	160	160	345B	59	$4,080	$2,992	$7,072	$3,128	$238	$3,366	$112	$385	$497	$7,320	$3,615	$10,935
8	**Security**	2,600	26,000	210	210	345B	96	$3,900	$2,860	$6,760	$4,106	$313	$4,419	$179	$615	$794	$8,185	$3,788	$11,973
9	**MCC for phase II pumps**	231	2,772	64	64	345B	9	$416	$305	$721	$1,251	$95	$1,346	$112	$385	$497	$1,779	$785	$2,564
10	**Laboratory**	10,350	538,200	438	438	345B	383	$80,730	$59,202	$139,932	$8,563	$653	$9,216	$716	$2,461	$3,177	$90,009	$62,316	$152,325
11	**Project mgr trailer**	684	6,840	138	0	345B	13	$1,300	$752	$2,052	$0	$0	$0	$112	$385	$497	$1,412	$1,137	$2,549
12	**Project trailer**	2,120	21,200	186	0	345B	39	$4,028	$2,332	$6,360	$0	$0	$0	$112	$385	$497	$4,140	$2,717	$6,857
13	**Fire trailer**	200	2,000	60	0	345B	4	$380	$220	$600	$0	$0	$0	$112	$385	$497	$492	$605	$1,097
14	**Process maint trailer**	1,500	15,000	170	0	345B	28	$2,850	$1,650	$4,500	$0	$0	$0	$112	$385	$497	$2,962	$2,035	$4,997
15	**Crusher Maint addition**	1,000	17,000	130	130	345B	37	$2,550	$1,870	$4,420	$2,542	$194	$2,736	$112	$385	$497	$5,204	$2,449	$7,653
16	**Crusher Maint lean to**	400	5,200	100	100	345B	15	$780	$572	$1,352	$1,955	$149	$2,104	$112	$385	$497	$2,847	$1,106	$3,953
17	**AGADR 1995**	16,500	858,000	530	1,590	345B	611	$128,700	$94,380	$223,080	$35,521	$2,687	$38,208	$1,141	$3,922	$5,063	$165,362	$100,989	$266,351
18	**Pipe access gallery**	600	6,000	140	420	345B	22	$900	$660	$1,560	$9,383	$710	$10,093	$112	$385	$497	$10,395	$1,755	$12,150
19	**carbon strip & regen**	2,675	120,375	264	792	345B	99	$18,056	$13,241	$31,297	$17,693	$1,338	$19,031	$190	$654	$844	$35,939	$15,233	$51,172
20	**Process maint trailer**	1,500	18,000	170	0	345B	28	$3,420	$1,980	$5,400	$0	$0	$0	$112	$385	$497	$3,532	$2,365	$5,897
21	**AGADR north**	7,095	312,180	416	1,248	345B	263	$46,827	$34,340	$81,167	$27,880	$2,109	$29,989	$492	$1,692	$2,184	$75,199	$38,141	$113,340
22	**AGADR south**	7,560	430,920	356	1,068	345B	280	$64,638	$47,401	$112,039	$23,859	$1,805	$25,664	$526	$1,807	$2,333	$89,023	$51,013	$140,036
23	**Etrain**	5,964	316,092	368	1,104	345B	221	$47,414	$34,770	$82,184	$24,663	$1,866	$26,529	$414	$1,423	$1,837	$72,491	$38,059	$110,550
24	**MCC fume scrubber**	592	9,472	106	318	345B	22	$1,421	$1,042	$2,463	$7,104	$537	$7,641	$112	$385	$497	$8,637	$1,964	$10,601
25	**enrichment pump station**	1,800	68,400	180	540	345B	67	$10,260	$7,524	$17,784	$12,064	$913	$12,977	$123	$423	$546	$22,447	$8,860	$31,307
26	**Ph V Preg pump MCC**	484	8,228	88	264	345B	18	$1,234	$905	$2,139	$5,898	$446	$6,344	$112	$385	$497	$7,244	$1,736	$8,980
27	**Ph V Preg enrich MCC**	924	15,708	128	384	345B	34	$2,356	$1,728	$4,084	$8,579	$649	$9,228	$112	$385	$497	$11,047	$2,762	$13,809
28	**Ph V Preg enrich LVSC**	200	2,400	60	180	345B	7	$360	$264	$624	$4,021	$304	$4,325	$112	$385	$497	$4,493	$953	$5,446
29	**Victor maint light vehicle shop**	4,480	53,760	272	272	345B	166	$8,064	$5,914	$13,978	$5,318	$405	$5,723	$313	$1,077	$1,390	$13,695	$7,396	$21,091
30	**truck wash**	3,375	138,375	240	240	345B	125	$20,756	$15,221	$35,977	$4,692	$358	$5,050	$235	$807	$1,042	$25,683	$16,386	$42,069
31	**truck shop**	28,975	1,883,375	800	800	345B	1,073	$282,506	$207,171	$489,677	$15,640	$1,192	$16,832	$2,003	$6,883	$8,886	$300,149	$215,246	$515,395
32	**Mill maint warehouse**	11,400	535,800	514	514	345B	422	$80,370	$58,938	$139,308	$10,049	$766	$10,815	$783	$2,692	$3,475	$91,202	$62,396	$153,598
33	**agglomerator**	1,520	51,680	192	576	345B	56	$7,752	$5,685	$13,437	$11,261	$858	$12,119	$112	$385	$497	$19,125	$6,928	$26,053
34	**sump pump**	240	3,120	62	186	345B	9	$468	$343	$811	$3,636	$277	$3,913	$112	$385	$497	$4,216	$1,005	$5,221
35	**conveyor shed**	1,105	23,205	196	196	345B	41	$3,481	$2,553	$6,034	$3,832	$292	$4,124	$112	$385	$497	$7,425	$3,230	$10,655
36	**process corridor**	2,625	63,000	380	1,140	345B	97	$9,450	$6,930	$16,380	$22,287	$1,699	$23,986	$179	$615	$794	$31,916	$9,244	$41,160
37	**Buckley main bldg**	2,400	28,800	200	200	345B	89	$4,320	$3,168	$7,488	$3,910	$298	$4,208	$168	$577	$745	$8,398	$4,043	$12,441
38	**AGVLF AGADR**	5,964	316,092	368	1,104	345B	221	$47,414	$34,770	$82,184	$24,663	$1,866	$26,529	$414	$1,423	$1,837	$72,491	$38,059	$110,550
39	**MCC & fume scrubber**	592	9,472	106	318	345B	22	$1,421	$1,042	$2,463	$7,104	$537	$7,641	$112	$385	$497	$8,637	$1,964	$10,601
40	**enrichment pump station**	1,800	68,400	180	540	345B	67	$10,260	$7,524	$17,784	$12,064	$913	$12,977	$123	$423	$546	$22,447	$8,860	$31,307
41	**Ph V Preg pump MCC**	484	8,228	88	264	345B	18	$1,234	$905	$2,139	$5,898	$446	$6,344	$112	$385	$497	$7,244	$1,736	$8,980
42	**Ph V Preg enrich MCC**	924	15,708	128	384	345B	34	$2,356	$1,728	$4,084	$8,579	$649	$9,228	$112	$385	$497	$11,047	$2,762	$13,809
43	**Ph V Preg enrich LVSC**	200	2,400	60	180	345B	7	$360	$264	$624	$4,021	$304	$4,325	$112	$385	$497	$4,493	$953	$5,446
44	**Squaw MCC**	1,620	19,440	174	522	345B	60	$2,916	$2,138	$5,054	$11,661	$882	$12,543	$112	$385	$497	$14,689	$3,405	$18,094
45	**warehouse**	8,320	266,240	368	1,104	345B	308	$39,936	$29,286	$69,222	$24,663	$1,866	$26,529	$571	$1,961	$2,532	$65,170	$33,113	$98,283
46	**LVSC pump**	1,510	18,120	322	966	345B	56	$2,718	$1,993	$4,711	$21,580	$1,633	$23,213	$112	$385	$497	$24,410	$4,011	$28,421
47	**SGADR**	33,000	2,046,000	730	2,190	345B	1,222	$306,900	$225,060	$531,960	$48,925	$3,701	$52,626	$2,283	$7,844	$10,127	$358,108	$236,605	$594,713
48	**SGADR utility**	1,800	30,600	180	540	345B	67	$4,590	$3,366	$7,956	$12,064	$913	$12,977	$123	$423	$546	$16,777	$4,702	$21,479
49	**security**	2,860	28,600	326	978	345B	106	$4,290	$3,146	$7,436	$21,849	$1,653	$23,502	$201	$692	$893	$26,340	$5,491	$31,831
50	**modular office 1**	3,960	39,600	252	756	345B	73	$5,940	$4,356	$10,296	$16,889	$1,278	$18,167	$134	$461	$595	$22,963	$6,095	$29,058
51	**modular office 2**	3,960	39,600	252	756	345B	73	$5,940	$4,356	$10,296	$16,889	$1,278	$18,167	$134	$461	$595	$22,963	$6,095	$29,058
52	**modular office 3**	792	7,920	156	468	345B	15	$1,188	$871	$2,059	$10,455	$791	$11,246	$112	$385	$497	$11,755	$2,047	$13,802
53	**substation**	10,700	160,500	414	1,242	345B	396	$24,075	$17,655	$41,730	$27,746	$2,099	$29,845	$739	$2,538	$3,277	$52,560	$22,292	$74,852
54	**auxiliary A**	1,320	13,200	172	516	345B	49	$1,980	$1,452	$3,432	$11,527	$872	$12,399	$112	$385	$497	$13,619	$2,709	$16,328
55	**auxiliary B**	400	4,000	80	240	345B	15	$600	$440	$1,040	$5,362	$406	$5,768	$112	$385	$497	$6,074	$1,231	$7,305
56	**auxiliary C**	920	9,200	132	396	345B	34	$1,380	$1,012	$2,392	$8,847	$669	$9,516	$112	$385	$497	$10,339	$2,066	$12,405
57	**High grade mill**	67,000	5,762,000	1,070	3,210	345B	2,481	$864,300	$633,820	$1,498,120	$71,711	$5,425	$77,136	$4,633	$15,919	$20,552	$940,644	$655,164	$1,595,808
58	**offices**	7,680	76,800	352	352	345B	284	$11,520	$8,448	$19,968	$6,882	$524	$7,406	$526	$1,807	$2,333	$18,928	$10,779	$29,707

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Project Name: AM-13 BP2020 Financial warranty calculation - Reclamation Plan
Date of Submittal: December 2019
File Name: SRCE_AM13_FW_V4.xlsm
Model Version: Version 1.4.1
Cost Data: User Data
Cost Data File: SRCE_Cost_data-USR_1_12_DRMS_BONDING.xlsm
Cost Estimate Type: Surety Cost Basis: CC&V Bonding

Buildings & Foundation Demolition Cost Summary				
	Labor	**Equipment**	**Materials**	**Totals**
Building Demolition Cost	$2,556,952	$1,872,233	N/A	$4,429,185
Wall Demolition Cost	$750,601	$56,894	N/A	$807,495
Slab Demolition	$25,225	$86,687	N/A	$111,912
Subtotal Demolition	**$3,332,778**	**$2,015,814**	**$0**	**$5,348,592**
Cover Placement Cost	$52,276	$134,358	N/A	$186,634
Growth Media Placement Cost	$0	$0	N/A	$0
Ripping/Scarifying Cost	$4,088	$6,862	N/A	$10,950
Subtotal Earthworks	**$56,364**	**$141,220**	**$0**	**$197,584**
Revegetation Cost	$25,453	$13,474	$12,030	$50,957
TOTALS	**$3,414,595**	**$2,170,508**	**$12,030**	**$5,597,133**

59	**Buckley garage**	7,600	136,800	352	352	345B	281	$20,520	$15,048	$35,568	$6,882	$524	$7,406	$526	$1,807	$2,333	$27,928	$17,379	$45,307
60	**Ironclad office**	4,800	62,400	296	296	345B	178	$9,360	$6,864	$16,224	$5,787	$441	$6,228	$336	$1,154	$1,490	$15,483	$8,459	$23,942
61	**maint annex**	1,875	121,875	200	200	345B	69	$18,281	$13,406	$31,687	$3,910	$298	$4,208	$134	$461	$595	$22,325	$14,165	$36,490
62	**lab addition**	450	4,500	90	90	345B	17	$675	$495	$1,170	$1,760	$134	$1,894	$112	$385	$497	$2,547	$1,014	$3,561
63	**ROM Silo**	81	972	36	36	345B	3	$146	$107	$253	$1,126	$85	$1,211	$112	$385	$497	$1,384	$577	$1,961
64	**Converor Support**	24	216	20	180	345B	1	$35	$24	$59	$5,630	$427	$6,057	$112	$385	$497	$5,777	$836	$6,613
65	**Under ground contractor double wide**	1,440	17,280	168	168	345B	27	$3,283	$1,901	$5,184	$0	$0	$0	$112	$385	$497	$3,395	$2,286	$5,681
66	**Newmont double wide**	1,440	17,280	168	168	345B	27	$3,283	$1,901	$5,184	$0	$0	$0	$112	$385	$497	$3,395	$2,286	$5,681
67	**Underground Fixed Maintenance shop**	2,400	43,200	200	200	345B	89	$6,480	$4,752	$11,232	$3,910	$298	$4,208	$168	$577	$745	$10,558	$5,627	$16,185
68	**Mobile Maintenaince shop**	5,000	90,000	300	300	345B	185	$13,500	$9,900	$23,400	$5,865	$447	$6,312	$347	$1,192	$1,539	$19,712	$11,539	$31,251
69	**Lube bay and washbay**	4,000	72,000	260	260	345B	148	$10,800	$7,920	$18,720	$5,083	$387	$5,470	$280	$961	$1,241	$16,163	$9,268	$25,431
70	**Lube bay and washbay apron**	4,960	4,960	328	328	345B	184	$744	$546	$1,290	$6,412	$489	$6,901	$347	$1,192	$1,539	$7,503	$2,227	$9,730
71	**Compressor Housing**	2,025	24,300	180	180	345B	38	$3,645	$2,673	$6,318	$3,519	$268	$3,787	$112	$385	$497	$7,276	$3,326	$10,602
72	**Shotcrete plant**	8,250	99,000	410	410	345B	153	$14,850	$10,890	$25,740	$8,016	$611	$8,627	$291	$1,000	$1,291	$23,157	$12,501	$35,658
73	**Substation**	10,800	129,600	430	430	345B	200	$19,440	$14,256	$33,696	$8,407	$641	$9,048	$369	$1,269	$1,638	$28,216	$16,166	$44,382
			17,020,302				12,335	**$2,556,952**	**$1,872,233**	**$4,429,185**	**$750,601**	**$56,894**	**$807,495**	**$25,225**	**$86,687**	**$111,912**	**$3,332,778**	**$2,015,814**	**$5,348,592**

Building & Foundation - Foundation Cover and Growth Media Costs																			
		Foundation Cover								**Growth Media**								**Total Cover & Growth Media Costs**		
	Description (required)	**Cover Volume** cy	**Cover Repacement Fleet**	**Fleet Productivity** LCY/hr	**Number of Trucks/ Scrapers**	**Total Fleet Hours**	**Total Labor Cost** $	**Total Equipment Cost** $	**Total Cover Cost** $	**Growth Media Volume** cy	**Growth Media Repacement Fleet**	**Fleet Productivity** LCY/hr	**Number of Trucks/ Scrapers**	**Total Fleet Hours**	**Total Labor Cost** $	**Total Equipment Cost** $	**Total Growth Media Cost** $	**Total Labor Cost** $	**Total Equipment Cost** $	**Total Costs** $
1	**Primary crushers**	693	740/988G/D8R	700	6	1	$448	$1,146	$1,594						$0	$0	$0	$448	$1,146	$1,594
2	**Crane above pocket**	519	740/988G/D8R	661	6	1	$448	$1,146	$1,594						$0	$0	$0	$448	$1,146	$1,594
3	**Secondary crusher MCC**	206	740/988G/D8R	661	6	1	$448	$1,146	$1,594						$0	$0	$0	$448	$1,146	$1,594
4	**Secondary crushers**	1,489	740/988G/D8R	661	6	2	$895	$2,291	$3,186						$0	$0	$0	$895	$2,291	$3,186
5	**Screen Bldg**	427	740/988G/D8R	661	6	1	$448	$1,146	$1,594						$0	$0	$0	$448	$1,146	$1,594
6	**Screen MCCs**	133	740/988G/D8R	654	4	1	$336	$874	$1,210						$0	$0	$0	$336	$874	$1,210
7	**Crusher Maint**	296	740/988G/D8R	654	4	1	$336	$874	$1,210						$0	$0	$0	$336	$874	$1,210
8	**Security**	481	740/988G/D8R	654	4	1	$336	$874	$1,210						$0	$0	$0	$336	$874	$1,210
9	**MCC for phase II pumps**	43	740/988G/D8R	654	4	1	$336	$874	$1,210						$0	$0	$0	$336	$874	$1,210
10	**Laboratory**	1,917	740/988G/D8R	654	4	3	$1,007	$2,621	$3,628						$0	$0	$0	$1,007	$2,621	$3,628
11	**Project mgr trailer**	127	740/988G/D8R	671	12	1	$783	$1,962	$2,745						$0	$0	$0	$783	$1,962	$2,745
12	**Project trailer**	393	740/988G/D8R	631	6	1	$448	$1,146	$1,594						$0	$0	$0	$448	$1,146	$1,594
13	**Fire trailer**	37	740/988G/D8R	661	6	1	$448	$1,146	$1,594						$0	$0	$0	$448	$1,146	$1,594
14	**Process maint trailer**	278	740/988G/D8R	661	6	1	$448	$1,146	$1,594						$0	$0	$0	$448	$1,146	$1,594
15	**Crusher Maint addition**	185	740/988G/D8R	661	6	1	$448	$1,146	$1,594						$0	$0	$0	$448	$1,146	$1,594
16	**Crusher Maint lean to**	74	740/988G/D8R	661	6	1	$448	$1,146	$1,594						$0	$0	$0	$448	$1,146	$1,594
17	**AGADR 1995**	3,056	740/988G/D8R	661	6	5	$2,238	$5,728	$7,966						$0	$0	$0	$2,238	$5,728	$7,966
18	**Pipe access gallery**	111	740/988G/D8R	661	6	1	$448	$1,146	$1,594						$0	$0	$0	$448	$1,146	$1,594
19	**carbon strip & regen**	495	740/988G/D8R	661	6	1	$448	$1,146	$1,594						$0	$0	$0	$448	$1,146	$1,594
20	**Process maint trailer**	278	740/988G/D8R	661	6	1	$448	$1,146	$1,594						$0	$0	$0	$448	$1,146	$1,594
21	**AGADR north**	1,314	740/988G/D8R	661	6	2	$895	$2,291	$3,186						$0	$0	$0	$895	$2,291	$3,186
22	**AGADR south**	1,400	740/988G/D8R	661	6	2	$895	$2,291	$3,186						$0	$0	$0	$895	$2,291	$3,186
23	**Etrain**	1,104	740/988G/D8R	661	6	2	$895	$2,291	$3,186						$0	$0	$0	$895	$2,291	$3,186
24	**MCC fume scrubber**	110	740/988G/D8R	661	6	1	$448	$1,146	$1,594						$0	$0	$0	$448	$1,146	$1,594
25	**enrichment pump station**	333	740/988G/D8R	654	4	1	$336	$874	$1,210						$0	$0	$0	$336	$874	$1,210
26	**Ph V Preg pump MCC**	90	740/988G/D8R	654	4	1	$336	$874	$1,210						$0	$0	$0	$336	$874	$1,210
27	**Ph V Preg enrich MCC**	171	740/988G/D8R	654	4	1	$336	$874	$1,210						$0	$0	$0	$336	$874	$1,210
28	**Ph V Preg enrich LVSC**	37	740/988G/D8R	654	4	1	$336	$874	$1,210						$0	$0	$0	$336	$874	$1,210
29	**Victor maint light vehicle shop**	830	740/988G/D8R	654	4	1	$336	$874	$1,210						$0	$0	$0	$336	$874	$1,210
30	**truck wash**	625	740/988G/D8R	700	6	1	$448	$1,146	$1,594						$0	$0	$0	$448	$1,146	$1,594
31	**truck shop**	5,366	740/988G/D8R	654	4	8	$2,686	$6,988	$9,674						$0	$0	$0	$2,686	$6,988	$9,674
32	**Mill maint warehouse**	2,111	740/988G/D8R	654	4	3	$1,007	$2,621	$3,628						$0	$0	$0	$1,007	$2,621	$3,628
33	**agglomerator**	281	740/988G/D8R	654	4	1	$336	$874	$1,210						$0	$0	$0	$336	$874	$1,210
34	**sump pump**	44	740/988G/D8R	700	6	1	$448	$1,146	$1,594						$0	$0	$0	$448	$1,146	$1,594
35	**conveyor shed**	205	740/988G/D8R	700	6	1	$448	$1,146	$1,594						$0	$0	$0	$448	$1,146	$1,594
36	**process corridor**	486	740/988G/D8R	700	6	1	$448	$1,146	$1,594						$0	$0	$0	$448	$1,146	$1,594
37	**Buckley main bldg**	444	740/988G/D8R	700	6	1	$448	$1,146	$1,594						$0	$0	$0	$448	$1,146	$1,594
38	**AGVLF AGADR**	1,104	740/988G/D8R	700	6	2	$895	$2,291	$3,186						$0	$0	$0	$895	$2,291	$3,186
39	**MCC & fume scrubber**	110	740/988G/D8R	654	4	1	$336	$874	$1,210						$0	$0	$0	$336	$874	$1,210
40	**enrichment pump station**	333	740/988G/D8R	661	6	1	$448	$1,146	$1,594						$0	$0	$0	$448	$1,146	$1,594
41	**Ph V Preg pump MCC**	90	740/988G/D8R	661	6	1	$448	$1,146	$1,594						$0	$0	$0	$448	$1,146	$1,594

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Project Name: AM-13 BP2020 Financial warranty calculation - Reclamation Plan
Date of Submittal: December 2019
File Name: SRCE_AM13_FW_V4.xlsm
Model Version: Version 1.4.1
Cost Data: User Data
Cost Data File: SRCE_Cost_data-USR_1_12_DRMS_BONDING.xlsm
Cost Estimate Type: Surety Cost Basis: CC&V Bonding

Buildings & Foundation Demolition Cost Summary

	Labor	Equipment	Materials	Totals
Building Demolition Cost	$2,556,952	$1,872,233	N/A	$4,429,185
Wall Demolition Cost	$750,601	$56,894	N/A	$807,495
Slab Demolition	$25,225	$86,687	N/A	$111,912
Subtotal Demolition	**$3,332,778**	**$2,015,814**	**$0**	**$5,348,592**
Cover Placement Cost	$52,276	$134,358	N/A	$186,634
Growth Media Placement Cost	$0	$0	N/A	$0
Ripping/Scarifying Cost	$4,088	$6,862	N/A	$10,950
Subtotal Earthworks	**$56,364**	**$141,220**	**$0**	**$197,584**
Revegetation Cost	$25,453	$13,474	$12,030	$50,957
TOTALS	**$3,414,595**	**$2,170,508**	**$12,030**	**$5,597,133**

42	**Ph V Preg enrich MCC**	171	740/988G/D8R	661	6	1	$448	$1,146	$1,594						$0	$0	$0	$448	$1,146	$1,594
43	**Ph V Preg enrich LVSC**	37	740/988G/D8R	661	6	1	$448	$1,146	$1,594						$0	$0	$0	$448	$1,146	$1,594
44	**Squaw MCC**	300	740/988G/D8R	661	6	1	$448	$1,146	$1,594						$0	$0	$0	$448	$1,146	$1,594
45	**warehouse**	1,541	740/988G/D8R	661	6	2	$895	$2,291	$3,186						$0	$0	$0	$895	$2,291	$3,186
46	**LVSC pump**	280	740/988G/D8R	661	6	1	$448	$1,146	$1,594						$0	$0	$0	$448	$1,146	$1,594
47	**SGADR**	6,111	740/988G/D8R	661	6	9	$4,028	$10,310	$14,338						$0	$0	$0	$4,028	$10,310	$14,338
48	**SGADR utility**	333	740/988G/D8R	661	6	1	$448	$1,146	$1,594						$0	$0	$0	$448	$1,146	$1,594
49	**security**	530	740/988G/D8R	661	6	1	$448	$1,146	$1,594						$0	$0	$0	$448	$1,146	$1,594
50	**modular office 1**	733	740/988G/D8R	661	6	1	$448	$1,146	$1,594						$0	$0	$0	$448	$1,146	$1,594
51	**modular office 2**	733	740/988G/D8R	661	6	1	$448	$1,146	$1,594						$0	$0	$0	$448	$1,146	$1,594
52	**modular office 3**	147	740/988G/D8R	654	4	1	$336	$874	$1,210						$0	$0	$0	$336	$874	$1,210
53	**substation**	1,981	740/988G/D8R	654	4	3	$1,007	$2,621	$3,628						$0	$0	$0	$1,007	$2,621	$3,628
54	**auxiliary A**	244	740/988G/D8R	654	4	1	$336	$874	$1,210						$0	$0	$0	$336	$874	$1,210
55	**auxiliary B**	74	740/988G/D8R	654	4	1	$336	$874	$1,210						$0	$0	$0	$336	$874	$1,210
56	**auxiliary C**	170	740/988G/D8R	654	4	1	$336	$874	$1,210						$0	$0	$0	$336	$874	$1,210
57	**High grade mill**	12,407	740/988G/D8R	654	4	19	$6,378	$16,597	$22,975						$0	$0	$0	$6,378	$16,597	$22,975
58	**offices**	1,422	740/988G/D8R	661	6	2	$895	$2,291	$3,186						$0	$0	$0	$895	$2,291	$3,186
59	**Buckley garage**	1,407	740/988G/D8R	661	6	2	$895	$2,291	$3,186						$0	$0	$0	$895	$2,291	$3,186
60	**Ironclad office**	889	740/988G/D8R	654	4	1	$336	$874	$1,210						$0	$0	$0	$336	$874	$1,210
61	**maint annex**	347	740/988G/D8R	654	4	1	$336	$874	$1,210						$0	$0	$0	$336	$874	$1,210
62	**lab addition**	83	740/988G/D8R	654	4	1	$336	$874	$1,210						$0	$0	$0	$336	$874	$1,210
63	**ROM Silo**	15	740/988G/D8R	654	4	1	$336	$874	$1,210						$0	$0	$0	$336	$874	$1,210
64	**Converor Support**	4	740/988G/D8R	654	4	1	$336	$874	$1,210						$0	$0	$0	$336	$874	$1,210
65	**Under ground contractor double wide**	267	740/988G/D8R	657	8	1	$560	$1,418	$1,978						$0	$0	$0	$560	$1,418	$1,978
66	**Newmont double wide**	267	740/988G/D8R	657	8	1	$560	$1,418	$1,978						$0	$0	$0	$560	$1,418	$1,978
67	**Underground Fixed Maintenance shop**	444	740/988G/D8R	657	8	1	$560	$1,418	$1,978						$0	$0	$0	$560	$1,418	$1,978
68	**Mobile Maintenaince shop**	926	740/988G/D8R	657	8	1	$560	$1,418	$1,978						$0	$0	$0	$560	$1,418	$1,978
69	**Lube bay and washbay**	741	740/988G/D8R	657	8	1	$560	$1,418	$1,978						$0	$0	$0	$560	$1,418	$1,978
70	**Lube bay and washbay apron**	919	740/988G/D8R	657	8	1	$560	$1,418	$1,978						$0	$0	$0	$560	$1,418	$1,978
71	**Compressor Housing**	375	740/988G/D8R	657	8	1	$560	$1,418	$1,978						$0	$0	$0	$560	$1,418	$1,978
72	**Shotcrete plant**	1,528	740/988G/D8R	657	8	2	$1,119	$2,835	$3,954						$0	$0	$0	$1,119	$2,835	$3,954
73	**Substation**	2,000	740/988G/D8R	657	8	3	$1,679	$4,253	$5,932						$0	$0	$0	$1,679	$4,253	$5,932
		65,252				127	**$52,276**	**$134,358**	**$186,634**						**$0**	**$0**	**$0**	**$52,276**	**$134,358**	**$186,634**

Building & Foundation - Scarifying/Revegetation Costs

					Scarifying/Ripping			Revegetation				Total Scarify & Revegation Costs			
	Description (required)	Flat Area acres	Ripping/ Scarifying Fleet	Scarifying/ Ripping Hours hrs	Scarifying/ Ripping Labor Costs $	Scarifying/ Ripping Equipment Cost $	Total Scarifying/ Ripping Costs $	Revegetation Labor Cost $	Revegetation Equipment Cost $	Revgetation Material Cost $	Total Revegetation Cost $	Total Labor Cost $	Total Equipment Cost $	Total Material Cost $	Total Costs $
1	**Primary crushers**	0.10	D7R	1	$56	$94	$150	$346	$183	$105	$635	$402	$277	$105	$785
2	**Crane above pocket**	0.10	D7R	1	$56	$94	$150	$346	$183	$105	$635	$402	$277	$105	$785
3	**Secondary crusher MCC**	0.10	D7R	1	$56	$94	$150	$346	$183	$105	$635	$402	$277	$105	$785
4	**Secondary crushers**	0.20	D7R	1	$56	$94	$150	$346	$183	$208	$738	$402	$277	$208	$888
5	**Screen Bldg**	0.10	D7R	1	$56	$94	$150	$346	$183	$105	$635	$402	$277	$105	$785
6	**Screen MCCs**	0.10	D7R	1	$56	$94	$150	$346	$183	$105	$635	$402	$277	$105	$785
7	**Crusher Maint**	0.10	D7R	1	$56	$94	$150	$346	$183	$105	$635	$402	$277	$105	$785
8	**Security**	0.10	D7R	1	$56	$94	$150	$346	$183	$105	$635	$402	$277	$105	$785
9	**MCC for phase II pumps**	0.10	D7R	1	$56	$94	$150	$346	$183	$105	$635	$402	$277	$105	$785
10	**Laboratory**	0.20	D7R	1	$56	$94	$150	$346	$183	$208	$738	$402	$277	$208	$888
11	**Project mgr trailer**	0.10	D7R	1	$56	$94	$150	$346	$183	$105	$635	$402	$277	$105	$785
12	**Project trailer**	0.10	D7R	1	$56	$94	$150	$346	$183	$105	$635	$402	$277	$105	$785
13	**Fire trailer**	0.10	D7R	1	$56	$94	$150	$346	$183	$105	$635	$402	$277	$105	$785
14	**Process maint trailer**	0.10	D7R	1	$56	$94	$150	$346	$183	$105	$635	$402	$277	$105	$785
15	**Crusher Maint addition**	0.10	D7R	1	$56	$94	$150	$346	$183	$105	$635	$402	$277	$105	$785
16	**Crusher Maint lean to**	0.10	D7R	1	$56	$94	$150	$346	$183	$105	$635	$402	$277	$105	$785
17	**AGADR 1995**	0.40	D7R	1	$56	$94	$150	$346	$183	$417	$947	$402	$277	$417	$1,097
18	**Pipe access gallery**	0.10	D7R	1	$56	$94	$150	$346	$183	$105	$635	$402	$277	$105	$785
19	**carbon strip & regen**	0.10	D7R	1	$56	$94	$150	$346	$183	$105	$635	$402	$277	$105	$785
20	**Process maint trailer**	0.10	D7R	1	$56	$94	$150	$346	$183	$105	$635	$402	$277	$105	$785
21	**AGADR north**	0.20	D7R	1	$56	$94	$150	$346	$183	$208	$738	$402	$277	$208	$888
22	**AGADR south**	0.20	D7R	1	$56	$94	$150	$346	$183	$208	$738	$402	$277	$208	$888
23	**Etrain**	0.10	D7R	1	$56	$94	$150	$346	$183	$105	$635	$402	$277	$105	$785
24	**MCC fume scrubber**	0.10	D7R	1	$56	$94	$150	$346	$183	$105	$635	$402	$277	$105	$785

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Project Name: AM-13 BP2020 Financial warranty calculation - Reclamation Plan
Date of Submittal: December 2019
File Name: SRCE_AM13_FW_V4.xlsm
Model Version: Version 1.4.1
Cost Data: User Data
Cost Data File: SRCE_Cost_data-USR_1_12_DRMS_BONDING.xlsm
Cost Estimate Type: Surety Cost Basis: CC&V Bonding

Buildings & Foundation Demolition Cost Summary

	Labor	Equipment	Materials	Totals
Building Demolition Cost	$2,556,952	$1,872,233	N/A	$4,429,185
Wall Demolition Cost	$750,601	$56,894	N/A	$807,495
Slab Demolition	$25,225	$86,687	N/A	$111,912
Subtotal Demolition	**$3,332,778**	**$2,015,814**	**$0**	**$5,348,592**
Cover Placement Cost	$52,276	$134,358	N/A	$186,634
Growth Media Placement Cost	$0	$0	N/A	$0
Ripping/Scarifying Cost	$4,088	$6,862	N/A	$10,950
Subtotal Earthworks	**$56,364**	**$141,220**	**$0**	**$197,584**
Revegetation Cost	$25,453	$13,474	$12,030	$50,957
TOTALS	**$3,414,595**	**$2,170,508**	**$12,030**	**$5,597,133**

25	**enrichment pump station**	0.10	D7R	1	$56	$94	$150	$346	$183	$105	$635	$402	$277	$105	$785
26	**Ph V Preg pump MCC**	0.10	D7R	1	$56	$94	$150	$346	$183	$105	$635	$402	$277	$105	$785
27	**Ph V Preg enrich MCC**	0.10	D7R	1	$56	$94	$150	$346	$183	$105	$635	$402	$277	$105	$785
28	**Ph V Preg enrich LVSC**	0.10	D7R	1	$56	$94	$150	$346	$183	$105	$635	$402	$277	$105	$785
29	**Victor maint light vehicle shop**	0.10	D7R	1	$56	$94	$150	$346	$183	$105	$635	$402	$277	$105	$785
30	**truck wash**	0.10	D7R	1	$56	$94	$150	$346	$183	$105	$635	$402	$277	$105	$785
31	**truck shop**	0.70	D7R	1	$56	$94	$150	$346	$183	$730	$1,260	$402	$277	$730	$1,410
32	**Mill maint warehouse**	0.30	D7R	1	$56	$94	$150	$346	$183	$313	$843	$402	$277	$313	$993
33	**agglomerator**	0.10	D7R	1	$56	$94	$150	$346	$183	$105	$635	$402	$277	$105	$785
34	**sump pump**	0.10	D7R	1	$56	$94	$150	$346	$183	$105	$635	$402	$277	$105	$785
35	**conveyor shed**	0.10	D7R	1	$56	$94	$150	$346	$183	$105	$635	$402	$277	$105	$785
36	**process corridor**	0.10	D7R	1	$56	$94	$150	$346	$183	$105	$635	$402	$277	$105	$785
37	**Buckley main bldg**	0.10	D7R	1	$56	$94	$150	$346	$183	$105	$635	$402	$277	$105	$785
38	**AGVLF AGADR**	0.10	D7R	1	$56	$94	$150	$346	$183	$105	$635	$402	$277	$105	$785
39	**MCC & fume scrubber**	0.10	D7R	1	$56	$94	$150	$346	$183	$105	$635	$402	$277	$105	$785
40	**enrichment pump station**	0.10	D7R	1	$56	$94	$150	$346	$183	$105	$635	$402	$277	$105	$785
41	**Ph V Preg pump MCC**	0.10	D7R	1	$56	$94	$150	$346	$183	$105	$635	$402	$277	$105	$785
42	**Ph V Preg enrich MCC**	0.10	D7R	1	$56	$94	$150	$346	$183	$105	$635	$402	$277	$105	$785
43	**Ph V Preg enrich LVSC**	0.10	D7R	1	$56	$94	$150	$346	$183	$105	$635	$402	$277	$105	$785
44	**Squaw MCC**	0.10	D7R	1	$56	$94	$150	$346	$183	$105	$635	$402	$277	$105	$785
45	**warehouse**	0.20	D7R	1	$56	$94	$150	$346	$183	$208	$738	$402	$277	$208	$888
46	**LVSC pump**	0.10	D7R	1	$56	$94	$150	$346	$183	$105	$635	$402	$277	$105	$785
47	**SGADR**	0.80	D7R	1	$56	$94	$150	$346	$183	$835	$1,365	$402	$277	$835	$1,515
48	**SGADR utility**	0.10	D7R	1	$56	$94	$150	$346	$183	$105	$635	$402	$277	$105	$785
49	**security**	0.10	D7R	1	$56	$94	$150	$346	$183	$105	$635	$402	$277	$105	$785
50	**modular office 1**	0.10	D7R	1	$56	$94	$150	$346	$183	$105	$635	$402	$277	$105	$785
51	**modular office 2**	0.10	D7R	1	$56	$94	$150	$346	$183	$105	$635	$402	$277	$105	$785
52	**modular office 3**	0.10	D7R	1	$56	$94	$150	$346	$183	$105	$635	$402	$277	$105	$785
53	**substation**	0.20	D7R	1	$56	$94	$150	$346	$183	$208	$738	$402	$277	$208	$888
54	**auxiliary A**	0.10	D7R	1	$56	$94	$150	$346	$183	$105	$635	$402	$277	$105	$785
55	**auxiliary B**	0.10	D7R	1	$56	$94	$150	$346	$183	$105	$635	$402	$277	$105	$785
56	**auxiliary C**	0.10	D7R	1	$56	$94	$150	$346	$183	$105	$635	$402	$277	$105	$785
57	**High grade mill**	1.50	D7R	1	$56	$94	$150	$519	$275	$1,565	$2,359	$575	$369	$1,565	$2,509
58	**offices**	0.20	D7R	1	$56	$94	$150	$346	$183	$208	$738	$402	$277	$208	$888
59	**Buckley garage**	0.20	D7R	1	$56	$94	$150	$346	$183	$208	$738	$402	$277	$208	$888
60	**Ironclad office**	0.10	D7R	1	$56	$94	$150	$346	$183	$105	$635	$402	$277	$105	$785
61	**maint annex**	0.10	D7R	1	$56	$94	$150	$346	$183	$105	$635	$402	$277	$105	$785
62	**lab addition**	0.10	D7R	1	$56	$94	$150	$346	$183	$105	$635	$402	$277	$105	$785
63	**ROM Silo**	0.10	D7R	1	$56	$94	$150	$346	$183	$105	$635	$402	$277	$105	$785
64	**Converor Support**	0.10	D7R	1	$56	$94	$150	$346	$183	$105	$635	$402	$277	$105	$785
65	**Under ground contractor double wide**	0.10	D7R	1	$56	$94	$150	$346	$183	$105	$635	$402	$277	$105	$785
66	**Newmont double wide**	0.10	D7R	1	$56	$94	$150	$346	$183	$105	$635	$402	$277	$105	$785
67	**Underground Fixed Maintenance shop**	0.10	D7R	1	$56	$94	$150	$346	$183	$105	$635	$402	$277	$105	$785
68	**Mobile Maintenaince shop**	0.10	D7R	1	$56	$94	$150	$346	$183	$105	$635	$402	$277	$105	$785
69	**Lube bay and washbay**	0.10	D7R	1	$56	$94	$150	$346	$183	$105	$635	$402	$277	$105	$785
70	**Lube bay and washbay apron**	0.10	D7R	1	$56	$94	$150	$346	$183	$105	$635	$402	$277	$105	$785
71	**Compressor Housing**	0.10	D7R	1	$56	$94	$150	$346	$183	$105	$635	$402	$277	$105	$785
72	**Shotcrete plant**	0.20	D7R	1	$56	$94	$150	$346	$183	$208	$738	$402	$277	$208	$888
73	**Substation**	0.20	D7R	1	$56	$94	$150	$346	$183	$208	$738	$402	$277	$208	$888
		11.50		73	**$4,088**	**$6,862**	**$10,950**	**$25,453**	**$13,474**	**$12,030**	**$50,957**	**$29,541**	**$20,336**	**$12,030**	**$61,907**

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Closure Cost Estimate
Other Demo & Equip Removal

Project Name: AM-13 BP2020 Financial warranty calculation - Reclamation Plan
Date of Submittal: December 2019
File Name: SRCE_AM13_FW_V4.xlsm
Model Version: Version 1.4.1
Cost Data: User Data
Cost Data File: SRCE_Cost_data-USR_1_12_DRMS_BONDING.xlsm
Cost Estimate Type: Surety Cost Basis: CC&V Bonding

Other Demoltion and Equipment Removal - Cost Summary				
	Labor	Equipment	Materials	Totals
Other Demolition	$51,951	$23,120	$0	$75,071
Equipment Removal	$183,176	$130,152	$110,200	$423,528
TOTALS	**$235,127**	**$153,272**	**$110,200**	**$498,599**

Other Demolition

Facility Description									
	Description (required)	ID Code	Type	Quantity	Units	Labor Unit Cost $	Equipment Unit Cost $	Material Unit Cost $
1	**mill conveyor demolition**			**1250**	**ft**	**$8.64**	**$0.00**	**$0.00**
2	**Septic systems**			**8**	**ea**	**$4,997.00**	**$2,890.00**	
3	**ROM Conveyor**			**136**	**ft**	**$8.64**	**$0.00**	**$0.00**
						$51,951	**$23,120**	**$0**

Notes:

Equipment & Material Removal

Facility Description								
	Description (required)	ID Code	Type	Quantity	Units	Labor Unit Cost ($)	Equipment Unit Cost ($)	Material Unit Cost ($)
1	**Lump sum from 2014 "11-Demolition", includes tanks & & piping & contamination**		Process - Other	**1**	**uniit**			**$110,200.00**
2	**10 Carbon columns**		Process - Other	**13499**	**C.F.**	**$0.16**	**$0.12**	
3	**intermediate**		Process - Other	**8042**	**C.F.**	**$0.16**	**$0.12**	
4	**2 1999 solution tanks**		Process - Other	**7660**	**C.F.**	**$0.16**	**$0.12**	
5	**5 1999 carbon columns**		Process - Other	**6749**	**C.F.**	**$0.16**	**$0.12**	
6	**kiln**		Process - Other	**290**	**C.F.**	**$0.16**	**$0.12**	
7	**carbon feed**		Process - Other	**1256**	**C.F.**	**$0.16**	**$0.12**	
8	**carbon quench**		Process - Other	**706**	**C.F.**	**$0.16**	**$0.12**	
9	**carbon strip**		Process - Other	**604**	**C.F.**	**$0.16**	**$0.12**	
10	**2 cyanide mix**		Process - Other	**6627**	**C.F.**	**$0.16**	**$0.12**	
11	**5 train D carbon columns**		Process - Other	**7798**	**C.F.**	**$0.16**	**$0.12**	
12	**Pregnant solution tanks**		Process - Other	**5321**	**C.F.**	**$0.16**	**$0.12**	
13	**D head**		Process - Other	**805**	**C.F.**	**$0.16**	**$0.12**	
14	**D transfer**		Process - Other	**2352**	**C.F.**	**$0.16**	**$0.12**	
15	**pre-dryer**		Process - Other	**8738**	**C.F.**	**$0.16**	**$0.12**	
16	**Victor fresh water**		Process - Other	**6842**	**C.F.**	**$0.16**	**$0.12**	
17	**detox**		Process - Other	**1413**	**C.F.**	**$0.16**	**$0.12**	
18	**4 Pregnant solution tanks**		Process - Other	**27369**	**C.F.**	**$0.16**	**$0.12**	
19	**fire water**		Process - Other	**11083**	**C.F.**	**$0.16**	**$0.12**	
20	**4 bulk storage**		Process - Other	**9236**	**C.F.**	**$0.16**	**$0.12**	
21	**2 SST solution**		Process - Other	**3392**	**C.F.**	**$0.16**	**$0.12**	
22	**fuel**		Process - Other	**785**	**C.F.**	**$0.16**	**$0.12**	
23	**fuel**		Process - Other	**502**	**C.F.**	**$0.16**	**$0.12**	
24	**fuel**		Process - Other	**785**	**C.F.**	**$0.16**	**$0.12**	
25	**prill**		Process - Other	**25132**	**C.F.**	**$0.16**	**$0.12**	
26	**20 carbon columns**		Process - Other	**26998**	**C.F.**	**$0.16**	**$0.12**	
27	**intermediate**		Process - Other	**8042**	**C.F.**	**$0.16**	**$0.12**	
28	**2 barren**		Process - Other	**29412**	**C.F.**	**$0.16**	**$0.12**	
29	**acid mix**		Process - Other	**1070**	**C.F.**	**$0.16**	**$0.12**	
30	**acid neutralization**		Process - Other	**1070**	**C.F.**	**$0.16**	**$0.12**	
31	**acid neut scrubber**		Process - Other	**1070**	**C.F.**	**$0.16**	**$0.12**	
32	**concentrated acid**		Process - Other	**936**	**C.F.**	**$0.16**	**$0.12**	
33	**sodium hydroxide**		Process - Other	**2674**	**C.F.**	**$0.16**	**$0.12**	
34	**kiln**		Process - Other	**290**	**C.F.**	**$0.16**	**$0.12**	
35	**feed**		Process - Other	**1256**	**C.F.**	**$0.16**	**$0.12**	
36	**quench**		Process - Other	**706**	**C.F.**	**$0.16**	**$0.12**	
37	**strip**		Process - Other	**604**	**C.F.**	**$0.16**	**$0.12**	
38	**2 preg**		Process - Other	**5348**	**C.F.**	**$0.16**	**$0.12**	
39	**transfer water**		Process - Other	**668**	**C.F.**	**$0.16**	**$0.12**	
40	**pretreatment**		Process - Other	**602**	**C.F.**	**$0.16**	**$0.12**	
41	**2 NaCN**		Process - Other	**6684**	**C.F.**	**$0.16**	**$0.12**	
42	**carbon attrition**		Process - Other	**134**	**C.F.**	**$0.16**	**$0.12**	
43	**E cell tanks**		Process - Other	**267**	**C.F.**	**$0.16**	**$0.12**	
44	**thickener**		Process - Other	**8556**	**C.F.**	**$0.16**	**$0.12**	
45	**thickener**		Process - Other	**8556**	**C.F.**	**$0.16**	**$0.12**	
46	**process water**		Process - Other	**55481**	**C.F.**	**$0.16**	**$0.12**	
47	**thickener**		Process - Other	**48128**	**C.F.**	**$0.16**	**$0.12**	
48	**2 NaCN**		Process - Other	**6684**	**C.F.**	**$0.16**	**$0.12**	
49	**6 leach**		Process - Other	**138770**	**C.F.**	**$0.16**	**$0.12**	
50	**PS stabilization**		Process - Other	**163029**	**C.F.**	**$0.24**	**$0.16**	
51	**8 CoMag clarifier**		Process - Other	**88514**	**C.F.**	**$0.24**	**$0.16**	
52	**coagulant**		Process - Other	**45160**	**C.F.**	**$0.16**	**$0.12**	
53	**precoat**		Process - Other	**45160**	**C.F.**	**$0.16**	**$0.12**	
54	**comag process tanks**		Process - Other	**28979**	**C.F.**	**$0.16**	**$0.12**	
55	**2 wet wells**		Process - Other	**38603**	**C.F.**	**$0.24**	**$0.16**	
56	**gravity thickener**		Process - Other	**51051**	**C.F.**	**$0.24**	**$0.16**	
						$183,176	**$130,152**	**$110,200**

Notes: **Formally User 5. RSMeans 2018 unit costs used**

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Closure Cost Estimate
Sediment & Drainage Control

Project Name: AM-13 BP2020 Financial warranty calculation - Reclamation Plan
Date of Submittal: December 2019
File Name: SRCE_AM13_FW_V4.xlsm
Model Version: Version 1.4.1
Cost Data: User Data
Cost Data File: SRCE_Cost_data-USR_1_12_DRMS_BONDING.xlsm
Cost Estimate Type: Surety Cost Basis: CC&V Bonding

Drainage Control - Cost Summary

	Labor	Equipment	Materials	Totals
Diversion Ditch Construction	$0	$0	N/A	$0
Diversion Ditch Liner	$0	$0	$0	$0
Diversion Ditch Rip-Rap	$0	$0	$0	$0
Sed Pond Construct/Regrade	$0	$0	N/A	$0
Liner Installation	$0	$0	$0	$0
Sed Pond Cover	$0	$0	N/A	$0
Ripping/Scarifying Cost	$0	$0	N/A	$0
Subtotal Earthworks	**$0**	**$0**	**$0**	**$0**
Diversion Ditch Revegetation	$0	$0	$0	$0
Sediment Pond Revegetation	$0	$0	$0	$0
Subtotal Revegetation	**$0**	**$0**	**$0**	**$0**
TOTALS	**$0**	**$0**	**$0**	**$0**

Diversion Ditches - User Input

		Diversions Ditches							Revegetation			Liner and Rip-Rap Installation			
	Description (required)	ID Code	Diversion Length ft	Diversion Depth ft	Ditch Bottom Width ft	Ditch Sideslope Angle _H:1V	Excavate Volume (if calculated elsewhere) cy	Excavating Material Condition (select)	Excavating Equipment Fleet (select)	Seed Mix (select)	Mulch (select)	Fertilizer (select)	Liner Area S.Y.	Liner Type (select)	Rip-Rap Area S.Y.	Rip-Rap Type (select type)

Notes:

Sediment/Evaporation Pond Construction/Removal - User Input

		Sediment Ponds								Growth Media		
	Description (required)	ID Code	Pond Width ft	Pond/Berm Length ft	Berm Height ft	Crest Width ft	Sideslope Angle _H:1V	Final Area (if calculated elsewhere) acres	Regrade Volume (if calculated elsewhere) cy	Cover Volume (if calculated elsewhere) cy	Growth Media Thickness in	Distance from Growth Media Stockpile ft	Slope from Pond to Borrow % grade

Notes:
1. All Physical parameters must be input even if manual overrides for volume or area are used.
2. If Slope from facility to borrow source is >20, downhill travel time may be underestimated due to limitation of uphill travel time curves and downhill speed tables from CAT Handbook (see Productivty Sheet)
3. Material Types are used for density correction based on material densities in Caterpillar Performance Handbook material density table

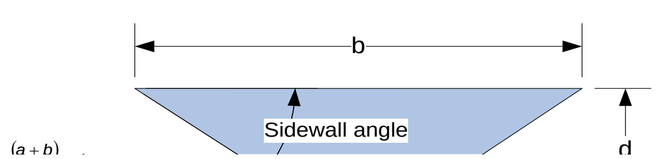
Sediment/Evaporation Pond Construction/Removal - User Input (cont.)

		Sediment Ponds				Growth Media			Revegetation			Ripping/Scarifying	
	Description (required)	Excavating Material Condition (select)	Material Type (select)	Excavating Equipment Fleet (select)	Liner Type (select)	Growth Media Material Type (select)	Growth Media Placement Equipment Fleet (select)	Maximum Fleet Size (user override)	Seed Mix (select)	Mulch (select)	Fertilizer (select)	Scarify/ Rip? (select)	Scarify/ Ripping Fleet (select)

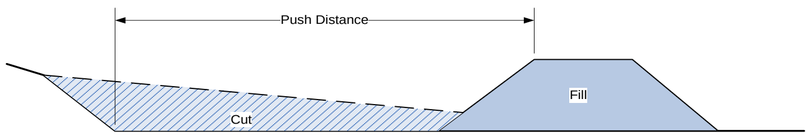
Notes:
1. Material Types are used for density correction based on material densities in Caterpillar Performance Handbook material density table

Drainage Control - Calculations

Diversion Ditch Volume Calculation



Sediment/Evaporation Pond Construction Calculation



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Closure Cost Estimate
Sediment & Drainage Control

Project Name: AM-13 BP2020 Financial warranty calculation - Reclamation Plan
Date of Submittal: December 2019
File Name: SRCE_AM13_FW_V4.xlsm
Model Version: Version 1.4.1
Cost Data: User Data
Cost Data File: SRCE_Cost_data-USR_1_12_DRMS_BONDING.xlsm
Cost Estimate Type: Surety Cost Basis: CC&V Bonding

Drainage Control - Cost Summary

	Labor	Equipment	Materials	Totals
Diversion Ditch Construction	$0	$0	N/A	$0
Diversion Ditch Liner	$0	$0	$0	$0
Diversion Ditch Rip-Rap	$0	$0	$0	$0
Sed Pond Construct/Regrade	$0	$0	N/A	$0
Liner Installation	$0	$0	$0	$0
Sed Pond Cover	$0	$0	N/A	$0
Ripping/Scarifying Cost	$0	$0	N/A	$0
Subtotal Earthworks	**$0**	**$0**	**$0**	**$0**
Diversion Ditch Revegetation	$0	$0	$0	$0
Sediment Pond Revegetation	$0	$0	$0	$0
Subtotal Revegetation	**$0**	**$0**	**$0**	**$0**
TOTALS	**$0**	**$0**	**$0**	**$0**

Cross Sectional Area = $\frac{(a+b)}{2} \times d$

Ditch Volume = Ditch Length x Cross Sectional Area

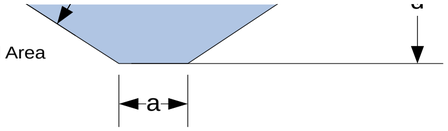


Figure 1 - Ditch Volume Calculation

1) Assume 20% swell for excavations
2) Assumes heavy duty trenching bucket is used

Cut = Fill
Push distance = pond width up to 2/3 max push distance (400 ft)

Figure 2 - Sediment Ponds

1) Assume balanced cut-to-fill for berm construction
2) Include cost for liner, if required.
3) Include line items for removal, if necessary.
4) Assume 20% swell for excavations
5) Minimum 1 hr ripping/scarifying per area
6) Minimum 1 acre revegetation crew time per area

Diversion Ditches - Excavation Costs

	Description (required)	Diversion Ditch Volume LCY	Diversion Ditch Equipment	Corrected Excavator Productivity LCY/hr	Total Hours	Diversion Ditch Labor Cost $	Diversion Ditch Equipment Cost $	Total Diversion Ditch Cost $	Liner Installation: Total Labor Cost $	Liner Installation: Total Equipment Cost $	Liner Installation: Total Material Cost $	Liner Installation: Total Liner Cost $	Rip-Rap Installation: Labor Cost $	Rip-Rap Installation: Equipment Cost $	Rip-Rap Installation: Material Cost $	Rip-Rap Installation: Total Cost $
						$0	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**

Notes: LCM assumes 20% swell from ditch volume

Diversion Ditches - Revegetation Costs

	Description (required)	Surface Area acres	Revegetation Labor Cost $	Revegetation Equipment Cost $	Revgetation Material Cost $	Total Revegetation Cost $
			$0	**$0**	**$0**	**$0**

Sediment/Evaporation Ponds - Construction/Regrading Costs

Productivity = Dozer Productivity x Grade Correction x Density Correction x Operator (0.75) x Material x Visibility x Job Efficiency (0.83)

	Description (required)	Regrading Volume cy	Sed/Evap Pond Equipment	Dozing Distance (see above) ft	Uncorrected Dozer Productivity LCY/hr	Grade Correction	Density Correction	Excavating Material	Corrected Productivity LCY/hr	Total Dozer Hours hr	Earthwork: Total Labor Cost $	Earthwork: Total Equipment Cost $	Earthwork: Total Constr/ Regrading Cost $	Liner: Total Labor Cost $	Liner: Total Equipment Cost $	Liner: Total Material Cost $
											$0	**$0**	**$0**	**$0**	**$0**	**$0**

Sediment/Evaporation Ponds - Growth Media Costs

	Description (required)	Growth Media: Growth Media Volume cy	Growth Media Fleet	Fleet Productivity LCY/hr	Number of Trucks/ Scrapers	Total Fleet Hours	Total Labor Cost $	Total Equipment Cost $	Total Cover Placement Cost $
							$0	**$0**	**$0**

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Closure Cost Estimate
Sediment & Drainage Control

Project Name: AM-13 BP2020 Financial warranty calculation - Reclamation Plan
Date of Submittal: December 2019
File Name: SRCE_AM13_FW_V4.xlsm
Model Version: Version 1.4.1
Cost Data: User Data
Cost Data File: SRCE_Cost_data-USR_1_12_DRMS_BONDING.xlsm
Cost Estimate Type: Surety Cost Basis: CC&V Bonding

Drainage Control - Cost Summary

	Labor	Equipment	Materials	Totals
Diversion Ditch Construction	$0	$0	N/A	$0
Diversion Ditch Liner	$0	$0	$0	$0
Diversion Ditch Rip-Rap	$0	$0	$0	$0
Sed Pond Construct/Regrade	$0	$0	N/A	$0
Liner Installation	$0	$0	$0	$0
Sed Pond Cover	$0	$0	N/A	$0
Ripping/Scarifying Cost	$0	$0	N/A	$0
Subtotal Earthworks	**$0**	**$0**	**$0**	**$0**
Diversion Ditch Revegetation	$0	$0	$0	$0
Sediment Pond Revegetation	$0	$0	$0	$0
Subtotal Revegetation	**$0**	**$0**	**$0**	**$0**
TOTALS	**$0**	**$0**	**$0**	**$0**

Sediment/Evaporation Ponds - Revegetation Costs

	Description (required)	Surface Area acres	Long Ripping Distance ft	Ripping/ Scarifying Fleet	Scarifying/ Ripping Hours hrs	Scarifying/ Ripping Labor Costs $	Scarifying/ Ripping Equipment Cost $	Total Scarifying/ Ripping Costs $	Revegetation Labor Cost $	Revegetation Equipment Cost $	Revgetation Material Cost $	Total Revegetation Cost $
					0	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**

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Closure Cost Estimate
Process Ponds

Project Name: AM-13 BP2020 Financial warranty calculation - Reclamation Plan
Date of Submittal: December 2019
File Name: SRCE_AM13_FW_V4.xlsm
Model Version: Version 1.4.1
Cost Data: User Data
Cost Data File: SRCE_Cost_data-USR_1_12_DRMS_BONDING.xlsm
Cost Estimate Type: Surety Cost Basis: CC&V Bonding

Process Ponds - Cost Summary

	Labor	Equipment	Materials	Totals
Backfilling Costs	$80,232	$208,769	N/A	$289,001
Growth Media Placement Costs	$4,756	$12,537	N/A	$17,293
Liner Cutting & Folding Costs	$40,117	$21,051	N/A	$61,168
Subtotal Earthworks	**$125,105**	**$242,357**	**$0**	**$367,462**
Revegetation Costs	$4,294	$2,273	$12,098	$18,665
TOTALS	**$129,399**	**$244,630**	**$12,098**	**$386,127**

Process Ponds - User Input

You must fill in ALL green cells and relevant blue cells in this section for each pond

	Description (required)	ID Code	Pond Length ft	Pond Width ft	Pond Depth ft	Pond Sideslope Angle _H:1V	Disturbed Area (if calculated elsewhere) acres	Percent Backfill (100% if blank)	Distance from Backfill Borrow ft	Slope from Facility to Borrow Area % grade	Pond Volume (if calculated elsewhere) cy	Growth Media Thickness in	Distance from Growth Media Stockpile ft	Slope from Facility to Stockpile % grade
	Facility Description		**Pond Dimensions (1)**					**Backfill - (If trucks are used) (1)**				**Growth Media**		
1	**EMP ponds**		**1000**	**247**	**10.3**	**3.0**		**100%**	**4,600**	**3%**		**6**	**4,600**	**3%**
2	**Crusher fuel island fresh water pond**		**100**	**100**	**4.5**	**3.0**		**100%**	**4,600**	**3%**		**6**	**4,600**	**3%**
3	**Arequa external ponds**		**1000**	**250**	**11.0**	**3.0**		**100%**	**4,600**	**3%**		**6**	**4,600**	**3%**

Notes:
1. All Physical parameters must be input even if manual overrides for volume or area are used.
2. If Slope from facility to borrow source is >20, downhill travel time may be underestimated due to limitation of uphill travel time curves and downhill speed tables from CAT Handbook (see Productivty Sheet)

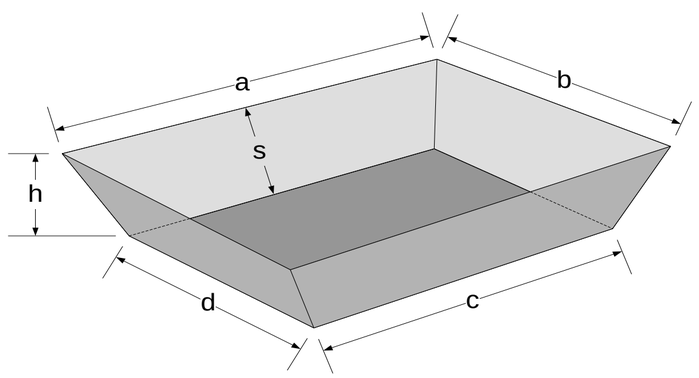
Process Ponds - User Input (cont.)

	Description (required)	Liner: Crew Cut & Fold Time (2) hrs	Backfill: Backfill Material Type (select)	Backfill: Backfill Equipment Fleet (select)	Backfill: Maximum Fleet Size (user override)	Growth Media: Growth Media Material Type (select)	Growth Media: Growth Media Placement Equipment Fleet (select)	Growth Media: Maximum Fleet Size (user override)	Revegetation: Seed Mix (select)	Revegetation: Mulch (select)	Revegetation: Fertilizer (select)
		Liner	**Backfill**			**Growth Media**			**Revegetation**		
1	**EMP ponds**	**114.0**	**Alluvium**	**Med Truck**		**Topsoil**	**Med Truck**		**User Mix 1**	**Hydro Mulch**	**Chemical**
2	**Crusher fuel island fresh water pond**	**2.0**	**Alluvium**	**Med Truck**		**Topsoil**	**Med Truck**		**User Mix 1**	**Hydro Mulch**	**Chemical**
3	**Arequa external ponds**	**123.0**	**Alluvium**	**Med Truck**		**Topsoil**	**Med Truck**		**User Mix 1**	**Hydro Mulch**	**Chemical**

Notes:
1. Material Types are used for density correction based on material densities in Caterpillar Performance Handbook material density table
(2) Pond liner removal crew (2Clab + excavator) = 2 General Laborers + 325C Excavator

Process Ponds - Calculations

Pond Volume Calculation



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Closure Cost Estimate
Process Ponds

Project Name: AM-13 BP2020 Financial warranty calculation - Reclamation Plan
Date of Submittal: December 2019
File Name: SRCE_AM13_FW_V4.xlsm
Model Version: Version 1.4.1
Cost Data: User Data
Cost Data File: SRCE_Cost_data-USR_1_12_DRMS_BONDING.xlsm
Cost Estimate Type: Surety Cost Basis: CC&V Bonding

Process Ponds - Cost Summary

	Labor	Equipment	Materials	Totals
Backfilling Costs	$80,232	$208,769	N/A	$289,001
Growth Media Placement Costs	$4,756	$12,537	N/A	$17,293
Liner Cutting & Folding Costs	$40,117	$21,051	N/A	$61,168
Subtotal Earthworks	**$125,105**	**$242,357**	**$0**	**$367,462**
Revegetation Costs	$4,294	$2,273	$12,098	$18,665
TOTALS	**$129,399**	**$244,630**	**$12,098**	**$386,127**

Area and Volume of the Frustrum of a Pyramid

$$\text{Surface Area} = ab + cd + (a+b+c+d) \times \frac{s}{2}$$

$$\text{Volume} = \frac{h\,(ab + cd + \sqrt{abcd})}{3}$$

Revegetation Calculations

Minimum 1 acre revegetation crew time per area

Process Ponds - Liner Cutting and Folding

	Description (required)	Crew Hours hrs	Total Labor Cost $	Total Equipment Cost $	Total Liner Removal Cost $
1	**EMP ponds**	114	$19,135	$10,041	$29,176
2	**Crusher fuel island fresh water pond**	2	$336	$176	$512
3	**Arequa external ponds**	123	$20,646	$10,834	$31,480
		239	**$40,117**	**$21,051**	**$61,168**

Process Ponds - Backfill and Growth Media Costs

		Pond Backfill								Growth Media							
	Description (required)	Backfill Volume cy	Backfill Fleet	Fleet Productivity LCY/hr	Number of Trucks/ Scrapers	Total Fleet Hours hrs	Total Labor Cost $	Total Equipment Cost $	Total Backfill Cost $	Growth Media Volume cy	Growth Media Fleet	Fleet Productivity LCY/hr	Number of Trucks/ Scrapers	Total Fleet Hours	Total Labor Cost $	Total Equipment Cost $	Total Growth Media Cost $
1	**EMP ponds**	79,719	740/988G/D8R	697	4	114	$38,270	$99,580	$137,850	4,568	740/988G/D8R	567	3	8	$2,238	$5,900	$8,138
2	**Crusher fuel island fresh water pond**	1,257	740/988G/D8R	697	4	2	$671	$1,747	$2,418	185	740/988G/D8R	567	3	1	$280	$737	$1,017
3	**Arequa external ponds**	85,438	740/988G/D8R	697	4	123	$41,291	$107,442	$148,733	4,630	740/988G/D8R	567	3	8	$2,238	$5,900	$8,138
		166,414				239	**$80,232**	**$208,769**	**$289,001**	9,383				17	**$4,756**	**$12,537**	**$17,293**

Process Ponds - Revegetation Costs

	Description (required)	Surface Area acres	Revegetation Labor Cost $	Revegetation Equipment Cost $	Revgetation Material Cost $	Total Revegetation Cost $
1	**EMP ponds**	5.70	$1,974	$1,045	$5,945	$8,964
2	**Crusher fuel island fresh water pond**	0.20	$346	$183	$208	$737
3	**Arequa external ponds**	5.70	$1,974	$1,045	$5,945	$8,964
		11.60	**$4,294**	**$2,273**	**$12,098**	**$18,665**

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Closure Cost Estimate
Waste Disposal

Project Name: AM-13 BP2020 Financial warranty calculation - Reclamation Plan
Date of Submittal: December 2019
File Name: SRCE_AM13_FW_V4.xlsm
Model Version: Version 1.4.1
Cost Data: User Data
Cost Data File: SRCE_Cost_data-USR_1_12_DRMS_BONDING.xlsm
Cost Estimate Type: Surety Cost Basis: CC&V Bonding

Waste Disposal - Cost Summary

	Labor	Equipment	Fees	Totals
Solid Waste - On Site	$0	$0	N/A	$0
Solid Waste - Off Site				$0
Hazardous Materials				$0
Hydrocarbon Contaminated Soils	$0	$0	$0	$0
TOTALS	**$0**	**$0**	**$0**	**$0**

Waste Disposal - User Input - Solid Waste

						Landfill (Bulk) Disposal			Dumpster
	Description (required)	**ID Code**	**Waste Type** (select)	**Disposal Method** (select)	**Quantity** cy	**Distance to Landfill** ft	**Slope to Landfill** % grade	**Number of Trucks** (user override)	**Months Dumpster Rental** months

Notes:
1. All Physical parameters must be input even if manual overrides for volume or area are used.
2. If Slope from facility to borrow source is >20, downhill travel time may be underestimated due to limitation of uphill travel time curves and downhill speed tables from CAT Handbook (see Productivty Sheet)

Waste Disposal - User Input - Hazardous Materials

	Description (required)	**ID Code**	**Waste Type** (select)	**Container Type** (select)	**Vacuum Truck Size** (select)	**Liquid Quantity** gallons	**Soild Quantity** cy	**One Way Travel Distance to Disposal Site** mi	**One Way Travel Time to Disposal Site** hr

Notes:
1. Use Other Demo & Equip Removal Sheet for tank removal

Waste Disposal - User Input - Hydrocarbon Contaminated Soils

	Description (required)	**ID Code**	**Waste Type** (select)	**Disposal Method** (select)	**Quantity** cy	**Travel Distance to Offsite Disposal** mi

Notes:

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Closure Cost Estimate
Waste Disposal

Project Name: AM-13 BP2020 Financial warranty calculation - Reclamation Plan
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Model Version: Version 1.4.1
Cost Data: User Data
Cost Data File: SRCE_Cost_data-USR_1_12_DRMS_BONDING.xlsm
Cost Estimate Type: Surety Cost Basis: CC&V Bonding

Waste Disposal - Cost Summary

	Labor	Equipment	Fees	Totals
Solid Waste - On Site	$0	$0	N/A	$0
Solid Waste - Off Site				$0
Hazardous Materials				$0
Hydrocarbon Contaminated Soils	$0	$0	$0	$0
TOTALS	**$0**	**$0**	**$0**	**$0**

1. Use Yards or Landfills Sheets for bioremediation facility reclamation

Waste Disposal - Assumptions & Calculations

Solid Waste Disposal

Off site disposal assumes use of average rolloff dumpster [30 cy (m3), 10 ton (tonne)]
On site disposal assumes use of small loader/truck fleet for haulage
Average density for on site disposal = 2,600 lb/cy (1,540 kg/m3)
For on site disposal only 1 truck is required unless total truck hours > 8, only 2 trucks unless total truck hours are > 16

Hazardous Materials Disposal

Assumes all hazardous materials are known
Enter EITHER solid or liquid quantity each line.
If container type = 55 gallon (200 liter) drum then solid waste hauling costs apply
Average density for solids assumed to be 2,600 lb/cy (1,540 kg/m3)
Vacuum truck sizes: small = 2,200 gal (~8,300 litres), large = 5,000 gal (~19,000 litres)
Vacuum truck on site for 4 hours for each load

Hydrocarbon Contaminated Soils Disposal

Assumes all hazardous materials are known
On site disposal assumes biopad treatment
Exavation productivity =45 cy./hr (35 m3/hr) (Means Heavy Construction, 2006: 02315-424-0360)

Waste Disposal - Solid Waste Disposal

	Description (required)	Waste Volume cy	Number of Off Site Dumpster Loads	Landfill Fleet Equipment	Landfill Fleet Productivity LCY/hr	Number of Trucks	Total Fleet Hours	Total Dumpster Cost $	Total Labor Cost $	Total Equipment Cost $
								$0	**$0**	**$0**

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Closure Cost Estimate
Waste Disposal

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Cost Data: User Data
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Cost Estimate Type: Surety Cost Basis: CC&V Bonding

Waste Disposal - Cost Summary

	Labor	Equipment	Fees	Totals
Solid Waste - On Site	$0	$0	N/A	$0
Solid Waste - Off Site				$0
Hazardous Materials				$0
Hydrocarbon Contaminated Soils	$0	$0	$0	$0
TOTALS	**$0**	**$0**	**$0**	**$0**

Waste Disposal - Hazardous Materials Disposal

	Description (required)	Liquid Waste Volume gallons	Solid Waste Volume cy	Number of Truck Loads	Tons of Waste Tons	Pick-up Fees $	Transport Fees $	Disposal Fees $	Total Hazardous Material Cost $
						$0	**$0**	**$0**	**$0**

Waste Disposal - Hydrocarbon Contaminated Soils

	Description (required)	Quantity cy	Disposal Equipment Fleet	Total Fleet Hours	Treatment Cost $	Transport Fees $	Disposal Fees $	Total Labor Cost $	Total Equipment Cost $	Total Waste Disposal Cost $
					$0	**$0**	**$0**	**$0**	**$0**	**$0**

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Closure Cost Estimate
Well Abandonment

Project Name: AM-13 BP2020 Financial warranty calculation - Reclamation Plan
Date of Submittal: December 2019
File Name: SRCE_AM13_FW_V4.xlsm
Model Version: Version 1.4.1
Cost Data: User Data
Cost Data File: SRCE_Cost_data-USR_1_12_DRMS_BONDING.xlsm
Cost Estimate Type: Surety Cost Basis: CC&V Bonding

Well Abandonment

	Labor	Equipment	Materials	Totals
Production, Dewatering, Infiltration Wells	$0	$0	$0	$0
Monitoring Wells	$41,711	$87,589	$2,720	$132,020
TOTALS	**$41,711**	**$87,589**	**$2,720**	**$132,020**

Production, Dewatering and Infiltration Well Closure

	Description (required)	ID Code	Number of Holes	Casing Diam in	Average Depth[1] ft bgs	Depth to First Water ft bgs	Original Static Water Level ft bgs	Top of Slotted Casing[2] ft bgs	Blank Casing Below Top of Screen[2] ft	Type of Pump (if any) (select)	Depth to Pump ft bgs	Hole Plug Method (select)	Casing Volume per ft cf	Perforation Length[3,4] ft	Grout Volume per Hole[4,5] cy	Cement Volume per Hole[6] cy	Inert Media Volume per Hole[7] cy	Pump Removal Labor Cost $	Pump Removal Equip Cost $	Perf Labor Cost $	Perf Equip Cost[8] $	Grout + Cement Labor Cost[9] $	Grout + Cement Equip Cost[9] $	Grout + Cement Material Cost $	Inert Media Labor Cost[10] $	Inert Media Equip Cost[9] $
																		$0	$0	$0	$0	$0	$0	$0	$0	$0

(1) For previously abandoned holes enter "0" for depth
(2) Wells abandoned per Nevada Administrative Code (NAC 534.420). Hole grouted and perforated from bottom to 50 feet (15.24m) above the top of the screen, or first water encountered or original static water level, depending on vertical hydraulic gradient and well construction parameters. Inert media (cuttings or alluvium) used from top of grout to top seal.
(3) Perforation length = amount of blank casing below first water (for confined aquifers) or predicted recovered water table (unconfined aquifers) + 50 feet (15.24m) of blank casing above water table
(4) Assumes 50' (15.24m) sanitary seal at top of hole. Therefore, perforation and grouting only required to bottom of sanitary seal.
(5) Assumes 100% loss to formation for grout (abandonite) for screened and perforated sections.
(6) Assumes 20' (6m) top seal of cement in casing only. See note 4.
(7) Inert material is cuttings or alluvium sourced locally.
(8) Includes perforation tool wear cost/ft of perforation (see Productivty Sheet).
(9) See Productivity Sheet for hourly production. Minimum 1 hr per hole + fixed hours per hole for move and setup. If no perforation required, use standard drill rig.
(10) See Productivity Sheet for hourly production. Minimum 1 hr per hole.

Notes:

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Closure Cost Estimate
Well Abandonment

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Model Version: Version 1.4.1
Cost Data: User Data
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Cost Estimate Type: Surety Cost Basis: CC&V Bonding

Well Abandonment

	Labor	Equipment	Materials	Totals
Production, Dewatering, Infiltration Wells	$0	$0	$0	$0
Monitoring Wells	$41,711	$87,589	$2,720	$132,020
TOTALS	**$41,711**	**$87,589**	**$2,720**	**$132,020**

Monitoring Well Closure

	Description (required)	ID Code	Number of Holes	Casing Diam in	Average Depth ft bgs	Top of Screen[1] ft bgs	Hole Plug Method (select)	Casing Volume per ft ft3	Grout Volume/ Well[2,3] cy	Cement Volume per Hole[4] cy	Inert Backfill Volume per Hole[5] cy	Total Grouting Hours/ Hole hr	Total Inert Media Hours/ Hole hr	Grout + Cement Labor Cost[6] $	Grout + Cement Equip Cost[6] $	Grout + Cement Material Cost $	Inert Material Labor Cost[7] $	Inert Material Equip Cost[7] $
1	**All Monitroing wells**		**71**	**4.0**	**227**	**140**	**Grout Only**	0.090	0.86	0.08		3.5		$41,711	$87,589	$2,720	$0	$0
														$41,711	**$87,589**	**$2,720**	**$0**	**$0**

Wells abandoned per NAC 534.420 with bentonite grout placed to 50 feet above the top of the screen (see note 1).
(1) Assumes top of screen is at or above the static water level (in unconfined aquifers) or the depth of first water encountered (in confined aquifers).
(2) Assumes 25% loss to formation for grouting
(3) Grouting only required to 50' (15.24m) above the top of screen because monitor wells are constructed with a seal in the annular space.
(4) Assumes top 20' (6m) plugged with cement.
(5) Assumes hole plugged with inert material (cuttings or alluvium) above grout up to cement surface plug.
(6) See Productivity Sheet for hourly production. Minimum 1 hr per hole + fixed hours per hole for move and setup (see Productivty Sheet).
(7) See Productivity Sheet for hourly production. Minimum 1 hr per hole.

Notes:

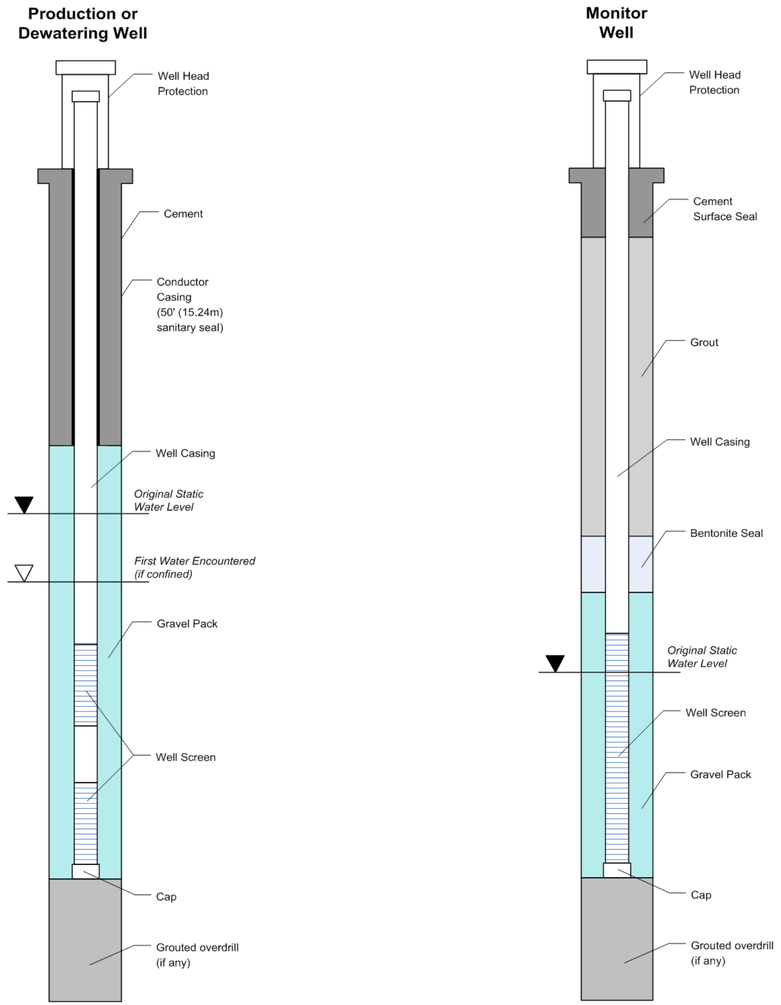
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Closure Cost Estimate
Well Abandonment

Project Name: AM-13 BP2020 Financial warranty calculation - Reclamation Plan
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Cost Estimate Type: Surety Cost Basis: CC&V Bonding

Well Abandonment				
	Labor	Equipment	Materials	Totals
Production, Dewatering, Infiltration Wells	$0	$0	$0	$0
Monitoring Wells	$41,711	$87,589	$2,720	$132,020
TOTALS	**$41,711**	**$87,589**	**$2,720**	**$132,020**

Well Construction



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Closure Cost Estimate
Misc. Costs

Project Name: AM-13 BP2020 Financial warranty calculation - Reclamation Plan
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File Name: SRCE_AM13_FW_V4.xlsm
Model Version: Version 1.4.1
Cost Data: User Data
Cost Data File: SRCE_Cost_data-USR_1_12_DRMS_BONDING.xlsm
Cost Estimate Type: Surety Cost Basis: CC&V Bonding

Miscellaneous Cost Summary

	Labor	Equipment	Materials	Totals
Fence Removal	$37,101	$10,688	N/A	$47,789
Fence Installation	$293,222	$46,774	$1,532,934	$1,872,930
Culvert & Buried Pipe Removal	$0	$0	N/A	$0
Surface Pipe Removal	$336,030	$47,940	N/A	$383,970
Power Lines	$397,325	N/A	N/A	$397,325
Substations/Transformers	$0	N/A	N/A	$0
Rip-rap, rock lining, gabions	$0	$0	$0	$0
Other Costs	$0	$0	$0	$0
TOTALS	**$1,063,678**	**$105,402**	**$1,532,934**	**$2,702,014**

Fence Removal

You must fill in ALL green and blue cells

	Description (required)	ID Code	Length ft	Type (select type)	Costs: Labor Cost $	Costs: Equipment Cost $	Costs: Total Cost $
1	**Arequa fence removal**		**3450**	**Chain link 8-10 ft**	$10,419	$3,002	$13,421
2	**Squaw fence removal**		**8835**	**Chain link 8-10 ft**	$26,682	$7,686	$34,368
					$37,101	**$10,688**	**$47,789**

Notes:

Fence Installation

You must fill in ALL green and blue cells

	Description (required)	ID Code	Input: Length ft	Input: Type (select type)	Costs: Labor Cost $	Costs: Equipment Cost $	Costs: Material Cost ($)
1	**Cresson Fencing**		**22542**	**Chain link 8-10ft**	$168,163	$26,825	$879,138
2	**Globe Hill Fencing**		**16764**	**Chain link 8-10ft**	$125,059	$19,949	$653,796
					$293,222	**$46,774**	**$1,532,934**

Notes:

Culvert & Buried Pipe Removal

You must fill in ALL green and blue cells

	Description (required)	ID Code	Input: Length ft	Input: Type (select type)	Input: Location (select)	Costs: Labor Cost $	Costs: Equipment Cost $
						$0	**$0**

Notes:

Surface Pipe Removal

You must fill in ALL green and blue cells

	Description (required)	ID Code	Input: Length ft	Input: Type (select type)	Input: Location (select)	Costs: Labor Cost $	Costs: Equipment Cost $
1	**Arequa Large Pipes**		**6900**	**20 in (500 mm) - 3**	**Off site**	$51,750	$7,383
2	**Arequa Small Pipes**		**21200**	**20 in (500 mm) - 3**	**Off site**	$159,000	$22,684
3	**Squaw Large Pipes**		**4082**	**20 in (500 mm) - 3**	**Off site**	$30,615	$4,368
4	**Squaw Small Pipes**		**12422**	**20 in (500 mm) - 3**	**Off site**	$93,165	$13,292
5	**TR76 barren pipe**		**300**	**10 in (250 mm) - 1**	**Off site**	$1,500	$213
						$336,030	**$47,940**

Notes:

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Closure Cost Estimate
Misc. Costs

Project Name: AM-13 BP2020 Financial warranty calculation - Reclamation Plan
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Cost Estimate Type: Surety Cost Basis: CC&V Bonding

Miscellaneous Cost Summary

	Labor	Equipment	Materials	Totals
Fence Removal	$37,101	$10,688	N/A	$47,789
Fence Installation	$293,222	$46,774	$1,532,934	$1,872,930
Culvert & Buried Pipe Removal	$0	$0	N/A	$0
Surface Pipe Removal	$336,030	$47,940	N/A	$383,970
Power Lines	$397,325	N/A	N/A	$397,325
Substations/Transformers	$0	N/A	N/A	$0
Rip-rap, rock lining, gabions	$0	$0	$0	$0
Other Costs	$0	$0	$0	$0
TOTALS	**$1,063,678**	**$105,402**	**$1,532,934**	**$2,702,014**

Power Line and Substation Removal

You must fill in ALL green and blue cells

	Description (required)	ID Code	Input: Power Line Length (miles)	Input: Power Line Type (select)	Input: Number of Substations (#)	Input: Location (select)	Power Line Removal ($)
1	**Powerlines**		**7.2**	**Single Pole**		**On-site**	$304,150
2	**Crusher and ADR 1 Lines**		**1.93**	**Double Pole**		**On-site**	$93,175
							$397,325

Notes: If substation owned by operator, use Other Demo & Equipment Removal sheet
User may need to add line items in Foundations & Buildings for substation slab demolition and fence removal
Labor/Equipment costs assume approximately 80% of cost are equipment and 20% are labor related costs
Assumed average spacing of 250 FT between poles

Rip-Rap & Rock Lining

You must fill in ALL green and blue cells

	Description (required)	ID Code	Input: Area (S.Y.)	Input: Type (select type)	Costs: Labor Cost ($)	Costs: Equipment Cost ($)	Costs: Material Cost ($)
					$0	**$0**	**$0**

Notes:

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Closure Cost Estimate
Monitoring

Project Name: AM-13 BP2020 Financial warranty calculation - Reclamation Plan
Date of Submittal: December 2019
File Name: SRCE_AM13_FW_V4.xlsm
Model Version: Version 1.4.1
Cost Data: User Data
Cost Data File: SRCE_Cost_data-USR_1_12_DRMS_BONDING.xlsm
Cost Estimate Type: Surety Cost Basis: CC&V Bonding

Reclamation Monitoring & Maintenance - Cost Summary

	Labor	Equipment	Lab & Materials	Totals
Revegetation Maintenance	$154,628	$81,855	$137,080	$373,563
Erosion Maintenance	$25,665	$76,996	N/A	$102,661
Reclamation Monitoring	$105,336	$2,671	N/A	$108,007
Subtotal Reclamation Monitoring	**$285,629**	**$161,522**	**$137,080**	**$584,231**
Water Quality Monitoring	$423,177	$113,373	$656,020	$1,192,571
TOTAL MONITORING	**$708,806**	**$274,895**	**$793,100**	**$1,776,802**

Reclamation Maintenance

Description	Total Revegetation Surface Area (1,2) acres	% Area Requiring Reseeding	Seed Mix (select)	Area Requiring Reseeding acres	Seed $/acres	Labor $/acres	Equipment $/acres	Totals $
Revegetation Maintenance	4,465	**10%**	**User Mix 1**	446.5	$307.00	$346.30	$183.32	
Labor								$154,628
Equipment								$81,855
Materials								$137,080
Cost/Acre								$837
							Subtotal	**$373,563**

Notes: 1) Surface area is NOT the same as footprint disturbance area typically used for permitting purposes.

	Total Volume Growth Media cy	% Volume Requiring Maintenance	Average Growth Media Placement Cost $/CY	Volume Requiring Replacement cy		Labor (assume: 25%) $/acres	Equipment (assume: 75%) $/acres	Total $
Erosion Maintenance	3,491,894	**2%**	$1.47	69,838		$25,665.00	$76,996.00	$102,661

Notes:

Reclamation Monitoring

Description	Hrs/Day	Days/Year	Number of Years	Rate $/hr		
Field Work						
Field Geologist/Engineer				$77.31		$0
Range Scientist	**10**	**5**	**10**	$159.60		$79,800
Reporting						
Field Geologist/Engineer				$77.31		$0
Range Scientist	**8**	**2**	**10**	$159.60		$25,536
					Subtotal	**$105,336**
Travel						
	Hrs/Trip hr	**Trips/Year**	**Years**	**Truck Cost** $/hr		
Travel	**10**	**1**	**10**	$26.71		$2,671
					Subtotal	**$2,671**
					Total Reclamation Monitoring	**$108,007**

Notes:

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Closure Cost Estimate
Monitoring

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Cost Data File: SRCE_Cost_data-USR_1_12_DRMS_BONDING.xlsm
Cost Estimate Type: Surety Cost Basis: CC&V Bonding

Reclamation Monitoring & Maintenance - Cost Summary

	Labor	Equipment	Lab & Materials	Totals
Revegetation Maintenance	$154,628	$81,855	$137,080	$373,563
Erosion Maintenance	$25,665	$76,996	N/A	$102,661
Reclamation Monitoring	$105,336	$2,671	N/A	$108,007
Subtotal Reclamation Monitoring	**$285,629**	**$161,522**	**$137,080**	**$584,231**
Water Quality Monitoring	$423,177	$113,373	$656,020	$1,192,571
TOTAL MONITORING	**$708,806**	**$274,895**	**$793,100**	**$1,776,802**

Water and Rock Sample Analysis

Description	Samples #	Events/Year	No. Years	First Sample Year closure year (1-100)	No. of Samplers	Days/Event	Hrs/Day	Analysis Cost $/sample	Supplies $/sample	Lab Cost $
Water Analysis (Complete) (1)	**21**	**4**	**14**	**1**	**1**	**4**	**10**	$302.60	$5.68	$355,858
Water Analysis (Complete) (1)	**14**	**4**	**14**	**1**	**1**	**4**	**10**	$302.60	$5.68	$237,238
Water Analysis (Complete) (1)	**1**	**12**	**14**	**1**	**1**	**1**	**10**	$302.60	$5.68	$50,837
										$643,933.00

Notes: Sampling labor cost = No. Samplers x Years x Events/year x Days/event x Hour/Day x Labor Rate
Sampling equipment costs include 1 pickup truck for every two samplers

Ground & Surface Water Monitoring

Pump Costs

Description	No. of units		Years		Cost $
Pump (purchased)	**1**	Replacement period (yrs):	**14**	2431.55	$2,432
				Subtotal Field Work	**$2,432**

Notes: Replacement period = frequency of pump replacement

Reporting

Description	Hrs/Event	Rate $/hr	Cost $
Field Geologist/Engineer	**8**	$77.31	$103,905
		Subtotal Reporting	**$103,905**

Notes:

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Closure Cost Estimate
Constr. Mgmt

Project Name: AM-13 BP2020 Financial warranty calculation - Reclamation Plan
Date of Submittal: December 2019
File Name: SRCE_AM13_FW_V4.xlsm
Model Version: Version 1.4.1
Cost Data: User Data
Cost Data File: SRCE_Cost_data-USR_1_12_DRMS_BONDING.xlsm
Cost Estimate Type: Surety Cost Basis: CC&V Bonding

Construction Management & Road Maintenance - Cost Summary

	Labor	Equipment	Materials	Totals
Construction Management	$2,452,800	$484,109	N/A	$2,936,909
Construction Support		$0		$0
Road Maintenance	$945,332	$1,774,165	$0	$2,719,497
TOTAL CONSTRUCTION MANAGEMENT	**$3,398,132**	**$2,258,274**	**$0**	**$5,656,406**

Construction Management

Construction Management Staff

Description	Duration mo.	Hours/ Month hr.	Number of Supervisors	Supervisor Rate $/hr	Labor Cost $	Equipment Cost[(1)] $	Totals $
Active Reclamation	**168**	**160**	**1**	$91.25	$2,452,800	$484,109	$2,936,909
Monitoring & Maintenance					$0	$0	$0
				Total Staff	**$2,452,800**	**$484,109**	**$2,936,909**

Construction Management Support

Description	Duration mo.	Number of Units		Rental Rate $/mo	Generator Cost $/mo	Equipment Cost[(1)] $	Totals $
Temporary Office Rental						$0	$0
Temporary Toilets						$0	$0
					Total Support	**$0**	**$0**

Notes: Office rental assumes only 1 generator required for every 4 trailers

Total Construction Management **$2,936,909**

Road Maintenance

Description	Fleet Size (select)	Number	Duration mo.	Hours/ Month hr.	Labor Cost $	Equipment Cost $	Totals $
Active Reclamation							
Water Truck	**Large**	**1**	**48**	**176**	$472,666	$843,026	$1,315,692
Grader	**Large**	**1**	**48**	**176**	$472,666	$931,139	$1,403,805
Monitoring & Maintenance							
Water Truck					$0	$0	$0
Grader					$0	$0	$0

Description	Gallons/ Day	Days/ Month	Duration mo.	Cost/ Gallon $			Totals $
Water Fees							
Water Fees							$0
				Total Project Maintenance	**$945,332**	**$1,774,165**	**$2,719,497**

Notes: 1) Supervisor equipment = pickup truck

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Closure Cost Estimate
Labor Rates

Project Name: AM-13 BP2020 Financial warranty calculation - Reclamation Plan
Date of Submittal: December 2019
File Name: SRCE_AM13_FW_V4.xlsm
Model Version: Version 1.4.1
Cost Data: User Data
Cost Data File: SRCE_Cost_data-USR_1_12_DRMS_BONDING.xlsm
Cost Estimate Type: Surety Cost Basis: CC&V Bonding

Color Code Key	
User Input - Direct Input	**Direct Input**
User Input - Pull Down List	**Pull Down Selection**
Program Constant (can override)	**Alternate Input**
Program Calculated Value	**Locked Cell - Formula or Reference**

ZONE ADJUSTMENTS		
Cost Basis/Project Region	**CC&V Bonding**	Labor = 2019 Newmont CC&V rate if available; otherwise 2018 Nevada bond rate. Equipment = 2019 Newmont CC&V operating + maintenance co
Power Equipment Operators	**None**	$0.00
Truck Drivers	**none**	$0.00
Laborers	**none**	$0.00

INDIRECT COSTS	
Unemployment (%)	3.00%
Retirement/SS/Medicare (%)	7.65%
Workman's Compensation (%)	8.70%
Other Indirects	
State Payroll Tax (13),(15),(17),(18	
Burden Rate less govt tax (Newmo	32.65%
Total Other Indirects	**32.65%**

HOURLY LABOR RATE TABLE

EQUIPMENT TYPE (1) OR JOB DESCRIPTION	Labor Group	Base Rate ($/hr)	Zone Adjustment ($/hr)	Hourly Wage ($/hr)	Fringe ($/hr)	Retirement/ Medicare ($/hr)	Unemployment Insurance ($/hr)	Workman's Compensation ($/hr)	Other Indirect Costs ($/hr)	Total ($/hr)
Equipment Operators ($/hr) (2)										
Bulldozers										
D6R		$36.81	$0.00	$36.81	$0.00	$1.10	$2.82	$3.20	$12.02	$55.95
D6R w/ Winch		$36.81	$0.00	$36.81	$0.00	$1.10	$2.82	$3.20	$12.02	$55.95
D7R		$36.81	$0.00	$36.81	$0.00	$1.10	$2.82	$3.20	$12.02	$55.95
D8R		$36.81	$0.00	$36.81	$0.00	$1.10	$2.82	$3.20	$12.02	$55.95
D9R		$36.81	$0.00	$36.81	$0.00	$1.10	$2.82	$3.20	$12.02	$55.95
D10R		$36.81	$0.00	$36.81	$0.00	$1.10	$2.82	$3.20	$12.02	$55.95
D11R		$36.81	$0.00	$36.81	$0.00	$1.10	$2.82	$3.20	$12.02	$55.95
Wheeled Dozers										
824G					$0.00					
834G					$0.00					
844					$0.00					
854G					$0.00					
Motor Graders										
120H		$36.81	$0.00	$36.81	$0.00	$1.10	$2.82	$3.20	$12.02	$55.95
14G/H		$36.81	$0.00	$36.81	$0.00	$1.10	$2.82	$3.20	$12.02	$55.95
16G/H		$36.81	$0.00	$36.81	$0.00	$1.10	$2.82	$3.20	$12.02	$55.95
24M		$36.81	$0.00	$36.81	$0.00	$1.10	$2.82	$3.20	$12.02	$55.95
Track Excavators										
312C		$36.81	$0.00	$36.81	$0.00	$1.10	$2.82	$3.20	$12.02	$55.95
320C		$36.81	$0.00	$36.81	$0.00	$1.10	$2.82	$3.20	$12.02	$55.95
325C		$36.81	$0.00	$36.81	$0.00	$1.10	$2.82	$3.20	$12.02	$55.95
330C		$36.81	$0.00	$36.81	$0.00	$1.10	$2.82	$3.20	$12.02	$55.95
345B		$36.81	$0.00	$36.81	$0.00	$1.10	$2.82	$3.20	$12.02	$55.95
365BL		$36.81	$0.00	$36.81	$0.00	$1.10	$2.82	$3.20	$12.02	$55.95
385BL		$36.81	$0.00	$36.81	$0.00	$1.10	$2.82	$3.20	$12.02	$55.95
Scrapers										
631G		$36.81	$0.00	$36.81	$0.00	$1.10	$2.82	$3.20	$12.02	$55.95
637G		$36.81	$0.00	$36.81	$0.00	$1.10	$2.82	$3.20	$12.02	$55.95
Wheeled Loaders										
924G		$36.81	$0.00	$36.81	$0.00	$1.10	$2.82	$3.20	$12.02	$55.95
928G		$36.81	$0.00	$36.81	$0.00	$1.10	$2.82	$3.20	$12.02	$55.95
950G		$36.81	$0.00	$36.81	$0.00	$1.10	$2.82	$3.20	$12.02	$55.95
966G		$36.81	$0.00	$36.81	$0.00	$1.10	$2.82	$3.20	$12.02	$55.95
972G		$36.81	$0.00	$36.81	$0.00	$1.10	$2.82	$3.20	$12.02	$55.95
980G		$36.81	$0.00	$36.81	$0.00	$1.10	$2.82	$3.20	$12.02	$55.95
988G		$36.81	$0.00	$36.81	$0.00	$1.10	$2.82	$3.20	$12.02	$55.95
990		$36.81	$0.00	$36.81	$0.00	$1.10	$2.82	$3.20	$12.02	$55.95
992G		$36.81	$0.00	$36.81	$0.00	$1.10	$2.82	$3.20	$12.02	$55.95
994D		$36.81	$0.00	$36.81	$0.00	$1.10	$2.82	$3.20	$12.02	$55.95
L2350		$36.81	$0.00	$36.81	$0.00	$1.10	$2.82	$3.20	$12.02	$55.95
Shovels										
PC2000		$36.81	$0.00	$36.81	$0.00	$1.10	$2.82	$3.20	$12.02	$55.95
PC3000		$36.81	$0.00	$36.81	$0.00	$1.10	$2.82	$3.20	$12.02	$55.95
PC4000		$36.81	$0.00	$36.81	$0.00	$1.10	$2.82	$3.20	$12.02	$55.95
PC5500		$36.81	$0.00	$36.81	$0.00	$1.10	$2.82	$3.20	$12.02	$55.95
PC8000		$36.81	$0.00	$36.81	$0.00	$1.10	$2.82	$3.20	$12.02	$55.95

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Closure Cost Estimate
Labor Rates

Project Name: AM-13 BP2020 Financial warranty calculation - Reclamation Plan
Date of Submittal: December 2019
File Name: SRCE_AM13_FW_V4.xlsm
Model Version: Version 1.4.1
Cost Data: User Data
Cost Data File: SRCE_Cost_data-USR_1_12_DRMS_BONDING.xlsm
Cost Estimate Type: Surety Cost Basis: CC&V Bonding

Color Code Key	
User Input - Direct Input	**Direct Input**
User Input - Pull Down List	**Pull Down Selection**
Program Constant (can override)	**Alternate Input**
Program Calculated Value	**Locked Cell - Formula or Reference**

ZONE ADJUSTMENTS		
Cost Basis/Project Region	**CC&V Bonding**	Labor = 2019 Newmont CC&V rate if available; otherwise 2018 Nevada bond rate. Equipment = 2019 Newmont CC&V operating + maintenance co
Power Equipment Operators	**None**	$0.00
Truck Drivers	**none**	$0.00
Laborers	**none**	$0.00

INDIRECT COSTS	
Unemployment (%)	3.00%
Retirement/SS/Medicare (%)	7.65%
Workman's Compensation (%)	8.70%
Other Indirects	
State Payroll Tax (13),(15),(17),(18	
Burden Rate less govt tax (Newmo	32.65%
Total Other Indirects	**32.65%**

HOURLY LABOR RATE TABLE

Hydraulic Hammers										
H-120 (fits 325)										
H-160 (fits 345)										
H-180 (fits 365/385)										
Demolition Shears										
S340 (fits 322/325/330)										
S365 (fits 330/345)										
S390 (fits 365/385)										
Demolition Grapples										
G315 (fits 322/325)										
G320 (fits 325/330)										
G330 (fits 345/365)										
Other Equipment										
420D 4WD Backhoe		$36.81	$0.00	$36.81	$0.00	$1.10	$2.82	$3.20	$12.02	$55.95
428D 4WD Backhoe		$36.81	$0.00	$36.81	$0.00	$1.10	$2.82	$3.20	$12.02	$55.95
CS533E Vibratory Roller		$36.81	$0.00	$36.81	$0.00	$1.10	$2.82	$3.20	$12.02	$55.95
CS633E Vibratory Roller					$0.00					
CP533E Sheepsfoot Compactor					$0.00					
CP633E Sheepsfoot Compactor					$0.00					
Light Truck - 1.5 Ton					$0.00					
Supervisor's Truck					$0.00					
Flatbed Truck					$0.00					
Air Compressor + tools		$46.88	$0.00	$46.88	$0.00	$1.41	$3.59	$4.08	$15.31	$55.95
Welding Equipment		$46.88	$0.00	$46.88	$0.00	$1.41	$3.59	$4.08	$15.31	$55.95
Heavy Duty Drill Rig		$46.88	$0.00	$46.88	$0.00	$1.41	$3.59	$4.08	$15.31	$55.95
Pump (plugging) Drill Rig		$46.88	$0.00	$46.88	$0.00	$1.41	$3.59	$4.08	$15.31	$55.95
Concrete Pump					$0.00					
Gas Engine Vibrator		$36.81	$0.00	$36.81	$0.00	$1.10	$2.82	$3.20	$12.02	$55.95
Generator 5KW					$0.00					
HDEP Welder (pipe or liner)					$0.00					
5 Ton Crane		$36.81	$0.00	$36.81	$0.00	$1.10	$2.82	$3.20	$12.02	$55.95
20 Ton Crane		$36.81	$0.00	$36.81	$0.00	$1.10	$2.82	$3.20	$12.02	$55.95
50 Ton Crane					$0.00					
120 Ton Crane					$0.00					

NOTES:

(1) Equipment Type:	Catepillar model or equivalent, LeTourneau	
(2) Equipment Operator Source:		
(3) Zone Basis:		

Truck Drivers ($/hr) (4)										
725		$36.81	$0.00	$36.81	$0.00	$1.10	$2.82	$3.20	$12.02	$55.95
730		$36.81	$0.00	$36.81	$0.00	$1.10	$2.82	$3.20	$12.02	$55.95
735		$36.81	$0.00	$36.81	$0.00	$1.10	$2.82	$3.20	$12.02	$55.95
740		$36.81	$0.00	$36.81	$0.00	$1.10	$2.82	$3.20	$12.02	$55.95
769D		$36.81	$0.00	$36.81	$0.00	$1.10	$2.82	$3.20	$12.02	$55.95
773E		$36.81	$0.00	$36.81	$0.00	$1.10	$2.82	$3.20	$12.02	$55.95
777D		$36.81	$0.00	$36.81	$0.00	$1.10	$2.82	$3.20	$12.02	$55.95
785C		$36.81	$0.00	$36.81	$0.00	$1.10	$2.82	$3.20	$12.02	$55.95
793C		$36.81	$0.00	$36.81	$0.00	$1.10	$2.82	$3.20	$12.02	$55.95
797B		$36.81	$0.00	$36.81	$0.00	$1.10	$2.82	$3.20	$12.02	$55.95
613E (5,000 gal) Water Wagon		$36.81	$0.00	$36.81	$0.00	$1.10	$2.82	$3.20	$12.02	$55.95
621E (8,000 gal) Water Wagon		$36.81	$0.00	$36.81	$0.00	$1.10	$2.82	$3.20	$12.02	$55.95

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Closure Cost Estimate
Labor Rates

Project Name: AM-13 BP2020 Financial warranty calculation - Reclamation Plan
Date of Submittal: December 2019
File Name: SRCE_AM13_FW_V4.xlsm
Model Version: Version 1.4.1
Cost Data: User Data
Cost Data File: SRCE_Cost_data-USR_1_12_DRMS_BONDING.xlsm
Cost Estimate Type: Surety Cost Basis: CC&V Bonding

Color Code Key	
User Input - Direct Input	Direct Input
User Input - Pull Down List	Pull Down Selection
Program Constant (can override)	Alternate Input
Program Calculated Value	Locked Cell - Formula or Reference

ZONE ADJUSTMENTS			
Cost Basis/Project Region	CC&V Bonding	Labor = 2019 Newmont CC&V rate if available; otherwise 2018 Nevada bond rate. Equipment = 2019 Newmont CC&V operating + maintenance co	
Power Equipment Operators	None	$0.00	
Truck Drivers	none	$0.00	
Laborers	none	$0.00	
INDIRECT COSTS			
Unemployment (%)	3.00%		
Retirement/SS/Medicare (%)	7.65%		
Workman's Compensation (%)	8.70%		
Other Indirects			
State Payroll Tax (13),(15),(17),(18			
Burden Rate less govt tax (Newmo	32.65%		
Total Other Indirects	**32.65%**		

HOURLY LABOR RATE TABLE											
777D Water Truck		$36.81	$0.00	$36.81	$0.00	$1.10	$2.82	$3.20	$12.02	$55.95
785C Water Truck		$36.81	$0.00	$36.81	$0.00	$1.10	$2.82	$3.20	$12.02	$55.95
Dump Truck (10-12 yd3)		$36.81	$0.00	$36.81	$0.00	$1.10	$2.82	$3.20	$12.02	$55.95

NOTES:

(4) Truck Driver Source:	Mine Site Costs
(5) Zone Basis:	Mine Site Costs

Laborers ($/hr) (6,7)										
General Laborer		$36.81	$0.00	$36.81		$1.10	$2.82	$3.20	$12.02	$55.95
Skilled Laborer		$36.81	$0.00	$36.81		$1.10	$2.82	$3.20	$12.02	$55.95
Driller's Helper		$36.81	$0.00	$36.81		$1.10	$2.82	$3.20	$12.02	$55.95
Rodmen (reinforcing concrete)		$36.81	$0.00	$36.81		$1.10	$2.82	$3.20	$12.02	$55.95
Cement finisher		$36.81	$0.00	$36.81		$1.10	$2.82	$3.20	$12.02	$55.95
Carpenter		$36.81	$0.00	$36.81		$1.10	$2.82	$3.20	$12.02	$55.95

NOTES:

(6) Laborer Source:	10 Apr 2019 Kim Johnson email
(7) Carpenter Source:	
(8) Zone Basis:	

Project Management and Technical Labor ($/hr) (9)										
Project Manager		$60.03		$60.03		$1.80	$4.59	$5.22	$19.60	$91.25
Foreman		$49.81		$49.81		$1.49	$3.81	$4.33	$16.26	$75.71
Field Geologist/Engineer		$50.86		$50.86		$1.53	$3.89	$4.42	$16.61	$77.31
Field Tech/Sampler		$34.10		$34.10		$1.02	$2.61	$2.97	$11.13	$51.83
Range Scientist		$105.00		$105.00		$3.15	$8.03	$9.14	$34.28	$159.60
Senior Planning Engineer										
Project Engineer										
Mechanic/Fitter		$37.80		$37.80		$1.13	$2.89	$3.29	$12.34	$57.46

NOTES:

(9) Project Manager:	NMC HR Mar 2019
(9) Foreman Source:	NMC HR Mar 2019
(9) Techical Labor Source:	10 Apr 2019 Kim Johnson email
Other Labor Source:	
Other Labor Source:	
†Additional User Markups	
(These are added by the user to the	
base rate to account for site-specific	
conditions or corporate requirements)	

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Closure Cost Estimate
Equipment Costs

Project Name: AM-13 BP2020 Financial warranty calculation - Reclamation Plan
Date of Submittal: December 2019
File Name: SRCE_AM13_FW_V4.xlsm
Model Version: Version 1.4.1
Cost Data: User Data
Cost Data File: SRCE_Cost_data-USR_1_12_DRMS_BONDING.xlsm
Monthly Rental Basis: 176 hrs month

EQUIPMENT RENTAL RATE TABLE

EQUIPMENT TYPE (1)	Monthly Owner/Rental Rate	Equipment Hourly Rate	Fuel/Lube/ Wear	Total Rate
Bulldozers				
D6R	$10,400.00	$59.09	$26.30	$85.39
D6R w/ Winch			$14.04	$14.04
D7R	$11,350.00	$64.49	$29.11	$93.60
D8R	$19,000.00	$107.95	$39.25	$147.20
D9R	$23,100.00	$131.25	$55.84	$187.09
D10R			$144.35	$144.35
D11R	$64,000.00	$363.64	$104.98	$468.61
Wheeled Dozers				
824G			$24.16	$24.16
834G			$28.31	$28.31
844			$33.71	$33.71
854G			$42.69	$42.69
Motor Graders				
120H	$9,600.00	$54.55	$27.62	$82.16
14G/H	$14,500.00	$82.39	$39.81	$122.20
16G/H			$110.22	$110.22
24M			$190.04	$190.04
Track Excavators				
312C	$5,415.00	$30.77	$12.27	$43.04
320C	$6,700.00	$38.07	$19.94	$58.01
325C	$11,100.00	$63.07	$25.01	$88.08
330C	$10,800.00	$61.36	$31.19	$92.55
345B	$14,280.00	$81.14	$37.53	$118.66
365BL			$29.66	$29.66
385BL	$22,500.00	$127.84	$58.59	$186.43
Scrapers				
631G	$18,000.00	$102.27	$58.27	$160.54
637G	$35,000.00	$198.86	$84.88	$283.74
Wheeled Loaders				
924G	$5,000.00	$28.41	$16.57	$44.98
928G	$5,200.00	$29.55	$18.98	$48.52
950G	$7,600.00	$43.18	$26.29	$69.47
966G	$10,900.00	$61.93	$34.99	$96.92
972G	$13,800.00	$78.41	$39.57	$117.98
980G	$13,800.00	$78.41	$42.72	$121.13
988G	$21,000.00	$119.32	$62.91	$182.23
990			$38.20	$38.20
992G			$330.37	$330.37
994D			$466.79	$466.79
L2350			$148.30	$148.30
Shovels				
PC2000			$83.14	$83.14
PC3000			$112.35	$112.35
PC4000			$157.29	$157.29
PC5500			$267.39	$267.39
PC8000			$334.80	$334.80
Hydraulic Hammers				
H-120 (fits 325)	$5,700.00	$32.39	$5.44	$37.83
H-160 (fits 345)	$12,000.00	$68.18	$10.58	$78.76
H-180 (fits 365/385)	$16,200.00	$92.05	$12.53	$104.58
Demolition Shears				
S340 (fits 322/325/330)				$0.00

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S365 (fits 330/345)				$0.00
S390 (fits 365/385)				$0.00
Demolition Grapples				
G315 (fits 322/325)				$0.00
G320 (fits 325/330)				$0.00
G330 (fits 345/365)				$0.00
Other Equipment				
420D 4WD Backhoe	$3,200.00	$18.18	$14.98	$33.16
428D 4WD Backhoe	$4,000.00	$22.73	$14.88	$37.61
CS533E Vibratory Roller	$8,470.00	$48.13	$8.43	$56.55
CS633E Vibratory Roller			$10.67	$10.67
CP533E Sheepsfoot Compactor			$8.43	$8.43
CP633E Sheepsfoot Compactor			$10.67	$10.67
Light Truck - 1.5 Ton	$4,074.00	$23.15	$3.56	$26.71
Supervisor's Truck	$2,741.00	$15.57	$2.43	$18.01
Flatbed Truck	$4,074.00	$23.15	$11.59	$34.74
Air Compressor + tools	$4,345.00	$24.69	$2.25	$26.93
Welding Equipment	$2,123.00	$12.06	$4.49	$16.56
Heavy Duty Drill Rig	$58,080.00	$330.00	$26.96	$356.96
Pump (plugging) Drill Rig	$58,080.00	$330.00	$22.47	$352.47
Concrete Pump	$18,986.00	$107.88	$22.47	$130.35
Gas Engine Vibrator	$554.00	$3.15	$2.25	$5.39
Generator 5KW	$766.00	$4.35	$3.37	$7.72
HDEP Welder (pipe or liner)	$9,196.00	$52.25	$4.49	$56.74
5 Ton Crane	$5,610.00	$31.88	$6.74	$38.62
20 Ton Crane	$12,782.00	$72.63	$8.99	$81.61
50 Ton Crane	$12,782.00	$72.63	$10.56	$83.19
120 Ton Crane			$11.68	$11.68
Trucks				
725	$15,000.00	$85.23	$35.51	$120.74
730	$15,000.00	$85.23	$36.64	$121.87
735	$15,000.00	$85.23	$49.63	$134.86
740	$15,000.00	$85.23	$50.79	$136.02
769D	$21,000.00	$119.32	$34.45	$153.77
773E	$33,000.00	$187.50	$46.57	$234.07
777D			$155.95	$155.95
785C			$54.49	$54.49
793C			$341.09	$341.09
797B			$132.01	$132.01
613E (5,000 gal) Water Wagon	$6,000.00	$34.09	$22.87	$56.96
621E (8,000 gal) Water Wagon	$11,000.00	$62.50	$37.29	$99.79
777D Water Truck			$207.26	$207.26
785C Water Truck			$54.49	$54.49
Dump Truck (10-12 yd^3)	$11,726.00	$66.63	$12.51	$79.14

NOTES:

(1) Power Equipment Source:	
(2) Power Equipment Type:	Catepillar model or equivalent, LeTourneau loader, Komatsu shovels
(3) Drilliing Equipment Source:	Means Heavy Construction (2019, Q3)
(4) Other Equipment Source:	Means Heavy Construction (2018, Q2)
(5) Drill rig includes support (pipe) truck	

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Closure Cost Estimate
Equipment Costs

Project Name: AM-13 BP2020 Financial warranty calculation - Reclamation Plan
Date of Submittal: December 2019
File Name: SRCE_AM13_FW_V4.xlsm
Model Version: Version 1.4.1
Cost Data: User Data
Cost Data File: SRCE_Cost_data-USR_1_12_DRMS_BONDING.xlsm

FUEL, LUBE AND WEAR CALCULATIONS

EQUIPMENT TYPE	PM Cost Per Hour (1)	Under carriage or Tires (2)	G.E.T Consumption (3)	Fuel Use Rate gal/hr (4)	Cost@ 2.25/gal	Total Hourly Equipment Cost
Bulldozers						
D6R	$7.19		$5.07	6.25	$14.04	$26.30
D6R w/ Winch				6.25	$14.04	$14.04
D7R	$7.19		$5.07	7.50	$16.85	$29.11
D8R	$7.59		$9.75	9.75	$21.91	$39.25
D9R	$8.65		$15.17	14.25	$32.02	$55.84
D10R	$103.90			18.00	$40.45	$144.35
D11R	$13.87		$31.56	26.50	$59.55	$104.98
Wheeled Dozers						
824G		$0.00		10.75	$24.16	$24.16
834G		$0.00		12.60	$28.31	$28.31
844		$0.00		15.00	$33.71	$33.71
854G		$0.00		19.00	$42.69	$42.69
Motor Graders						
120H	$4.37	$3.79	$10.47	4.00	$8.99	$27.62
14G/H	$5.45	$5.19	$15.13	6.25	$14.04	$39.81
16G/H	$93.37			7.50	$16.85	$110.22
24M	$155.21			15.50	$34.83	$190.04
Track Excavators						
312C	$4.11		$3.94	1.88	$4.22	$12.27
320C	$4.38		$4.55	4.90	$11.01	$19.94
325C	$4.44		$5.74	6.60	$14.83	$25.01
330C	$6.44		$6.32	8.20	$18.43	$31.19
345B	$7.25		$6.46	10.60	$23.82	$37.53
365BL				13.20	$29.66	$29.66
385BL	$6.05		$13.22	17.50	$39.32	$58.59
Scrapers						
631G	$7.30	$8.99	$8.27	15.00	$33.71	$58.27
637G	$12.13	$8.99	$10.39	23.75	$53.37	$84.88
Wheeled Loaders						
924G	$3.33	$2.71	$4.35	2.75	$6.18	$16.57
928G	$3.90	$2.71	$4.50	3.50	$7.86	$18.98
950G	$4.85	$4.08	$8.37	4.00	$8.99	$26.29
966G	$5.06	$6.50	$10.51	5.75	$12.92	$34.99
972G	$5.72	$6.50	$13.30	6.25	$14.04	$39.57
980G	$5.72	$6.85	$13.30	7.50	$16.85	$42.72
988G	$10.72	$10.75	$14.25	12.10	$27.19	$62.91
990				17.00	$38.20	$38.20
992G	$278.69			23.00	$51.68	$330.37
994D	$385.90			36.00	$80.89	$466.79
L2350				66.00	$148.30	$148.30
Shovels						
PC2000				37.00	$83.14	$83.14
PC3000				50.00	$112.35	$112.35
PC4000				70.00	$157.29	$157.29
PC5500				119.00	$267.39	$267.39
PC8000				149.00	$334.80	$334.80
Hydraulic Hammers						
H-120 (fits 325)	N/A		$5.44			$5.44
H-160 (fits 345)	N/A		$10.58			$10.58
H-180 (fits 365/385)	N/A		$12.53			$12.53
Demolition Shears						
S340 (fits 322/325/330)	N/A					$0.00
S365 (fits 330/345)	N/A					$0.00

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Closure Cost Estimate
Equipment Costs

Project Name: AM-13 BP2020 Financial warranty calculation - Reclamation Plan
Date of Submittal: December 2019
File Name: SRCE_AM13_FW_V4.xlsm
Model Version: Version 1.4.1
Cost Data: User Data
Cost Data File: SRCE_Cost_data-USR_1_12_DRMS_BONDING.xlsm

S390 (fits 365/385)	N/A					$0.00
Demolition Grapples						
G315 (fits 322/325)	N/A					$0.00
G320 (fits 325/330)	N/A					$0.00
G330 (fits 345/365)	N/A					$0.00
Other Equipment						
420D 4WD Backhoe	$4.04	$0.70	$3.50	3.00	$6.74	$14.98
428D 4WD Backhoe	$3.83	$0.70	$3.61	3.00	$6.74	$14.88
CS533E Vibratory Roller				3.75	$8.43	$8.43
CS633E Vibratory Roller				4.75	$10.67	$10.67
CP533E Sheepsfoot Compactor				3.75	$8.43	$8.43
CP633E Sheepsfoot Compactor				4.75	$10.67	$10.67
Light Truck - 1.5 Ton		$0.19		1.50	$3.37	$3.56
Supervisor's Truck		$0.19		1.00	$2.25	$2.43
Flatbed Truck		$1.03		4.70	$10.56	$11.59
Air Compressor + tools			N/A	1.00	$2.25	$2.25
Welding Equipment			N/A	2.00	$4.49	$4.49
Heavy Duty Drill Rig				12.00	$26.96	$26.96
Pump (plugging) Drill Rig				10.00	$22.47	$22.47
Concrete Pump			N/A	10.00	$22.47	$22.47
Gas Engine Vibrator			N/A	1.00	$2.25	$2.25
Generator 5KW			N/A	1.50	$3.37	$3.37
HDEP Welder (pipe or liner)			N/A	2.00	$4.49	$4.49
5 Ton Crane				3.00	$6.74	$6.74
20 Ton Crane				4.00	$8.99	$8.99
50 Ton Crane				4.70	$10.56	$10.56
120 Ton Crane				5.20	$11.68	$11.68
Trucks						
725	$8.04	$13.78	$3.13	4.70	$10.56	$35.51
730	$8.04	$13.78	$3.13	5.20	$11.68	$36.64
735	$8.04	$21.95	$3.13	7.35	$16.52	$49.63
740	$8.04	$23.10	$3.13	7.35	$16.52	$50.79
769D	$5.96	$4.21	$3.50	9.25	$20.78	$34.45
773E	$7.37	$8.86	$3.94	11.75	$26.40	$46.57
777D	$114.37		$3.94	16.75	$37.64	$155.95
785C				24.25	$54.49	$54.49
793C	$247.28			41.75	$93.81	$341.09
797B				58.75	$132.01	$132.01
613E (5,000 gal) Water Wagon	$5.75	$3.64		6.00	$13.48	$22.87
621E (8,000 gal) Water Wagon	$6.11	$7.02		10.75	$24.16	$37.29
777D Water Truck	$169.62			16.75	$37.64	$207.26
785C Water Truck				24.25	$54.49	$54.49
Dump Truck (10-12 yd3) (5)	N/A	$0.83	N/A	5.20	$11.68	$12.51

Notes:

(1) PM Source:	July 2018 Cashman Equipment (except as noted)
(2) Undercarriage Source:	Purcell Tire Quote July 2019
(3) G.E.T. Source:	Cashman Equipment Company (July 2018) or Newmont Nevada costs unless noted
(4) Fuel Use Source:	Caterpillar Handbook, Edition 35, Ch. 20; or estimated average for smaller vehicles
(5) Dump Truck Oper. Cost Source:	Means Heavy Construction (2008)

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TIRE COST TABLES

Equipment	Tire Size	# of Tires Per Piece of Equipment	Cost Per Tire	Tire Cost (1)(2)	Life Expectency Hours (Low/Zone A) (3)	Tire Cost per Hour
Bulldozers						
D6R			N/A			
D6R w/ Winch			N/A			
D7R			N/A			
D8R			N/A			
D9R			N/A			
D10R			N/A			
D11R			N/A			
Wheeled Dozers						
824G	29.5R25	4		$0.00	3,500	$0.00
834G	35/65-R33	4		$0.00	3,500	$0.00
844	45/65-R39	4		$0.00	3,500	$0.00
854G	45/65-R45	4		$0.00	3,500	$0.00
Motor Graders						
120H	13PR24	6	$2,210.54	$13,263.24	3,500	$3.79
14G/H	20.5R25	6	$3,026.19	$18,157.14	3,500	$5.19
16G/H	23.5R25	6		$0.00	3,500	
24M	23.5R25	6		$0.00	3,500	
Track Excavators						
312C			N/A			
320C			N/A			
325C			N/A			
330C			N/A			
345B			N/A			
365BL			N/A			
385BL			N/A			
Scrapers						
631G	37.25R35	4	$8,991.59	$35,966.36	4,000	$8.99
637G	37.25R35	4	$8,991.59	$35,966.36	4,000	$8.99
Wheeled Loaders						
924G	17.5R25	4	$3,049.73	$12,198.92	4,500	$2.71
928G	17.5R25	4	$3,049.73	$12,198.92	4,500	$2.71
950G	26.5R25	4	$4,594.55	$18,378.20	4,500	$4.08
966G	26.5R25	4	$7,315.27	$29,261.08	4,500	$6.50
972G	26.5R25	4	$7,315.27	$29,261.08	4,500	$6.50
980G	29.5R25	4	$7,701.09	$30,804.36	4,500	$6.85
988G	35/65-33	4	$12,094.03	$48,376.12	4,500	$10.75
990	41.25/70-39	4		$0.00	4,500	
992G	45/65R45	4		$0.00	4,500	
994D	55/85R57	4		$0.00	4,500	
L2350	55/85R57	4		$0.00	4,500	
Shovels						
PC2000			N/A			
PC3000			N/A			
PC4000			N/A			
PC5500			N/A			
PC8000			N/A			
Hydraulic Hammers						
H-120 (fits 325)			N/A			
H-160 (fits 345)			N/A			
H-180 (fits 365/385)			N/A			
Demolition Shears						
S340 (fits 322/325/330)			N/A			

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Cost Data: User Data
Cost Data File: SRCE_Cost_data-USR_1_12_DRMS_BONDING.xlsm

S365 (fits 330/345)			N/A			
S390 (fits 365/385)			N/A			
Demolition Grapples						
G315 (fits 322/325)			N/A			
G320 (fits 325/330)			N/A			
G330 (fits 345/365)			N/A			
Other Equipment						
420D 4WD Backhoe	340/80R18-19.5LR24	2	$1,046.27	$2,092.54	3,000	$0.70
428D 4WD Backhoe	340/80R18-16.9R28	2	$1,046.27	$2,092.54	3,000	$0.70
CS533E Vibratory Roller			N/A			
CS633E Vibratory Roller			N/A			
CP533E Sheepsfoot Compactor			N/A			
CP633E Sheepsfoot Compactor			N/A			
Light Truck - 1.5 Ton		4	140.72	$562.88	3,000	$0.19
Supervisor's Truck		4	140.72	$562.88	3,000	$0.19
Flatbed Truck		22	140.72	$3,095.84	3,000	$1.03
Air Compressor + tools			N/A			
Welding Equipment			N/A			
Heavy Duty Drill Rig		4		$0.00	3,000	
Pump (plugging) Drill Rig		4		$0.00	3,000	
Concrete Pump			N/A			
Gas Engine Vibrator			N/A			
Generator 5KW			N/A			
HDEP Welder (pipe or liner)			N/A			
5 Ton Crane		4		$0.00	3,000	
20 Ton Crane		4		$0.00	3,000	
50 Ton Crane		6		$0.00	3,000	
120 Ton Crane		6		$0.00	3,000	
Trucks						
725	23.5R25	6	$4,594.55	$27,567.30	2,000	$13.78
730	23.5R25	6	$4,594.55	$27,567.30	2,000	$13.78
735	26.5R25	6	$7,315.27	$43,891.62	2,000	$21.95
740	29.5R25	6	$7,701.09	$46,206.54	2,000	$23.10
769D	18.00R33	6	$4,210.07	$25,260.42	6,000	$4.21
773E	24.00R35	6	$7,383.83	$44,302.98	5,000	$8.86
777D	27.00R49	6		$0.00	5,000	
785C	33.00R51	6		$0.00	4,000	
793C	40.00R57	6		$0.00	4,000	
797B	40.00R57	6		$0.00	4,000	
613E (5,000 gal) Water Wagon	23.5R25	6	$3,636.27	$21,817.62	6,000	$3.64
621E (8,000 gal) Water Wagon	33.25R29	6	$9,363.96	$56,183.76	8,000	$7.02
777D Water Truck	27.00R49	6		$0.00	5,000	
785C Water Truck	33.00R51	6		$0.00	4,000	
Dump Truck (10-12 yd3)		10	$497.89	$4,978.90	6,000	$0.83

Notes:

(1) Unit Cost Basis:	Cost per tyre each
(2) Cost Basis:	
(3) Tire Cost Source:	Purcell Tire Quote July 2019
(4) Tire Wear Source:	Caterpillar Handbook, Edition 37

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Closure Cost Estimate
Material Costs

Project Name: AM-13 BP2020 Financial warranty calculation - Reclamation Plan
Date of Submittal: December 2019
File Name: SRCE_AM13_FW_V4.xlsm
Model Version: Version 1.4.1
Cost Data: User Data
Cost Data File: SRCE_Cost_data-USR_1_12_DRMS_BONDING.xlsm
Cost Estimate Type: Surety Cost Basis: CC&V Bonding

Revegetation Materials

Seed Mixes

Seed Mix	Description	Cost/Acre
None		
Mix 1	Basins	$307.00
Mix 2	Low Hills	$263.10
Mix 3	Uplands	$271.80
Mix 4	Riparian or Custom	$342.70
User Mix 1	**AdherenceWork Fall 2019**	**$307.00**
User Mix 2		
User Mix 3		
User Mix 4		**$1,025.28**

	Cost/lb	lbs/Acre	Cost/Acre
User Mix 5 (from Seed Mix sheet)	#DIV/0!	$0.00	$0.00
Notes:			

Mulch

Item	Cost/lb	lbs/Acre	Cost/Acre
None			
Straw Mulch	$0.16	**2000**	$320.00
Hydro Mulch	$0.25	**2000**	$500.00
Timber Mulch			
Notes:			

Amendments

Item	Cost/lb	lbs/Acre	Cost/Acre
None			
Organic Matter	$0.70	**2000**	$1,400.00
Treated Sludge			
Chemical	$0.59	**400**	$236.00

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Closure Cost Estimate
Material Costs

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File Name: SRCE_AM13_FW_V4.xlsm
Model Version: Version 1.4.1
Cost Data: User Data
Cost Data File: SRCE_Cost_data-USR_1_12_DRMS_BONDING.xlsm
Cost Estimate Type: Surety Cost Basis: CC&V Bonding

Notes:			

Well Abandonment Materials

Description	Cost/50lb bag	Units	Cost/unit*
Cement	$7.57	cy	$36.05
Grout (Low Grade Bentonite)	$8.65	cy	$41.19
Inert Material/Cuttings		cy	
		cy	
		cy	

(1) Jentech Drilling Supply quote (June 2017) Type I,II Cement at $14.24 per 94# bag (1.1 cf/bag)
(2) Jentech Drilling Supply (June 2017) 3/8 Chunk Bentonite Hole Plug at $8.65 per 50# bag (5.75 cf/bag at 43 g
* Assumes 1 bag mixes with water to make 0.21 y3 or 0.16 m3 of grout/cement slurry.

Monitoring Costs

Description	Units	Cost/unit
Monitor Well Pump	ea.	$2,431.55
Sampling Supplies	ea.	$5.68
Water Analysis (Complete) (1)	ea.	$302.60
ABA + S speciation	ea.	$455.60
Cyanide - WAD	ea.	$150.00
Cyanide - Free	ea.	$56.00
Cyanide - Total soils	ea.	$336.60
Cyanide - Total water	ea.	$295.80
TPH in soils	ea.	
Humidty Cell (20 wk) (2)	ea.	
Humidty Cell (40 wk)	ea.	
NAG	ea.	
TCLP w/ full analysis	ea.	
SPLP w/ full analysis	ea.	
AS4439 Leach test w/ full analysis	ea.	
Soil Fertility	ea.	
	ea.	

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Closure Cost Estimate
Material Costs

Project Name: AM-13 BP2020 Financial warranty calculation - Reclamation Plan
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File Name: SRCE_AM13_FW_V4.xlsm
Model Version: Version 1.4.1
Cost Data: User Data
Cost Data File: SRCE_Cost_data-USR_1_12_DRMS_BONDING.xlsm
Cost Estimate Type: Surety Cost Basis: CC&V Bonding

SVL, 2019		

Fuel, Etc.

Description	Units	Cost/unit
Off-road Diesel - delivered (1)	$/gal	$2.247
Pickup Truck Mileage	$/mi	$0.545
Electical Power	$/kWh	$0.120
Trona (material + delivery)	$/ton	$157.740
red diesel 2019 Brandie Notestine		
electric J. Seeliger 2019		
trona 2019 Brandie Notestine		

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Closure Cost Estimate
Material Costs

Revegetation Method				
Slopes				
Disturbance Type	**Seed Application Method**	**Labor** Cost/Acre	**Equipment** Cost/Acre	**Total** Cost/Acre
Waste Rock Dumps	**Mechanical Broadcast**	$346.30	$183.32	$529.62
Heap Leach	**Mechanical Broadcast**	$346.30	$183.32	$529.62
Tailings	**Hand Broadcast**	$267.22		$267.22
Quarries & Borrow Pits	**Mechanical Broadcast**	$346.30	$183.32	$529.62
Flat Areas and Undifferentiated				
Disturbance Type	**Seed Application Method**	**Labor** Cost/Acre	**Equipment** Cost/Acre	**Total** Cost/Acre
Exploration Trenches	**Mechanical Broadcast**	$346.30	$183.32	$529.62
Exploration Roads	**Mechanical Broadcast**	$346.30	$183.32	$529.62
Waste Rock Dumps	**Mechanical Broadcast**	$346.30	$183.32	$529.62
Heap Leach	**Mechanical Broadcast**	$346.30	$183.32	$529.62
Tailings	**Mechanical Broadcast**	$346.30	$183.32	$529.62
Quarries & Borrow Pits	**Mechanical Broadcast**	$346.30	$183.32	$529.62
Roads	**Mechanical Broadcast**	$346.30	$183.32	$529.62
Pits	**Mechanical Broadcast**	$346.30	$183.32	$529.62
Haul Material	**Mechanical Broadcast**	$346.30	$183.32	$529.62
Foundations & Buildings	**Mechanical Broadcast**	$346.30	$183.32	$529.62
Sediment & Drainge Control	**Mechanical Broadcast**	$346.30	$183.32	$529.62
Process Ponds	**Mechanical Broadcast**	$346.30	$183.32	$529.62
Landfills	**Mechanical Broadcast**	$346.30	$183.32	$529.62
Yards, Etc.	**Mechanical Broadcast**	$346.30	$183.32	$529.62
Revegetation Maintenance	**Mechanical Broadcast**	$346.30	$183.32	$529.62

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Closure Cost Estimate
Misc. Unit Costs

Project Name: AM-13 BP2020 Financial warranty calculation - Reclamation Plan
Date of Submittal: December 2019
File Name: SRCE_AM13_FW_V4.xlsm
Model Version: Version 1.4.1
Cost Data: User Data
Cost Data File: SRCE_Cost_data-USR_1_12_DRMS_BONDING.xlsm
Cost Estimate Type: Surety Cost Basis: CC&V Bonding

Revegetation

	Means Number	Unit	Crew	Daily Output	Daily Output User	Materials	Labor	Equipment	Total	Notes
Seeding - Broadcast Hand (1)		acres					$267.22		$267.22	
Seeding - Broadcast Mechanical (1)		acres					$346.30	$183.32	$529.62	
Seeding - Drill (1)		acres		365					$0.00	
Seeding - Hydroseeding (1)				365			$622.91	$324.52	$947.43	
Shrub Planting - bare root 6-10 in (150- 250mm) (2)	02910-400-0561	ea.	1 Clab	365					$0.00	
Tree Planting - bare root 11-16 in (270- 400mm) (3)	02910-400-0562	ea.	1 Clab	260		$6.40	$6.40		$6.40	
Cactus Planting (4)		ea.	1 Clab						$0.00	
NOTES:										
(1) Seeding Source:	2019 DRMS rate									
(2) Shrub Source:										
(3) Tree Source:										
(4) Cactus Source:										

Building and Wall Demolition

Hourly productivity rates and crew composition from Means Heavy Construction 2005 Edition by permission of R.S.Means/Reed Construction Data .
All equipment, labor and material unit costs are from Labor Costs, Equipment Costs and Material Costs spreadsheets

	Means Number	Unit	Crew	Daily Output	Daily Output User	Labor	Equipment	Premium	Total	Notes
Building Demolition										
Lg. steel	02220-110-0012	C.F.	B-8	21500		$0.15	$0.11	8%	$0.28	Premium adjusted for 2019 RSMeans 024116130020
Lg. concrete	02220-110-0050	C.F.	B-8	15300		$0.22	$0.15	8%	$0.40	Premium adjusted for 2019 RSMeans 024116130050
Lg. masonry	02220-110-0080	C.F.	B-8	20100		$0.16	$0.11	11%	$0.30	Premium adjusted for 2019 RSMeans 024116130080
Lg. mixed	02220-110-0100	C.F.	B-8	20100		$0.16	$0.11	11%	$0.30	Premium adjusted for 2019 RSMeans 024116130100
Sm. steel	02220-110-0500	C.F.	B-3	14800		$0.19	$0.11	10%	$0.33	Premium adjusted for 2019 RSMeans 024116130500
Sm. concrete	02220-110-0600	C.F.	B-3	11300		$0.25	$0.15	5%	$0.42	Premium adjusted for 2019 RSMeans 024116130600
Sm. masonry	02220-110-0650	C.F.	B-3	14800		$0.19	$0.11	11%	$0.33	Premium adjusted for 2019 RSMeans 024116130650
Sm. wood	02220-110-0700	C.F.	B-3	14800		$0.19	$0.11	11%	$0.33	Premium adjusted for 2019 RSMeans 024116130700
Wall Demolition										
Block 4 in (100 mm) thick	02220-130-2000	S.F.	1 Clab	180		$2.49	$0.00	20%	$2.99	Premium adjusted for 2019 RSMeans 024116171220
Block 6 in (150 mm) thick	02220-130-2040	S.F.	1 Clab	170		$2.63	$0.00	20%	$3.16	Premium adjusted for 2019 RSMeans 024116171220
Block 8 in (200 mm) thick	02220-130-2080	S.F.	1 Clab	150		$2.98	$0.00	20%	$3.58	Premium adjusted for 2019 RSMeans 024116171220
Block 12 in (300 mm) thick	02220-130-2100	S.F.	1 Clab	150		$2.98	$0.00	20%	$3.58	Premium adjusted for 2019 RSMeans 024116171220
Conc 6 in (150 mm) thick	02220-130-2400	S.F.	B-9	160		$17.77	$1.35	10%	$21.03	Premium adjusted for 2019 RSMeans 024116172220
Conc 8 in (200 mm) thick	02220-130-2420	S.F.	B-9	140		$20.31	$1.54	10%	$24.04	Premium adjusted for 2019 RSMeans 024116172220
Conc 10 in (250 mm) thick	02220-130-2440	S.F.	B-9	120		$23.70	$1.80	10%	$28.05	Premium adjusted for 2019 RSMeans 024116172220
Conc 12 in (300 mm) thick	02220-130-2500	S.F.	B-9	100		$28.44	$2.15	10%	$33.65	Premium adjusted for 2019 RSMeans 024116172220

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Closure Cost Estimate
Misc. Unit Costs

Project Name: AM-13 BP2020 Financial warranty calculation - Reclamation Plan
Date of Submittal: December 2019
File Name: SRCE_AM13_FW_V4.xlsm
Model Version: Version 1.4.1
Cost Data: User Data
Cost Data File: SRCE_Cost_data-USR_1_12_DRMS_BONDING.xlsm
Cost Estimate Type: Surety Cost Basis: CC&V Bonding

Waste Disposal

Unit rates from Means Heavy Construction 2006 Edition by permission of R.S.Means/Reed Construction Data .

	Means Number	Unit	Crew	Daily Output	Materials	Labor	Equipment		Total	Notes
Rubbish Handling										
Dumpster delivery (average for all sizes)	02220-350-0910	ea.			$56.00				$56.00	
Haul (average for all sizes)	02220-350-0920	ea.			$175.00				$175.00	
Rent per month (average for all sizes)	02220-350-0940	ea.			$59.50				$59.50	
Disposal fee per ton (tonne) (average for all sizes)	02220-350-0950	ton			$65.50				$65.50	
NOTES:										
Dumpster Cost Source	Means Heavy Construction (2018)									
Dumpster Disposal Fee Source:	Means Heavy Construction (2018)									
Hazardous Material Handling - Solids (+ Liquids in drums)										
Pickup fees 55 gal (200 L). drums	02110-300-1100	ea.			$259.00				$259.00	
Bulk material (average)	02110-300-1220/1230	ton			$423.00				$423.00	
Transport - truck load (80 drums, 25 cy (m3), 18 tons)	02110-300-1260/1270	mile			$5.78				$5.78	
Dump site solid disposal fee	02110-300-6000/6020	ton			$298.50				$298.50	
NOTES:										
Solid Handling Cost Source	Means Heavy Construction (2018)									
Solid Disposal Fee Source:	Means Heavy Construction (2018)									
Hazardous Material Handling - Liquids										
Vacuum Truck Pickup (2200 gal/8300 L)	02110-300-3110	hr.			$152.00				$152.00	
Vacuum Truck Pickup (5000 gal/19000 L)	02110-300-3120	hr.			$220.00				$220.00	
Dump site liquid disposal fee	02110-300-6000/6020	ton			$298.50				$298.50	
NOTES:										
Liquid Handling Cost Source	Means Heavy Construction (2018)									
Liquid Disposal Fee Source:	2018 Means Heavy Construction, ave. 02 81									
Hydrocarbon Contaminated Soils (HCS)										
Insitu Biotreatment	02115-200-2020/2021	C.Y.			$18.72				$18.72	
HCS disposal fee	02115-200-2050/2055	C.Y.			$288.50				$288.50	
NOTES:										
Insitu Treatement Cost Source	2018 Means Heavy Construction, ave. 02 65									
HCS Disposal Fee Source:	2018 Means Heavy Construction, ave. 02 65									

Concrete Structure Installation

Weekly dumpster rental rates from Means Heavy Construction 2005 Edition with permission by R.S.Means/Reed Construction Data .
Weekly dumpster rental rates include haul to off-site disposal site and disposal fees

	Means Number	Unit	Crew	Daily Output	Materials	Labor	Equipment	Premium	Total	Notes
Reinforced Concrete Bulkheads and Shaft Covers										
Grade walls - 15 in (400mm) thick, 8 ft (2.5m) high	03310-240-4300	C.Y.	C-14D	80.02	$167.00	$141.82	$15.37		$324.19	includes reinforcing
Grade walls - 15 in (400mm) thick, 12 ft (3.7m) high	03310-240-4350	C.Y.	C-14D	26.2	$167.00	$433.13	$46.95		$647.08	includes reinforcing
Elevated conc, 1-way beam & slab - 15ft (4.6m) span	03310-240-2700	C.Y.	C-14B	20.59	$290.00	$572.88	$59.74		$922.62	includes reinforcing

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Closure Cost Estimate
Misc. Unit Costs

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Cost Estimate Type: Surety Cost Basis: CC&V Bonding

Elevated conc, 1-way beam & slab - 25ft (7.5m) span	03310-240-2750	C.Y.	C-14B	28.36	$276.00	$415.93	$43.37		$735.30	includes reinforcing
Bat Gate/Foam Plug Installation										
Bat Gate (5)		ea.			$3,039.44					materials $/ea. Installed
Culvert Gate (5)		ea.			$6,078.87					materials $/ea. Installed
Adit Foam Plug (6)		ea./C.Y.			$303.94					materials $/cy placed
Production Opening Foam Plug (6)		ea./C.Y.			$303.94					materials $/cy placed
NOTES:										
(5) Bat Gate Source:	NV BLM, 2/2006: 8 hr + 1hr mob/demob + 1hr setup per gate (adjusted to 2018)									
(6) Foam Plug Source:	NV BLM, 2/2006: 8 hr + 1hr mob/demob + 1hr setup per adit; 16 hrs per production opening (adjusted to 2018)									

Misc. Linear Projects

Hourly productivity rates and crew composition from Means Heavy Construction 2005 Edition by permission of R.S.Means/Reed Construction Data .
All equipment, labor and material unit costs are from Labor Costs, Equipment Costs and Material Costs spreadsheets

	Means Number	Unit	Crew	Daily Output	Materials	Labor	Equipment	Premium	Total	Notes
Fencing Installation										
Barbed 3-strand	02820-170-1650	L.F.	B-80A	760	$0.48	$1.77	$0.28		$2.53	
Barbed 4-strand	extrapolated	L.F.	B-80A	570	$0.64	$2.36	$0.37		$3.37	
Barbed 5-strand	02820-130-0920	L.F.	B-80A	456	$0.80	$2.94	$0.47		$4.21	
Chain link 8-10ft (2.5-3m) Install	02820-130-0920	L.F.	B-80C	180	$39.00	$7.46	$1.19		$47.65	
Wood stockade fence 6 ft (2 m) high - Install	02820-510-1240	L.F.	B-80C	150	$15.95	$8.95	$1.42		$26.32	
	user	L.F.							$0.00	
	user	L.F.							$0.00	
	user	L.F.							$0.00	
	user	L.F.							$0.00	
Fencing Removal										
Barbed 3-strand Removal	02220-220-1600	L.F.	2 Clab	430		$2.08	$0.50		$2.58	
Barbed 4-strand Removal	extrapolated	L.F.	2 Clab	355		$2.52	$0.60		$3.12	
Barbed 5-strand Removal	02220-220-1650	L.F.	2 Clab	280		$3.20	$0.76		$3.96	
Chain link 8-10 ft (2.5-3 m) Removal	02220-220-1700	L.F.	B-6	445		$3.02	$0.87		$3.89	
Wood, all types 4-6 ft ("1.5-2 m) high - Removal	02220-220-1775	L.F.	2 Clab	430		$2.08	$0.50		$2.58	
	user	L.F.								
	user	L.F.							$0.00	
	user	L.F.							$0.00	
	user	L.F.							$0.00	
Culvert Removal										
12 in (300 mm) Diameter	02220-220-2900	L.F.	B-6	175		$7.67	$2.22		$9.89	
18 in (450 mm) Diameter	02220-220-2930	L.F.	B-6	150		$8.95	$2.59		$11.54	
24 in (600 mm) Diameter	02220-220-2960	L.F.	B-6	120		$11.19	$3.23		$14.42	
36 in (1m) Diameter	02220-220-3000	L.F.	B-6	90		$14.92	$4.31		$19.23	
Pipeline Removal										
0.75 in (20mm) - 4 in (100 mm) diameter	02220-381-1600	L.F.	B-20	700		$2.14	$0.31		$2.45	

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Closure Cost Estimate
Misc. Unit Costs

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6 in (150 mm) - 8 in (200 mm)	02220-381-1700	L.F.	B-20	500		$3.00	$0.43		$3.43	
10 in (250 mm) - 18 in (450 mm)	02220-381-1800	L.F.	B-20	300		$5.00	$0.71		$5.71	
20 in (500 mm) - 36 in (1 m)	02220-381-1900	L.F.	B-20	200		$7.50	$1.07		$8.57	
Pipe and Drainpipe Installation										
Water 4in (100mm) 40ft (12m) length, welded HDPE	02510-760-0100	L.F.	B-22A	400	$2.20	$5.60	$4.36		$12.16	
Water 6in (150mm) 40ft (12m) length, welded HDPE	02510-760-0200	L.F.	B-22A	380	$4.97	$5.89	$4.59		$15.45	
Water 12in (300mm) 40ft (12m) length, welded HDPE	02510-760-0500	L.F.	B-22A	260		$8.61	$6.71		$15.32	
Drain 4in (100mm) perforated PVC	02620-630-2100	L.F.	B-14	315	$1.44	$9.03	$1.52		$11.99	
Drain 6in (150mm) perforated PVC	02620-630-2110	L.F.	B-14	300	$3.07	$9.48	$1.60		$14.15	
Drain 4in (100mm) corrugated, perf or plain	02620-660-0040	L.F.	2 Clab	1200	$0.65	$0.75	$0.18		$1.58	
Drain 6in (150mm) corrugated., perf or plain	02620-660-0060	L.F.	2 Clab	900	$1.65	$0.99	$0.24		$2.88	
Drain Rock Preparation										
Crushing		C.Y.								
Screening		C.Y.								
TOTAL									$0.00	
Misc.										
Backhoe work	02210-700-0120	C.Y.	B-11M	28		$15.99	$9.47		$25.46	
Powerline and Transformer Removal										
Single Pole		mile							$42,243.00	
Double Pole		mile							$48,277.00	
Transformer (9)		ea.							$30,274.00	
NOTES:										
(7) Single Pole Source:	NVEnergy estimate (2009) Adjusted to 2018									
(8) Double Pole Source:	NVEnergy estimate (2009) Adjusted to 2018									
(9) Transformer Source:	Sierra Pacific Power Company estimate (2004) adjusted to 2018									

Erosion and Sedimentation Control

Hourly productivity rates and crew composition from Means Heavy Construction 2005 Edition by permission of R.S.Means/Reed Construction Data .
All equipment, labor and material unit costs are from Labor Costs, Equipment Costs and Material Costs spreadsheets

	Means Number	Unit	Crew	Daily Output	Materials	Labor	Equipment	Premium	Total	Notes
Rip-Rap & Rock Lining										
Rip-Rap 3/8 to 1/4 CY (m3) pieces, grouted	02370-450-0110	S.Y.	B-13	80	$28.50	$35.55	$8.16		$72.21	assumes on-site source of rip-rap
Rip-Rap 18 in (450 mm) min thick, no grout	02370-450-0200	S.Y.	B-13	53	$8.75	$53.65	$12.32		$74.72	assumes on-site source of rip-rap
Gabions, 6 in (150 mm) deep	02370-450-0400	S.Y.	B-13	200	$8.65	$14.22	$3.26		$26.13	assumes on-site source rock fill for gabions
Gabions, 9 in (250 mm) deep	02370-450-0500	S.Y.	B-13	163	$10.70	$17.45	$4.01		$32.16	assumes on-site source rock fill for gabions
Gabions, 12 in (300 mm) deep	02370-450-0200	S.Y.	B-13	153	$14.35	$18.59	$4.27		$37.21	assumes on-site source rock fill for gabions
Gabions, 18 in (450 mm) deep	02370-450-0200	S.Y.	B-13	102	$20.50	$27.88	$6.40		$54.78	assumes on-site source rock fill for gabions
Gabions, 36 in (1m) deep	02370-450-0200	S.Y.	B-13	60	$34.50	$47.39	$10.88		$92.77	assumes on-site source rock fill for gabions
HDEP Liner Installation										
Finish grading large area	2310-100-0100	S.F.	B-11L	18000		$0.05	$0.05		$0.10	
Compaction-riding, vibrating roller - 12in (300mm) lifts	2315-310-5100	C.Y.	B-10Y	2600		$0.34	$0.17		$0.51	

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Closure Cost Estimate
Misc. Unit Costs

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Cost Estimate Type: Surety Cost Basis: CC&V Bonding

	60 mil HDPE	2660-610-0010	S.F.	3 Skwk	1600	$0.43	$1.12	$0.45		$2.00	
	80 mil HDPE	user	S.F.	3 Skwk	149		$12.02	$4.83		$16.85	
	40 mil VLDPE	user	S.F.	3 Skwk	150		$11.94	$4.79		$16.73	
		user	S.F.	3 Skwk	149		$12.02	$4.83		$16.85	
		user	S.F.	3 Skwk	149		$12.02	$4.83		$16.85	
Construction Management Support											
	Office Trailer, Furnished, no hook-ups	0150-500-0250	mo.			$207.00				$207.00	
	Toilet Portable, chemical	1590-400-6410	mo.			$215.80				$215.80	
	TOTAL					$422.80				$422.80	
Pump and Casing Removal											
	Pump Type	**Measurement**	**Unit**				**Labor**	**Equipment**		**Total**	**Notes**
Pump Removal											
	Submersible	ft to pump	L.F.				$6.04	$16.25		$22.29	
	Line Shaft	ft to pump	L.F.				$6.04	$16.25		$22.29	
	NOTES:										
	(10) Pump Removal Source:	Boart Longyear quote June 2018									

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Cost Estimate Type: Surety Cost Basis: CC&V Bonding

EQUIPMENT FLEETS

ACTIVITY AND FLEET		Standard Crew Size	EQUIPMENT UNIT COST (Hourly)	TOTAL LABOR UNIT COST (Hourly)	TOTAL COST (Hourly)
RIPPING					
Rip road					
Waste rock dumps, heaps, tails - rip flat surfaces					
Surface preparation					
Scarify					
Small Dozer w/ multi-shank					
D7R		1	$93.60	$55.95	$149.55
Totals			$93.60	$55.95	$149.55
Medium Dozer w/ multi-shank					
D9R		1	$187.09	$55.95	$243.04
Totals			$187.09	$55.95	$243.04
Large Dozer w/ multi-shank					
D10R		1	$144.35	$55.95	$200.30
Totals			$144.35	$55.95	$200.30
Grader w/ multi-shank					
16G/H		1	$110.22	$55.95	$166.17
Totals			$110.22	$55.95	$166.17
GRADING					
Grading storage and structure areas					
Grading waste rock dumps and heaps					
Grading landfills					
Constructing pit safety berms					
Small Dozer Fleet					
D7R		1	$93.60	$55.95	$149.55
Totals			$93.60	$55.95	$149.55
Medium Dozer Fleet					
D9R		1	$187.09	$55.95	$243.04
Totals			$187.09	$55.95	$243.04
Large Dozer Fleet					
D10R		1	$144.35	$55.95	$200.30
Totals			$144.35	$55.95	$200.30
EXPLORATION GRADING					
Backfilling and grading exploration trenches					
Grading flat exploration roads					
Small Dozer Fleet					
D6R		1	$85.39	$55.95	$141.34
Totals			$85.39	$55.95	$141.34

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Cost Estimate Type: Surety Cost Basis: CC&V Bonding

EQUIPMENT FLEETS

ACTIVITY AND FLEET		Standard Crew Size	EQUIPMENT UNIT COST (Hourly)	TOTAL LABOR UNIT COST (Hourly)	TOTAL COST (Hourly)
Medium Dozer Fleet					
D7R		1	$93.60	$55.95	$149.55
Totals			$93.60	$55.95	$149.55
Large Dozer Fleet					
D8R		1	$147.20	$55.95	$203.15
Totals			$147.20	$55.95	$203.15
EXCAVATING					
Earthen Berms					
Diversion ditch excavation and backfill					
Underground openings backfill - excavate and place					
Pit berm construction (excavator option)					
Small Excavator					
325C		1	$88.08	$55.95	$144.03
Totals			$88.08	$55.95	$144.03
Medium Excavator					
345B		1	$118.66	$55.95	$174.61
Totals			$118.66	$55.95	$174.61
Large Excavator					
385BL		1	$186.43	$55.95	$242.38
Totals			$186.43	$55.95	$242.38
EXCAVATE AND RECONTOUR					
Recontour large roads (haul roads, access roads, etc.)					
Ponds - Excavate and pull liner and bury					
Small Excavator + Dozer					
325C		1	$88.08	$55.95	$144.03
D7R		1	$93.60	$55.95	$149.55
Total Equipment			$181.68	$111.90	$293.58
Medium Excavator + Dozer					
345B		1	$118.66	$55.95	$174.61
D9R		1	$187.09	$55.95	$243.04
Totals			$305.75	$111.90	$417.65
Large Excavator + Dozer					
385BL		1	$186.43	$55.95	$242.38
D10R		1	$144.35	$55.95	$200.30
Totals			$330.78	$111.90	$442.68

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Cost Estimate Type: Surety Cost Basis: CC&V Bonding

EQUIPMENT FLEETS

ACTIVITY AND FLEET		Standard Crew Size	EQUIPMENT UNIT COST (Hourly)	TOTAL LABOR UNIT COST (Hourly)	TOTAL COST (Hourly)
EXPLORATION ROAD/PAD RECONTOUR					
Recontour small roads (exploration roads, service roads, etc.)					
Cut and Fill reclamation on slopes					
Drill pad recountour					
Drill sump backfill					
Small Dozer					
D6R		1	$85.39	$55.95	$141.34
Totals			$85.39	$55.95	$141.34
Large Dozer					
D8R		1	$147.20	$55.95	$203.15
Totals			$147.20	$55.95	$203.15
Grader					
14G/H		1	$122.20	$55.95	$178.15
Totals			$122.20	$55.95	$178.15
Small Excavator					
320C		1	$58.01	$55.95	$113.96
Totals			$58.01	$55.95	$113.96
Medium Excavator					
325C		1	$88.08	$55.95	$144.03
Totals			$88.08	$55.95	$144.03
LOAD, HAUL AND PLACE MATERIAL					
Rock placement					
Haul overburden for backfill					
Haul borrow for backfill					
Haul cover or growth media					
Small Truck/Loader Fleet					
725		Calculated	$120.74	$55.95	$176.69
966G	**Loader**	1	$96.92	$55.95	$152.87
D7R		1	$93.60	$55.95	$149.55
Totals			$311.26	$167.85	$479.11
Medium Truck/Loader Fleet					
740		Calculated	$136.02	$55.95	$191.97
988G	**Loader**	1	$182.23	$55.95	$238.18
D8R		1	$147.20	$55.95	$203.15
Totals			$465.45	$167.85	$633.30
Large Truck/Loader Fleet					
769D		Calculated	$153.77	$55.95	$209.72
988G	**Loader**	1	$182.23	$55.95	$238.18

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Cost Estimate Type: Surety Cost Basis: CC&V Bonding

EQUIPMENT FLEETS

ACTIVITY AND FLEET		Standard Crew Size	EQUIPMENT UNIT COST (Hourly)	TOTAL LABOR UNIT COST (Hourly)	TOTAL COST (Hourly)
D7R		1	$93.60	$55.95	$149.55
Totals			$429.60	$167.85	$597.45
Extra Large Truck/Loader Fleet					
777D		Calculated	$155.95	$55.95	$211.90
992G	**Loader**	1	$330.37	$55.95	$386.32
D7R		1	$93.60	$55.95	$149.55
Totals			$579.92	$167.85	$747.77
Scraper/Dozer Fleet					
631G		Calculated	$160.54	$55.95	$216.49
D10R		1	$144.35	$55.95	$200.30
D7R		1	$93.60	$55.95	$149.55
Totals			$398.49	$167.85	$566.34
Tandem Scraper Fleet					
637G		2	$283.74	$55.95	$339.69
D7R		1	$93.60	$55.95	$149.55
Totals			$377.34	$111.90	$489.24
MISC. LOAD AND HAUL AND EARTHWORKS					
Sludge removal					
Drainage controls					
Misc. - Cat 325B Excavator / 10-12 yd3 Truck					
325C		1	$88.08	$55.95	$144.03
Dump Truck (10-12 yd3)		1	$79.14	$55.95	$135.09
Totals			$167.22	$111.90	$279.12
Misc. - Cat D9R Dozer/ Loader (5 yd3) / 10-12 yd3 Truck					
D9R		1	$187.09	$55.95	$243.04
966G		1	$96.92	$55.95	$152.87
Dump Truck (10-12 yd3)		1	$79.14	$55.95	$135.09
Totals			$363.15	$167.85	$531.00
Misc. - Cat D6 Dozer / Cat 966 Loader / 10-12 yd3 Truck					
D6R		1	$85.39	$55.95	$141.34
966G		1	$96.92	$55.95	$152.87
Dump Truck (10-12 yd3)		1	$79.14	$55.95	$135.09
Totals			$261.45	$167.85	$429.30
CONCRETE BREAKING					
Slab demolition					
Footing demolition					
Wall demolition					
Small - Cat 325B Excavator w/ H140D s Hammer					
325C		1	$88.08	$55.95	$144.03

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Cost Estimate Type: Surety Cost Basis: CC&V Bonding

EQUIPMENT FLEETS

ACTIVITY AND FLEET		Standard Crew Size	EQUIPMENT UNIT COST (Hourly)	TOTAL LABOR UNIT COST (Hourly)	TOTAL COST (Hourly)
H-120 (fits 325)		1	$37.83	$0.00	$37.83
D9R		1	$187.09	$55.95	$243.04
Totals			$313.00	$111.90	$424.90
Medium - Cat 345B Excavator w/ H180D s Hammer					
345B		1	$118.66	$55.95	$174.61
H-160 (fits 345)		1	$78.76	$0.00	$78.76
D9R		1	$187.09	$55.95	$243.04
Totals			$384.51	$111.90	$496.41
Large - Cat 385B Excavator w/ H180D s Hammer					
385BL		1	$186.43	$55.95	$242.38
H-180 (fits 365/385)		1	$104.58	$0.00	$104.58
D9R		1	$187.09	$55.95	$243.04
Totals			$478.10	$111.90	$590.00
DRILL HOLE ABANDONMENT					
Drill Hole - Grout or Cement					
Pump (plugging) Drill Rig		1	$352.47	$55.95	$408.42
Driller's Helper		2	$0.00	$111.90	$111.90
Totals			$352.47	$167.85	$520.32
Drill Hole - Inert Media (Means Crew B-11M+ 1 Laborer)					
420D 4WD Backhoe		1	$33.16	$55.95	$89.11
General Laborer		1	$0.00	$55.95	$55.95
Totals			$33.16	$111.90	$145.06
Drill Hole - Casing Perforation or Removal					
Heavy Duty Drill Rig		1	$356.96	$55.95	$412.91
Driller's Helper		2	$0.00	$111.90	$111.90
Totals			$356.96	$167.85	$524.81
MAINTENANCE FLEET					
Road Grading, Dust Suppression, Clean Up					
Maintenance - Small Water Truck and Cat 14G Grader					
613E (5,000 gal) Water Wagon		1	$56.96	$55.95	$112.91
120H		1	$82.16	$55.95	$138.11
Totals			$139.12	$111.90	$251.02
Maintenance - Medium Water Truck and Cat 16G Grader					
613E (5,000 gal) Water Wagon		1	$56.96	$55.95	$112.91
14G/H		1	$122.20	$55.95	$178.15
Totals			$179.16	$111.90	$291.06
Maintenance - Large Water Truck and Cat 16G Grader					
621E (8,000 gal) Water Wagon		1	$99.79	$55.95	$155.74
16G/H		1	$110.22	$55.95	$166.17
Totals			$210.01	$111.90	$321.91

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Cost Estimate Type: Surety Cost Basis: CC&V Bonding

EQUIPMENT FLEETS

ACTIVITY AND FLEET		Standard Crew Size	EQUIPMENT UNIT COST (Hourly)	TOTAL LABOR UNIT COST (Hourly)	TOTAL COST (Hourly)
PROJECT SUPERVISION					
Foreman		1	$0.00	$75.71	$75.71
Supervisor's Truck		1	$18.01	$0.00	$18.01
Totals			$18.01	$75.71	$93.72
MEANS CREW DEFINITIONS					
Crew composition from Means Heavy Construction 2005 Edition by permission of R.S.Means/Reed Construction Data . For use with misc. unit costs where Means is the source for productivity					
1 Clab - Seedling Planting/Block Wall Demolition					
General Laborer		1	$0.00	$55.95	$55.95
Totals			$0.00	$55.95	$55.95
2 Clab - Barbed Wire/Wood Fence Removal, Drainpipe Installation, Pumping, Evaporation					
General Laborer		2	$0.00	$111.90	$111.90
Light Truck - 1.5 Ton		1	$26.71	$0.00	$26.71
Totals			$26.71	$111.90	$138.61
2 Clab + Excavator - Pond Liner Cut and Fold					
General Laborer		2	$0.00	$111.90	$111.90
325C		1	$88.08	$55.95	$144.03
Totals			$88.08	$167.85	$255.93
2 Clab + Welder - Bat Gates					
General Laborer		2	$0.00	$111.90	$111.90
Welding Equipment		1	$16.56	$55.95	$72.51
Light Truck - 1.5 Ton		1	$26.71	$0.00	$26.71
Totals			$43.27	$167.85	$211.12
3 Clab - Foam Adit Plugs					
General Laborer		2	$0.00	$111.90	$111.90
420D 4WD Backhoe		1	$33.16	$55.95	$89.11
Light Truck - 1.5 Ton		1	$26.71	$0.00	$26.71
Totals			$59.87	$167.85	$227.72
3 Clab + Welder - Culvert Bat Gate					
General Laborer		2	$0.00	$111.90	$111.90
Welding Equipment		1	$16.56	$55.95	$72.51
420D 4WD Backhoe		1	$33.16	$55.95	$89.11
Light Truck - 1.5 Ton		1	$26.71	$0.00	$26.71
Totals			$76.43	$223.80	$300.23
3 Clab D - 3 Laborers + Foreman - Decontamination					
General Laborer		3	$0.00	$167.85	$167.85
Foreman		1	$0.00	$75.71	$75.71
Supervisor's Truck		1	$18.01	$0.00	$18.01
Light Truck - 1.5 Ton		1	$26.71	$0.00	$26.71

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EQUIPMENT FLEETS

ACTIVITY AND FLEET		Standard Crew Size	EQUIPMENT UNIT COST (Hourly)	TOTAL LABOR UNIT COST (Hourly)	TOTAL COST (Hourly)
Totals			$44.72	$243.56	$288.28
3 SKWK - Liner Installation					
Skilled Laborer		3	$0.00	$167.85	$167.85
HDEP Welder (pipe or liner)		1	$56.74	$0.00	$56.74
420D 4WD Backhoe		1	$33.16	$55.95	$89.11
			$0.00		$0.00
			$0.00		$0.00
			$0.00		$0.00
Totals			$89.90	$223.80	$313.70
B-3 - Small Building Demoltion					
LABOR					
General Laborer		2	$0.00	$111.90	$111.90
Foreman		1	$0.00	$75.71	$75.71
			$0.00		$0.00
			$0.00		$0.00
			$0.00		$0.00
EQUIPMENT					
928G		1	$48.52	$55.95	$104.47
Dump Truck (10-12 yd3)		2	$158.28	$111.90	$270.18
			$0.00		$0.00
			$0.00		$0.00
			$0.00		$0.00
			$0.00		$0.00
			$0.00		$0.00
			$0.00		$0.00
			$0.00		$0.00
Totals			$206.80	$355.46	$562.26
B-6 - Chain Link Fence/Culvert Removal					
General Laborer		2	$0.00	$111.90	$111.90
928G		1	$48.52	$55.95	$104.47
Totals			$48.52	$167.85	$216.37
B-8 - Large Building Demolition					
LABOR					
General Laborer		2	$0.00	$111.90	$111.90
Foreman		1	$0.00	$75.71	$75.71
			$0.00		$0.00
			$0.00		$0.00
			$0.00		$0.00
EQUIPMENT					
928G		1	$48.52	$55.95	$104.47
20 Ton Crane		1	$81.61	$55.95	$137.56
Dump Truck (10-12 yd3)		2	$158.28	$111.90	$270.18
			$0.00		$0.00
			$0.00		$0.00
			$0.00		$0.00

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EQUIPMENT FLEETS

ACTIVITY AND FLEET		Standard Crew Size	EQUIPMENT UNIT COST (Hourly)	TOTAL LABOR UNIT COST (Hourly)	TOTAL COST (Hourly)
			$0.00		$0.00
			$0.00		$0.00
			$0.00		$0.00
			$0.00		$0.00
			$0.00		$0.00
			$0.00		$0.00
			$0.00		$0.00
			$0.00		$0.00
Totals			$288.41	$411.41	$699.82
B-9 - Concrete Wall Demolition					
General Laborer		4	$0.00	$223.80	$223.80
Foreman		1	$0.00	$75.71	$75.71
Air Compressor + tools			$26.93	$55.95	$82.88
Totals			$26.93	$355.46	$382.39
B-10Y - General Compaction					
General Laborer		1	$0.00	$55.95	$55.95
CS533E Vibratory Roller		1	$56.55	$55.95	$112.50
Totals			$56.55	$111.90	$168.45
B-11L - Fine Grading for Evaporation Pond Liner Base					
General Laborer		1	$0.00	$55.95	$55.95
14G/H		1	$122.20	$55.95	$178.15
Totals			$122.20	$111.90	$234.10
B-11M - Backhoe Work					
420D 4WD Backhoe		1	$33.16	$55.95	$89.11
Totals			$33.16	$55.95	$89.11
B-12G - Rip-Rap Machine Placed (Modified)					
966G		1	$96.92	$55.95	$152.87
325C		1	$88.08	$55.95	$144.03
Light Truck - 1.5 Ton		1	$26.71	$0.00	$26.71
Totals			$211.71	$111.90	$323.61
B-13 - Grouted Rip-Rap & Gabion Baskets					
General Laborer		4	$0.00	$223.80	$223.80
Foreman		1	$0.00	$75.71	$75.71
20 Ton Crane		1	$81.61	$55.95	$137.56
Totals			$81.61	$355.46	$437.07
B-14 PVC Drain Pipe Installation					
Foreman		1	$0.00	$75.71	$75.71
General Laborer		4	$0.00	$223.80	$223.80
420D 4WD Backhoe		1	$33.16	$55.95	$89.11
Light Truck - 1.5 Ton		1	$26.71	$0.00	$26.71
Totals			$59.87	$355.46	$415.33

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EQUIPMENT FLEETS

ACTIVITY AND FLEET		Standard Crew Size	EQUIPMENT UNIT COST (Hourly)	TOTAL LABOR UNIT COST (Hourly)	TOTAL COST (Hourly)
B-20 - Remove Pipelines					
Foreman		1	$0.00	$75.71	$75.71
Skilled Laborer		1	$0.00	$55.95	$55.95
General Laborer		1	$0.00	$55.95	$55.95
Light Truck - 1.5 Ton		1	$26.71	$0.00	$26.71
Totals			$26.71	$187.61	$214.32
B-22A - HDEP Installation - Pipe or Liner					
Skilled Laborer		1	$0.00	$55.95	$55.95
General Laborer		2	$0.00	$111.90	$111.90
D7R		1	$93.60	$55.95	$149.55
Light Truck - 1.5 Ton		1	$26.71	$0.00	$26.71
420D 4WD Backhoe		1	$33.16	$55.95	$89.11
Generator 5KW		1	$7.72	$0.00	$7.72
HDEP Welder (pipe or liner)		1	$56.74	$0.00	$56.74
Totals			$217.93	$279.75	$497.68
B-80A - Install Barbed Wire Fence					
General Laborer		3	$0.00	$167.85	$167.85
Light Truck - 1.5 Ton		1	$26.71	$0.00	$26.71
Totals			$26.71	$167.85	$194.56
B-80C - Install Chain Link Fence (Flatbed truck has small crane)					
General Laborer		3	$0.00	$167.85	$167.85
Light Truck - 1.5 Ton		1	$26.71	$0.00	$26.71
Totals			$26.71	$167.85	$194.56
C-14B - Elevated Concrete Slabs (Reinforced Concrete Shaft Covers)					
Foreman		1	$0.00	$75.71	$75.71
Supervisor's Truck		1	$18.01	$0.00	$18.01
Carpenter		16	$0.00	$895.20	$895.20
General Laborer		2	$0.00	$111.90	$111.90
Rodmen (reinforcing concrete)		4	$0.00	$223.80	$223.80
Cement finisher		2	$0.00	$111.90	$111.90
Gas Engine Vibrator		1	$5.39	$55.95	$61.34
Concrete Pump		1	$130.35	$0.00	$130.35
Totals			$153.75	$1,474.46	$1,628.21
C-14D - Concrete Walls Formed in Place (Reinforced Concrete Adit Bulkheads)					
Foreman		1	$0.00	$75.71	$75.71
Supervisor's Truck		1	$18.01	$0.00	$18.01
Carpenter		18	$0.00	$1,007.10	$1,007.10
General Laborer		2	$0.00	$111.90	$111.90
Rodmen (reinforcing concrete)		2	$0.00	$111.90	$111.90
Cement finisher		1	$0.00	$55.95	$55.95
Gas Engine Vibrator		1	$5.39	$55.95	$61.34
Concrete Pump		1	$130.35	$0.00	$130.35
Totals			$153.75	$1,418.51	$1,572.26

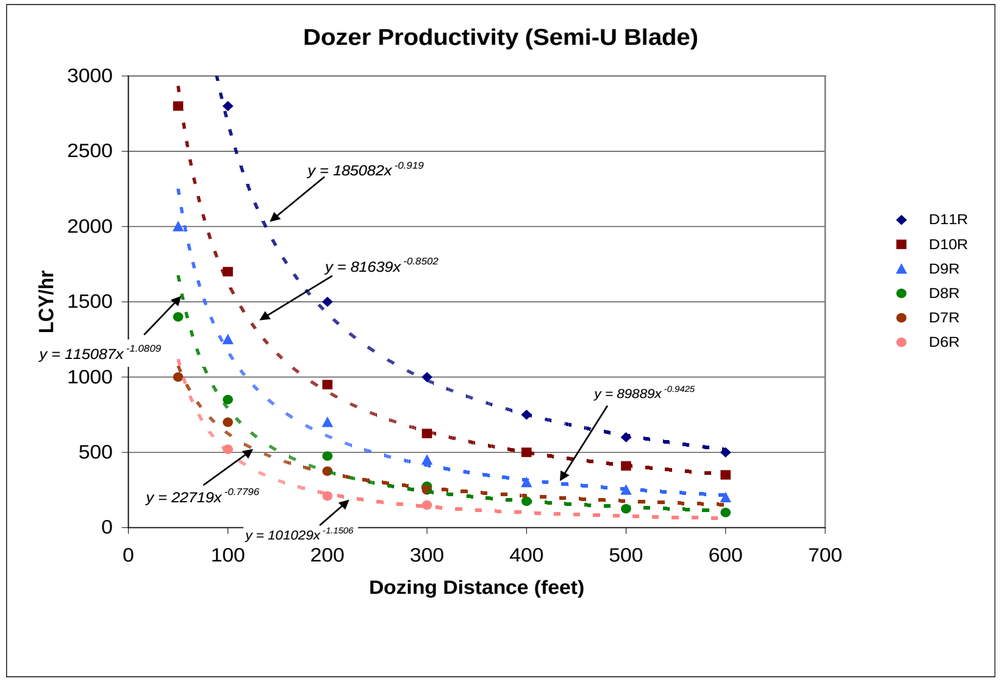
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Productivity - Bulldozers

Dozer Specifications						
Description	**D11R**	**D10R**	**D9R**	**D8R**	**D7R**	**D6R**
Blade Width (SU) (ft)	18.33	15.92	14.17	12.92	12.08	10.67
Shank Guage (3 shanks) (ft)	9.83	8.67	7.67	7.08	6.5	6.5
Pocket Spacing (ft)	4.75	4.33	3.87	3.58	3.25	3.25
Ripping Width (Ripper + 1 Pocket) (ft)	14.58	13	11.54	10.66	9.75	9.75
Ripping Speed (mph)	1	1	1	1	1	1
Ripping Maneuver (turn) Time (min)	0.25	0.25	0.25	0.25	0.25	0.25
Altitude Deration Factor	0.85	0.97	0.85	0.85	1	0.92
Ripping Hourly Production (excluding maneuvering time) (ft)	4,488	5,122	4,488	4,488	5,280	4,858

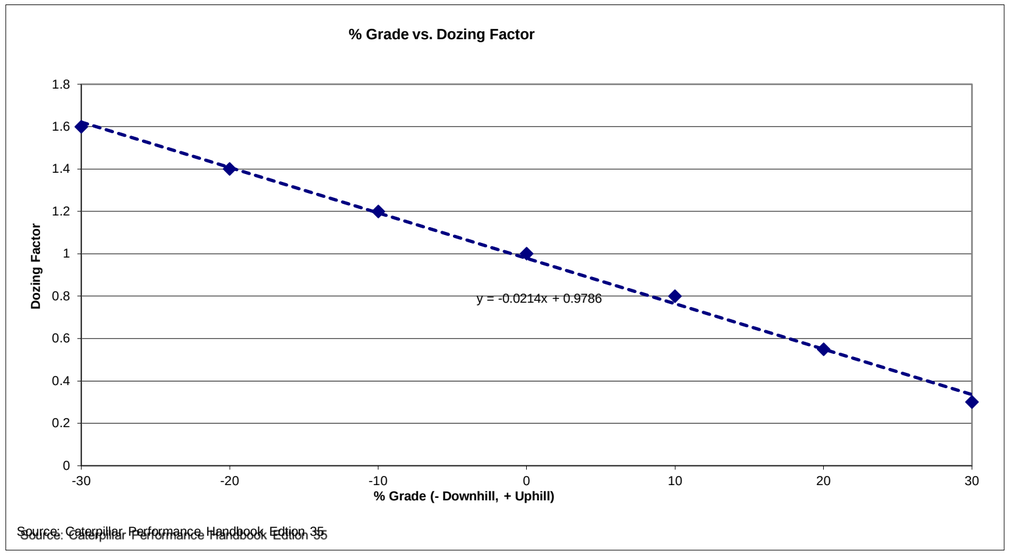
Source: Caterpillar Performance Handbook Edition 35

Dozer Productivity vs. Grading Distance						
Average Dozing Distance (feet)	**Production (LCY/hr)**					
	D11R	**D10R**	**D9R**	**D8R**	**D7R**	**D6R**
50	4,800	2,800	2,000	1,400	1,000	
100	2,800	1,700	1,250	850	700	520
200	1,500	950	700	475	375	210
300	1,000	625	450	275	250	150
400	750	500	300	175		
500	600	410	250	125		
600	500	350	200	100		
Source: Caterpillar Performance Handbook Edition 35						
dozer productivity = k x Dozing Distance^{p} (see graph)						
k =	185082	81639	89889	115087	22719	101029
p =	-0.919	-0.8502	-0.9425	-1.0809	-0.7796	-1.1506



Productivity - Bulldozers (cont.)

% Grade vs. Dozing Factor	
% Grade	**Dozing Factor**
-30	1.6
-20	1.4
-10	1.2
0	1
10	0.8
20	0.55
30	0.3
Source: Caterpillar Performance Handbook Edition 35	
% Grade Dozing Factor = -0.0214x + 0.9786 (see graph)	



Job Condition Correction Factors - Bulldozers	
OPERATOR	
Average	0.75
MATERIAL (1)	
Loose stockpile	1.2
Normal	1
Hard to cut; frozen — with tilt cylinder	0.8

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Hard to drift; “dead” (dry,non-cohesive material) or very sticky material	0.8
Rock, ripped or blasted	0.6
SLOT DOZING OR SIDE BY SIDE (1)	1.2
VISIBILITY	
Good conditions	1
JOB EFFICIENCY	
50 min/hr	0.83

(1) Selected in facility worksheets.
Other factors included as standard factors.
Source: Caterpillar Performance Handbook Edition 35

Material Densities(1)

Material	lb/cy	kg/m^3
Alluvium	2,900	1,720
Basalt	3,300	1,960
Clay - Dry	2,500	1,480
Granite - broken	2,800	1,660
Gravel	2,550	1,510
LS - broken	2,600	1,540
LS - crushed	2,600	1,540
Sandstone	2,550	1,510
Shale	2,100	1,250
Stone - crushed	2,700	1,600
Tailings - Coarse (dry, loose sand)	2,400	1,420
Tailings - Slimes (loose sand & clay)	2,700	1,600
Topsoil	1,600	950

(1) Source: Caterpillar Performance Handbook Edition 35

Note: uses Sand & Gravel - Dry from Caterpillar Handbook

Productivity - Scrapers

Scraper Specifications

Description	631G	637G
Empty Weight	100,600	112,760
Payload Capacity (cy)		
Struck	24	24
Heaped	34	34
Average	29	29
Loaded by	One D10R	Self*
Load Time (min)	1	1
Maneuver and Spread (min)	1	1
Job Efficiency	1	1
Rolling Resistance**	3	3
Altitude Deration Factor	1	1

* Requires pair

**A firm, smooth, rolling roadway with dirt or light surfacing, flexing slightly under load or undulating, maintained fairly regularly, watered

Source: Caterpillar Performance Handbook Edition 35

Weight of Materials			Downhill Scraper Speed - Grade Retarding vs. Effective Grade (Grade - Rolling Resistance)											
			631G						637G PP					
Material	lb/cy	Scraper Load lb	Loaded Weight (lbs)	22	16	10	5	1	Loaded Weight (lbs)	25	15	10	5	1
Alluvium	2,900	84,100	184,700	7.5	10	13	33	33	196,860	7	10	18.5	34	34
Basalt	3,300	95,700	196,300	7.5	10	13	24.5	33	208,460	7	10	18.5	25	34
Clay - Dry	2,500	72,500	173,100	7.5	10	13	33	33	185,260	7	10	18.5	34	34
Granite - broken	2,800	81,200	181,800	7.5	10	13	33	33	193,960	7	10	18.5	34	34
Gravel	2,550	73,950	174,550	7.5	10	13	33	33	186,710	7	10	18.5	34	34
LS - broken	2,600	75,400	176,000	7.5	10	13	33	33	188,160	7	10	18.5	34	34
LS - crushed	2,600	75,400	176,000	7.5	10	13	33	33	188,160	7	10	18.5	34	34
Sandstone	2,550	73,950	174,550	7.5	10	13	33	33	186,710	7	10	18.5	34	34
Shale	2,100	60,900	161,500	7.5	10	18	33	33	173,660	10	13.5	18.5	34	34
Stone - crushed	2,700	78,300	178,900	7.5	10	13	33	33	191,060	7	10	18.5	34	34
Tailings - Coarse (dry, loose sand)	2,400	69,600	170,200	7.5	10	13	33	33	182,360	7	10	18.5	34	34
Tailings - Slimes (loose sand & clay)	2,700	78,300	178,900	7.5	10	13	33	33	191,060	7	10	18.5	34	34

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Topsoil	1,600	46,400	147,000	7.5	10	18	33	33	159,160	10	13.5	18.5	34	34
			Empty	10	18	24.5	33	33	Empty	10	13.5	18.5	34	34

Source: Caterpillar Performance Handbook Edition 34

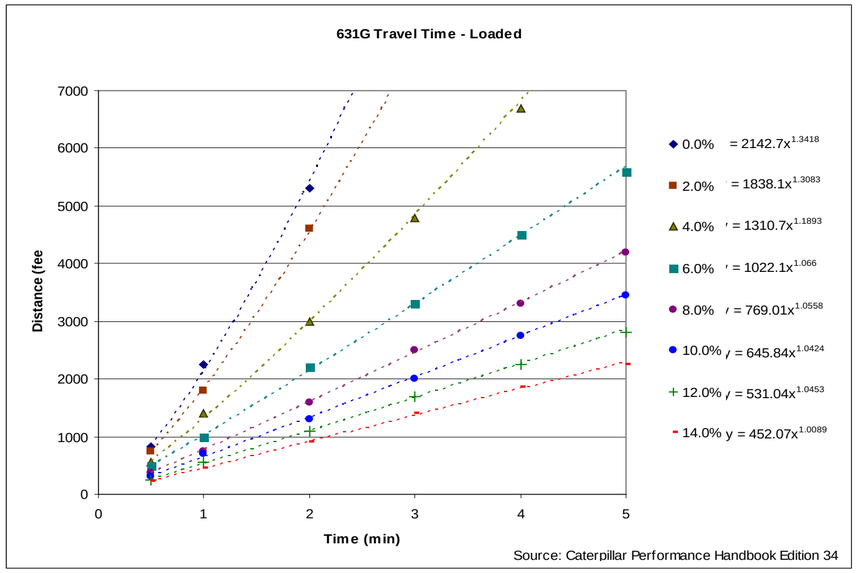
Productivity - Scrapers (cont.)

631G Scraper Travel Time - Uphill Loaded

Total Resistance (%) (rolling + grade)	Time (min) 0.5	1	2	3	4	5	k	p
0	825	2,250	5,300				2142.7	1.3418
2	750	1,800	4,600				1838.1	1.3083
4	550	1,400	3,000	4,800	6,700		1310.7	1.1893
6	490	1,000	2,200	3,300	4,500	5,600	1022.1	1.066
8	375	750	1,600	2,500	3,300	4,200	769.01	1.0558
10	300	700	1,300	2,000	2,750	3,450	645.84	1.0424
12	250	550	1,100	1,700	2,250	2,800	531.04	1.0453
14	225	450	900	1,400	1,850	2,250	452.07	1.0089

Travel Time (min) = $\sqrt[p]{\frac{\text{distance}}{k}}$

Source: Caterpillar Performance Handbook Edition 35



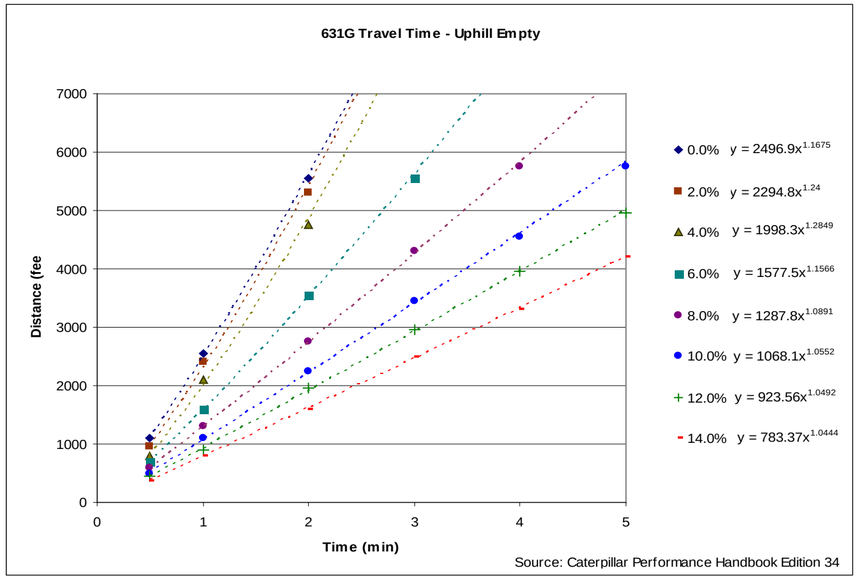
Source: Caterpillar Performance Handbook Edition 34

631G Scraper Travel Time - Uphill Empty

Total Resistance (%) (rolling + grade)	Time (min) 0.5	1	2	3	4	5	k	p
0	1,100	2,550	5,550				2496.9	1.1675
2	950	2,400	5,300				2294.8	1.24
4	800	2,100	4,750				1998.3	1.2849
6	700	1,600	3,550	5,550			1557.5	1.1566
8	600	1,300	2,750	4,300	5,750		1287.8	1.0891
10	500	1,100	2,250	3,450	4,550	5,750	1068.1	1.0552
12	450	900	1,950	2,950	3,950	4,950	923.56	1.0492
14	375	800	1,600	2,500	3,300	4,200	783.37	1.0444

Travel Time (min) = $\sqrt[p]{\frac{\text{distance}}{k}}$

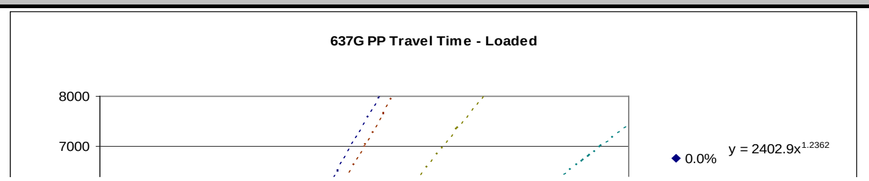
Source: Caterpillar Performance Handbook Edition 35



Source: Caterpillar Performance Handbook Edition 34

Productivity - Scrapers (cont.)

637G Push-Pull Scraper Travel Time - Uphill Loaded

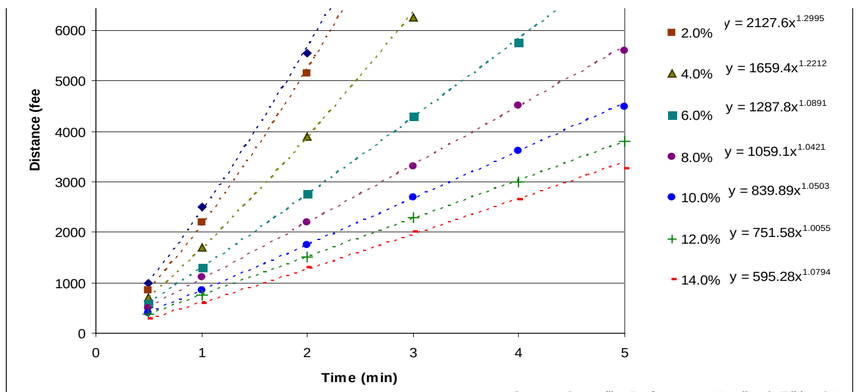


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Total Resistance (%) (rolling + grade)	Time (min) 0.5	1	2	3	4	5	k	p
0	1,000	2,500	5,550				2402.9	1.2362
2	850	2,200	5,150				2127.6	1.2995
4	700	1,700	3,900	6,250			1659.4	1.2212
6	600	1,300	2,750	4,300	5,750		1287.8	1.0891
8	500	1,100	2,200	3,300	4,500	5,600	1059.1	1.0421
10	400	850	1,750	2,700	3,600	4,475	839.89	1.0503
12	375	750	1,500	2,300	3,000	3,800	751.58	1.0055
14	275	600	1,300	2,000	2,650	3,250	595.28	1.0794

Travel Time (min) = $\sqrt[p]{\frac{\text{distance}}{k}}$

Source: Caterpillar Performance Handbook Edition 35

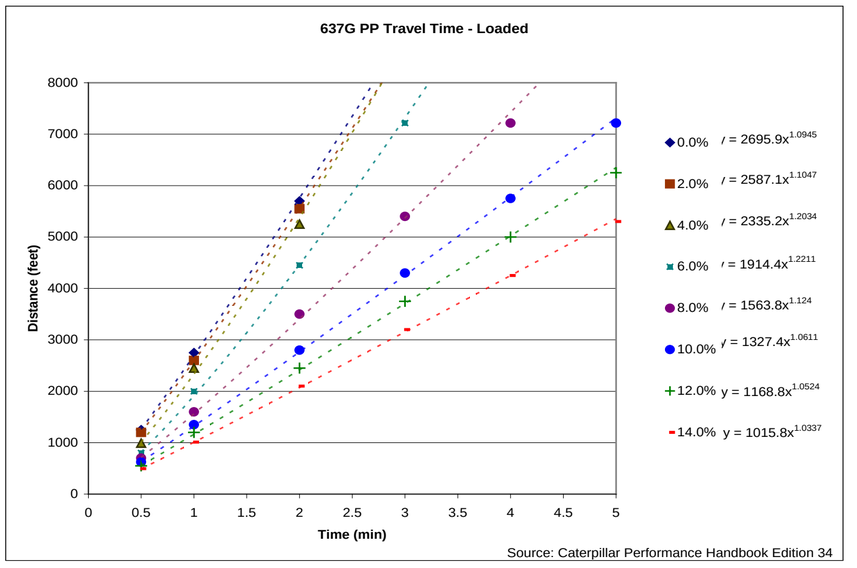


Source: Caterpillar Performance Handbook Edition 34

637G Push-Pull Scraper Travel Time - Uphill Empty								
Total Resistance (%) (rolling + grade)	Time (min) 0.5	1	2	3	4	5	k	p
0	1,250	2,750	5,700				2695.9	1.0945
2	1,200	2,600	5,550				2587.1	1.1047
4	990	2,450	5,250				2335.2	1.0234
6	800	2,000	4,450	7,216			1914.4	1.2211
8	700	1,600	3,500	5,400	7,216		1563.8	1.124
10	625	1,350	2,800	4,300	5,750	7,216	1327.4	1.0611
12	550	1,200	2,450	3,750	5,000	6,250	1168.8	1.0524
14	495	1,010	2,100	3,200	4,250	5,300	1015.8	1.0337

Travel Time (min) = $\sqrt[p]{\frac{\text{distance}}{k}}$

Source: Caterpillar Performance Handbook Edition 35



Source: Caterpillar Performance Handbook Edition 34

Productivity - Haul Trucks

Haul Truck Specifications						
Description	769D	773E	777D	785C	793C	797B
Chassis Weight (lb)	53,506	70,330	113,160	170,000	259,500	473,600
Body Weight (lb)	17,350	20,300	34,785	36,788	70,785	104,200
Standard Liner Weight (lb)	7,000	8,600	12,040	16,846	24,418	8,800
Total Truck Weight (lb)	77,856	99,230	159,985	223,634	354,703	586,600
Payload Capacity (cy)						
Struck	21.6	34.8	55	78.5	126	228
Heaped	31.7	46	78.6	102	169	290
Average	26.65	40.4	66.8	90.25	147.5	259
Maneuver to Load Time (min)	0.7	0.7	0.7	0.7	0.7	0.7
Maneuver and Dump Time (min)	1.1	1.1	1.1	1.1	1.1	1.1
Job Efficiency	0.83	0.83	0.83	0.83	0.83	0.83
Rolling Resistance**	2.5	2.5	2.5	2.5	2.5	2.5
Altitude Deration Factor	0.88	0.93	0.93	0.86	1	1

**A firm, smooth, rolling roadway with dirt or light surfacing, flexing slightly under load or undulating, maintained fairly regularly, watered

Source: Caterpillar Performance Handbook Edition 35

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Weight of Materials					Downhill Haul Truck Speed - Grade Retarding vs. Effective Grade (Grade - Rolling Resistance)														
					769D					773E					777D				
Material	lb/cy	Truck (769D) Load lb	Truck (773E) Load lb	Truck (777D) Load lb	Loaded Weight (lbs)	20	15	10	5	Loaded Weight (lbs)	20	15	10	5	Loaded Weight (lbs)	20	15	10	5
Alluvium	2,900	77,285	117,160	193,720	155,141	11	11	15	26	216,390	7	7	13	23	353,705	7	9	12	29
Basalt	3,300	87,945	133,320	220,440	165,801	11	11	11	20	232,550	7	7	13	23	380,425	7	7	12	21
Clay - Dry	2,500	66,625	101,000	167,000	144,481	11	11	15	26	200,230	7	9	13	23	326,985	7	9	16	29
Granite - broken	2,800	74,620	113,120	187,040	152,476	11	11	15	26	212,350	7	7	13	23	347,025	7	9	12	29
Gravel	2,550	67,958	103,020	170,340	145,814	11	11	15	26	202,250	7	9	13	23	330,325	7	9	16	29
LS - broken	2,600	69,290	105,040	173,680	147,146	11	11	15	26	204,270	7	9	13	23	333,665	7	9	12	29
LS - crushed	2,600	69,290	105,040	173,680	147,146	11	11	15	26	204,270	7	9	13	23	333,665	7	9	12	29
Sandstone	2,550	67,958	103,020	170,340	145,814	11	11	15	26	202,250	7	9	13	23	330,325	7	9	16	29
Shale	2,100	55,965	84,840	140,280	133,821	11	11	15	26	184,070	7	9	13	31	300,265	7	9	16	29
Stone - crushed	2,700	71,955	109,080	180,360	149,811	11	11	15	26	208,310	7	7	13	23	340,345	7	9	12	29
Tailings - Coarse (dry, loose sand)	2,400	63,960	96,960	160,320	141,816	11	11	15	26	196,190	7	9	13	23	320,305	7	9	16	29
Tailings - Slimes (loose sand & clay)	2,700	71,955	109,080	180,360	149,811	11	11	15	26	208,310	7	7	13	23	340,345	7	9	12	29
Topsoil	1,600	42,640	64,640	106,880	120,496	11	11	15	26	163,870	7	9	17	31	266,865	9	12	16	29
					Empty	15	15	26	36	Empty	13	17	23	42	Empty	16	16	29	39

Source: Caterpillar Performance Handbook Edition 35

Weight of Materials					Downhill Haul Truck Speed - Grade Retarding vs. Effective Grade (Grade - Rolling Resistance)														
					785C					793C					797B				
Material	lb/cy	Truck (785C) Load lb	Truck (793C) Load lb	Truck (797B) Load lb	Loaded Weight (lbs)	20	15	10	5	Loaded Weight (lbs)	20	15	10	5	Loaded Weight (lbs)	20	15	10	5
Alluvium	2,900	261,725	427,750	751,100	485,359	8	8	14	27	782,453	7	7	10	17	1,337,700	7	7	9	17
Basalt	3,300	297,825	486,750	854,700	521,459	8	8	14	27	841,453	7	7	10	17	1,441,300	7	7	9	17
Clay - Dry	2,500	225,625	368,750	647,500	449,259	8	11	14	36	723,453	7	7	10	25	1,234,100	7	7	9	23
Granite - broken	2,800	252,700	413,000	725,200	476,334	8	8	14	27	767,703	7	7	10	17	1,311,800	7	7	9	17
Gravel	2,550	230,138	376,125	660,450	453,772	8	8	14	36	730,828	7	7	10	25	1,247,050	7	7	9	23
LS - broken	2,600	234,650	383,500	673,400	458,284	8	8	14	27	738,203	7	7	10	25	1,260,000	7	7	9	23
LS - crushed	2,600	234,650	383,500	673,400	458,284	8	8	14	27	738,203	7	7	10	25	1,260,000	7	7	9	23
Sandstone	2,550	230,138	376,125	660,450	453,772	8	8	14	36	730,828	7	7	10	25	1,247,050	7	7	9	23
Shale	2,100	189,525	309,750	543,900	413,159	8	11	14	36	664,453	7	7	10	25	1,130,500	7	7	13	23
Stone - crushed	2,700	243,675	398,250	699,300	467,309	8	8	14	27	752,953	7	7	10	17	1,285,900	7	7	9	23
Tailings - Coarse (dry, loose sand)	2,400	216,600	354,000	621,600	440,234	8	11	14	36	708,703	7	7	10	25	1,208,200	7	7	9	23
Tailings - Slimes (loose sand & clay)	2,700	243,675	398,250	699,300	467,309	8	8	14	27	752,953	7	7	10	17	1,285,900	7	7	9	23
Topsoil	1,600	144,400	236,000	414,400	368,034	8	11	19	36	590,703	7	10	13	25	1,001,000	7	9	13	23
					Empty	14	19	36	36	Empty	10	13	17	33	Empty	13	17	23	42

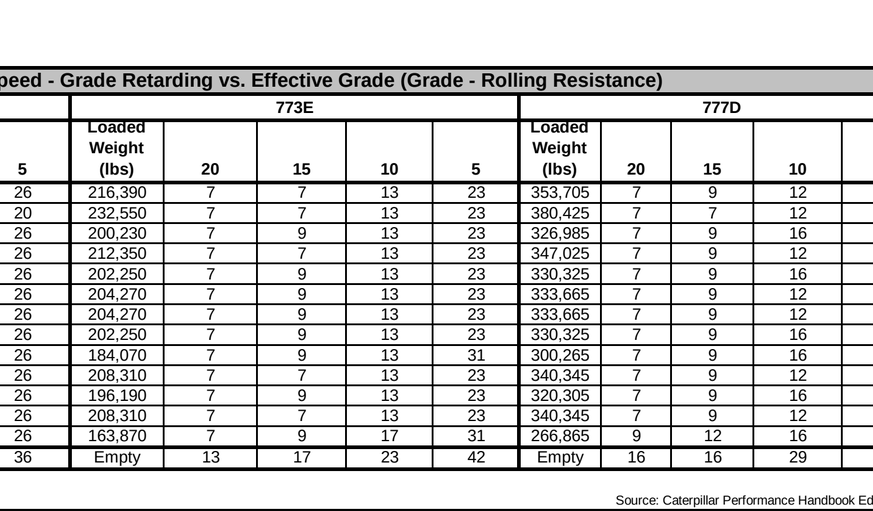
Source: Caterpillar Performance Handbook Edition 35

Productivity - Haul Trucks (cont.)

769D Haul Truck Travel Time - Uphill Loaded								
Total Resistance (%) (rolling + grade)	Time (min)						k	p
	0.4	1	2	3	4	5		
0	1,148	3,428	7,183				3316.3	1.1422
4	689	1,984	4,198	6,330			1928.3	1.1033
6	508	1,427	2,952	4,510	6,002		1386.4	1.0725
8	394	1,082	2,263	3,411	4,592	5,740	1061.8	1.06
10	328	869	1,771	2,690	3,608	4,510	857.82	1.0373
15	213	574	1,181	1,804	2,394	3,018	565	1.0482

Travel Time (min) = $\sqrt[p]{\frac{\text{distance}}{k}}$

Source: Caterpillar Performance Handbook Edition 35



Source: Caterpillar Performance Handbook Edition 34

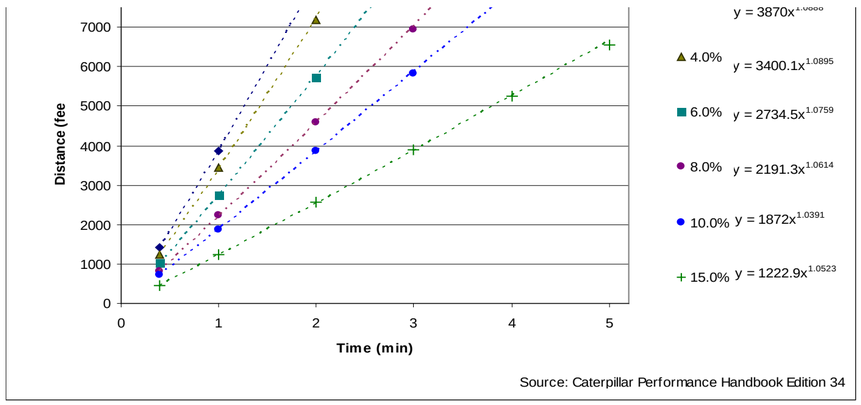


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769D Haul Truck Travel Time - Uphill Empty								
Total Resistance (%) (rolling + grade)	Time (min)						k	p
	0.4	1	2	3	4	5		
0	1,427	3,870					3870	1.0888
4	1,246	3,444	7,183				3400.1	1.0895
6	1,017	2,755	5,740				2734.5	1.0759
8	820	2,230	4,592	6,954			2191.3	1.0614
10	722	1,870	3,870	5,838			1872	1.0391
15	459	1,246	2,558	3,903	5,248	6,560	1222.9	1.0523

Travel Time (min) = $\sqrt[p]{\frac{\text{distance}}{k}}$

Source: Caterpillar Performance Handbook Edition 35



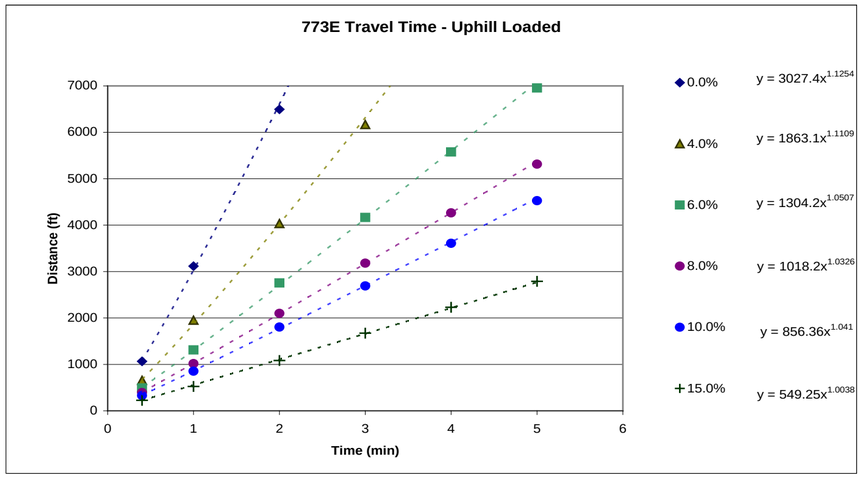
Source: Caterpillar Performance Handbook Edition 34

Productivity - Haul Trucks (cont.)

773E Haul Truck Travel Time - Uphill Loaded								
Total Resistance (%) (rolling + grade)	Time (min)						k	p
	0.4	1	2	3	4	5		
0	1,066	3,117	6,496				3027.4	1.1254
4	656	1,952	4,035	6,168			1863.1	1.1109
6	492	1,312	2,756	4,167	5,577	6,955	1304.2	1.0507
8	394	1,017	2,100	3,182	4,265	5,315	1018.2	1.0326
10	328	853	1,804	2,690	3,609	4,528	856.36	1.041
15	226	525	1,083	1,673	2,231	2,789	549.25	1.0038

Travel Time (min) = $\sqrt[p]{\frac{\text{distance}}{k}}$

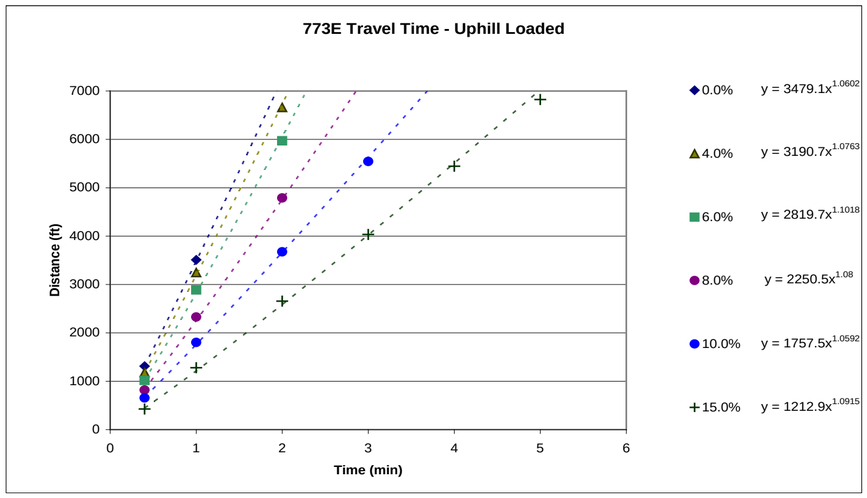
Source: Caterpillar Performance Handbook Edition 35



773E Haul Truck Travel Time - Uphill Empty								
Total Resistance (%) (rolling + grade)	Time (min)						k	p
	0.4	1	2	3	4	5		
0	1,312	3,510	7,218				3479.1	1.0602
4	1,181	3,248	6,660				3190.7	1.0763
6	1,017	2,887	5,971				2819.7	1.1018
8	820	2,329	4,790	7,218			2250.5	1.08
10	656	1,804	3,675	5,545			1757.5	1.0592
15	427	1,280	2,657	4,035	5,446	6,824	1212.9	1.0915

Travel Time (min) = $\sqrt[p]{\frac{\text{distance}}{k}}$

Source: Caterpillar Performance Handbook Edition 35



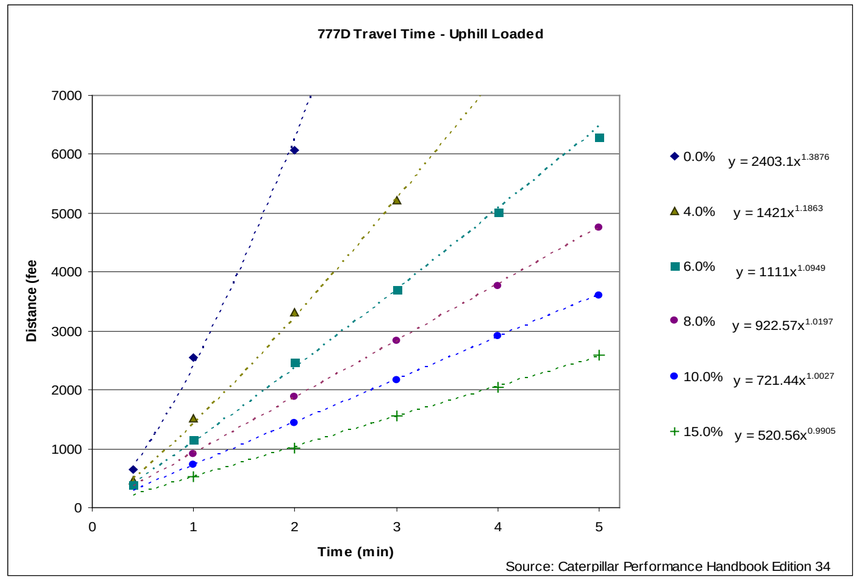
Productivity - Haul Trucks (cont.)

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777D Haul Truck Travel Time - Uphill Loaded								
Total Resistance (%) (rolling + grade)	Time (min)						k	p
	0.4	1	2	3	4	5		
0	656	2,558	6,068				2403.1	1.3876
4	459	1,509	3,313	5,215	7,085		1412	1.1863
6	394	1,148	2,460	3,706	5,018	6,298	1111	1.0949
8		918	1,886	2,837	3,772	4,756	922.57	1.0197
10		722	1,443	2,165	2,919	3,608	721.44	1.0027
15		525	1,017	1,558	2,034	2,591	520.56	0.9905

Travel Time (min) = $\sqrt[p]{\frac{\text{distance}}{k}}$

Source: Caterpillar Performance Handbook Edition 35

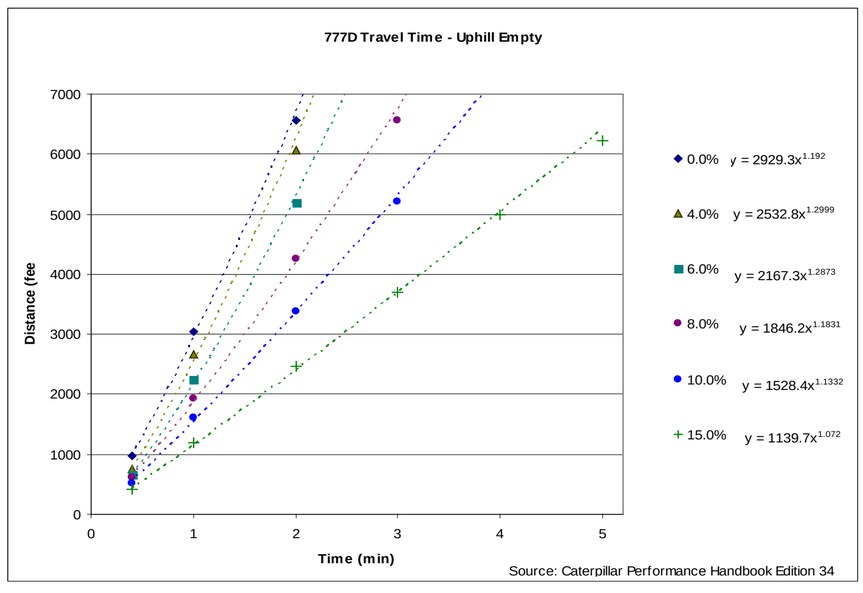


Source: Caterpillar Performance Handbook Edition 34

777D Haul Truck Travel Time - Uphill Empty								
Total Resistance (%) (rolling + grade)	Time (min)						k	p
	0.4	1	2	3	4	5		
0	968	3,034	6,560				2929.3	1.192
4	754	2,657	6,068				2532.8	1.2999
6	656	2,247	5,182				2167.3	1.2873
8	607	1,935	4,248	6,560			1846.2	1.1831
10	525	1,607	3,378	5,215	7,282		1528.4	1.1332
15	410	1,197	2,460	3,706	4,986	6,232	1139.7	1.072

Travel Time (min) = $\sqrt[p]{\frac{\text{distance}}{k}}$

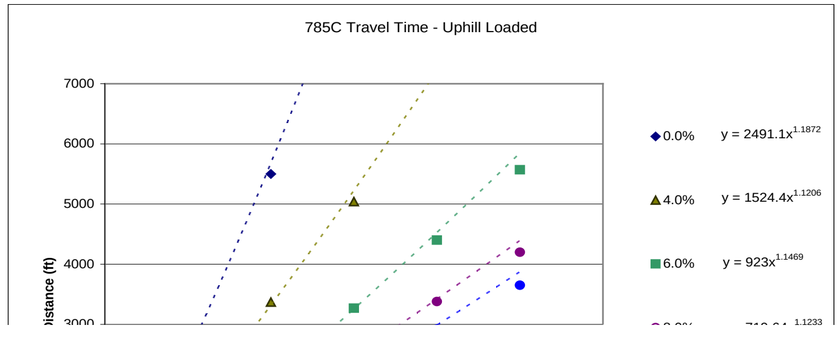
Source: Caterpillar Performance Handbook Edition 35



Source: Caterpillar Performance Handbook Edition 34

Productivity - Haul Trucks (cont.)

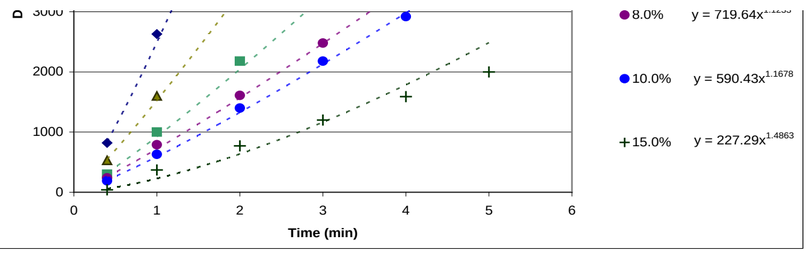
785C Haul Truck Travel Time - Uphill Loaded								
Total Resistance (%) (rolling + grade)	Time (min)						k	p
	0.4	1	2	3	4	5		
0	820	2,630	5,500				2491.1	1.1872
4	530	1,600	3,370	5,040			1524.4	1.1206
6	300	1,000	2,180	3,270	4,400	5,570	923	1.1469
8	240	790	1,610	2,480	3,380	4,200	719.64	1.1233
10	190	630	1,400	2,180	2,920	3,650	590.43	1.1678
15	40	370	770	1,200	1,590	2,000	227.29	1.4863



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Travel Time (min) = $\sqrt[p]{\frac{distance}{k}}$

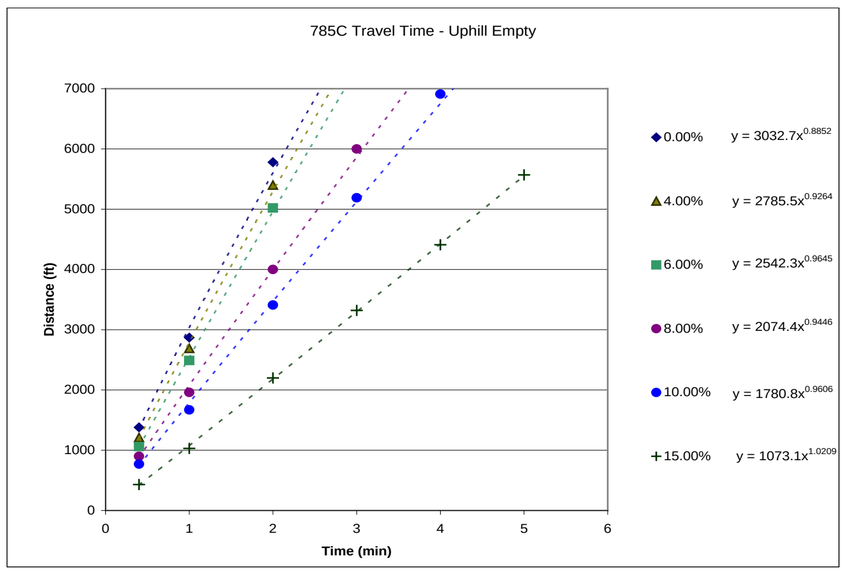
Source: Caterpillar Performance Handbook Edition 35



785C Haul Truck Travel Time - Uphill Empty								
Total Resistance (%) (rolling + grade)	Time (min)						k	p
	0.4	1	2	3	4	5		
0	1,380	2,870	5,780				3032.7	0.8852
4	1,210	2,690	5,400				2785.5	0.9264
6	1,060	2,490	5,020				2542.3	0.9645
8	900	1,960	4,000	6,000			2074.4	0.9446
10	770	1,670	3,410	5,190	6,910		1780.8	0.9606
15	430	1,030	2,200	3,320	4,410	5,570	1073.1	1.0209

Travel Time (min) = $\sqrt[p]{\frac{distance}{k}}$

Source: Caterpillar Performance Handbook Edition 35

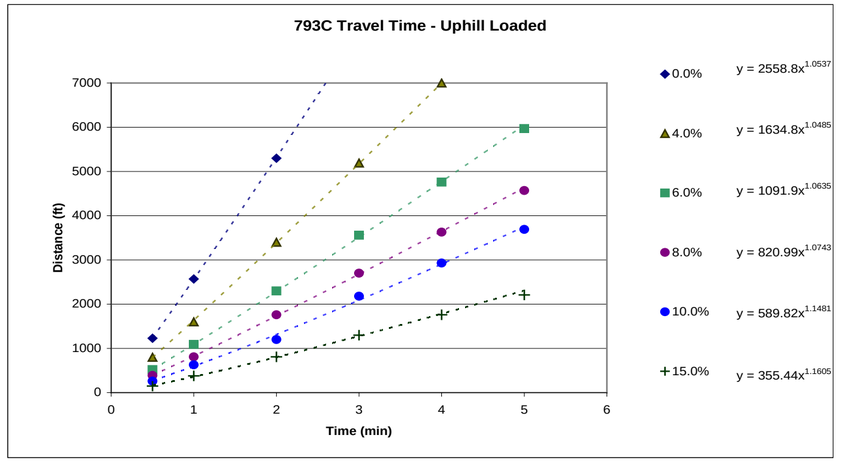


Productivity - Haul Trucks (cont.)

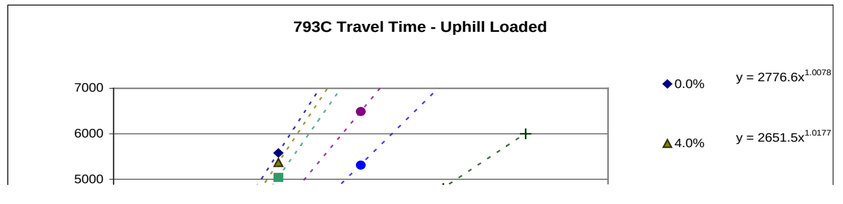
793C Haul Truck Travel Time - Uphill Loaded								
Total Resistance (%) (rolling + grade)	Time (min)						k	p
	0.5	1	2	3	4	5		
0	1,230	2,570	5,300				2558.8	1.0537
4	800	1,600	3,400	5,190	7,000		1634.8	1.0485
6	520	1,090	2,300	3,560	4,760	5,970	1091.9	1.0635
8	390	810	1,760	2,700	3,630	4,570	820.99	1.0743
10	260	630	1,200	2,180	2,930	3,690	589.82	1.1481
15	150	380	810	1,300	1,760	2,210	355.44	1.1605

Travel Time (min) = $\sqrt[p]{\frac{distance}{k}}$

Source: Caterpillar Performance Handbook Edition 35



793C Haul Truck Travel Time - Uphill Empty								
Total Resistance (%)	Time (min)							

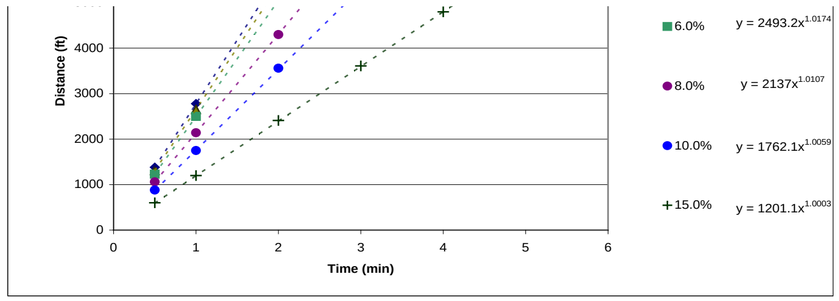


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(rolling + grade)	0.5	1	2	3	4	5	k	p
0	1,380	2,780	5,580				2776.6	1.0078
4	1,310	2,650	5,370				2651.5	1.0177
6	1,230	2,500	5,040				2493.2	1.0174
8	1,060	2,140	4,300	6,490			2137	1.0107
10	880	1,750	3,560	5,310			1762.1	1.0059
15	600	1,200	2,410	3,610	4,800	6,000	1201.1	1.0003

Travel Time (min) = $\sqrt[p]{\frac{\text{distance}}{k}}$

Source: Caterpillar Performance Handbook Edition 35



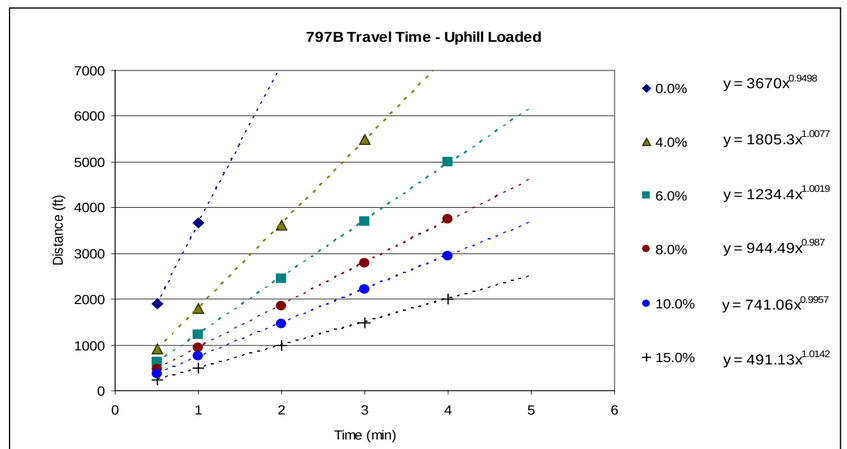
Productivity - Haul Trucks (cont.)

797B Haul Truck Travel Time - Uphill Loaded

Total Resistance (%) (rolling + grade)	Time (min) 0.5	1	2	3	4	5	k	p
0	1,900	3,670					3670	0.9498
4	900	1,800	3,620	5,480			1805.3	1.0077
6	620	1,230	2,450	3,700	5,000		1234.4	1.0019
8	480	940	1,850	2,790	3,750		944.49	0.987
10	370	750	1,460	2,220	2,950		741.06	0.9957
15	240	500	1,000	1,480	2,000		491.13	1.0142

Travel Time (min) = $\sqrt[p]{\frac{\text{distance}}{k}}$

Source: Caterpillar Performance Handbook Edition 35

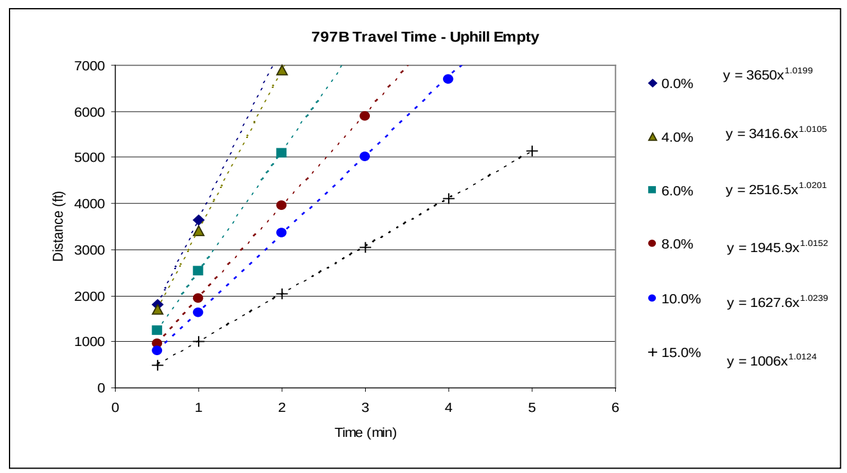


797B Haul Truck Travel Time - Uphill Empty

Total Resistance (%) (rolling + grade)	Time (min) 0.5	1	2	3	4	5	k	p
0	1,800	3,650					3650	1.0199
4	1,700	3,400	6,900				3416.6	1.0105
6	1,240	2,520	5,100				2516.5	1.0201
8	960	1,950	3,960	5,900			1945.9	1.0152
10	800	1,620	3,350	5,000	6,700		1627.6	1.0239
15	500	1,000	2,040	3,050	4,100	5,130	1006	1.0124

Travel Time (min) = $\sqrt[p]{\frac{\text{distance}}{k}}$

Source: Caterpillar Performance Handbook Edition 35



Productivity - Articulated Trucks

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Articulated Truck Specifications				
Description	**725**	**730**	**735**	**740**
Chassis Weight (lb)				
Body Weight (lb)				
Standard Liner Weight (lb)				
Operating Weight (Empty) (lb)	50,120	51,220	65,830	72,070
Payload Capacity (cy)				
Struck	14.5	17.1	19.3	23.3
Heaped	18.8	22.1	31.8	30.2
Average	16.65	19.6	25.55	26.75
Maneuver to Load Time (min)	0.7	0.7	0.7	0.7
Maneuver and Dump Time (min)	1.1	1.1	1.1	1.1
Job Efficiency	0.83	0.83	0.83	0.83
Rolling Resistance**	2.5	2.5	2.5	2.5
Altitude Deration Factor	1	1	0.99	0.99

**A firm, smooth, rolling roadway with dirt or light surfacing, flexing slightly under load or undulating, maintained fairly regularly, watered

Source: Caterpillar Performance Handbook Edition 35

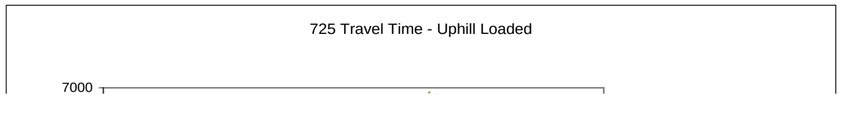
Weight of Materials				Downhill Haul Truck Speed - Grade Retarding vs. Effective Grade (Grade - Rolling Resistance)									
				725					730				
Material	**lb/cy**	**Truck (725) Load lb**	**Truck (730) Load lb**	**Loaded Weight (lbs)**	**20**	**15**	**10**	**5**	**Loaded Weight (lbs)**	**20**	**15**	**10**	**5**
Alluvium	2,900	48,285	56,840	98,405	9	9	13	30	108,060	5	8	13	29
Basalt	3,300	54,945	64,680	105,065	5	9	13	22	115,900	5	8	13	29
Clay - Dry	2,500	41,625	49,000	91,745	9	13	13	30	100,220	8	8	13	29
Granite - broken	2,800	46,620	54,880	96,740	9	13	13	30	106,100	5	8	13	29
Gravel	2,550	42,458	49,980	92,578	9	13	13	30	101,200	8	8	13	29
LS - broken	2,600	43,290	50,960	93,410	9	13	13	30	102,180	8	8	13	29
LS - crushed	2,600	43,290	50,960	93,410	9	13	13	30	102,180	8	8	13	29
Sandstone	2,550	42,458	49,980	92,578	9	13	13	30	101,200	8	8	13	29
Shale	2,100	34,965	41,160	85,085	9	13	22	30	92,380	8	13	13	29
Stone - crushed	2,700	44,955	52,920	95,075	9	13	13	30	104,140	8	8	13	29
Tailings - Coarse (dry, loose sand)	2,400	39,960	47,040	90,080	9	13	13	30	98,260	8	8	13	29
Tailings - Slimes (loose sand & clay)	2,700	44,955	52,920	95,075	9	13	13	30	104,140	8	8	13	29
Topsoil	1,600	26,640	31,360	76,760	9	13	22	30	82,580	8	13	22	35
				Empty	13	13	22	30	Empty	13	13	22	35

Source: Caterpillar Performance Handbook Edition 35

Weight of Materials				Downhill Haul Truck Speed - Grade Retarding vs. Effective Grade (Grade - Rolling Resistance)									
				735					740				
Material	**lb/cy**	**Truck (735) Load lb**	**Truck (740) Load lb**	**Loaded Weight (lbs)**	**20**	**15**	**10**	**5**	**Loaded Weight (lbs)**	**20**	**15**	**10**	**5**
Alluvium	2,900	74,095	77,575	139,925	7	9	13	27	149,645	7	9	17	23
Basalt	3,300	84,315	88,275	150,145	7	9	13	27	160,345	7	9	13	23
Clay - Dry	2,500	63,875	66,875	129,705	7	9	13	27	138,945	9	13	17	31
Granite - broken	2,800	71,540	74,900	137,370	7	9	13	27	146,970	7	9	17	23
Gravel	2,550	65,153	68,213	130,983	7	9	13	27	140,283	7	9	17	31
LS - broken	2,600	66,430	69,550	132,260	7	9	13	27	141,620	7	9	17	31
LS - crushed	2,600	66,430	69,550	132,260	7	9	13	27	141,620	7	9	17	31
Sandstone	2,550	65,153	68,213	130,983	7	9	13	27	140,283	7	9	17	31
Shale	2,100	53,655	56,175	119,485	9	9	18	27	128,245	7	13	17	31
Stone - crushed	2,700	68,985	72,225	134,815	7	9	13	27	144,295	7	9	17	23
Tailings - Coarse (dry, loose sand)	2,400	61,320	64,200	127,150	7	9	13	27	136,270	9	13	17	31
Tailings - Slimes (loose sand & clay)	2,700	68,985	72,225	134,815	7	9	13	27	144,295	7	9	17	23
Topsoil	1,600	40,880	42,800	106,710	9	13	18	36	114,870	9	13	17	31
				Empty	13	18	27	42	Empty	17	17	23	31

Source: Caterpillar Performance Handbook Edition 35

Productivity - Articulated Trucks (cont.)

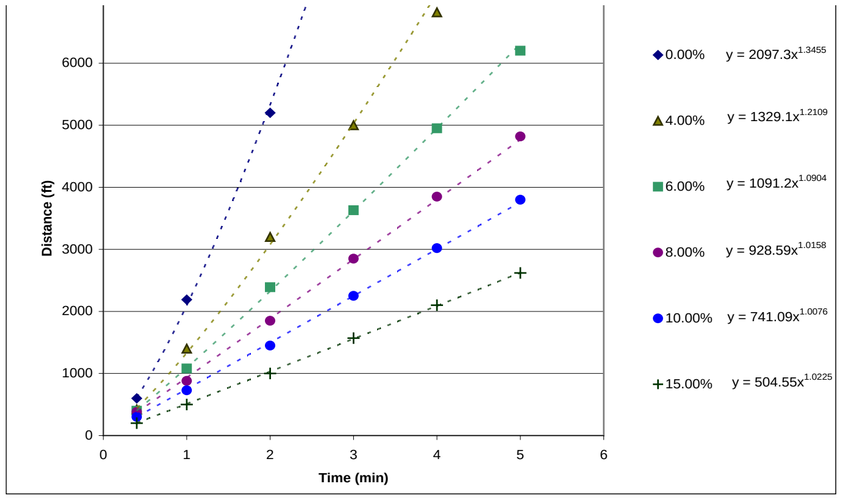


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725 Articulated Truck Travel Time - Uphill Loaded								
Total Resistance (%) (rolling + grade)	Time (min)						k	p
	0.5	1	2	3	4	5		
0	600	2,190	5,200				2097.3	1.3455
4	420	1,400	3,200	5,000	6,820		1329.1	1.2109
6	400	1,080	2,390	3,630	4,950	6,200	1091.2	1.0904
8	380	880	1,850	2,850	3,850	4,820	928.59	1.0158
10	300	729	1,450	2,250	3,020	3,800	741.09	1.0076
15	200	500	1,000	1,570	2,100	2,620	504.55	1.0225

Travel Time (min) = $\sqrt[p]{\frac{\text{distance}}{k}}$

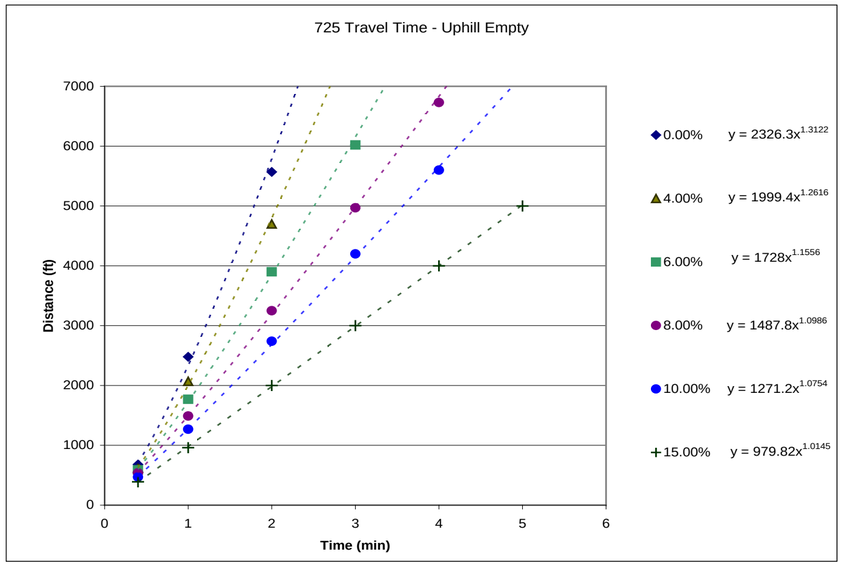
Source: Caterpillar Performance Handbook Edition 35



725 Haul Truck Travel Time - Uphill Empty								
Total Resistance (%) (rolling + grade)	Time (min)						k	p
	0.5	1	2	3	4	5		
0	680	2,480	5,570				2326.3	1.3122
4	620	2,070	4,700				1999.4	1.2616
6	590	1,770	3,900	6,020			1728	1.1556
8	540	1,490	3,250	4,970	6,730		1487.8	1.0986
10	470	1,270	2,740	4,200	5,600	7,050	1271.2	1.0754
15	390	960	2,000	3,000	4,000	5,000	979.82	1.0145

Travel Time (min) = $\sqrt[p]{\frac{\text{distance}}{k}}$

Source: Caterpillar Performance Handbook Edition 35

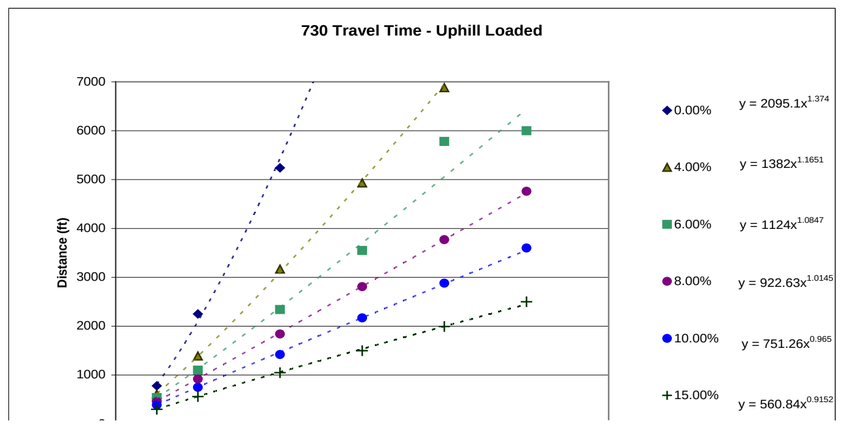


Productivity - Articulated Trucks (cont.)

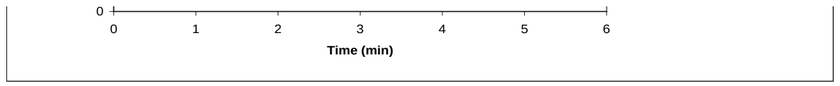
730 Articulated Truck Travel Time - Uphill Loaded								
Total Resistance (%) (rolling + grade)	Time (min)						k	p
	0.5	1	2	3	4	5		
0	780	2,250	5,240				2095	1.374
4	610	1,390	3,170	4,930	6,880		1382	1.1651
6	540	1,100	2,340	3,550	5,780	6,000	112	1.0847
8	460	920	1,840	2,810	3,770	4,760	922.63	1.0145
10	390	750	1,420	2,170	2,880	3,600	751.26	0.965
15	300	560	1,050	1,500	1,995	2,500	560.84	0.9152

Travel Time (min) = $\sqrt[p]{\frac{\text{distance}}{k}}$

Source: Caterpillar Performance Handbook Edition 35



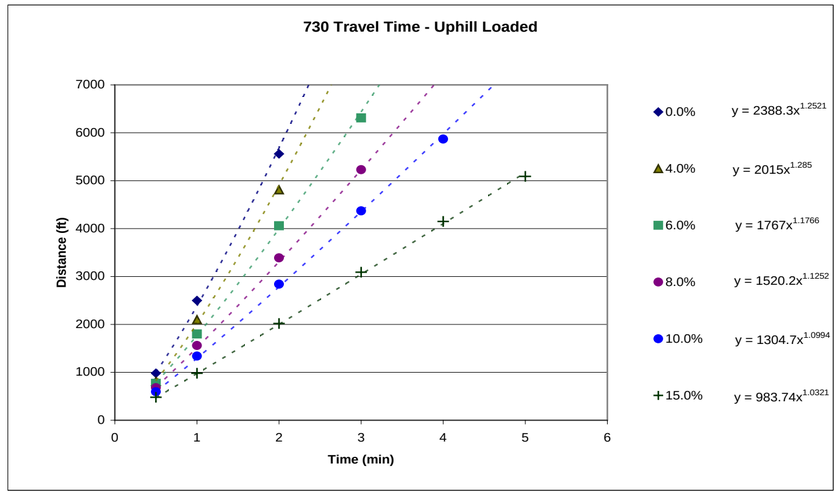
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730 Haul Truck Travel Time - Uphill Empty								
Total Resistance (%) (rolling + grade)	Time (min)						k	p
	0.5	1	2	3	4	5		
0	980	2,500	5,560				2388	1.25621
4	810	2,100	4,810				2015	1.285
6	770	1,800	4,060	6,310			1767	1.1766
8	680	1,560	3,390	5,230	7,070		1520.2	1.1252
10	595	1,340	2,840	4,370	5,870		1304.7	1.0994
15	480	980	2,020	3,090	4,150	5,090	983.74	1.0321

Travel Time (min) = $\sqrt[p]{\frac{\text{distance}}{k}}$

Source: Caterpillar Performance Handbook Edition 35

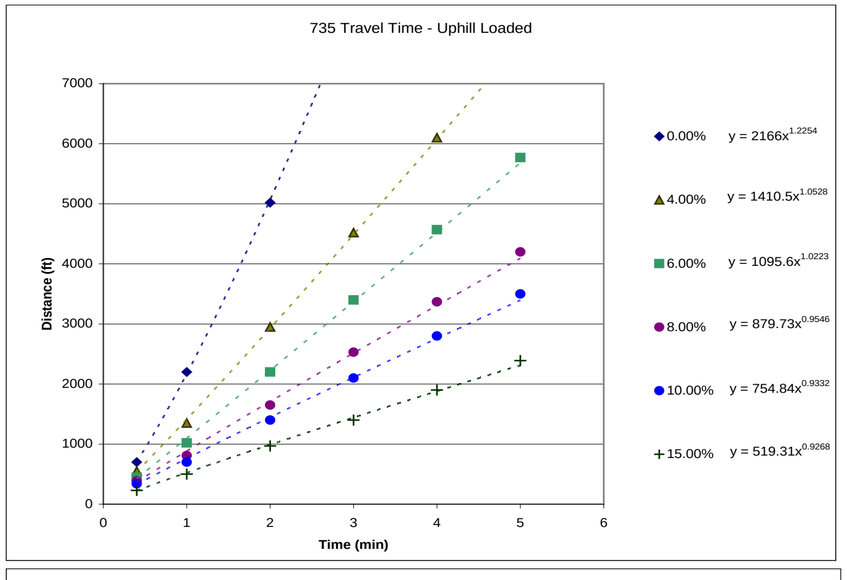


Productivity - Articulated Trucks (cont.)

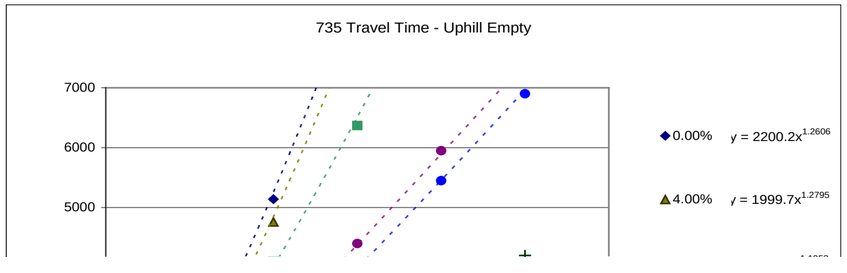
735 Articulated Truck Travel Time - Uphill Loaded								
Total Resistance (%) (rolling + grade)	Time (min)						k	p
	0.5	1	2	3	4	5		
0	700	2,200	5,020				2166	1.2254
4	550	1,350	2,950	4,520	6,100		1410.5	1.0528
6	450	1,020	2,200	3,400	4,570	5,770	1095.6	1.0223
8	390	810	1,650	2,530	3,370	4,200	879.73	0.9546
10	340	700	1,400	2,100	2,800	3,500	754.84	0.9332
15	230	500	970	1,400	1,900	2,390	519.31	0.9268

Travel Time (min) = $\sqrt[p]{\frac{\text{distance}}{k}}$

Source: Caterpillar Performance Handbook Edition 35



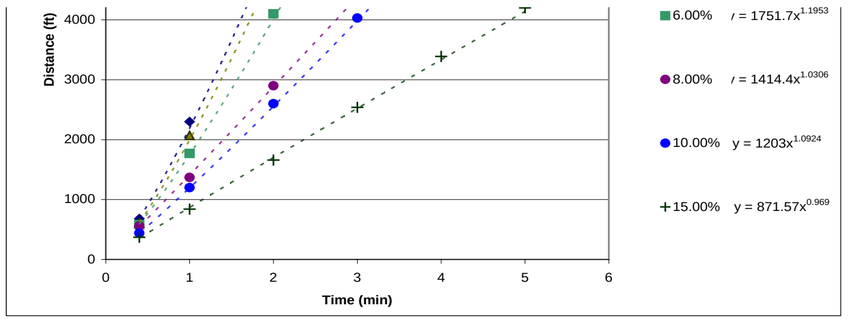
735 Haul Truck Travel Time - Uphill Empty								
Total Resistance (%) (rolling + grade)	Time (min)						k	p
	0.5	1	2	3	4	5		
0	680	2,300	5,140				2200.2	1.2606
4	610	2,070	4,760				1999.7	1.2795
6	580	1,770	4,100	6,370			1751.7	1.1953
8	560	1,370	2,900	4,400	5,950		1414.4	1.0306
10	440	1,200	2,600	4,030	5,450	6,900	1203	1.0924
15	370	840	1,660	2,540	3,390	4,200	871.57	0.969



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Travel Time (min) = $\sqrt[p]{\frac{distance}{k}}$

Source: Caterpillar Performance Handbook Edition 35



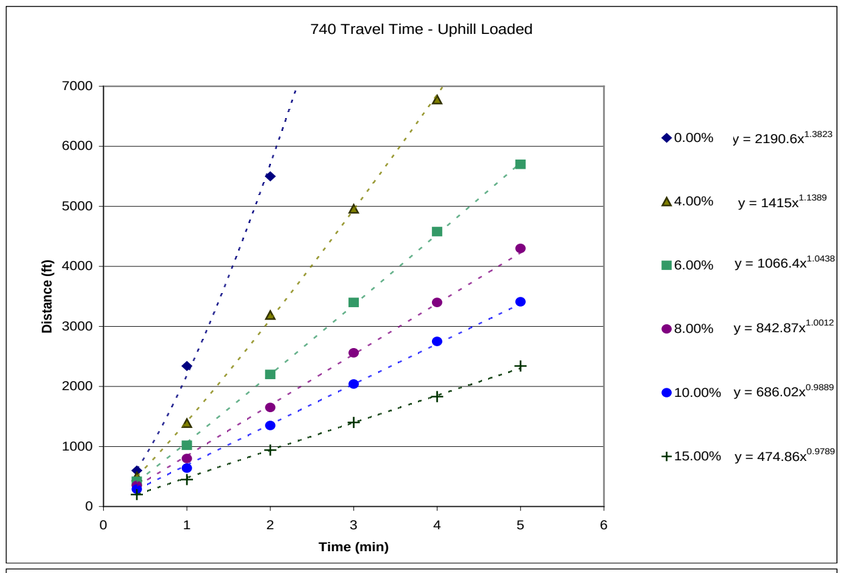
Productivity - Articulated Trucks (cont.)

740 Articulated Truck Travel Time - Uphill Loaded

Total Resistance (%) (rolling + grade)	Time (min) 0.5	1	2	3	4	5	k	p
0	600	2,340	5,500				2190.6	1.3823
4	500	1,390	3,190	4,960	6,780		1415	1.1389
6	420	1,020	2,200	3,400	4,580	5,700	1066.4	1.0438
8	350	800	1,650	2,560	3,400	4,300	842.87	1.0012
10	290	640	1,350	2,040	2,750	3,410	686.02	0.9889
15	200	450	940	1,400	1,830	2,340	474.86	0.9789

Travel Time (min) = $\sqrt[p]{\frac{distance}{k}}$

Source: Caterpillar Performance Handbook Edition 35

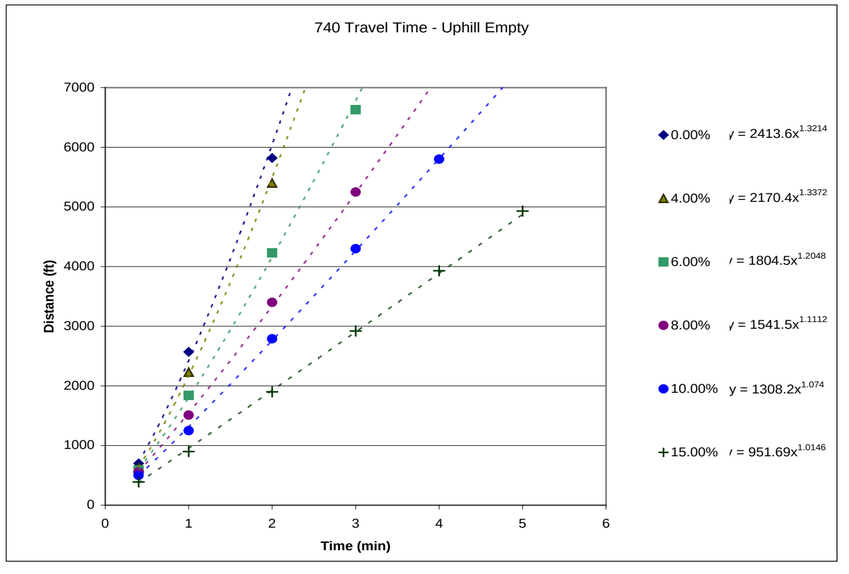


740 Haul Truck Travel Time - Uphill Empty

Total Resistance (%) (rolling + grade)	Time (min) 0.5	1	2	3	4	5	k	p
0	700	2,570	5,820				2413.6	1.3214
4	630	2,230	5,400				2170.4	1.3372
6	590	1,840	4,230	6,630			1804.5	1.2048
8	560	1,510	3,400	5,250	7,120		1541.5	1.1112
10	500	1,250	2,790	4,300	5,800		1308.2	1.074
15	390	900	1,900	2,920	3,930	4,930	951.69	1.0146

Travel Time (min) = $\sqrt[p]{\frac{distance}{k}}$

Source: Caterpillar Performance Handbook Edition 35



Productivity - Wheel Loaders

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Wheel Loader Specifications														
Description	**924G**	**928G**	**950G**	**966G**	**972G**	**972G (2)**	**980G**	**988G**	**988G(2)**	**990**	**992G**	**992G(2)**	**994D**	**L2350**
Payload Capacity (cy)														
Struck	2.2	2.5	3.46	4.46	4.71	4.71	6.34	6.9	6.9	9.5	13.2	13.2	18	
Heaped	2.7	3.25	4	5.25	5.5	5.5	7.25	8.33	8.33	11.25	16	16	22.5	
Average	2.45	2.875	3.73	4.855	5.105	5.105	6.795	7.615	7.615	10.375	14.6	14.6	20.25	53
Matched Truck	N/A	N/A	N/A	725	730	735	N/A	740	769D	773D	777D	785C	793C	797B
Average Cycle Time (min)	0.45	0.45	0.5	0.5	0.5	0.5	0.55	0.55	0.55	0.55	0.6	0.6	0.6	0.75
Passes to Fill Truck	N/A	N/A	N/A	3	4	5	N/A	4	3	4	5	6	7	5
Altitude Deration Factor	0.97	0.92	1	0.96	0.77	0.77	0.96	0.85	0.85	0.92	0.93	0.93	0.96	0.96
Operator Efficiency	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Job Efficiency	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Time to Fill Truck	N/A	N/A	N/A	1.44	1.54	1.93	N/A	1.87	1.4	2.02	2.79	3.35	4.03	3.6
Rolling Resistance**	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5

Loader matched to small truck fleet
Loader matched to medium truck fleet
Loader matched to large truck fleet
Loader matched to extra large truck fleet

**A firm, smooth, rolling roadway with dirt or light surfacing, flexing slightly under load or undulating, maintained fairly regularly, watered
992G (2) - can be used to load 785 with 6 passes

Source: Caterpillar Performance Handbook Edition 35; LeTourneau/actual Chilean mine operating data for L2350.

Wheeled Loaders	General Purpose	Spade Nose-Rock
928G	3.25 cubic yard	not available
966G	5.0 cubic yard	not available
972G	5.5 cubic yard	not available
988G	not available	8.3 cubic yard
992G	not available	16.0 cubic yard

note: capacities are 2:1 heaped, SAE standards
NOTES: Buckets for both Track Excavators and Wheel Loaders are offered by CECo & available for the rental rates quoted. Bucket sizes and capacities obtained from CATERPILLAR PERFORMANCE HANDBOOK, ED 34; Section 12, Wheel Loader and Section 4, Excavators

Bucket capacity and width dictated by material weight and configuration, ie., shot, loose, tight bank, stockpile, rock, etc. Typical Nevada applications were used to determine above bucket capacities as related to materials & densities. Job site specifics may alter specific bucket requirements. (Cashman Equipment, Elko, Nevada - February 21, 2005)

Productivity - Shovels

Shovel Specifications (Komatsu equivalent)					
Description	**PC2000**	**PC3000**	**PC4000**	**PC5500**	**PC8000**
Payload Capacity (cy)					
Struck	10.46	18.84	26.16	33.48	47.09
Heaped	14.39	25.9	35.97	46.04	64.75
Average	12.43	22.37	31.07	39.76	55.92
Matched Truck	740	777D	785C	793C	797B
Average Cycle Time (min)	0.49	0.49	0.59	0.59	0.69
Passes to Fill Truck	2.05	2.84	3.38	4.69	5.11
Altitude Deration Factor	1	1	0.9	1	1
Operator Efficiency	1	1	1	1	1
Job Efficiency	0.83	0.83	0.83	0.83	0.83
Time to Fill Truck	1.68	2.33	3.32	4.61	5.86
Rolling Resistance**	2.5	2.5	2.5	2.5	2.5

Shovel matched to small truck fleet
Shovel matched to medium truck fleet
Shovel matched to large truck fleet
Shovel matched to extra large truck fleet

**A firm, smooth, rolling roadway with dirt or light surfacing, flexing slightly under load or undulating, maintained fairly regularly, watered
992G (2) - can be used to load 785 with 6 passes

Source: Caterpillar Performance Handbook Edition 35; Komatsu actual Peruvian mine (Lagunas Norte) operating data for PC4000.

Productivity - Motor Graders

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Closure Cost Estimate
Productivity

Motor Grader Specifications				
Description	**120H**	**14G/H**	**16G/H**	**24M**
Grader Width (ft)	8	9.25	10.08	14.04
Blade Width (ft)	12	14	16	16
Ripper Width (7 shanks) (ft)	7.6	8.5	9.75	12.83
Road Maintence Speed (mph)				
Minimum	3	3	3	3
Maximum	9.5	9.5	9.5	9.5
Average	6.25	6.25	6.25	6.25
Hourly Production	33,000	33,000	33,000	33,000
Ripping Speed (mph)	1	1	1	1
Minimum	0	0	0	0
Maximum	3	3	3	3
Average	1.5	1.5	1.5	1.5
Altitude Deration Factor	0.96	0.98	0.98	0.98
Hourly Production (with job efficiency correction & altitude deration factors) (excluding manuever time)	6,311	6,442	6,442	6,442
Maneuver time per pass (min)	0.5	0.5	0.5	0.5
Operator Efficiency	1	1	1	1
Job Efficiency	0.83	0.83	0.83	0.83

Source: Caterpillar Performance Handbook Edition 35

Productivity - Excavators

Track Excavator Specifications							
Description	**312C**	**320C**	**325C**	**330C**	**345B**	**365BL**	**385BL**
Bucket Capacity (cy)	0.68	1.57	2.22	2.22	3	4.6	7.3
Fill Factor	0.9	0.9	0.9	0.9	0.9	0.9	0.9
Average Bucket Load (cy)	0.612	1.413	1.998	1.998	2.7	4.14	6.57
Soil Type	packed earth	hard clay	hard clay	hard clay	hard clay	hard clay	hard clay
Job Condition	med-hard	med-hard	med-hard	med-hard	med-hard	med-hard	med-hard
Cycle Times (minutes) - based on hard clay							
Load Bucket	0.07	0.09	0.09	0.09	0.13	0.1	0.19
Swing Loaded	0.06	0.06	0.06	0.07	0.07	0.09	0.06
Dump Bucket	0.03	0.03	0.04	0.04	0.02	0.04	0.03
Swing Empty	0.05	0.05	0.06	0.07	0.06	0.07	0.07
Total Cycle Time	0.21	0.23	0.25	0.27	0.28	0.3	0.35
Job Efficiency	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Operator Efficiency	1	1	1	1	1	1	1
Altitude Deration Factor	0.78	0.83	1	1	0.93	0.86	0.85
Corrected Productivity (LCY/hr)	113	254	398	369	447	591	795
Exploration Road Cycle Time [1] (min)	N/A	0.38	0.4	N/A	0.42	N/A	N/A
Exploration Road Corr Prod (LCY/hr)	N/A	154	249	N/A	298	N/A	N/A
Track Width (ft)	8.17	9.17	9.83	10.5	11.42	11.5	11.5
Ditch/Trench Excavation							
Bucket Capacity (cy)	0.42	0.58	0.88	0.89	2.09	3.27	2.75
Fill Factor	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Corrected Productivity (LCY/hr)	39	52	88	82	173	233	166

Source: Caterpillar Performance Handbook Edition 35

Track Excavators	Hvy Duty Rock	Extreme Service Exc (e.g. haulroad recontour)	Hvy Duty Trench
312C	30", 0.68 cubic yd	47", 0.94 cubic yd	22", .42 cubic yd
320C	30", 0.90 cubic yd	55.1", 1.57 cubic yd	23.6", .58 cubic yd
325C	36", 1.25 cubic yd	60", 2.22 cubic yd	30", .88 cubic yd
330C	36", 1.25 cubic yd	60", 2.22 cubic yd	30", .89 cubic yd
345B	43.2", 1.69 cubic yd	65", 3.0 cubic yd	48", 2.09 cubic yd
365BL	60", 3.25 cubic yd	82", 4.6 cubic yd	59", 3.27 cubic yd
385BL	85", 6.30 cubic yd.	96.0, 7.30 cubic yd	57", 2.75 cubic yd

Note: capacities are 2:1 heaped, SAE standards
NOTES: Buckets for both Track Excavators and Wheel Loaders are offered by CECo &

available for the rental rates quoted. Bucket sizes and capacities obtained from CATERPILLAR PERFORMANCE HANDBOOK, ED 34; Section 12, Wheel Loader and Section 4, Excavators
Bucket capacity and width dictated by material weight and configuration, ie., shot, loose, tight bank, stockpile, rock, etc. Typical Nevada applications were used to determine above bucket capacities as related to materials & densities. Job site specifics may alter specific bucket requirements (Cashman Equipment, Elko, Nevada - February 21, 2005)

(1) Exploration cycle time assumes feathering/smoothing performed by excavator

Concrete Breaking Production

Track Excavator w/Hammer Specifications			
Description	**325C**	**345B**	**385BL**
Hydraulic Hammer	H120D s	H160D s	H180D s
Material	reinforced concrete		
Min Shift Production (yd3/8hr)	160	300	350
Max Shift Production (yd3/8hr)	300	850	1,550
Avg Shift Production (8hr)	230	575	950
Job Efficiency	0.83	0.83	0.83
Altitude Deration Factor	1	0.93	0.85

Source: Caterpillar Performance Handbook Edition 35

Drill Hole Plugging Productivity

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Drill Hole Plugging Productivity		
Description	**Drill Rig**	**Pump Rig**
Move-to-hole, set-up, tear-down [1]	2	2
Trip in tremmie pipe [1]	500	
Pulling casing (threaded, not cemented)	200	
Single-pass perforating (water wells)	Productivity(all p	Passes
4	60	4
6	60	4
8	50	4
12	45	6
18	40	9
24	28	12
Perforation setup,trip in/out,tear-down	2	
Perforation tool cost (wear cost)[3]	2.5	
Inert Material Placement (backfill)		
Grouting/Cement [4] (cy/hr)		5.33
Cuttings (see below) (cy/hr)		3.5

Sources:
1. Drillers daily logs from Newmont, Barrick, New West Gold, Agnico Eagle, Idaho General Mines Inc.
2. Drillers daily logs from Newmont, Barrick, Target Minerals
3. Drillers daily logs from Newmont
4. WDC Exploration, Dec 2005

Sournce: WDC Exploration, Dec 2005

Cuttings Placement Productivity		
Shift productivity (Means 02210-700-0120; Crew B11M)	28	cy / shift
Shift length	8	hours
Estimated Hourly Productivity	3.5	cy / hour

Altitude Deration Table

	Elevation											
	0-760 m (0-2500')		760-1500 m (2500-5000')		1500-2300 m (5000-7000')		2300-3000 m (7500-10,000')		3000-3800 m (10,000-12,000')		3800-4600 m (12,500-15,000')	
MODEL	**CAT**	**User**	**CAT**	**User**	**CAT**	**User**	**CAT**	**User**	**CAT**	**User**	**CAT**	**User**
Bulldozers												
D6R	100		100		100		100		92		84	
D6R w/ Winch	100		100		100		100		92		84	
D7R	100		100		100		100		100		96	
D8R	100		100		100		93		85		77	
D9R	100		100		100		93		85		77	
D10R	100		100		100		100		97		89	
D11R	100		100		100		93		85		77	
Wheeled Dozers												
824G	100		100		100		100		92		84	
834G	100		100		100		100		92		84	
844	100		100		100		100		100		96	
854G	100		100		100		93		85		77	
Graders												
120H	100		100		100		100		96		93	
14G/H	100		100		100		100		98		96	
16G/H	100		100		100		100		98		96	
24M	100		100		100		100		98		96	
Excavators												
312C	100		100		100		83		78		73	
320C	100		100		90		87		83		76	
325C	100		100		100		100		100		100	
330C	100		100		100		100		100		100	
345B	100		100		100		100		93		93	
365BL	100		100		100		86		86		86	
385BL	100		100		100		93		85		78	

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Closure Cost Estimate
Productivity

Scrapers												
631G	100		100		100		100		97		90	
637G	100		100		100		95		87		80	
Loaders												
924G	100		100		100		100		97		89	
928G	100		100		100		100		92		85	
950G	100		100		100		100		100		100	
966G	100		100		100		100		96		88	
972G	100		100		92		84		77		70	
980G	100		100		100		100		96		88	
988G	100		100		100		95		85		75	
990	100		100		100		100		92		85	
992G	100		100		100		100		93		87	
994D	100		100		100		100		96		88	
L2350	100		100		100		100		96		90	
Shovels												
PC2000	100		100		100		100		96		90	
PC3000	100		100		100		100		96		90	
PC4000	100		100		100		100		96		90	
PC5500	100		100		100		100		96		90	
PC8000	100		100		100		100		96		90	
Other Equipment												
420D 4WD Backhoe	99		97		95		91		91		91	
428D 4WD Backhoe	99		97		95		91		91		91	
CS533E Vibratory Roller	100		100		98		95		91		86	
CS633E Vibratory Roller	100		100		100		100		91		86	
CP533E Sheepsfoot Compactor	100		100		98		95		91		100	
CP633E Sheepsfoot Compactor	100		100		100		100		91		86	
Light Truck - 1.5 Ton												
Supervisor's Truck												
Flatbed Truck												
Air Compressor + tools												
Welding Equipment												
Heavy Duty Drill Rig												
Pump (plugging) Drill Rig												
Concrete Pump												
Gas Engine Vibrator												
Generator 5KW												
HDEP Welder (pipe or liner)												
5 Ton Crane												
20 Ton Crane												
50 Ton Crane												
120 Ton Crane												
Trucks												
725	100		100		100		100		100		95	
730	100		100		100		100		100		95	
735	100		100		100		100		99		91	
740	100		100		100		100		99		91	
769D	100		100		100		93		88		82	
773E	100		100		100		100		93		85	
777D	100		100		100		100		93		87	
785C	100		100		100		93		86		80	
793C	100		100		100		100		100		93	
797B	100		100		100		100		100		93	
613E (5,000 gal) Water Wagon	100		100		100		100		95		87	
621E (8,000 gal) Water Wagon	100		100		100		100		97		90	
777D Water Truck	100		100		100		100		93		87	
785C Water Truck	100		100		100		93		86		80	
Dump Truck (10-12 yd^3) (5)												

Notes:
User entered deration value will override values from CAT Performance Handbook, except L2350 Loader: data from actual mine performance in Chile.
Komatsu altitude deration assumed from LeTourneau L2350

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Closure Cost Estimate
Seed Mixture

Project Name: AM-13 BP2020 Financial warranty calculation - Reclamation Plan
Date of Submittal: December 2019
File Name: SRCE_AM13_FW_V4.xlsm
Model Version: Version 1.4.1
Cost Data: User Data
Cost Data File: SRCE_Cost_data-USR_1_12_DRMS_BONDING.xlsm
Cost Estimate Type: Surety Cost Basis: CC&V Bonding

Seed Mixture

Common Name	Scientific Name	Species Number of Seeds / lb	Species % in Mix	PLS/acre	Cost/Lb	Cost/Acre
Grasses						
Forbs						
Shrubs						
Total				**$0.00**		**$0.00**

Source:

Notes:

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Closure Cost Estimate
User 2

Project Name: AM-13 BP2020 Financial warranty calculation - Reclamation Plan
Date of Submittal: December 2019
File Name: SRCE_AM13_FW_V4.xlsm
Model Version: Version 1.4.1
Cost Data: User Data
Cost Data File: SRCE_Cost_data-USR_1_12_DRMS_BONDING.xlsm
Cost Estimate Type: Surety Cost Basis: CC&V Bonding

DISTURBANCE SUMMARY

Description	Total Regrade or Haul Volume cy	Total Cover Volume cy	Total Growth Media Volume cy	Total Surface Area acres
Waste Rock Dumps	11,936,017		1,354,516	1,679
Tailings Impoundments				
Heap Leach Pads	5,667,906		973,655	1,207
Open Pits		0	0	
Quarries & Borrow Pits				
Roads		0		
Landfills				
Buildings		65,252		12
Yards			1,154,340	1,550
Ponds	166,414	0	9,383	12
Exploration Roads		0		
Exploration Trenches		0	0	
Diversion Ditches	0	0	0	
Sediment Ponds			0	
Generic Haulage/Backfill Waste Dumps				0
Generic Haulage/Backfill Heap Leach Pads	24,884,419	0	0	0
Adit/Decline Backfilling1		0	0	0
Shaft Backfilling		0	0	0

these cells are linked to 'reclamation quantities' tab in SRCE

		Acres
Foundations/Buildings Demo	17,020,302	cubic feet
Drainage & Sediment Control-Diversion Ditches Excavation/Revegetation		cubic yards

	Number of
mob/demob	1
Other Demolition	1
Tank Demolition	0
equipment removal	0
substations	0
surplus water disposal	1
heaps	2
tails	0

	total unit
Exploration Hole Abandonment	0
Production Well Abandonment	0
Monitor Well Abandonment	71
misc. cost- Fence removal (feet)	12285
misc. cost- Fence installation (feet)	22542
misc. cost- culvert & buried pipe removal (feet)	0
misc. cost- surface pipe removal (feet)	44904
misc. cost- powerline & substation removal (miles)	9.13
misc. cost- rip-rap & rock lining (area S.Y.)	
monitoring-reclamation monitoring & maintenance	1
monitoring-water quality monitoring	1
liquid waste disposal (gallons)	0
solid waste disposal (cuyds)	0
tire disposal (number of)	50

Tree Planting (number of)	2,033

these cells are linked to respective tabs in SRCE to get quantities

Closure Cost Estimate
User 3

Project Name: AM-13 BP2020 Financial warranty calculation - Reclamation Plan
Date of Submittal: December 2019
File Name: SRCE_AM13_FW_V4.xlsm
Model Version: Version 1.4.1
Cost Data: User Data
Cost Data File: SRCE_Cost_data-USR_1_12_DRMS_BONDING.xlsm
Cost Estimate Type: Surety Cost Basis: CC&V Bonding

Weed Treatment

Cost Per Year	$35,000	Weed Treatment 5 Years	$175,000

Closure Cost Estimate
User 8

Project Name: AM-13 BP2020 Financial warranty calculation - Reclamation Plan
Date of Submittal: December 2019
File Name: SRCE_AM13_FW_V4.xlsm
Model Version: Version 1.4.1
Cost Data: User Data
Cost Data File: SRCE_Cost_data-USR_1_12_DRMS_BONDING.xlsm
Cost Estimate Type: Surety Cost Basis: CC&V Bonding

Closure Cost Estimate
User 10

Project Name: AM-13 BP2020 Financial warranty calculation - Reclamation Plan
Date of Submittal: December 2019
File Name: SRCE_AM13_FW_V4.xlsm
Model Version: Version 1.4.1
Cost Data: User Data
Cost Data File: SRCE_Cost_data-USR_1_12_DRMS_BONDING.xlsm
Cost Estimate Type: Surety Cost Basis: CC&V Bonding

Rinsing Cost Rate Update Summary - VLF1

Inputs			
Item	**Unit**		**Source**
VLF	Tons	371,890,097	BP19
water	$ Gallon	$0.00323	From Water Specialist 3/4/2019 for BP2020
KWH	$	$0.12	BP2020
Cost of H2O2	$/per gallon	$3.36	BP19 + 3%
Operator	$/hr.	$55.95	SRCE_Cost_Data_file_2020BP
Mechanic	$/hr.	$57.46	SRCE_Cost_Data_file_2020BP
Pump maintenance	$/month	$14,689	Process Maintenance 4/2019
Generator maintenance	$/month	$773	Steffens + 3%
drip irrigation supplies	$/month	$20,600	Steffens + 3%
Support vehicle	$/month	$618	Steffens + 3%

Assumptions			
Item	**Unit**		**Source**
Density	tons/cy	1.485	Process Ops/Steffens
pore volume	%	30	From Process Ops
Barren & Preg Pu	GPM	15,000	From Process Ops
Barren & Preg KV	KWH /day	123,193	From Process Ops Budget option 1B scalled to 15,000gpm
Make up water	GPM	900	from Steffens verfied by Process Ops

Outputs		
Item	**Unit**	
Cubic Yards	yards	250,431,042
Rinse Volume	Yards	75,129,313
Rinse Volume	Gallons	15,175,144,449
One Rinse Cyle Time	Day	703
One Rinse Cyle Time	30-day Month	23
All Rinse Time	Day	2108
All Rinse Time	30-day Month	70
All Rinse Time	Years	5.85
First Rinse	$	$20,843,995
Second Rinse	$	$20,843,995
Third Rinse	$	$19,603,000
All three Rinses	$	$61,290,991
Discount for 1st Operational Rinse	$	$40,446,996

							First Rinse	Second Rinse	Third Rinse
Item	**Quantity**	**Unit**	**Assumptions**	**Equipment**	**Labor**	**Materials**	**Total**	**Total**	**Total**
Make up water	**900**	**Gallons**				**$2,940,943**	**$2,940,943**	**$2,940,943**	**$0**
Barren& Preg Power Cost	123,193	KWH day				$10,385,953	$10,385,953	$10,385,953	$10,385,953
H2O2	362,000	Gallons				$1,215,524			$1,215,524
Drip Irrigation supplies	23.41843279	Month				$482,419.72	$482,420	$482,420	$482,420
Operators	12	Per 24 hour	12 hour shift		$5,660,329		$5,660,329	$5,660,329	$5,660,329
Mechanics	2	Per 24 hour	12 hour shift		$968,849		$968,849	$968,849	$968,849
H202 Mechanic	1	Per 12 hour	12 hour shift		$484,424				$484,424
Pump Maintenance	23.41843279	Month		$343,993			$343,993	$343,993	$343,993
Generator Maintenance	23.41843279	Month		$18,091			$18,091	$18,091	$18,091
Support Vehicle	3	Each		$43,418			$43,418	$43,418	$43,418

First and Second Rinse

			First Rinse	Second Rinse	Third Rinse
Equipment	**Labor**	**Materials**	**Total**	**Total**	**Total**
$811,004	$13,742,779	$25,893,212	$20,843,995	$20,843,995	$19,603,000

	Equipment	**Labor**	**Materials**
All Rinses	$1,216,506	$20,371,957	$39,702,528

Closure Cost Estimate
User 11

Project Name: AM-13 BP2020 Financial warranty calculation - Reclamation Plan
Date of Submittal: December 2019
File Name: SRCE_AM13_FW_V4.xlsm
Model Version: Version 1.4.1
Cost Data: User Data
Cost Data File: SRCE_Cost_data-USR_1_12_DRMS_BONDING.xlsm
Cost Estimate Type: Surety Cost Basis: CC&V Bonding

Rinsing Cost Rate Update Summary - VLF2

Inputs			
Item	**Unit**		**Source**
VLF	Tons	252,000,000	BP19 + 44MT (Phase 3)
water	$ Gallon	$0.00323	From Water Specialist 3/4/2019 for BP2020
KWH	$	$0.12	BP2020
Cost of H2O2	$/per gallon	$3.36	BP19 + 3%
Operator	$/hr.	$55.95	SRCE_Cost_Data_file_2020BP
Mechanic	$/hr.	$57.46	SRCE_Cost_Data_file_2020BP
Pump maintenance	$/month	$14,689	Process Maintenance 4/2019
Generator maintenance	$/month	$773	Steffens + 3%
drip irrigation supplies	$/month	$20,600	Steffens + 3%
Support vehicle	$/month	$618	Steffens + 3%

Assumptions			
Item	**Unit**		**Source**
Density	tons/cy	1.485	Process Ops/Steffens
pore volume	%	28	From Process Ops
Barren Pump Fl	GPM	16,500	From Process Ops
Barren KWH	KWH /day	67,608	From Process Ops Budget
Preg Pump flow	GPM	16,500	From Process Ops
Preg Pump KHW	KWH /day	7159	From Process Ops Budget
Make up water	GPM	900	from Steffens verfied by Process Ops

Outputs		
Item	**Unit**	
Cubic Yards	yards	169,696,970
Rinse Volume	Yards	47,515,152
Rinse Volume	Gallons	9,597,442,909
One Rinse Cyle	Day	404
One Rinse Cyle	30-day Month	13
All Rinse Time	Day	1212
All Rinse Time	30-day Month	40
All Rinse Time	Years	3.4
First Rinse	$	$9,724,783
Second Rinse	$	$9,724,783
Third Rinse	$	$9,527,931
All three Rinses	$	$28,977,497
Discount for 1st	$	$19,252,714

							First Rinse	Second Rinse	Third Rinse
Item	**Quantity**	**Unit**	**Assumptions**	**Equipment**	**Labor**	**Materials**	**Total**	**Total**	**Total**
Make up water	900	Gallons				$1,690,895	$1,690,895	$1,690,895	$0
Barren Power Cost	67,608	KWH day				$3,277,091	$3,277,091	$3,277,091	$3,277,091
Preg Power costs	7,159	KWH day				$347,011	$347,011	$347,011	$347,011
H2O2	362,000	Gallons				$1,215,524	$0	$0	$1,215,524
Drip Irrigation supplies	13.46442608	Month				$277,367	$277,367	$277,367	$277,367
Operators	12	Per 24 hour	12 hour shift		$3,342,237		$3,342,237	$3,342,237	$3,342,237
Mechanics	2	Per 24 hour	12 hour shift		$557,039		$557,039	$557,039	$557,039
H202 Mechanic	1	Per 12 hour	12 hour shift		$278,520		$0	$0	$278,520
Pump Maintenance	13.46442608	Month		$197,779			$197,779	$197,779	$197,779
Generator Maintenance	13.46442608	Month		$10,401			$10,401	$10,401	$10,401
Support Vehicle	3	Each		$24,963			$24,963	$24,963	$24,963

First and Second Rinse			First Rinse	Second Rinse	Third Rinse
Equipment	**Labor**	**Materials**	**Total**	**Total**	**Total**
$466,287	$8,077,072	$10,709,355	$9,724,783	$9,724,783	$9,527,931

	Equipment	**Labor**	**Materials**
All Rinses	$699,430	$11,976,348	$16,301,718

Closure Cost Estimate
User 18

Project Name: AM-13 BP2020 Financial warranty calculation - Reclamation Plan
Date of Submittal: December 2019
File Name: SRCE_AM13_FW_V4.xlsm
Model Version: Version 1.4.1
Cost Data: User Data
Cost Data File: SRCE_Cost_data-USR_1_12_DRMS_BONDING.xlsm
Cost Estimate Type: Surety Cost Basis: CC&V Bonding

Drill Cost Calcuator

- Minimum of five holes are needed to perforate each of the PSSAs liners at the base of all Phases in VLFs.
- Assuming one extra hole for contingency we plan for (six) 1,000 foot holes to be drilled, at a cost of $60/ft = *$360,000*
- Number of casing lengths needed to complete (six) 1,000 ft holes is 6,000/20 = 300 sticks of casing needed. 300*207 = *$62,100*
- **Adding casing and drilling costs = $422,100**
- **If we want contingency of 15% total equals = $485,415**

	2017	2018	BP2020
Cost of drilling VLF liner perforation =	**$485,415**	$495,123	$509,977.00
	$2,017.00	$2,018.00	$2,079
Materials =	$71,415.00	$72,843.30	$75,029
Labor =	$207,000.00	$211,140.00	$217,474
Equipment =	$207,000.00	$211,140.00	$217,474
	$485,415.00	$495,123.30	$509,977

Closure Cost Estimate
User 17

Project Name: AM-13 BP2020 Financial warranty calculation - Reclamation Plan
Date of Submittal: December 2019
File Name: SRCE_AM13_FW_V4.xlsm
Model Version: Version 1.4.1
Cost Data: User Data
Cost Data File: SRCE_Cost_data-USR_1_12_DRMS_BONDING.xlsm
Cost Estimate Type: Surety Cost Basis: CC&V Bonding

Closure Cost Estimate
User 16

Project Name: AM-13 BP2020 Financial warranty calculation - Reclamation Plan
Date of Submittal: December 2019
File Name: SRCE_AM13_FW_V4.xlsm
Model Version: Version 1.4.1
Cost Data: User Data
Cost Data File: SRCE_Cost_data-USR_1_12_DRMS_BONDING.xlsm
Cost Estimate Type: Surety Cost Basis: CC&V Bonding

Tree and Shrub Cost Calculator

Shrubs and Trees								2015 costs	6% adj to 2017 c	2% adj to 2018 c	adjusted 3% 2019 (BP2020)
Gooseberry Currant				$	6.78	50	per acre	**$ 338.90**	$359.23	$366.42	$377.41
Rosa Woodsii (wild rose)				$	4.11	50	per acre	**$ 205.27**	$217.59	$221.94	$228.59
Englemann Spruce				$	5.82	25	per acre	**$ 145.57**	$154.30	$157.39	$162.11
Bristlecone Pine				$	9.24	25	per acre	**$ 230.93**	$244.78	$249.68	$257.17
						Cost of Shrub/Tree Planting per acre =		**$ 920.66**	$975.90	$995.42	$1,025.28

Closure Cost Estimate
User 15

Project Name: AM-13 BP2020 Financial warranty calculation - Reclamation Plan
Date of Submittal: December 2019
File Name: SRCE_AM13_FW_V4.xlsm
Model Version: Version 1.4.1
Cost Data: User Data
Cost Data File: SRCE_Cost_data-USR_1_12_DRMS_BONDING.xlsm
Cost Estimate Type: Surety Cost Basis: CC&V Bonding

Assumptions: 50% of all tree thinning is already completed in the Globe Hill area by the end of 2017). Schist Island Area comprising of remaining 50% to be cleared.

Source: RS Means 2017

	rent/week	
Feller Buncher	2218.32	
# of weeks	2.571429	(assume 3 weeks rental)
cos/hr rent	46.22	
operating c	43.28	
Skid Steer	736.66	
cos/hr rent	15.35	
operating c	17.82	

3.1 Tree Thinning Cost Estimate

18 days for thinning (assumed) and 8 hours per day in the field
Total Time needed = 8 x 18 = 144 hours with each machine and an operator

Feller Buncher ($46.22/hr machine rental + $50.77/hr operator + $43.28/hr maintenance and fuel) = $140.27/hr * 144 hrs = $20,198 (Source:RS Means, 2017)

Skid Steer (15.35/hr machine rental + $50.77/hr operator + $17.82/hr maintenance and fuel) = $83.94/hr * 144 hrs = $12,087 (Source:RS Means, 2017)

Truck to Haul Trees = (35 Ton Haul Truck(Cat 735) @ $126.97/hr total rate + 50.77/hr operator)= $177.74/hr * 144 hrs = $25,595 (Source: Equipment Costs and Labor Rates tabs)

Road Building and Maintenance (D7 Dozer @$84.78/hr total rate + $50.77 operator)= $135.55/hr * 70 hours = $9,489 (Source: Equipment Costs and Labor Rates tabs)

Supervisor Costs = $78.92/hr for construction supervision of crew * 140 hrs = $11,049 (Source: Labor Rates tab)

Contractor's Thinning Costs = $20,198+$12,087+$25,595+$9,489+$11,049 = $78,418

Oversight and Direction of Field Activities = assume 10% of Contractor's Costs = $7,842

Contingency (assumed to be 15% of Contractor's Costs) = (0.15 x $78,418) = $11,763

Total Tree Thinning Costs = $78,418 + $7,842 + $11,763 = $ 98,023

Tree Thinning

	Equipmt	Labor	Material
	$ 20,198		
	$ 12,087		
	$ 25,595		
	$ 9,489		
	$ 11,049		
Sub-Total	$ 78,418	$ 19,605	$ -
2017 Chk =	$ 98,023		

3.2 Harvesting of Salvageable Trees and Hauling to Nursery (Source: Equipment Costs and Labor Rates tabs, except where noted)

Based on Randy Mandel's experience with similar projects:
3000 Trees Total to be harvested (3000 additional trees will be purchased or dug up elsewhere to make the total of 6000 trees needed)
Dig up trees with a mini-excavator *(not proposing to use a conventional tree spade)*
$5 per tree for containers and supplies like burlap and ties
40 trees can be harvested per day with the mini-excavator and a two man crew
Shipping offsite to a nursery in either Colorado Springs or Canon City for care until needed in reclamation
Mini-excavator (3/4 CY) at $5,616.90/month rental = $5,616.90/ 160 hrs = $35.10/hr +$33.09/hr operating cost = $68.19 total cost (RS Means, 2017)
Operator for excavator @ $50.77/hr
Total cost for mini-ex = $68.19+$50.77= $118.96/hr
3000 trees / 40 trees per day = 75 days x 8 hrs/day = 600 hours
600 hrs x $118.96/ hr = $71,376 for Mini-Ex + operator digging trees
Extra field hand at $50.77/hr for 600 hrs = $30,462 (holding tree & wrapping with burlap)
Flat bedTruck to haul trees at $9.38/hr total cost + $50.77/hr operator = $60.15/hr * 300 hrs= $18,045 (assume truck needed about half-time)
Supervisor cost = $78.92/hr x 600 hrs = $47,352
Supplies @ $5/tree for burlap and plastic containers: 3000 x $5 = $15,000
Contingency figured at 15% of contractor's costs = [$71,376 + $18,045 + $47,352 + $15,000] x 0.15 = $22,766

Therefore the total harvesting cost would be on the order of: $71,376 digging + $30,462 field hand + $18,045 hauling + $47,352
$ 205,001

Harvesting and Hauling Trees

	Equipmt	Labor	Material
	$ 71,376		$ 15,000
	$ 18,045		
	$ 22,766		
Sub-Total	$ 112,187	$ 77,814	$ 15,000
chk =	$ 205,001		

3.3 Maintenance of Trees at Nursery

Assume trees can be "cared for" at a cost of approximately $10 / yr per tree for a total of 4 yrs (arbitrary), then the cost of maintenance would be 3000 trees x $10 / yr x 4 yrs = $120,000.

Total Maint. $ for Harvested Trees at Commercial Nursery : $ 120,000

Nursery Maintenance

	Equipmt	Labor	Material
	$ 80,000	$ 25,000	$ 15,000
Sub-Total chk=	$ 120,000		

3.4 Retrieving Trees from Nursery, Hauling to Site, and Installing Gator Bags (water release), Buying 3000 additional trees from Nursery, Re-planting in Reclaimed Areas (Source: Equipment Costs and Labor Rates tabs, except where noted)

Buying 3000 nursery trees at $27.25/ tree x 3000 trees = $81,750 from Heidrich's Colorado Tree Farm Nursery at wwwcoloradotreefarmnursery.com
Planting rate for trees is 4 trees per hour for salvaged trees and 5 trees per hour for purchased trees.
Therefore, it will take (3000 trees / 4 per hour) + (3000 trees / 5 per hour) = 1350 hours with a 4 man crew and an excavator to dig holes and a truck to haul them to the site.
320C Excavator $59.53/hr total cost + $50.77/hr operator = $110.53/hr
Flat bedTruck to haul trees at $9.38/hr total cost + $50.77/hr operator = $60.15/hr for half the total hours or roughly 700 hours
2 Extra Hands on Ground to Plant and Position Trees @ $50.77/hr
Supervisor @$78.92/hr
20 gallon Gator Bag Cost ($21 each) from Sprinkler Supply Store at www.sprinklersupplystore.com.
Cost Estimate = (3000 new trees x $27.25/tree) + (1350 hrs x $110.53/hr planting) + (700 hrs x $60.15/hr trucking) + (1350 x $101.54 field hands) + (1350 x $78.92 supervisor) + ($21 each gator bags x 6000 trees) + (water truck to charge gator bags at 700 @$50.77/hr) + (cost of water is 0.00287/gal * 1,056,000 gallons) = $681,262
New Trees = $81,750
Planting = $149,216
Trucking = $42,105
Field labor = $137,079
Supervision = $106,542
Gator bags = $126,000
Water Truck = $35,539
Water cost = $3,031
Contingency @15% = ($681,262 x 0.15) = $102,189

Total Tree Planting Cost & Purchasing All Supplies & Watering = $ 783,451

Planting on Reclaimed Areas

	Equipmt	Labor	Material
	$ 149,216	$ 137,079	$ 81,750
	$ 42,105	$ 106,542	$ 126,000
		$ 35,539	$ 3,031
		$ 102,189	
Sub-Total =	$ 191,321	$ 381,349	$ 210,781
chk =	$ 783,451		

4.1 Consultation and Oversight of Tree Planting Effort

Assume a professional will need to be consulted and be in the field a total of 50 days during the required 1350 man-hours for planting to provide guidance and oversight.

Cost of consultation = (50 days x 8 hrs/day x $150/hr labor) + ($250/day x 50 days expenses) = $72,500 **$ 72,500**

Oversight of Planting Effort

	Equipmt	Labor	Material
	$ -	$ 60,000	$ 12,500
Sub-Total =	$ -	$ 60,000	$ 12,500
chk =	$ 72,500		

4.2 Re-planting at 10% of 6000 Trees

Using the above cost per tree for planting and watering for 60 trees (10% of 6000 originally planted) =
60 x $129.98 = $7,799 **$ 7,799**

Re-Planting Effort

	Equipmt	Labor	Material
	$ -	$ 3,032	$ 4,767
Sub-Total =	$ -	$ 3,032	$ 4,767
chk =	$ 7,799		

4.3 Evaluation of Tree Stands, Meetings with DRMS, and Report Preparation

Assume a professional will need 100 hours of additional work time to prepare reports and meet with DRMS in the field to evaluate and explain the tree planting exercise.
100 hours x $150/hour = $15,000 **$ 15,000**

Evaluation, Meetings, and Reports

	Equipmt	Labor	Material
	$ -	$ 15,000	
Sub-Total =	$ -	$ 15,000	$ -
chk =	$ 15,000		

	Equipment	Labor	Materials	Total	Chk Total
Grand Total Viewshed Conservation Plan =	$ 461,926	$ 581,800	$ 258,048	$ 1,301,774	$ 1,301,774
				$ 1,327,809	for 2018 with 2% escalation
				$ 1,367,643.76	3% for BP2020

ATTACHMENT 3

Table U-2- Environmental Protection Facilities

Facility	Designated Chemicals/Acid Mine Drainage	Sampling Frequency	Release Response Procedures
AGVLF (Liner and Toe Berms)	Sodium Cyanide, Dilute Sodium Cyanide Solution, Sodium Hydroxide, Hypochloric Acid	Weekly inspections of the Leak Detection System, Quarterly sampling of down-gradient monitoring wells	Outlined in ERP
ADR1	Sodium Cyanide, Dilute Sodium Cyanide Solution, Sodium Hydroxide, Hypochloric Acid	Weekly inspections of the Leak Detection System, Quarterly sampling of down-gradient monitoring wells	Outlined in ERP
AGVLF Underdrain/Pumpback Sysem	Possible Sodium Cyanide, Dilute Sodium Cyanide Solution, Sodium Hydroxide, Hypochloric Acid	Weekly inspections. Sampled if flow is observed in underdrain	Outlined in ERP
Enrichment Building & Assay Laboratory	Sodium Cyanide, Dilute Sodium Cyanide Solution, Sodium Hydroxide, Hypochloric Acid	Weekly inspections of the Leak Detection System, Quarterly sampling of down-gradient monitoring wells	Outlined in ERP
Off-liner Process Pipelines	Dilute Sodium Cyanide Solution	Weekly inspections of the Leak Detection System,Quarterly sampling of down-gradient monitoring wells	Outlined in ERP

PSES Liner	Dilute Sodium Cyanide Solution	Weekly inspections of the Leak Detection System,Quarterly sampling of down-gradient monitoring wells	Outlined in ERP
SGVLF (Liner and Toe Berms)	Sodium Cyanide, Dilute Sodium Cyanide Solution, Sodium Hydroxide, Hypochloric Acid	Weekly inspections of the Leak Detection System, Quarterly sampling of down-gradient monitoring wells	Outlined in ERP
SGVLF Underdrain Pond	Possible Sodium Cyanide, Dilute Sodium Cyanide Solution, Sodium Hydroxide, Hypochloric Acid	Weekly inspections	
HGM Liner	Sodium Cyanide, Dilute Sodium Cyanide Solution, Sodium Hydroxide, Potassium Amyl Xanthate, Dithiophosphate, Frother	Quarterly sampling of down-gradient monitoring wells	Outlined in ERP
ESP	Dilute Sodium Cyanide Solution	Quarterly sampling of down-gradient monitoring wells	Outlined in ERP

ATTACHMENT 4

NewFields	CLIENT Newmont Cripple Creek & Victor Gold Mine	PROJECT NO 475.0106.033
PROJECT: VLF2 Phase 3		
TITLE: TECHNICAL SPECIFICATIONS –EARTHWORKS		**SPECIFICATION NO.** **02200 EARTHWORKS REV22**

REV	DATE	PAGES	APPROVALS			REMARKS
			AUTHOR	REVIEW	CLIENT	
0	12/05/2019	21	JNM	KCW		Issued for Permitting
1	7/24/2020	21	JNM	KCW		Re-Issued for Permitting
2	12/01/2020	21	JNM	KCW		Re-Issued for Permitting

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SECTION 02200.0 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, 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 01050.0 - Staking and Construction Certification Documentation
- Section 02776.0 - Geomembrane
- Section 02777.0 - 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, 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 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. 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, and the 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
No. 200	0 – 25
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
No. 200	0 – 25
Plasticity Index: 30 maximum	

2. 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**.

3. 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	

4. 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	

5. 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	

6. 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	

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 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 3.6.10 of Section 2200, 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 Part 3.06 of the SPECIFICATIONS. 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. Prior to the commencement of Overburden Fill placement, a test pad, developed following a method compaction technique, shall be constructed to determine the minimum number of passed are required from a loaded haulage truck to maximize the potential compaction. The number of passes and loose lift thickness shall be subject to **CERTIFYING ENGINEER's** approval 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.

4. Maximum rock size for overburden fill shall be 5 feet.

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).
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).
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

5. Leak Detection Fill shall be placed in the Leak Detection Trenches as shown on the DRAWINGS.
6. **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 02776.0 and 02777.0 of these 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 02776.0 and 02777.0 of these 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 recompaction 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 reworked 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, 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 02776.0 and 02777.0 of these 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 02776.0 and 02777.0 of these 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. 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.**

J. Granular Filter Material

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

K. 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 recompaction 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, 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.**

ATTACHMENT 5

NewFields	CLIENT Newmont Cripple Creek & Victor Gold Mine	PROJECT NO 475.0106.033
PROJECT: VL2 Phase 3		
TITLE: TECHNICAL SPECIFICATIONS –UNDERGROUND WORKING REMEDIATION		**SPECIFICATION NO.** **02210 UNDERGROUND WORKINGS**

REV	DATE	PAGES	APPROVALS			REMARKS
			AUTHOR	REVIEW	CLIENT	
0	12/01/2020	3	JNM	KCW		Issued for Permitting

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SECTION 02210.0 UNDERGROUND WORKING REMEDIATION

1. PART 1: GENERAL

1.1. Summary

This SPECIFICATION describes the activities associated with the remediation of the underground workings located within the limits of the valley leach facility.

1.2. Related Sections

Refer to the following Sections for related work:

- Section 02200.0 - Earthworks
- Section 03300.0 - Cast In Place Concrete
- Section 03310.0 - Cemented Rockfill
- Section 03320.0 - Concrete Plug
- Section 03330.0 - Flowable Fill

1.3. Quality Assurance

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

B. All CQA soils testing (both field and laboratory testing) will be the responsibility of CQA Monitor, 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**.

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

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

1.4. Submittals

A. **CONTRACTOR** shall provide method of Coarse Shaft Backfill and Select Structural Fill placement.

B. **CONTRACTOR** shall provide method of compacting Native material, Coarse Shaft Backfill, and Select Structural Fill, to meet the compaction requirements identified in Sections 3.02 and 3.03.

C. **CONTRACTOR** shall provide blasting design for approval by **MANAGER**.

2. PART 2: PRODUCTS

2.1. Materials

A. Fill materials will consist of Structural Fill, Select Structural Fill, and Coarse Shaft Backfill identified in Section 2200.0, Cast-In-Place Concrete identified in Section 3300.0, Cemented Rockfill identified in Section 3310.0, Concrete Plug identified in Section 3320.0, and Flowable Fill identified in Section 3330.0.

3. PART 3: EXECUTION

3.1. Excavation

A. 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.

B. **CONTRACTOR** shall conduct all excavation and shoring operations in compliance with applicableColorado State and Federal government laws and regulations.

3.2. Fill Placement

A. Structural Fill

1. **CONTRACTOR** shall condition, place and compact Structural Fill by a method compaction technique, as discussed in Section 2200.0.

   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**.

B. Select Structural Fill

1. **CONTRACTOR** shall condition and compact the Select Structural Fill using a method specification on 3-foot thick lifts that result in a firm surface that will be approved by the **CERTIFYING ENGINEER**.

C. Coarse Shaft Backfill

1. Coarse Shaft Backfill shall be placed in the underground workings as part of remediation, as shown in the DRAWINGS.
2. **CONTRACTOR** shall compact and condition the final surface of the Coarse Shaft Backfill using a method specification that results in a firm surface that will be approved by **CERTIFYING ENGINEER.**

D. Cast-in-Place Concrete

1. Cast-in-Place Concrete shall be placed in the underground working as part of remediation, as show in the DRAWINGS.

E. Cemented Rockfill

1. Cemented Rockfill shall be placed in the underground working as part of remediation, as show in the DRAWINGS.

F. Concrete Plug

1. Concrete Plug shall be placed in the underground working as part of remediation, as show in the DRAWINGS.

G. Flowable Fill

1. Flowable Fill shall be placed in the underground working as part of remediation, as show in the DRAWINGS.

3.3. Native Material

For the remediation of shafts greater than 25 feet, which are currently backfilled with native material, **CONTRACTOR** shall excavate the current native backfill to a depth of 25 feet below Soil Liner Fill subgrade elevation. The surface of the native material at this elevation will then be compacted using a methodspecification that results in a firm surface that will be approved by **CERTIFYING ENGINEER. CONTRACTOR** shall then remediate the underground working using Coarse Shaft Backfill, Cement Plug,and Cemented Rockfill as shown on the DRAWINGS.

3.4. Blasting

The **CONTRACTOR** shall compact the surface of the area that has been blasted. If the blasted surface is below the Soil Liner subgrade elevation, the **CONTRACTOR** shall compact the blasted surface using a method specification approved by the **CERTIFYING ENGINEER**, and then remediate according to the DRAWINGS to achieve the design grades and elevations. If the blasted surface is above the Soil Liner subgrade elevation, the **CERTIFYING ENGINEER** assess the foundation conditions and recommend whether the **CONTRACTOR** shall over excavate and backfill with Cemented Rockfill and Structural Fill, or if the **CONTRACTOR** shall remove excess material and compact the final grade surface using a method specification approved by the **CERTIFYING ENGINEER**.

ATTACHMENT 6

Wildlife Protection Plan

Cripple Creek & Victor Gold Mining Co. Cresson Project

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1 Introduction

All aspects of the Cripple Creek and Victor Mine (CC&V) operations shall take into account the safety and protection of wildlife on the mine site, at processing sites, and along all access roads to the mine site, with attention given to periods in the life cycle of those species which may require special consideration (e.g., elk calving, migration routes, and peregrine falcon nesting).

The following Wildlife Protection Plan provides the procedures that CC&V uses to ensure wildlife safety and compliance with Colorado Mineral Rule 6.4.21(18) and 3.1.8(1). As defined in CC&V's Operating and Reclamation Cresson Project Permit M-1980-244, the post mining land use for CC&V has been established and approved for wildlife habitat and livestock grazing (rangeland). The purpose of this plan is to ensure wildlife safety during current mining practices, and to prepare the site to meet post mining goals.

2 Preventive Measures within Respective Areas of Activity

2.1 Lined Ponds

- Lined ponds must be fenced to exclude wildlife. Fences will be a minimum of eight feet high, and with openings no larger than three inches in diameter in the bottom three feet, unless sufficient justification exists to consider an alternate design. The bottom of the fence is to be buried a minimum of six inches. Lined ponds will also have textured lining to aid in egress should wildlife become entrapped.

- Gates in fenced areas are to be designed to achieve the same protection as detailed above. For example, when the gates are closed; gaps, such as those below and between the gates, should be modified to be less than three inches in diameter.

- Gates on fenced areas must remain closed and be posted with signs indicating the same.

- Bird deterrence methods will be deployed if a lined pond contains process solution. These methods may include, but are not limited to, bird balls, netting, and/or sonic devices.

2.2 Active Leaching or Process Facilities – (>20 ppm cyanide concentration)

Exclusionary measures should be taken as needed to deter wildlife from inhabiting the area. Such measures include:

- Areas of standing process solution with a surface area larger than three feet by three feet must be corrected as soon as reasonably possible. Wildlife deterrence methods such as bird balls and netting shall be used on these areas until they are corrected. In order to promote increased infiltration, CC&V will level and rip any areas with standing solution as soon as possible. The use of bird-balls or netting may be necessary if immediate mitigation is not attainable.

- Prior to drip line placement, the top lift is leveled and subsequently double ripped after

placement of ore. In general, drip lines will be placed in the furrows created by ripping to minimize ponding. The majority of the drip lines will not be bared, with the exception of those located on the side slopes and upper surfaces of the pad.

- Routine evaluations of the process solution distribution network within the leaching facility to minimize standing solution as result of malfunctioning valves, flanges or connections.

- In areas where standing process solution cannot be avoided, measures such as fencing, bird balls, and/or netting must be deployed.

2.3 Mine Area and Other Excavations or Disturbances

If obvious habits and/or young, such as nests, eggs, calving areas, pups, or dens, are found when entering new areas for development, the findings should be reported to the S&ER department to ensure appropriate procedures for removal, avoidance, and/or relocation are followed.

Large ungulate access to the tops of high-walls, adjacent to significant wildlife habitat, should be restricted by fencing or berms. In areas where fencing is determined necessary, the fence will be an eight foot tall wildlife fence with wildlife escape ramps as necessary. Planned fencing locations and wildlife escape ramps are defined in Technical Revision 91 and located in the S&ER directory.

Mine portals, shafts, and other underground voids should be identified, prior to any disturbance, for the presence of bats or bat habitat. Pre-activity reviews should be performed before commencing activity in historic mine openings. A copy of the Site Evaluation Datasheet for Bats used by Colorado Parks and Wildlife (CPW) is included at Appendix B and may be used as a guide for conducting pre-activity reviews.

Stormwater control sumps, drilling exploration sumps, and any other excavations should be adequately bermed to discourage entry, and graded with slopes no steeper that 1:1 to easily facilitate wildlife egress.

2.4 Haul Roads and Access Roads

Care should be taken to avoid contact with any wildlife on or near roads, if safely possible, including the use of signage and speed restrictions in areas known to be frequented by wildlife.

For the safety of both wildlife and personnel, mine site employees should be notified when working in an area whereby the presence of wildlife has been noted.

2.5 Buildings and Administrative Areas

Care should be taken to properly dispose of food waste in order to reduce wildlife attraction.

Rodent control methods should be employed to minimize hygiene hazards and reduce predator (such as fox) attractions.

2.6 Property-Wide Considerations

All spills and releases shall be cleaned up immediately to ensure wildlife do not come in direct or indirect (mobilized through storm-water runoff) contact with the product. Please refer to CC&V's Spill Prevention and Countermeasure Plans for further guidance (controlled document NA-CCV-SER-Plan-1926, 2223.1930).

Bow hunting on CC&V property is permitted within specified periods, following required approvals and permission from CC&V. This practice is not guaranteed and is reviewed periodically. Hunting with firearms is strictly prohibited on CC&V property.

Herding or intentionally chasing or harassing wildlife is prohibited.

Feeding wildlife is prohibited by Colorado state law. Under state law violators face a $50 fine. As needed, communication will be undertaken to educate personnel on the requirements for the management and interaction with wildlife.

3 Maintenance and Inspections of Preventive Measures

3.1 Inspections

All process and mine operation areas should be inspected on a weekly basis for wildlife activity and sightings. These inspections shall be reported to S&ER and recorded in a Wildlife Database managed by S&ER personnel. Each department on site should conduct inspections as it applies to their work area. For example:

- Process is responsible for inspecting process areas such as, lined process ponds and the Valley Leach Facilities
- Mine Operations is responsible for inspecting excavated and disturbed areas, stormwater sumps and ponds, the Ames and Crusher ponds, and highwalls that pertain to operational areas.
- Departments that have the potential to spill potentially harmful products are responsible for inspecting their areas and managing the cleanup of spills that occur.
- Exploration is responsible for excavations (sumps) and other exploration related projects that could potentially adversely affect wildlife.
- The Projects Department is responsible for sites that are under construction and related activities that are coordinated through this department.
- Inspections should ensure that preventive measures are in place that meet the criteria detailed under Section 2 of this plan.

All personnel responsible for wildlife inspections in their areas shall be trained by the S&ER Department on what to look for, how to document it, and how to report the information on to the S&ER Department.

If repairs are determined to be necessary, they should be completed within a timeframe appropriate to the risk's score on the Newmont Risk Matrix.

3.2 Maintenance

Preventive measures should be maintained to meet the criteria detailed under Section 2 of this plan, until the reclamation bond for a given area has been released or reclaimed to the extent that wildlife are no longer exposed to potential risks outlined herein.

4 Legacy Considerations

4.1 Reclamation

Habitat management and creation, as part of CC&V's Reclamation Plan, should be directed toward encouraging the diversity of both game and non-game species, and shall provide protection, rehabilitation or improvement of wildlife habitat.

Operators are encouraged to contact the S&ER department if they have suggestions for enhancing sites that promotes biodiversity and habitat.

S&ER personnel will contact CPW and/or federal agencies with regulatory authority to determine available opportunities to enhance habitat and/or benefit wildlife and accomplished within the framework of the approved final Reclamation Plan.

Creativity within reclamation (within the current reclamation permit) is encouraged to incorporate features that promote wildlife habitat diversity and mimic natural, un-disturbed conditions through methods and goals such as:

- Variability in slope direction and severity to increase differential snow drifting and subsequent micro-climate diversity.
- Dozer pockets
- Boulder piles
- Motte or clump woody vegetation re-establishment
- Woody vegetation travel, cover, and browse corridors.

4.2 Biodiversity

Every reasonable effort should be made to increase bio-diversity in the post-mining environment including, variability in soil conditions, slope aspect, and slope severity.

4.3 Sustainability

Post-mining land use planning should incorporate features that will not require maintenance for biotic and functional sustenance. Examples include:

- Vegetation seed mix including native species
- Storm-water control features that are permanent in nature.

5 Wildlife Monitoring Plan

A Wildlife Monitoring Plan, attached as Appendix C, will be implemented in January 2018. This

Plan will be followed for the duration of 2018, with a year-end review in consultation with CPW. Following the year-end review, the Plan will be revised for further monitoring or deemed complete. Appendix D contains the Wildlife Sightings Log to be completed monthly as discussed in the Plan. Appendix E is a visual guide to identifying wildlife commonly sighted on mine property.

6 Reporting Wildlife Findings

6.1 Wildlife Injured or Sick

When wildlife is found injured or sick on or near CC&V property, the following procedure must be followed immediately.

- Ensure that your safety is not compromised at the scene while analyzing the situation.
- Report the event to S&ER Department,
- Document the following information as is pertinent and provide to S&ER:
    - Time found
    - Location found or last seen
    - Species involved (e.g., elk, deer, fox, etc)
    - Number of animals involved
    - Cause of injury or sickness, if known.
    - Symptoms observed
    - Action taken to help the animal, if applicable
- Identify needed measures to prevent reoccurrence of the incident
- Assist S&ER personnel, as necessary, to care for the animal appropriately, and,
- Incorporate needed measures to prevent reoccurrence of the incident

Wildlife incidents, including near misses, are to be reported in Cintellate, CC&V's electronic incident reporting system within 24 hours of the event.

6.2 Wildlife Mortalities

When wildlife mortalities occur on CC&V property, the following procedure must be followed as soon as reasonably possible:

- Ensure that your safety is not compromised at the scene while analyzing the situation.
- Report to the S&ER Department,
- Document as much of the following information as is pertinent and provide to S&ER:
    - Time incident occurred or time wildlife was found
    - Location found
    - Species (elk, deer, fox, etc)
    - Number of animals involved
    - Cause of death, if known
    - Other applicable observations
- Identify needed measures to prevent reoccurrence of the incident,

- Assist, as necessary, to dispose of the animal appropriately per direction of the S&ER Department, and,
- Incorporate needed measures to prevent reoccurrence of the incident.

Wildlife mortalities, including near misses, are to be reported in Cintellate, CC&V's electronic incident reporting system within 24 hours of the event.

Revision History

Revision No	Revision Date	By Whom	Description
01	April 4, 2007	G. Goodrich	Initial release of document
02	October 29, 2008	PMR	Update revision history per CAR-CCV-2008-002
03	July 28, 2010	MAV	Plan Update w/ CN Code Audit improvements
04	November 22, 2011	MAV	Update State Agency Contact Info.
05	August 12, 2013	TCC	Review and Update
06	October 2015	GH	General review and update and added reference to bats in underground workings
07	March 2017	TVO	General review and updated sections discussing buried drip lines
08	December 2017	GH, EM	Includes reference to and addition of Wildlife Monitoring Plan and items identified in CPW visit

Appendix A

Procedures for Handling and Reporting Wildlife Incidents to the Colorado Division of Parks and Wildlife

When wildlife is found or reported dead or injured on CC&V property, the following procedures should be followed by S&ER Team Members within a 24 hour period:

1. Call the Environmental On-Call Phone or appropriate area representative if during regular business hours
2. If the wildlife is injured, contact CPW immediately so they can advise on and assist with the situation
3. If the wildlife is found dead, the incident must be reported to CPW within 24 hours of the finding. The current CPW wildlife officer for Teller County and current contact information can be found at www.cpw.state.co.us
4. Make a note of the finding in preparation for reporting to CPW. Include the following:
    a. Location
    b. Time found and/or time reported to ER
    c. Species, approximate age (if obvious) and sex
    d. Number of wildlife involved
    e. Cause of death or injury
    f. Action taken to avoid recurrence
    g. Any other details pertinent to the incident
5. If applicable, take a water and/or soil sample at the scene
6. In the event of a small animal or bird mortality, S&ER personnel, in conference with CPW, will evaluate the potential that the animal or bird may have been exposed to chemical processes. If it is determined that there is a high probability the animal or bird was exposed to harmful chemicals or other processes, the animal will be sent to Colorado State University for necropsy.
7. Photo-document the finding including:

    In the event of an ungulate mortality, S&ER personnel will contact CPW and make arrangements for the transport of the animal to a location recommended by CPW. Photo-document the finding including:

    a. Site and animal as found
    b. Animal close up for identification purposes
    c. Injuries to the animal
    d. Burial site and procedures
8. Report the incident and findings to CPW, via telephone, within 24 hours of the finding. The current officer for the CC&V area is Tim Kroening – Office (719) 227-5200, Cell (719)439-9635
9. Document conversations with CPW using the phone memo format.
10. Complete a written report on the incident. The report should include
    a. Items listed in #4

b. Location of burial site
c. Telephone memo documenting conversation with CDOW
d. Pictures taken

Appendix B

CPW Site Evaluation Datasheet for Bats

SITE EVALUATION DATA

Survey By: _____ ID# _____

New Site? Yes No

Mine/Cave site: _____ County:		**Date:**	**Mine Type:** Comx Adit Decline stope Shaft W/Highwall
Utm-E z	Utm-N	Elevation	Portal Aspect:
Portal (H) _____ Ft or In (W) _____ Ft or In	Portal temp _____ Ambient _____	Connected to: _____ Large Rooms? _____ Unsafe Passages? _____	
AIR FLOW: ITOB OUT IN IBOT PULSE UNK NONE N/A AIR SPEED: Weak Trace Moderate Strong Unk		Water? Dry Unk Pooled Flowing Damp Dripping Historic flooding Depth of Pools _____	
Portal Stability: Stable – Fair - Unstable: rock timber , Bad Collar - Hazard! Internal Stability: Stable / Fair / Unstable: spots / Debris falling / Timbers Pillars Hazard! Unk			Human Disturbance? Trace Mod High None Trash Tracks Graffiti Claim
Guano? Yes No Unk (Lots Moderate Trace) Guano pattern: Pieces Scattered Clusters Walls Roost Stains? Possible None Assoc. w/guano? ____		Insect parts? Yes No (Lots Moderate Trace) Sign obscure? No Wet Soil Pkrat Human Unk Bat carcasses? Yes No #_____	
Est. mine depth: _____ <50 <100 100-300 >300		Soil samples taken? Yes No Bat samples? Yes No Number _____	
Gamma Max Dump _____ Portal _____ Internal _____		Other resources documented: _____	

BATS? YES NO UNK SURVEY COMPLETE ? YES ☐ PARTIAL ☐ External Only ☐

Species / # / Temps	Species / # / Temps	Species / # / Temps	Species / # / Temps
Loggers Deployed			

Revised 9/2013

Multi-portal? YES NO

Multi-levels? YES NO UNK POSS

Portal Obstructed? NO YES

Door Grated Rock Veg Timber

Plugged? YES NO

Type: Vegetation Timber

Rock Trash

BERM? NO YES est H _____

Drifts? NO YES # _____

Domes? NO YES # _____

Fissures? NO YES # _____

Winze? NO YES # _____

Raises? NO YES # _____

Air Vents? NO YES # _____

Micro- Climate:
Ceiling Temps (portal to face)

P_____ _____ _____ _____

_____ _____ _____ F_____

RH% (portal to face)

_____ _____ _____ _____

Photo? _____

COMMENTS & SKETCH FROM SURVEY:

(safety hazards, human visitation, access issues, possible gate issues, reasons for incomplete surveys, etc.)

Sketch layout & locations: B-bats S – soil samples T – temps R – RH% G – sign of use

Sketch layout & locations: B-bats S – soil samples T – temps R – rh% G – sign of use

MINE EVALUATION NOTES

Revised 9/2013

Survey By: Date:

Mine site:	Portal Area Temp	Human Disturbance? Trace Low Mod High None Trash Tracks
DOMES? No Yes #: _____ (Fissures? No Yes : Many Few Large) Boreholes? No, Few Many WINZE? No Yes: # _____ DRIFTS? No Yes: # _____ RAISES? No Yes : # _____ Gamma Readings: _____ Multi-Levels? Yes No Unk Likely Connects to: _____		
Internal Stability: stable / fair / unstable-spots / Debris falling / timber falling / covered winze / Hazardous!!		Water? Dry / Shallow – Deep Pooled / Flowing Damp / Dripping / Historic Flooding
Ceiling temps: Portal to Face: _____ _____ _____ _____ _____ _____ _____ _____ F_____ Junct Temps: _____ _____ _____ _____ Face / dome temps: _____ _____ _____ _____		
Guano? No Yes : Lots Trace Moderate Guano pattern: Pieces Scattered Clusters Walls Roost Stains? Possible None Assoc. w/guano? _____		Insect parts? No Yes: Lots Trace Moderate Sign obscure? No wet soil pkrat human
Est. mine depth: _____ <50 <100 100-300 >300		Hazards:

BATS

Species / # / Temps	Species / # / Temps	Species / # / Temps	Species / # / Temps

Appendix C
Wildlife Monitoring Plan

Overview:

CC&V recognizes that there is potential for risk to local wildlife associated with current mining operations at the CC&V site. In order to better understand this risk, and to mitigate any potential loss, CC&V proposes the following outline for a Wildlife Monitoring Plan as an appendix to the approved Wildlife Management Plan. Common species known to be at potential risk and have been observed on the property include:

- Black bear
- Elk
- Mule Deer
- Little brown bat and Townshend Big eared bat
- Numerous small birds and raptors (red tailed and Cooper's hawk, Golden eagle)
- Mountain lion
- Bobcat
- Red fox
- Coyote
- Moose

Purpose:

This plan is intended to identify species and locations of existing wildlife populations. Additionally, this plan will determine the potential wildlife risks and exposures associated with high walls, chemical storage, and processing areas.

Obligations of the Plan:

- **Monthly S&ER Inspection**: Personnel from the S&ER Department will conduct monthly inspections per Figure 1 in Appendix F of the permit boundary, identifying areas traveled frequently by wildlife and will complete the following:
  - **Record locations of sightings or tracks**: A monthly log will be kept of all sightings and interactions and recorded in a database. In addition, each area in Process, Mining Operations, and Mine Maintenance will record each sighting and location to S&ER on shift area inspections. This is further discussed in Section 3.1 of the Wildlife Protection Plan.
  - **In terrain particularly steep or difficult to access in adverse conditions:** CC&V will use game cameras. Areas of difficult access are primarily the interface of the Valley Leach Facilities and the natural environment.
  - **Conduct necropsies on all wildlife mortalities onsite:** CC&V will continue to notify CPW of any wildlife mortalities onsite, as is required by the Wildlife Management Plan. Additionally, small animals or birds that are found deceased on property, or adjacent to the permit boundary, will be sent for autopsy. CC&V will notify CPW immediately in the event any large ungulate is found deceased and arrangements will be made for CPW to perform an autopsy.
  - **CC&V will work with Industrial Hygienists** and other professionals to better understand toxic exposure limits to animals seen onsite. Thresholds will be

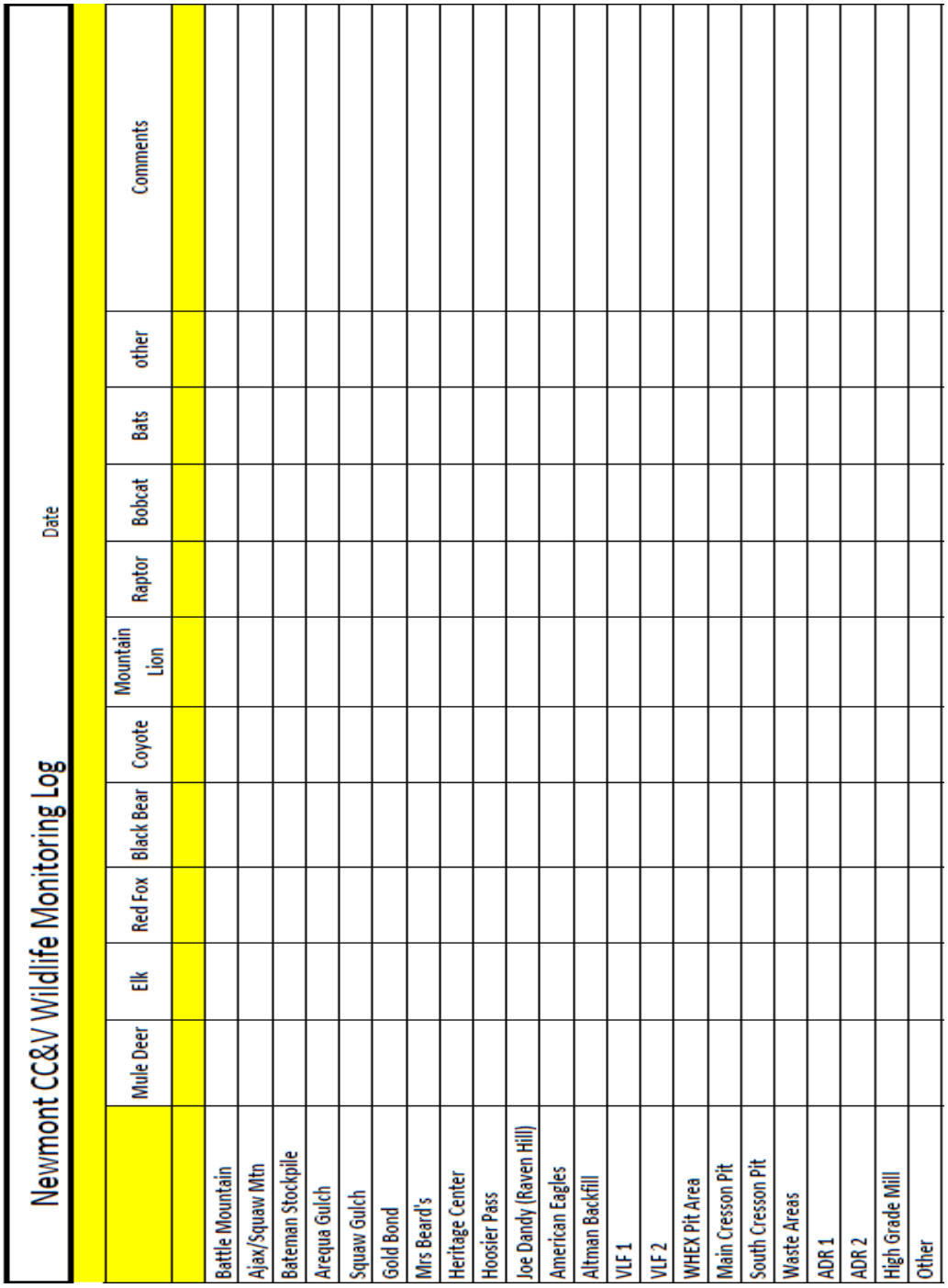
established for each species.

- **Bat monitoring:** In the summer months, bat monitoring around the Process Areas where open tanks are located will be monitored both visually and ultra-sonically.Bat activity is generally constrained to the period of late May to September.
- **Habitat Loss and Alteration:** CC&V will monitor and map major habitat alterations during this period and note any movement of wildlife concurrent with these operations.
- **Waste Management:** Any wildlife interactions with solid waste will be noted. Employee waste management training programs and waste management strategies will be reviewed and updated to prevent further negative wildlife interactions.

Schedule - One year Monitoring Term

The monitoring period will begin in January 2018 and continue for a full year. After one year of data collection, CC&V will review findings in conjunction with CPW and identify areas of high risk and determine where mitigation is required and what actions should be taken moving forward.

Appendix D

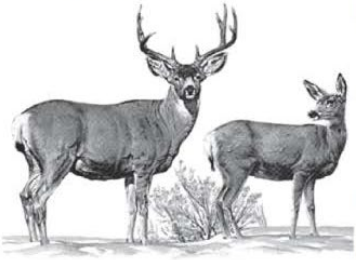


Newmont CC&V Wildlife Monitoring Log	Date																										
		Mule Deer	Elk	Red Fox	Black Bear	Coyote	Mountain Lion	Raptor	Bobcat	Bats	other	Comments
Battle Mountain												
Ajax/Squaw Mtn												
Bateman Stockpile												
Arequa Gulch												
Squaw Gulch												
Gold Bond												
Mrs Beard's												
Heritage Center												
Hoosier Pass												
Joe Dandy (Raven Hill)												
American Eagles												
Altman Backfill												
VLF 1												
VLF 2												
WHEX Pit Area												
Main Cresson Pit												
South Cresson Pit												
Waste Areas												
ADR 1												
ADR 2												
High Grade Mill												
Other												

Appendix E
Wildlife Identification Chart

ATTENTION! *It is quite common to find both mule deer and white-tailed deer in the same areas, especially on the Eastern Plains. Since both types of deer have the same general body shape and size, hunters can look for a few key differences to make a positive identification.* ***The primary telltale characteristic a hunter should look for is the tail.***

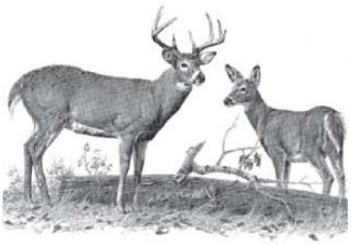
MULE DEER



TRAITS

» **TAIL:** rope-like tail with black tip
» **ANTLERS:** fork and then fork again, usually very evenly, on older males
» **EARS:** large in proportion to head on both bucks and does
» **GAIT:** stiff-legged bounce, tail held down
» **RANGE:** statewide; in mountain shrubs, foothills, communities

WHITE-TAILED DEER

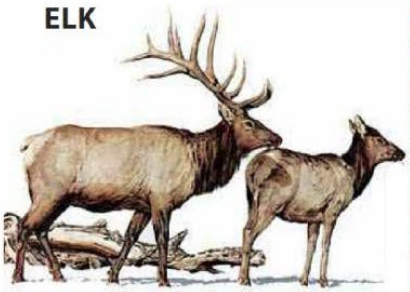


TRAITS

» **TAIL:** broad and brown with white fringe; all white when tail is up
» **ANTLERS:** consist of one main beam with three to five tines pointing upward
» **EARS:** smaller in proportion to head
» **GAIT:** move with a graceful lope, flag-like tail often held up
» **RANGE:** common on Eastern Plains; in streamside woodland areas; cropland along rivers

ATTENTION! *Moose can be found in the same habitat as elk in Colorado. Elk hunters must know the difference between the two species to avoid accidentally killing a moose.*

ELK



TRAITS

» **BODY:** reddish, lighter brown, darker legs
» **NECK:** chestnut brown
» **SNOUT:** slender
» **RUMP:** pale yellow
» **BULLS:** antlers aren't palmated and have obvious brow tines coming off main beam

MOOSE



TRAITS

» **BODY:** dark, black-brown with white-gray legs
» **NECK:** large bell (beard) on throat
» **SNOUT:** overhanging, bulbous nose
» **RUMP:** pale yellow
» **BULLS:** palmated antlers with tines

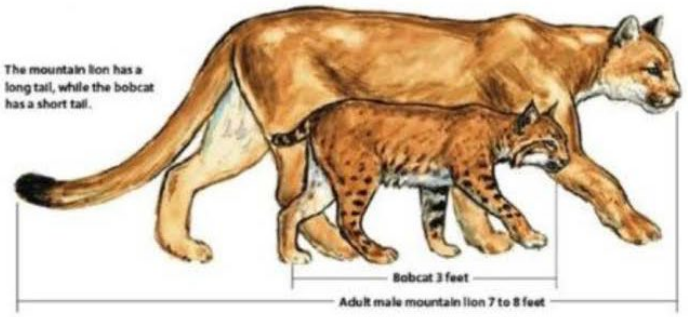


BLACK BEAR



TRAITS

» **COAT:** Adults have long, thick hair; yearlings may have thin, bleached-looking hair
» **EARS:** Small ears and a large head usually indicates a large bear
» **FACE:** Narrow face and long noses are a trait of young bears that are not yet adults





Coyotes (middle) are larger than red foxes (front) and smaller than wolves (back).

Appendix F


Observation Point
Game Camera
Wildlife Monitoring
NEWMONT
NEWMONT MINING CORP
Cripple Creek and Victor Gold Mining Company
Figure 1. Wildlife Monitoring Locations
N
Author: C. Steward
Date: 11/2017
1 inch = 500 feet
File: CCV_2017 Fence TR91 Dec Submittal

ATTACHMENT 7

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1.0 PURPOSE

This plan has been developed and compiled by the Health, Safety, and Security (HSS) Department. It contains practical rules, procedures and allocation of responsibilities for a better planning of emergency response and control.

The Emergency Response Plan is to be provided to all internal areas of management and contractors. Compliance with the relevant provisions of the Emergency Response Plan during an emergency will facilitate information flow and provide support and assistance. The Emergency Response Plan will be reviewed following any incident requiring the implementation of the Plan, to determine if the planned response procedures were adequate or require revision.

To familiarize all employees with the contents of this ERP, it is essential for the supervisors to review the ERP together with their employees:

(a) When they are new or when they have been transferred to a new area.
(b) When their duties and the responsibilities assigned to them within the department have been changed or modified.
(c) When they are assigned to a specific duty within this Plan.

2.0 SCOPE

This Plan applies to the Newmont - Cripple Creek & Victor functional areas, operations, offices, including employees, vendors, visitors and contractors within the scope of the Integrated Management System (IMS).

3.0 DEFINITIONS AND ACRONYMS

3.1 Definitions

Approved is certified to meet the minimum standards established by the HSSE Department. All PPE used at Cripple Creek & Victor operations shall meet at least the American National Standards Institute (ANSI) standards, American Society for Testing and Materials (ASTM), or other international or local standards which comply with or exceed those standards.

General Rules are rules which apply to all employees, vendors, visitors, and contractors regardless of where they work or what they do.

Job Specific is requirements directly associated with a specific job, task, or occupation.

Site refers to a specific location of operations.

Emergencies are an undesired event that generates real or potential dangers/risks, at Cripple Creek & Victor Operations (on site or off site), that directly effect:

(A) The people: the health and welfare of Newmont employees, the health and welfare of members of the general public.
(B) The assets.
(C) The livelihood.
(D) The environment.
(E) The reputation of Newmont.

An event need not be directly related to Newmont operations to adversely affect Newmont reputation. Public, media and/or government perceptions about our industry and its products can have a long-term

impact. All major occurrences of the type described below, regardless of cause, therefore constitute an emergency.

3.2 Acronyms

AMS	Atypical Measles Syndrome
ANSI	American National Standards Institute
ASTM	American Society for Testing and Materials
BLEVE	Boiling Liquid Expanding Vapor Explosion
BLM	Bureau of Land Management
CAB	Circulation, Airway & Breathing
CCFD	Cripple Creek Fire Department
CIC	Carbon in Columns
CPR	Cardiopulmonary resuscitation
DOT	Department of Transportation
EMR	Emergency Medical Responder
EMT	Emergency Medical Technician
GEO	Geology
HCI	Hydrochloric Acid
HCN	Hydrogen Cyanide
HMR	HSSE Management Representative
HSSE	Health, Safety, Security, and Environmental
H&S	Health and Safety
IC	Incident Commander
IMS	Integrated Management System
ISEA	International Safety Equipment Association
LPG	Liquid Petroleum Gas
MCC	Mechanical Control Center
MRT	Mine Rescue Team
MSHA	Mine Safety and Health Administration
MSDS	Material Safety Data Sheet
NNA	Newmont North America
NRR	Newmont Rapid Response
PPE	Personal Protective Equipment
RRT	Regional Response Team
SCBA	Self Contained Breathing Apparatus
SRT	Site Response Team
SWTC	Southwest Teller County
TARP	Trigger Action Response Plan
WAD	Weak Acid Dissociable

4.0 ROLES AND RESPONSIBILITIES

4.1 Document Owner

HMR – HSSE Management Representative

4.2 Responsible Roles and Position-Holders

4.2.1 General Responsibilities for All Employees

The following are general responsibilities for all employees to follow in the event of an emergency however a person's specific role and responsibilities may differ:

1. Notify the supervisor of the emergency situation. See Mayday Procedure
2. Report the emergency as described in 5.2 of this plan.
3. Provide help until the appropriate response team(s) arrives. Never place yourself or others in danger, especially during fires, or chemical emergencies.
4. For emergency evacuations follow the procedures outlined in 5.9 of this plan.
5. If an alarm is sounded or you are instructed to do so, evacuate the area to designated assembly points and stay there until you are instructed to leave.
6. If an evacuation takes place, follow the directions. Make sure you and any visitors you are responsible for are accounted for by your supervisor.
7. If you are responsible to perform shutdown procedures, know your responsibilities and perform them accordingly.
8. If responders are already at the scene of an emergency, do not go to the scene to watch or offer assistance unless you are personally called to the scene.

4.2.2 General Manager

The General Manager is responsible for the overall management of an emergency. This does not mean however that he/she must direct all parties involved. Rather, the General Manager may use key personnel to achieve a satisfactory outcome to an emergency situation. The General Manager shall evaluate the emergency and determine whether the Rapid Response Team is to be mobilized or whether local expertise will suffice.

4.2.3 Managers/General Foreman/Supervisors

In an emergency each Manager/General Foreman and Supervisor will check his/her own area of responsibility. If the emergency arises in his/her area or will affect his/her area they will remain there and report to the Site Manager and assist with the coordination of emergency response efforts. When the appropriate Manager is not on site his/her designate will assume responsibility for their department, manage the area and provide support to mine rescue. Preserve the scene evidence/security. Prevent secondary hazards.

4.2.4 Health and Safety Manager

Responsible for regulatory reporting (immediately). Liaise with the Site Rapid Response Team, Health & Safety Representatives, Emergency Response Teams and relevant personnel. Coordinate assistance from outside organizations if required and disseminates warnings and information as required.

4.2.5 Security

Provide crowd control at the scene of the emergency, secure and guard the scene of the accident as directed by management. Security will also restrict access to the emergency scene or the mine site and make calls to outside agencies as directed by management.

4.2.6 Mine Rescue Team Coordinator

The Mine Rescue Team Coordinator or their designate must be contactable at all times, both during office hours and after hours. During office hours, the MRT Coordinator must be in close proximity to a radio, cell phone or telephone. As a result the MRT Coordinator may not actually direct the operation of the mine rescue teams; the Team Captains will, where at all possible, seek the MRT Coordinators approval prior to commencing any interventions that could endanger either Mine Rescue Team Members or other personnel. The Captain has the right to refuse any tasks they consider is an unacceptable risk to the team.

4.2.7 Mine Rescue Team Captain

The Mine Rescue Team Captains report directly to the MRT Coordinator or their designee in an emergency. The Mine Rescue Team Captain directs action in the emergency, initiates appropriate action to minimize the effects of injury at the accident scene and care for those injured. The Captain has the right to refuse any tasks he considers are an unacceptable risk to the team. Team Captains will coordinate all efforts with the supervisor in charge for a unified command.

4.2.8 Mine Rescue Team

The Mine Rescue Team will report immediately to the Mine Rescue Team Captain / Co Captain unless already involved at the scene of the emergency. Personnel with appropriate First Aid training may be required to stand by to treat the injured and will report to the Team Captain. Team members also have the right to refuse any assignment they feel is unsafe.

5.0 DIRECTION

All employees, vendors, contractors, and visitors traveling/working on site shall comply with and ensure personnel accountable to them comply with the following requirements of this plan.

5.1 Objectives

5.1.1 The objectives of this Emergency Response Plan are to:

(a) Provide an effective response to emergency situations.
(b) Establish responsibilities levels and support coordination.
(c) Minimize the effect of emergencies on personnel, on the surrounding communities, and on public.
(d) Prevent injury, property damage, and damage to equipment, damage to environment and losses to process that result from emergencies.
(e) Ensure the cooperation with government and outside agencies.
(f) Provide suitable information to be conveyed to the public using the external relations contact.

5.2 Communication

5.2.1 Emergency Communications: In The Event of an Emergency:

(a) Immediately establish Radio contact through the Mayday procedure.
(b) If the emergency is at the Carlton Security or affects Carlton security the emergency will be ran through the Ironclad security at 719-689-4127 or R-1 on the radio.

5.2.2 Remember, do not hang up until this information has been given and remain on the line to make further arrangements.

(a) Do not call the local media to report the emergency. This will be taken care of by External Relations.
(b) Do not call the family or friends of the persons involved in the emergency (Management will take charge of making such calls).
(c) Do not take pictures or videos.
(d) Social media postings i.e. Facebook, Twitter and etc. are strictly prohibited.
(e) Do not call the government agencies (Management will take charge of making such calls).

5.2.3 **Communications Failure**:
There are several conceivable situations that could result in the loss of telephone communications from the mine. They include:

(a) The incoming telephone line being severed
(b) Major snow storms
(c) Rangeland fires
(d) Power failure
(e) Wind storms
(f) Lighting storms

5.2.4 Communications may therefore fail when they are most needed, i.e. in an emergency situation. Even if this is not the case, efficient operation of the mine is severely compromised without communications and a delay in notifying the relevant persons/agencies (Electrical Supervisor, IT Department, etc.) further exacerbates the problem.

5.2.5 **Alternate Communication Plan**:

(a) Cell Phone
(b) Radio communication with Teller County Sheriff's Office, Dispatch, Cripple Creek Fire Dept. and Cripple Creek Ambulance.

5.3 Emergency Notification and Callout Process

5.3.1 Provide the same information as outlined under, Reporting an Emergency

5.3.2 **Employee**: Notifies his or her supervisor.

5.3.3 **Supervisor**:

(a) Notifies security, his or her immediate supervisor, the area manager, and health and safety.
(b) The immediate supervisor will limit available information to the fact of the accident, having made positive identification of any injured employee.
(c) Radio discussions of the accident will be minimized and names and equipment numbers will not be broadcast.

5.3.4 The immediate supervisor will preserve the accident scene and all physical evidence until relieved of this responsibility.

5.3.5 Accident site visits will be limited to only necessary emergency response personnel, security personnel and appropriate management.

5.3.6 General Manager, Manager, Superintendent, General Foreman, reports via chain of command to implement Rapid Response and SRT Leaders.

5.3.7 **Security**: Initiates the following dispatches for the appropriate response.
(a) Medical: Company medical responders or Teller County EMS.
(b) Fire: Company MRT. or Cripple Creek Fire Department.
(c) Rescue/Hazmat: MRT
(d) Mutual Aid: Combined MRT or Teller County Cripple Creek
(e) Area Health and Safety Manager or on call HSSE representative.

5.3.8 Cripple Creek & Victor – Manager, General Foreman, Superintendent, General Manager reports via chain of command to implement the Rapid Response and MRT.

5.4 Emergency Equipment Location

5.4.1 **Medical emergency response vehicle**: is located in the Heavy Mobile Equipment (HME) shop, stocked with medical and rescue gear.

5.4.2 **Competition Travel Trailer:** is equipped with rope rescue equipment that can be used off site or if the Medical Emergency Response Vehicle does not have enough rope equipment on it.

5.4.3 **Hazmat Trailer:** equipped with Hazmat Decontamination supplies.

5.5 Emergency Levels

5.5.1 **Level 1 "Low":** A "Low Level" emergency is an on-site or off-site emergency. It can be controlled by area personnel from the affected area.

5.5.2 **Level 2 "Medium":** A "Medium Level" emergency cannot be handled by the personnel of the affected area. The MRT is required. It does not exceed the resources of the site.

5.5.3 **Level 3 "High":** A "High Level" incident is one which exceeds the resources available at the scene of the emergency and outside help such as government, industry and/or corporate is required.

5.5.4 The highest severity rating for any individual risk factor determines the overall severity rating of the emergency.

5.6 Mayday Procedures to follow in the event of an Emergency

5.6.1 **Examples requiring a Mayday call:**
(a) Emergency medical condition requiring immediate medical attention
(b) Event reasonably expected to cause a life threatening injury
(c) Event which creates conditions that are an immediate danger to life safety
(d) Fire

5.6.2 **Examples not requiring a Mayday call:**
(a) Minor first aid injuries with no life threat
(b) Minor equipment damage with no injury and no immediate danger to life safety
(c) Fire immediately extinguished
(d) Minor Geotechnical event which does not have potential to affect people or operations

5.6.3 When an emergency situation occurs, the person involved in or discovering the emergency shall call Ironclad Security on the radio and request a Mayday be called for an emergency.

5.6.4 When the Mayday is heard over the radio, all personnel are to safely cease activities and listen to the radio. Mobile equipment operators, haul truck drivers, and all other moving mine site traffic are to pull to the left edge of the road in a safe location and come to a stop. The only exception to this is in the area of the mills and where only mobile equipment needs to come to a stop. Other equipment that needs to shut down in the Mill area will be determined by the area supervisor on shift.

5.6.5 The person calling the Mayday will give security the following information:

(a) Location of the Emergency
(b) Nature of the Emergency
(c) Number of personnel involved
(d) Emergency personnel needed
(e) Any other pertinent information, i.e. name of contact and contact information

5.6.6 When the Mayday is called, Ironclad security will ask for the radio, followed by an announcement of 'Mayday' 3 times and where the Mayday is located. The Mayday will continue to run on Channel 1 at that time. When the Mayday is cleared, security will ask for the radio followed by an announcement stating the Mayday is clear.

5.7 Responsibilities during the Mayday

5.7.1 Once a Mayday has been called, all personnel shall maintain radio silence unless they are involved in the emergency response to the Mayday**,** see an unsafe condition requiring immediate action, or have another emergency situation.

5.7.2 All equipment and vehicles not involved in the emergency response shall remain in the stop mode allowing clear access for emergency vehicles and responders, until the Mayday situation has been stabilized and the Mayday has been cancelled by the responsible personnel.

5.7.3 The supervisors or their designee will account for their personnel while waiting for further information on the Mayday any responders that respond to the incident must notify their supervisor that they are responding so that they are not counted as missing.

5.8 Newmont Rapid Response System

5.8.1 Newmont has a management system called "Rapid Response" (NRR). Management is given training and a structured process to provide guidance in the event of an incident, which may have the potential to seriously damage the Company.

5.8.2 The Newmont Rapid Response (NRR) is designed to begin coordinating at the time an event occurs and continues until the requirement for management and operations no longer exists. The structure of the NRR can be established and expanded depending upon the changing conditions of the incident.

5.8.3 Rapid Response achieves this by:

(a) Providing appropriate support to an affected site and/or region in its technical response to an event.
(b) Minimizing the impact on the Company by considering environmental, strategic, legal, financial and public image aspects of the incident.

(c) Ensuring communications are being carried out in accordance with legal and ethical requirements.
(d) Identifying actions which need to be taken on a broader scale that cannot be envisioned by those involved in overcoming the immediate hazards

5.8.4 Site Response Team (SRT) Organization:
The SRT is commanded by a Leader, who is the General Manager of Operations; there is a list of alternates in case the Manger is not available. SRT is placed on alert in case of a Medium Level Emergency. During a High Level Emergency all the activities will be led by the SRT Leader.

5.8.5 Responsibility of the Site Response Team:
The Site Response Team (SRT) is responsible for the overall management of the emergency situation. This includes all the human resources, equipment, material and supplies, communication, production and decisions at the site. When necessary, the SRT will have external support divisions. The highest severity rating for any individual risk factor determines the overall severity rating of the emergency.

	Low	Medium	High
Response by Outcome	SRT	SRT & RRT	SRT, RRT & CRT
Personal injury	Injury involving hospitalization	Single fatality or multiple injuries	Multiple fatalities
Missing personnel	One or more people not accounted for	One or more people confirmed missing	One or more people confirmed missing >24hrs
Terrorism, Kidnap, Extortion, Sabotage	Threats to individuals or structures from known individual or organization	Confirmed threats without actions	Escalated threats or actions involving harm and/or significant damage
Environmental	Low level incident, site contained, requiring regulatory reporting	Incident resulting in offsite contamination and regulatory reporting	Significant incident which h has across company implcations
Production loss	Reduction of >25% normal capacity for a period of up to one month	Total loss of production or >25% loss for more than one month	Total loss of production for more than one month
Technical difficulty	Inabilty to operate at design capacity due to known problem	Inability to operate at design capacity due to unknown problems	Continued operating problems >3 months
Major contractor, supplier or partner Issue	No disruption to supply or activities	Supply or services disrupted with threat to production	Joint venture partner in crisis
Financial issue	Site accounting issue with ability to resolve	Cash flow or accounting issues involving multiple sites or no resolution on site	Cash flow or accounting issues requiring public disclosure
Community NGO action	No immediate likelihood of media interest	Community threat or use of media for publicity	Likelihood of national media attention
Media coverage	No company response warranted	Response required to local or state media article	Response required to nationwide media attention
Regulatory authority action	Action relating to site incident or issue	Action which has implications across multiple sites	Action with companywide implications
Government action	No loss of control	Newmont controlling with higher than normal government interest	Threat of government interference with operations

Civil Unrest	Local disruption with no imminent threat to site	Local disruption with possibility of affecting operations	Civil unrest or hostile threat from change in government
Labor Unrest	Local disruption affecting operations/production	Disruption which has implcations across multiple sites	Disruption with companywide implications
Loss of Senior Personnel	Accident/illness adversely affecting normal operational management capabilities	Accident/illness affecting normal regional management capabilities	Accident/illness affecting Newmont corporate management capabilities
Other Criminal Acts	Illegal act which threatens to cause local disruption	Illegal act which threatens to cause national/international disruption	Illegal act which threatens Newmont's corporate governance reputation n
Business / publicity opportunity	Low level discussions without commitments	Formal discussion or prepared statement required	Opportunity has companywide implications

*** Note:** Non-operational issues may result in a medium or high severity ranking and may not involve SRT or RRT. Cyanide emergencies are always considered high.

5.9 Evacuation Procedures

5.9.1 The following are basic responsibilities of every employee regarding emergency evacuation:

(a) Know the location of all emergency exits and evacuation assembly points.
(b) On the sounding of the alarm in your area or notification by your supervisor, immediately evacuate the building or area.
(c) On leaving your work station, take purses and, in cold weather, your coat. **CLOSE ALL DOORS AND WINDOWS** ***BUT DO NOT LOCK!*** Closed doors and windows reduce the spread of smoke and flame, thereby confining the emergency and effectively increasing the time for a safe evacuation. Use good judgment and, if possible, shut vaults and secure sensitive data by locking desks and file cabinets. Leave doors open if the emergency is a bomb threat.
(d) *If your office door automatically locks, TAKE YOUR KEY WITH YOU; *If the exits are blocked, find the nearest window to escape from if possible. *If all else fails, return to your room, call for help, and wait for rescue.
(e) WALK, DO NOT RUN. In an emergency move quickly but do not run. Keep your self-control.
(f) Avoid smoke-filled hallways. If the smoke-filled hallway is the only route to a clear exit, then crawl on your hands and knees, or return to your office and escape through the window.
(g) Do not talk even in low whispers unless it is absolutely necessary. Several people speaking softly make it impossible to communicate emergency instructions.
(h) If you are disabled, bring this to the attention of your supervisor. Example, pregnancy, heart condition, lung condition, joint problems, etc. Alternate plans can then be made for getting you out of the building. If you can use the stairs, do so, descending at a rate consistent with your own ability.

After leaving the building, proceed directly to your assigned assembly area, watching out for traffic hazards. Be certain that contact is made with your supervisor as soon as possible after reaching the assembly area. It is important to determine if anyone was left behind. Remain in the area until other instructions are given.

5.9.2 Evacuation Assemble Points: (These can all change depending on wind direction)

Building	Assembly Point
Administration building	Field to the East of building
Carlton Security	To be determined by supervisor at time of incident. "Wind Direction"
ADR 1, Lab	To be determined by supervisor at time of incident. "Wind Direction"
PSES	To be determined by supervisor at time of incident. "Wind Direction"
Ironclad Security	North employee parking area
Big Truck Shop, Warehouse	Ready line to the west of building
Fuel Island	To be determined by supervisor at time of incident. "Wind Direction"
High Grade Mill	To be determined by supervisor at time of incident. "Wind Direction"
ADR II	East employee parking area
Schoolhouse	South ready line or Ironclad parking area
Wagner Rebuild	North parking area
Crusher	North parking area
Victor Hotel	Northwest angle parking area

5.9.3 Pit Evacuation:

(a) The notification of a pit evacuation will come from Mine Foreman/Managers.
(b) It is important that people be waiting to be evacuated remain in an area where they are assigned and out of the line of traffic.
(c) The pit supervisors will determine pick-up assignments and monitor progress.

5.9.4 Accounting for Personnel:

(a) It is the responsibility of supervisors to account for their personnel in the event of an emergency.
(b) The supervisors accomplish this responsibility through the performance of two vital duties:

- Clearing of their work area of personnel during an evacuation.
- Conducting a head count of their employees and any other persons (e.g., contractors, vendors, visitors, etc.) located in their work area at the time of the evacuation at the designated assembly area.

5.9.5 Once the head count has been completed, the supervisor should report to their immediate supervisor and convey any discrepancies in personnel, including any missing personnel and/or any individuals that normally work elsewhere.

5.9.6 In turn, each supervisor will report to their immediate supervisor until personnel information reaches the senior management person for each department at the assembly area. The senior management person for each department will account for all departmental personnel. This accounting should include all employees, contractors, delivery personnel, temporaries, and visitors under their supervision.

5.9.7 Departmental management at each assembly area should communicate with each other to determine the location of any missing personnel. If personnel are suspected to be inside an evacuated facility, the Incident Commander and Emergency Response Team Captain should be contacted immediately. All supervisors shall keep their groups together at their respective assembly areas until the Incident Commander gives further instructions.

5.9.8 Search and Rescue:

(a) If a building has been evacuated, **personnel will not re-enter the building** to perform search and rescue or to perform additional shutdown procedures until the all clear signal is given, or unless you are directed to do so by the Incident Commander.
(b) Members of the Emergency Response team are allowed to re-enter an area that has been evacuated to perform search and rescue before the all-clear signal is given.
(c) Search and rescue is the responsibilities of the Emergency Response Team and will be conducted in accordance with their standard operating guidelines, however the teams may request help from the area supervisor or their designee for the search and rescue because of their knowledge of the area.

5.9.9 Note: There will be no search and rescue undertaken unless adequate backup teams are ready and standing by.

5.9.10 Termination of Emergency:

(a) The area evacuated must first be determined safe.
(b) Members of the response teams will thoroughly investigate the evacuated facility.
(c) If there was a fire or structural damage is suspected, the area must be inspected by Emergency Response Coordinator and Maintenance personnel to determine if the area is safe to occupy.
(d) Once the area is determined to be safe, the response team captain will notify the Incident Commander to send out the all-clear signal.
(e) The Incident Commander will broadcast the all-clear signal on all channels.
(f) The broadcast will include a description of the areas that were evacuated by the phrase, **"is now all-clear."**
(g) The broadcast will be repeated three times in succession.
(h) Once the area supervisor or Emergency Response Team has given the all-clear signal, employees may return to their work areas.

5.10 Stress Management:

5.10.1 People may find responding to emergencies stressful. Often emergency personnel work for long hours without adequate rest. In the event of a high level emergency, it will be necessary for a Site Response Team to arrange a debriefing. The debriefing will allow for open discussion of the feelings,

frustrations and anxieties experienced by response personnel. Contact the site Emergency Response Coordinator to organize a debriefing.

5.11 Bomb Threat

5.11.1 In the event that any person should receive a threat of a bomb, the following procedures shall be followed.

5.11.2 Bomb Threat Procedures:

(a) Notify any persons of authority, i.e., Manager, Supervisor, Health & Safety, Security or who, in turn, will withdraw all persons from the threatened area immediately.
(b) After all persons have been moved to a safe location, local law enforcement shall be notified by the most senior management personnel involved and their instructions shall be followed explicitly.
(c) The General Manager shall be notified and the Rapid Response initiated.

5.11.3 Action Plan – Receipt of Bomb Threat:

(a) Make every effort to remain calm and relaxed.
(b) Keep the caller on the line as long as possible. Ask the caller to repeat the message. Record every word spoken by the person making the call, if possible.
(c) Try to have the caller give the location or area of the bomb and the possible time of detonation. If the caller does not indicate the location of the bomb or possible time of detonation, it may be advisable to inform the caller that the building or mining area is occupied and that detonation of the bomb could result in death or serious injury to many innocent people.
(d) Pay particular attention to any strange or peculiar background noises such as motors running, background music, type of music which might give even a remote clue to the place from which the call is being made.
(e) Listen closely to the voice (male, female, etc.), voice quality, accents and speech impediments.
(f) Ask again for the specific location of the bomb.
(g) Ask again for the specific time of detonation of the bomb.
(h) Ask the following questions:
    (1) Where is the location of the bomb?
    (2) What kind of bomb is it?
    (3) Can you describe the bomb to me? What does it look like?
    (4) What time is detonation?
    (5) Why was the bomb planted?
    (6) How do you know about the bomb?
(i) Try to determine the following things about the caller:
    (1) Name
    (2) Age
    (3) Sex (Male or Female)
    (4) Mental Condition (influence of drugs/alcohol, etc.)
    (5) General Condition
    (6) Nationality
    (7) Voice Peculiarities
    (8) Accent, speech mannerisms, speech defects

Complain somewhat that you cannot hear well. Ask the person to repeat what they said or is saying several times, if possible.

5.11.4 Items to consider on a bomb threat call:

(a) If the caller makes two (2) or more calls in succession, carefully compare each of the calls.
(b) If the language or words used are entirely different, the threat may be an "off-the-top-of-the-head" type. However, action must still be taken.

5.11.5 Procedure for handling bomb threats:

(a) Shut down all mobile and base station radio transmissions in the area (300 feet of the affected area, if known.
(b) Remove all persons from the affected area or building. Personal items such as purses, briefcases and lunch boxes should be left inside the building.
(c) Have emergency rescue crews on standby at the mine, in a safe location.
(d) Do not, under any circumstances, touch, disturb or attempt to disarm the device

5.12 Labor/Civil Disturbances and Distraught Persons

5.12.1 Emergency Level Low

(a) A distraught person is causing a non-violent disturbance, no threats against persons or property; the person is a Newmont/contract employee or community member.
(b) Individuals are beginning to congregate or credible reports indicate that a demonstration may take place.
(c) No disruption of operations other than nuisance level.
(d) Minor criminal acts such as ingression/trespassing, verbal assaults, threats etc. exist.
(e) No National or International implications.
(f) No publicity involved or likely to occur.
(g) Can be handled at the local level

5.12.2 Emergency Level Medium

(a) A distraught person causing trouble cannot be persuaded to leave an area, threats against property or persons have been made.
(b) Serious criminal acts have taken place e.g. actual violence against persons, damage to property, disruption to processes beyond a nuisance levels are taking place or are imminent, etc.
(c) Refusals to leave Newmont property after reasonable negotiations have taken place.
(d) Medium sized demonstration e.g. approximately 50 to 100 persons.
(e) Publicity involved or likely will be.
(f) Implications at National level.
(g) Potential for violence likely.
(h) Cannot be handled at local (may require authority's intervention).

5.12.3 Emergency Level High

(a) Distraught person/s becomes violent with associated life threatening or significant harm to property and processes actions taking place.
(b) Large-scale e.g. more than approximately 100 person's violent demonstration putting the security of Newmont personnel and property at risk.
(c) Requires or will likely require security assistance by outside authorities.
(d) Sustained disruption of operations.

(e) Significant publicity already or likely.
(f) National and International implications

5.12.4 General Action Guidelines

5.12.4.1 Supervisor on the Scene:

(a) Observe and assess the situation, and get employees away from any immediate danger.
(b) Take whatever steps can safely be taken to reduce or eliminate the risks to people, property and process without putting anyone in danger.
(c) If there is a confrontation, try to calm the situation or disengage from the confrontation.
(d) Contact Security, explain the situation and request their immediate response

5.12.4.2 External Affairs:

(a) If the event is off-site contact the Site Manager to confirm actions desired, e.g. respond or not to respond.
(b) Acts as Incident Commander (IC) for low level events involving community personnel.
(c) Guides those involved to a location and time where the issues can be dealt with calmly and logically.
(d) Keeps Security and other Emergency Response Teams apprised of possible emergency needs and developments.
(e) Illegal activity must cease before Newmont will discuss issues, if there is a refusal, the emergency moves to a moderate level and a senior Security person takes over as IC from External Affairs, with External Affairs as an on-scene advisor to Security.
(f) Participates in making the assessment regarding a change in alert level

5.12.4.3 Security

(a) Immediately notifies External Affairs to respond immediately to the scene if the event involves community personnel.
(b) If not already done, remove people, equipment, and protect process for those at risk due to the disturbance.
(c) Keep the Site Response Team Leader (SRT Leader) and other persons apprised of the situation and events and provide them with enough facts to enable them to determine the alert level and respond appropriately.
(d) Deploy personnel to seal off access to the mine site.
(e) Decide if additional on-site emergency services are required and coordinate.
(f) Liaison with Community / External Relations representative immediately if not already done. If emergency involves community personnel, External Relations takes the role of IC for low level emergencies; Security takes control at moderate and high level emergencies. If the emergency involves strictly site personnel, Human Resources will be contacted and act as IC for low-level emergencies.
(g) Secure scene while discussions takes place.
(h) Use force only when absolutely necessary and to an extent proportional to the threat. Do not violate the rights of individuals while exercising the right to exercise freedom of association and peaceful assembly.
(i) If the event moves from low to medium level, the IC duties transfers to senior Security personnel.
(j) During medium and high-level emergencies, the IC warns those involved to leave property or authorities will be called (The SRT Leader will be kept informed of events on an ongoing basis and approves action requesting external authorities to respond to the scene).
(k) When authorities arrive they assume IC responsibility with Security acting in support.

5.12.4.4 Mine Rescue Team:

(a) If on scene prior to Security, ensure that they have been notified. Tell them whether the distraught person is armed, how many people are involved in the situation, and if anyone is injured.
(b) If on scene prior to Security, advise and direct them to the location.
(c) Isolate the site and evacuate as many people as possible.
(d) Wait for help to arrive.
(e) Position to a staging area where the MRT will be safe, while being able to response promptly.

5.12.4.5 Pre-Event Information:

(a) Persons receiving information regarding a potential civil disturbance shall pass this information directly and immediately (same working shift or sooner), to the manager of the area potentially affected by the disturbance and to Security Manger or his designate.
(b) The Security Manager, upon receiving this information shall prepare contingency plans in direct consultation with the Area manager potentially affected as well as with External Affairs personnel.
(c) The Security Manager will brief his immediate supervisor as well as the site Manager of any potential medium or high-level emergency situations.

5.13 Fires

5.13.1 Any type of fire on the mine site (within the fenced boundary) lasting more than 30 minutes from discovery must be immediately reported to the HSSE Manager.

(a) In the event of fire outside the mine property that places the mine downwind in the smoke plume, employees must be evacuated.
(b) The HSSE Manager must be immediately notified if this occurs.

5.13.2 Mine Structure/Surface Fires: When you discover a structure fire, follow these procedures.

5.13.2.1 Controllable Fires:

(a) *Call for help and attempt to put it out*. Use the fire extinguisher located in your area. The red, multi-purpose ABC extinguishers can be used for electrical fires, waste paper can fires, and/or oily substances.
(b) If the fire burned through a wall, ceiling, or caused apparent damage to the building or structural steel, the Emergency Response Team must be called to ensure the fire is completely out.
(c) Remember: Do not put yourself at risk; Never enter a smoke filled environment.

5.13.2.2 Large Uncontrollable Fires:

If you cannot put it out quickly, activate the fire alarm nearest you and evacuate.
(a) Isolate the fire by closing doors, if possible.
(b) Pull the fire alarm lever in alarm box if available in your area.
(c) Shut off gas and power supply, if possible.
(d) Notify the immediate supervisor. The supervisor will notify Security and HSSE.
(e) Evacuate the area.

5.13.3 Emergency Response Team: All of the hydrants are equipped with water cannons. If the structure on fire is beyond saving, your efforts should be concentrated on saving surrounding structures.

5.13.4 The Ironclad Security is responsible for:

(a) Requesting and ensuring radio silence. Activate the Mayday.
(b) Calling for the response of all emergency personnel needed
(c) Report wild land fires to the Teller County Dispatch, 719-687-9652.
(d) Providing unobstructed access to and from the scene for emergency personnel and equipment.
(e) Provide additional support to the Mine Rescue Team.
(f) Coordinate governmental mutual aid requests with Team Captain.
(g) Notifying Security, HSSE and Management.

5.13.5 Inform Ironclad Security

(a) Your name and location.
(b) Location of the fire.
(c) State what is burning.
(d) Give the size of the fire, direction, and spread if known.
(e) Determine if toxic chemicals may be involved.
(f) Report on efforts taken to control the fire.
(g) Number of injured personnel.
(h) Type of injuries.
(i) Type of help needed.
(j) Do not hang up until you are told to do so

5.13.6 All fires that last more than 30 minutes must be reported to the Health & Safety manager or an on call safety representative. All fires shall be investigated and incident reports completed.

5.13.6 Mobile Equipment Fires:

5.13.6.1 Manually activated fire suppression systems are installed on all large pieces of mobile equipment.

(a) Operators shall attempt to extinguish any fire immediately without exposing themselves to risk or injury.
(b) Equipment should be turned off, with keys removed, and brake(s) set.
(c) If immediate evacuation of mobile equipment is necessary, quickly set brakes, shut down engine, and ensure fire suppression is activated during dismount if at all possible.
(d) Notify your area supervisor by phone or radio.
(e) The area supervisor shall notify Ironclad Security.
(f) Upon notification of a fire, the water truck operator shall immediately travel to the fire area.
(g) The area supervisor shall be responsible for summoning the help needed to extinguish the fire.
(h) All personnel not assigned to specific jobs must keep clear of the area.
(i) Equipment on which there has been a fire or a suspected fire shall not be operated until an investigation has been conducted by both the supervisor and the Maintenance department.
(j) All fires and suspected fires must be reported to the area supervisor.
(k) It is the supervisor's responsibility to investigate the fire and report to the HSSE department and the Maintenance department on all equipment fires.

5.13.7 Chemical Fires: Before using water, identify the chemical using the Emergency Response Guide.
*** Note: Some chemicals react with water.**

5.13.8 Wildland Fires: This section covers range fires on mine property.

(a) Wildland fires are by their nature dangerous and unpredictable events that should be treated with great respect.
(b) Other than the obvious, threats arise from heat effects, smoke inhalation, and oxygen deprivation. Any wildland fire on mine property should be immediately reported to the area Supervisor.
(c) The area supervisor shall be responsible for summoning the help needed to extinguish the fire if necessary.
(d) All responses to the fire will be coordinated by the area Supervisor and the Production General Foreman.
(e) The security manager or his designee shall notify all landowners in the vicinity who might be affected by the fire.
(f) The General Manager shall be notified of any major fire, or a fire that threatens life or mine property.

5.13.9 The objective in responding to a wildland fire is to:

(a) Report it to Teller County Dispatch, 719-687-9652 or call 911
(b) Evaluate the danger to personnel and infrastructure.
(c) Continual monitoring of the fire for direction, speed, size, smoke, etc.
(d) Allocation of resources as needed.
(e) Evacuate to a safe place accounting for all persons on site.
(f) Help with fire in area as situation warrants and as directed by site management.

5.13.10 LPG Tank Fire Procedure:

Boiling Liquid Expanding Vapor Explosion (BLEVE)
Rupture and subsequent fire at the Liquefied Petroleum Gas (LPG) Tank.

(a) The first priority is to be directed towards saving lives, regardless of whether company property is at risk. Emergency Evacuation is warranted.
(b) The main aim in responding to an incident is to extract injured personnel, cool the tanks on fire to slow their disintegration, and evacuate all personnel a safe distance in a location not in line with the end caps on the tank.
(c) At the discretion of management, tasking may be directed towards extinguishing the fire and restoring the accident site to its normal working condition, only after all risks to personnel have been negated.

5.13.11 Explosives Fire:

(a) Report the emergency as described.
(b) Secure the scene to keep all people out of the area at minimum distance of 1/2 mile in all directions.

Do not, under any circumstances, fight an explosives fire; allow it to burn out.

***Note:** If a vehicle or structure containing explosives catches on fire, (i.e. engine compartment) attempt to extinguish the fire before it becomes a risk to the explosives.

5.13.12 Fire Reporting Requirements:

(a) All fires must be reported to the HSSE Manager.
(b) The HSSE Manager will report to the USFS and MSHA as appropriate.
(c) The insurance company will be notified.
(d) Proper documentation must be kept (i.e., pictures, date, time, circumstances, etc.). Documentation is the responsibility of the area Supervisor and HSSE.

Phone Contacts

HSSE Manager	719-689-4042	Cell 775-934-9652
H&S Manager	719-689-4036	Cell 775-385-7334
Mine Rescue Team Coordinator	719-689-4168	Cell 719-466-7513
H&S On Call	719-689-4328	
HSSE On Call	719-689-4300	

5.14 Emergency Response Procedures, Leaks, Spills, or Releases:

5.14.1 Any leak, or release outside containment areas and any unplanned spill into containment.

(a) Must be reported to the Environmental department immediately.
(b) All external notification and reporting shall be conducted by the HSSE department.
(c) An event report must be completed in Cintellate for every spill and release. To designate the difference between a spill and a release, a spill must be documented as a "Near-Miss" event.

5.14.2 Uncontrollable spills or releases must be reported to HSSE:

(a) Containment and cleanup activities shall only be performed as described in the Spill Prevention, Control and Countermeasures Plan (SPCC) or as directed by HSSE personnel.
   i. HSSE On-Call 719-689-4300
   ii. H&S On-Call 719-689-4328
(b) When handling chemicals, refer to the Safety Data Sheets (SDS) for handling and disposing of that particular material. Coordinate with HSSE to ensure proper disposal methods.

5.14.3 Any injuries requiring medical attention refer to the medical emergencies section. In all cases, the general response procedure shall follow:

1. SAFETY AND DETECTION	➢ Assess safety situation to yourself and others. ➢ If you cannot identify the substance, evacuate immediately and follow step 11. ➢ If there is a risk or fire or explosion, evacuate immediately and follow step 11. ➢ Shut off ignition source(s) if safe to do so.
2. TRACE SOURCE	➢ Put on appropriate PPE. ➢ Trace the source of the spill. ➢ Determine if spill is continuing.
3. STOP or CONTROL	➢ Stop or control the leakage by shutting valves, plugging holes, moving mobile equipment – only if it is safe to do so.
4. SECURE AREA	➢ Divert traffic and people away from the immediate area. Evacuate if necessary.
5. CONTAIN	➢ Contain the leakage using temporary berms, booms etc.
6. RECOVER PRODUCT	➢ Recover any free liquid into purpose built containers if possible. ➢ Recover absorbent booms etc.

7. CLEAN UP	➢ Clean-up the spill by pumping, absorbing, chemically treating. ➢ DO NOT SPREAD OR DILUTE SPILLS WITH DEGREASERS, DETERGENTS OR WATER.
8. DISPOSE	➢ Dispose of the spilled product as directed by the S&ER Department. ➢ Contaminated soil should be removed to an appropriate area (e.g. Hydrocarbon contaminated soil can be remediated).
9. CONFIRM CLEAN UP	➢ Clean-up all obvious contamination as directed by the S&ER Department; if contaminated area is indistinct (due to moisture, rain), collect samples for analysis. ➢ All cyanide contaminated soil ≥ .2 PPM WAD must be excavated or treated in place. ➢ Monitor the spill site to validate clean up and impact on the environment. ➢
10. REPORTING	➢ Enter all information into Cintellate as soon as possible including pictures and any lab analyses performed. ➢ Any external reporting shall be conducted by HSSE Department.
11. REPLACE USED EQUIPMENT	➢ Any equipment or materials consumed in the cleanup operation should be replaced as soon as possible. ➢ Items to restock Spill Kits can be obtained from Warehouse.
12. EMERGENCY NOTIFICATION	➢ Contact your supervisor. ➢ Contact Ironclad Security and the appropriate Environmental personnel. ➢ Contact HSSE Personnel per the call out sheet.

5.14.4 The use and location information and specific procedures for responding to chemical leaks and/or spills for major mine chemicals are outlined below.

<u>Sodium Cyanide (Liquid):</u> CYANCO EMERGENCY RESPONSE SERVICE (775) 623-1214

5.14.5 Use and Location:

(a) Cyanide is delivered to the Cripple Creek & Victor mine site by the transport company Transwood for Cyanco via tankers.
(b) Delivered as a Concentrated Sodium Cyanide - 30% reagent grade solution.
(c) The product is located at the bulk reagent area.

5.14.6 Danger:

(a) Sodium Cyanide is highly toxic and safe work practices must be adhered to, to prevent exposure.
(b) Death may occur due to asphyxiation.
(c) Sodium Cyanide is non-flammable but may produce highly flammable and toxic hydrogen cyanide (HCN) gas upon contact with acids.

5.14.7 Sodium Cyanide is an acute poison and acts rapidly as it enters the body either by:

(a) Inhalation of HCN gas or cyanide dust.
(b) Ingestion of solid or solution.
(c) Absorption through skin or eyes.
(d) The TLV for HCN is 4.7ppm and is highly toxic.

5.14.8 Response Procedure:

(a) Refer to Guide 157 of the Department of Transportation (DOT) Emergency Response Guidebook for emergency response information.
(b) Keep upwind of release or spill. Evacuate the area immediately in all directions at least 150 feet. Refer to the Table of Initial Isolation and Protective Action Distances in the DOT Emergency Response Guidebook for further evacuation information.
(c) Equipped with the appropriate monitor for HCN gas detection.
(d) Detectors are located in the Control Rooms at ADR I, ADR II, PSES, High Grade Mill, Crusher Millwright Shop, and Mine Rescue/Safety building.
(e) SCBA and full protective clothing/gear shall be worn.
(f) If the leak/spill has breached a concrete containment, use surrounding soil to berm the spill.
(g) Remove all contaminated soil to the heap leach area or as directed by the HSSE department.
(h) Refer to fluid management plan.

5.14.9 Sodium Cyanide – (Diluted Process Solution):

(a) This procedure is for diluted, weak cyanide solutions.
(b) The solutions may be high pH and may cause injury to exposed skin.

5.14.10 Use and Location:

(a) Dilute cyanide solution is used at all process facilities to extract precious metal from ore.
(b) The primary leachate, pregnant solutions, and tailings of the process solutions all contain weak acid dissociable (WAD) cyanide in concentration ranging from less than 1 mg/L to greater than 120 mg/L.

5.14.11 Response Procedure:

(a) Equipped with the appropriate monitor for HCN gas detection.
(b) Detectors are located in the Control rooms at ADR I, ADR II, PSES, High Grade Mill, Crusher Millwright Shop, and the Mine rescue/Safety building.
(c) Control flow by shutting down pumps/valves.
(d) If solution has breached concrete containment, control area of spill by constructing soil berms for spill containment.
(e) Remove all wet soil to the heap leach area.
(f) For large areas of contamination, soil samples will be taken and analyzed for WAD cyanide levels to verify contamination area limits.
(g) After cleanup is complete, take further soil samples and analyze them to verify that total cleanup was successful.

5.14.12 Tractor/Trailer Spills:

(a) A large percentage of the cyanide used in Newmont CCV operations is supplied by Cyanco. Drivers for Transwood, the Cyanco contracted transporter, are trained in the operation and use of the Qualcomm Satellite Communication System for emergency response.
(b) If the tanker has not sustained damage and the driver is not injured, the driver will initiate an emergency response utilizing the Qualcomm System. Emergency containment and clean-up is initiated by and handled by Cyanco.
(c) In the event of a serious incident on the mine property whereby the prime mover radio is not available, and cyanide has been spilt, the supervisor is to call Cyanco with details of the incident. Call 911.
(d) If cyanide solution is released from the tanker, the MRT is to be organized immediately with the appropriate safety equipment to contain the release before it leaves the property or enters a waterway.

(e) The action to be taken after containment of the release will be determined in conjunction with Cyanco.

5.14.13 Overtopping of Leaching Impoundment/Power Outages

(a) During a severe emergency (power outages, pump failures, etc.), if the operator determines there is a possibility that any of the leaching impoundment could overtop, management personnel will be notified and heavy equipment and personnel will be mobilized to construct an emergency berm adjacent to the area to contain the release.
(b) Process solutions contained in a temporary emergency containment basin will be pumped back to the process following the emergency.
(c) Cyanide-contaminated soils will be removed and disposed of on the heap leach pad or tailings impoundment. If necessary, soils would also be neutralized.

5.14.14 Run-off from Heap Leach Pads:

(a) In the event that runoff is observed from the leach pads, management personnel will be notified and heavy equipment and personnel will be mobilized to construct an emergency berm area adjacent to the area to contain the release.
(b) Process solutions contained in a temporary emergency containment basin will be pumped back to the process following the emergency.
(c) Cyanide-contaminated soils will be removed and disposed of on the heap leach pad or tailings impoundment. If necessary, soils would also be neutralized.

5.14.15 Tanks, Pipelines and Transfer Off Loading:

(a) In the event of a release of cyanide solution beyond an engineered containment structure, the Process Manager or control room will be notified and will take immediate measures to stop the release.
(b) If necessary, emergency berms or dikes will be constructed to contain the release until necessary equipment and personnel can be mobilized to clean up.
(c) Personnel and community safety is always the first priority. In case of a leak or release during off loading, the transfer driver will shut system down and notify operator of area to call appropriate personnel and equipment.
(d) In case of an uncontained seepage, notification to foreman, general foreman or manager will be made. Employees using a gas monitor and appropriate PPE will control seepage. If employees are unable to contain the seepage, rescue personnel will be brought in for control.

5.14.16 Fire/Explosions:

(a) Do not use straight streams.
(b) Use water spray, fog or alcohol resistant foam to extinguish fire and to reduce vapors.
(c) Control/contain fire water runoff for later disposal.

5.14.17 Treatment of Victims of Cyanide Exposure:

Symptoms of early or mild cyanide poisoning include:

(a) Headache
(b) Giddiness
(c) Nausea
(d) Difficulty in breathing – suffocating feeling.
(e) Feeling of general weakness with heaviness in arms and legs.
(f) Irritations of nose, mouth and throat.

5.14.18 Symptoms of severe cyanide poisoning include:

(a) Cherry red complexion, flushed
(b) Gasping for breath
(c) Loss of consciousness
(d) Breathing may be weak or absent and may result in cardiac arrest and possible death.

5.14.19 Routes of Exposure:

(a) Eye Contact: Cyanide is carried in a solution of water and caustic to maintain a high pH. Immediately flush with large amounts of water for at least 20 minutes, eyelids should be held open.
(b) Skin Contact: Remove contaminated clothing and wash skin thoroughly with large amounts of water.
(c) Ingestion: Do not give anything by mouth.
(d) Protection of Rescuers: Care should be taken in handling a patient whose clothing is contaminated with cyanide.
***Note:** It is important that the rescuer is not exposed to contamination.

5.14.20 NOTE: Rescuer must avoid becoming a casualty and wear a SCBA over 10 ppm HCN.

5.14.21 Semiconscious or Unconscious Breathing Victim All Routes Of Exposure:

(a) Symptoms of drowsiness and or slurred speech.
(b) Position patient to keep airway open.
(c) Give Oxygen high dose 15 liter. Non Rebreather
(d) Get Cyanide Antidote Kit – administered by MRT

5.14.22 Unconscious Non-breathing Victim All Exposure Routes:

(a) Use of a one way valve pocket mask when artificial respiration is necessary or bag valve mask with oxygen.
(b) Perform CPR using CAB (Circulation, Airway & Breathing) protocol, until the victim has adequate breathing or until medical help arrives.

5.14.23 Location of First Aid Equipment: Red MRT Bag
(a) Carlton Security
(b) HG Mill Control Room
(c) ADR I Control Room
(d) ADR II Control Room
(e) Lab
(f) Mine Rescue Truck

5.14.24 Eye wash stations are located in all process areas where cyanide is located

5.14.25 Response Procedure:

(a) Personnel shall wear full protective clothing/gear.
(b) SCBA's or chemical goggles and face shield should be used to protect the face.
(c) If the spill has breached a concrete containment, control with soil berms.
(d) Solution should be returned to the process circuit

5.14.26 Caustic Soda: (50% NaOH): Used as a pH modifier, primarily as initial dilutant of sodium cyanide.

5.14.27 Response Procedure:

(a) Personnel shall wear full protective clothing/gear.

(b) SCBA's or chemical goggles and face shield should be used to protect the face.
(c) If the spill has breached a concrete containment, control with soil berms.
(d) Dilute spill with water

5.14.28 Hydrogen Peroxide:

Hydrogen Peroxide is used to manufacture the CAROs acid used to detoxify cyanide in tailings and is located at the Warehouse Facility

5.14.29 Response Procedure:

(a) Personnel shall wear full protective clothing/gear.
(b) SCBA's or chemical goggles and face shield should be used to protect the face.
(c) If the spill has breached a concrete containment, control with soil berms.
(d) Small spill flood with water to dilute and neutralize spill.
(e) Large spill absorb with dry earth, sand or other non-combustible material.
(f) Although diluted, neutralized hydrogen peroxide has converted to water, the solution should be returned to the process circuit as a best management practice.

5.14.30 Teller County Emergency Medical Services Protocol

5.14.30.1 Hydroxycobalamin Administration:

Only authorized Mine Rescue Team Member or Teller County EMS can administer this drug.

5.14.30.2 Indications:

Treatment of known or suspected cyanide toxicity / exposure.
(a) Common symptoms: headache, confusion, dyspnea, chest tightness, and nausea.
(b) Common signs: AMS, seizures, coma, mydriasis, tachypnea (early), apnea (late),
(c) Hypertension (early), hypotension (late), cardiovascular collapse, vomiting, and
(d) Elevated lactate.

5.14.30.3 Precautions:

(a) Caution in patients with history of anaphylactic reactions to hydroxycobalamin or cyanocobalamin, but consider administration if life threatening cyanide toxicity.
(b) No pediatric doses are known for the United States, but non-US areas have used a dose of 70mg/kg IV for treatment of pediatric patients.

5.14.30.4 Adverse Reactions:

(a) Substantial increases in blood pressure may occur follow administration.
(b) Administration should NOT be withheld due to hypertension however; patient will likely have a change in urine and secretion color as well as skin redness after administration.
(c) Co-oximetry including carboxyhemoglobin levels can be inaccurate after administration due to the bright red color of the medication.

5.14.30.5 MRT or Teller County EMS Medication Administration:

(a) Assure separate IV line (this medication cannot be given in the same line as the other medications).
(b) Reconstitute the 5 gram vial of hydroxycobalamin with 200 mL of 0.9% normal saline (lactated ringers or D5W can be substituted if needed).

(c) Use the spike on the hydroxycobalamin vial to introduce the normal saline INTO the hydroxycobalamin vial.
(d) **The line on the hydroxycobalamin vial marks 200mL.**
(e) Following the additions of the diluents (normal saline) to the vial, the vial should be repeatedly **inverted or rocked (NOT shaken) for at LEAST 60 seconds prior to infusion.**
(f) Administer the medication IV over 15 minutes.
An additional dose of 5 grams hydroxycobalamin may be administered as above for a total dose of 10 grams depending on patient signs and symptoms.

5.14.31 Hydrochloric and Nitric Acid:

(a) Hydrochloric Acid is used in the Met Lab in small quantities less than 1 gallon. Nitric Acid is used at the Met Lab In small quantities less than 1 gallon.

5.14.32 Response Procedure:

(a) Personnel shall wear full protective clothing/gear and SCBA (For low concentrations of HCl, use acid gas respirators).
(b) If the acid has breached a concrete containment, control spill with soil/sand.
(c) Small spill dilute with NaOH and mop up or absorb with an inert material.
(d) Control HCl vapors with water spray.
(e) Remove contaminated materials under the direction of the Environmental department instructions.
(f) Return spilled solutions to the process circuit

5.14.33 Propane/Natural Gas:

Propane is in limited use at CC&V and primarily for refill of smaller portable propane tanks. Natural gas is used to heat process, maintenance, office buildings and process solution.

5.14.34 Emergency Procedure:

(a) Extinguish/remove all sources of ignition from spill area.
(b) Shut down source of fuel supply.
(c) If the fuel leak is on fire do not put the fire out until the fuel leak has been shut off.

5.14.35 Diesel, Gasoline and Other Petroleum Products:

Gasoline and clear Diesel is located south of Mine Maintenance building. Diesel is located west of the lower ready line.

5.14.36 Emergency Procedure:

(a) Extinguish/remove all sources of ignition from spill area.
(b) Shut down source of fuel supply.
(c) Use absorbent pads or other absorbent material to absorb the spill.
(d) Non- dripping absorbent materials may be taken to the landfill dumpster.

5.14.37 Nuclear Incidents:

Detailed emergency response procedures are included in the Colorado Radioactive Material License's and in Hazardous Waste Contingency Plan.

5.14.38 In the event of a release or radioactive material:

(a) Barricade: Leave the area, and prevent others from entering the area with a suitable barricade.

(b) Inform Supervisor: and provide the following information
  (1) Location and description of in incident.
  (2) Identification of persons involved.
  (3) The nature and extent of any injuries.
  (4) Time of incident.
  (5) Inform radiation safety officer.

5.14.39 Site Control Nuclear Incidents:
Detailed emergency response procedures are included in the Colorado Radioactive Material License's and in Newmont's Rapid Response Procedures.

Medical Emergency Numbers:

Ironclad Security R-1 719-689-4127 or Ext 18127

*Note: If there are any inquiries from the media, they are to be referred to and handled by External Relations and General Manager. For any suspected response to anthrax or biological hazard emergencies, response procedures will be in accordance with MRT procedure dealing with anthrax and biological hazard emergencies. The intent of the emergency spill response plan is to provide essential information and the protocol to follow in the event of a hydrocarbon or chemical spillage.

5.15 Medical Emergencies/Accidents

5.15.1 In the event of a serious injury/accident, the first priority is prevention of additional injury. The first responder should take all precautions to prevent injury to his self and others prior to commencing a rescue. Move the victim only if they are in grave danger. Trained first aid personnel are scheduled on each shift and should be contacted as soon as possible to render aid and transport the injured

5.15.2 Assess the accident scene:
(a) Secure the scene before entering.
(b) Identify the mechanism of injury.
(c) Assess the victim with care.
(d) Treat/Stabilize life-threatening injuries.

5.15.3 Notify the Ironclad Security or Mill Control by radio or phone. Follow the Mayday procedures State: "I have a medical emergency" and give location.

5.15.4 The area supervisor is responsible for:
(a) Calling for the response of all emergency personnel needed, and requesting radio silence when necessary.
(b) Providing unobstructed access to and from the scene for emergency personnel and equipment.
(c) Providing any additional support requested by emergency personnel.
(d) Notifying Security, HSSE, and Management.

5.15.5 Radio silence must be maintained during the emergency, when requested.

5.15.6 External phone calls, pictures, social media posting, contacting family, contacting media or government agencies is strictly prohibited.

5.15.7 Give the following information:
(a) Your name

(b) Location
(c) Nature of the injuries and number of injured persons (do not give names)
(d) Type of help needed, i.e., gear, transportation and personnel.
(e) # of emergency personnel already on scene.
(f) Make sure help is on the way.
(g) Do not hang up until told to do so.

5.15.8 Fill out witness statement, first aid report or incident report as needed

5.15.9 All accidents/incidents will be investigated in accordance with Newmont North America Procedures.

5.15.10 All attempts should be made to prevent injured or ill persons from leaving the property unless accompanied by at least one other individual. If the company mine rescue vehicle is used, a minimum of two people must accompany the injured - An EMT or first responder to render aid and one other to drive. The mine rescue vehicle is not to leave site.

5.15.11 If a medical emergency or accident occurs that requires patient transport to the hospital, the supervisor, dispatch, mill control or security can call Sheriff Dispatch 9(911) and request Teller County EMS or alternate Air Transport.

5.16 Air Ambulance Landing Requirements & Coordinates

5.16.1 Helicopter Landing Zone Requirements:
(a) Minimum clear area of 100' x 100' with a slope of less than 10 degrees.
(b) Remove debris and unsecured items.
(c) Alert access air ambulance of surrounding hazards; power lines, trees, etc.
(d) Assist the pilot in landing.
(e) One emergency vehicle with flashing light adjacent to landing site.
(f) At night, turn off headlights and spotlights just prior to landing.
(g) Use flags to indicate wind direction.
(h) Keep crowds back 100 ft. from helicopter at all times.
(i) Never approach the aircraft from the rear or while the blades are in motion, unless signaled to do so by the pilot.

5.16.2 Landing zones
(a) **Ironclad #1** – Helicopter Pad located North West of Ironclad Building. North 38 degrees 44min.47.4533 sec. by West 105' 08 min. 56.801 sec. Elevation 10482.09

(b) **Victor #2** – Helicopter Pad North 38 degrees 42' 63 West 105 degrees 7' 94

5.17 Fatal/Potentially Fatal Accidents

5.17.1 Accidents which result in fatalities require special action.
(a) **HSSE manager must be called immediately!**
(b) If the injured party is clearly and definitely deceased, the remains are not to be moved until authorization is received from the Coroner and applicable regulatory agencies.
(c) The HSSE department has the responsibility coordinate with Security to ensure notification of the Coroner.

(d) HSSE takes the lead in reporting fatalities to MSHA.

5.17.2 In the event of an on-the job fatality, the following responsibilities shall apply:

5.17.2.1 The Immediate Supervisor/or his/her designee will:

(a) Suspend work activity in and around the accident scene. Evacuate all personnel to a staging area. Barricade the area surrounding the accident scene to ensure evidence is preserved.
(b) The above step for securing the scene should also be followed in the event of any serious or major property damage (greater than $250,000).
(c) Notify promptly the following:
  (1) Emergency Response Team.
  (2) His or her immediate Supervisor who in turn will notify the Department Manager and the Functional Area Manager.
  (3) A representative from the Health and Safety Department who will in turn notify the Sr. HSSE functional area Manager who will advise the Regional Director of HSSE.
  (4) Confine the information to the facts of the accident. Radio discussions of the accident must be limited to emergency information only. Names or equipment numbers will not be broadcast.
  (5) Preserve the accident scene and all physical evidence. Accident site visits will be limited to only necessary emergency response personnel, security personnel and appropriate management.

5.17.2.2 The Director of Human Resources will:

(a) Notify the Manager of External Relations.
(b) File a notice of industrial accident to the company Workers' Compensation administration to file.
(c) Notify the next of kin as promptly as circumstances allow. Company officials and the coroner or his representative must make this notification.
(d) Ensure that crisis counseling is available for co-workers and response personnel, as soon as practical, after the accident.

5.17.2.3 The Functional Area HSSE Manager will:

(a) Upon notifying and receiving approval from the Health and Safety Regional Director (who advises the Vice President of Operations or designate of the decision to notify) will notify the appropriate Federal Agencies as soon as possible.
(b) Coordinate the legal requirements of all local, state, and federal agencies that have jurisdiction in the case. Coordinate the gathering of all records that the government agency's request during their investigation.
(c) Conduct a briefing session with representatives from the MSHA, and County Sheriff's Department prior to their inspection of the accident site.
(d) Report the facts of the accident, after the investigation has been completed, in writing to the General Manager, Department Manager, Director of Health and Safety and the Director of Human Resources. Include copies to be sent to MSHA, and County Sheriff's Department, after approval by the Operations Director.

Note* No information will be given to any other source or agency without authorization from the Regional Director of Operations.

5.17.3 Release the accident site as soon as possible, being consistent with the requirements of the law and governmental agencies.

5.17.4 The Functional Area Manager:

(a) Promptly advise the Vice President of Operations for the region of the facts of the fatality/injury.
(b) Ensure all procedures are followed.

5.17.6 The Investigation Team:

(a) Due to the nature of fatalities, special emphasis is taken to investigate the accident, determine the causes and take the necessary steps to prevent any reoccurrence. All fatalities will be investigated by a Special Investigation Team, consisting of:
  (1) The Functional General Manager
  (2) The Department Manager
  (3) The Superintendent of the Area Affected
  (4) Sr. HSSE Manager and Regional Director
  (5) Others, as determined by the Regional Director of Operations and as circumstances require, e.g. technical advisors.
  (6) The supervisor is responsible for completing a preliminary report of the accident. The Investigation Team will complete and distribute the final report as appropriate.

5.17.7 The Manager of External Relations will:

(a) Be the sole and immediate contact with the Press.
(b) Following the notification of next of kin, and with approval of the Executive Director of Operations, prepare and distribute a holding statement.
(c) Notify the Head of Corporate P.R.

5.17.8 The Manager of Security will:

(a) Secure the Company's security gates to prevent press officials and other unauthorized people from entering the mine property.
(b) After receiving permission from the Director of Health and Safety, and in the presence of a witness, impound and catalog the personal effects of the deceased and forward them to the Director of Health and Safety, who will provide to the Director of Human Resources for delivery to the deceased's family.
(c) Notify the appropriate Coroner and Police departments of the fatality.

5.17.10 Regional Legal Counsel will:

(a) Contact corporate legal to discuss the work related fatality.
(b) Contact the retained Legal MSHA consultant to advise and discuss.

5.18 Premature Blast or Unplanned Explosion

5.18.1 In the event of a premature blast or unplanned explosion:

(a) The employee involved shall notify his/her Supervisor giving all known details.
(b) All equipment and materials shall be left in place.
(c) Any mobile equipment not involved must evacuate the area.
(d) The area shall then be secured for investigation.
(e) After securing the area, the Supervisor will notify the HSSE Manager for MSHA reporting.
(f) HSSE will assist with the investigation as soon as possible following the incident.

5.18.2 In the event HSSE are unavailable, notify the first person you can according to the following list. The first person contacted will assume responsibility for contacting the others on the list:

(a) General Manager
(b) Department Manager
(c) Department Superintendent
(d) General Foreman

5.18.3 All blasting and mining equipment affected by the blast will be checked for defects and damages before being released for use.

5.18.4 The HSSE Manager shall report the results of the investigation to the General Manager. If appropriate, the cause(s) of the unplanned event and corrective action taken should be relayed to all affected employees during a subsequent safety meeting.

5.18.5 If an injury has occurred, refer to the Medical Emergencies/Accidents Section of this manual for proper response procedures.

5.18.6 MSHA requires immediate reporting for the following:

(a) An unplanned ignition or explosion of gas or dust at a mine.
(b) An unplanned mine fire not extinguished within 30 minutes of discovery.
(c) An unplanned ignition or explosion of blasting agent or an explosive at a mine.

5.18.7 HSSE management is responsible for notifying MSHA within the prescribed time limit. HSSE shall also notify the Division of Reclamation Mining and Safety.

5.19 Motor Vehicle Accidents

5.19.1 Accidents involving personnel and motor vehicles can occur at any time or place either on the mine site or off.

5.19.2 The first priority in responding to a motor vehicle accident is to establish if injury has occurred, to preserve life and render prompt and effective assistance.

5.19.3 Precedence is to be directed towards saving lives, regardless of whether company property is at risk. If persons are injured as a result of a motor vehicle accident refer to the medical emergencies section.

5.19.4 After all injured persons have been treated; efforts may be directed towards preserving company property.

5.19.5 At the discretion of management, tasking may be directed towards removing the vehicle and restoring the accident site to its normal working condition, only after all risks to personnel have been negated.

5.19.6 Any motor vehicle accident off of the mine property must be reported to the proper authorities (State, County or City). This includes single vehicle incidents, for example: pick up and cow collisions, single vehicle rollovers, etc. For injury incidents call **(911),** for non-injury incidents call Teller County dispatch at **719-687-9652** and they will make sure the correct jurisdiction is notified.

5.19.7 The applicable department head and HSSE is to be notified as soon as possible.

5.20 Equipment/Light Vehicle/Person in a void

5.20.1 Equipment/Light Vehicle/ Person in a void

(a) In the event any of the above listed unexpectedly enters a void, a Mayday shall be called. All MRT personnel are to report to the scene. CCFD shall be notified immediately and advised that we have a void rescue. The aerial is requested along with SWTC ambulance. A person from the voids group or GEO tech group shall be notified immediately as well as a member of the H&S team.

(b) An attempt to make contact with the person shall be made from a safe location to see if there are any injuries and current conditions in the void. Operator should be reminded at this time to stay in the cab if applicable. In the event there is a trapped miner or no communication can be made, the H&S manager or representative shall be notified immediately.

(c) Upon arrival, MRT will take command of the scene and do a complete scene assessment, designation of the rescue area and order more resources if needed (Divide Fire High Angle Team). MRT will coordinate a rescue plan with CCFD and the GEO tech. voids group. The rescue will be carried out per the plan.

(d) Newmont's fall protection policy will be followed at all times when working within 10' of the void. All rescues will be performed using the Mine Rescue high angle guidelines and a two rope system.

5.21 Severe Weather Conditions/Natural Disasters

5.21.1 In severe weather, seismic, or other natural disaster situations, the supervisor will keep personnel away from high risk areas created by the condition.

5.21.2 Examples Are:

1) High winds or earth movement
   a. Stay away from power lines, high walls, and embankments that may be affected.
   b. Lifts involving cranes and/or working at heights shall be suspended
2) Extreme precipitation (heavy rain, snow)
   a. Keep personnel and equipment out of possible flash flood areas.
   b. When visibility is limited, traffic will cease on the haul roads. TARP
3) Heavy snow
   a. Maintain accessibility for personnel and emergency equipment.
   b. In the event of public road closures, appropriate accommodations will be provided
4) Lightning
   a. Keep personnel out of non-protected elevated areas and other high-risk situations.
   b. Outdoor work will cease and those affected will immediately seek shelter.

5.21.3 In the event of severe weather conditions or other natural disaster situations, the shift supervisor shall notify the department manager and/or general manager for instructions. The supervisor is responsible for maintaining the safety and welfare of his crew.

5.21.4 The supervisors of each department will take steps to notify off-shift personnel of changes in schedules, duration of closure, and other pertinent information as instructed by the department manager.

5.21.5 Process components (leach pads and ponds, power lines, etc.) should be evaluated by the supervisor with appropriate action taken.

5.21.6 Floods:

Floods can be a problem and are a safety issue predominantly when crossing flooded creeks and previously dry gullies.

(a) Do not cross floodways if the depth of water is unknown or greater than one foot.
(b) If the depth is less than one foot but the water is flowing very fast, discretion must be used.
(c) If the depth of water is less than one foot, stop. Cross slowly in the center of the road. Engage 4 wheel drive if available.
(d) After traversing floodway, test brakes before continuing.
(e) If vehicle stalls in floodway, remain inside the vehicle and call for help via the radio or cell phone if available. Wait for help to arrive.
(f) If another vehicle is stopped in a floodway, ensure your own safety and call for help on the radio or cell phone if available. Wait for the appropriate help to arrive.

5.22 Earthquakes

5.22.1 In the event of an earthquake, there are actions to be taken during the quake and there are actions that should be done immediately following the quake. Please note that an earthquake is unpredictable and therefore, stay alert and aware of your surroundings. The following is a list of items to do in the event of an earthquake.

5.22.2 If you are inside a building:

(a) Do not run for the exits. (Most people injured in earthquakes by falling objects).
(b) Crouch under a heavy desk or table or stand in a doorway and brace yourself.
(c) Move away from windows or other objects that could break, fall or shatter.
(d) Expect fire alarms and sprinkler systems to activate.

5.22.3 If you are outside:

(a) Stay away from the collapse zone of buildings, utility poles and lines and other structures that could fall.
(b) Move away from high walls, stockpiles or any area where ground control could be compromised.

5.22.4 If you are in a vehicle:

(a) Stop the vehicle and stay inside until the shaking stops.
(b) Do not stop near structures or buildings that could fall.
(c) Move away from high walls, stockpiles or any area where ground control could be compromised.

5.22.5 After the quake:

(a) Quickly assess your area for secondary emergency situations such as fires, chemical spills or explosions. If there are injuries or other emergencies requiring response teams, report the situation as described on front page. (Please be aware that help or medical aid may not be immediately available).
(b) Do not perform any activity that may cause a spark, including lighting of matches.
(c) Evacuate the area, if either your location is unstable or you are notified to.

(d) Upon evacuation, move upwind (and uphill if possible) of all facilities.
(e) Anticipate subsequent aftershocks.
(f) Have maintenance personnel inspect and isolate utilities.
(g) Site Emergency Response Teams will be activated for major earthquakes or other natural disasters to assist departments with inspections of areas to insure they are safe.
(h) Maintenance and engineering personnel should inspect areas for any damage that could pose a threat to personnel.
(i) Only after maintenance inspections are completed and the results are reviewed with the respective Superintendent(s), will personnel be allowed to return to buildings.

5.23 Emergency Utilities Shutdown

5.23.1 The utilities that will be considered under emergency shutdown are:

(a) Propane/Natural Gas
(b) Process Water
(c) Fire Water
(d) Electrical

5.23.2 The shutdown of these utilities in catastrophic events remains the responsibility of the mine/process facility maintenance personnel in conjunction with the Emergency Response Team.

5.23.3 Utility Emergency Shutdown:
The following personnel are able to shut off main supply disconnects in the utility areas if they properly trained to do so:

(a) **Propane/Natural Gas:**
  (1) Main tank control panels: Mine Maintenance Personnel, Process Maintenance/Process Operations Personnel
  (2) Main property distribution shut-off valves: Maintenance Personnel, Process Supervisor/Operator
  (3) Main building feed valves: Mine/Process Maintenance/Process Operations personnel, Area Supervisor, Emergency Response Team members.
(b) **Fire Water System**
  (1) Main supply valves at water tank (This will be done only on a management decision): Maintenance Personnel, Process Supervisor, Emergency Response Team
  (2) **Main Building Shutoff:** Process Maintenance/Operations personnel, Area Supervisor, Emergency Response Team
(c) **Process Water System:** Handling of hazardous materials is of prime consideration in process shutdown (i.e., pH balance for cyanide).
  (1) Main supply valves and pumps: Process Operations personnel, Process Maintenance personnel
(d) **Electrical System**
  (1) Main transformers, MCC room building master closures: Electrical Personnel
  (2) Equipment and area disconnects below 500v rating: Area Supervisor, Area Personnel and Emergency Response Team.

5.23.4 Area personnel are trained in the lock-out of electrical utilities up to 500v and will retain this responsibility. In catastrophic situations, electrical/maintenance personnel, in conjunction with the ERT, will assume responsibility for all main property and main building disconnects.

5.23.5 The master power substations, MCC rooms and the emergency power require the skills and knowledge of electrical personnel.

5.23.6 Only trained Electrical, Maintenance or Process Operations personnel are responsible for starting emergency power.

5.23.7 The Mine department has portable light plants available for use. These light plants are normally located on the heavy equipment "ready line" unless they are in use in the mine area. In case of power outage call. Black Hills Energy 1-800-694-8989

5.24 Off Site Support Training and Drills

5.24.1 Off Site Response:

(a) Newmont will respond to off-site medical/accident emergencies when requested to do so, subject to the availability of the proper equipment, expertise.
(b) Authorization to respond to off-site accidents, injuries, fires, chemical or hazardous material spills, if requested, is the responsibility of the General Manager or his designee.
(c) Should the landowner (DOT, BLM or etc.) request support, the request will be in writing and the requestor should give permission for assistance and cleanup.
(d) Response will not be given when liability or other legal uncertainties are present.

5.24.2 Newmont's response will be limited to "first responder" status. Professional help should be called to terminate the emergency. Emergency transportation may be provided to meet the professional service enroot if the situation warrants.

5.24.3 In the case of a transportation accident involving injury and a hazardous material spill, the first priority must be the safety of the employees. The decision to respond should be based on knowledge of the material spilled and the ability to help the injured without placing anyone in danger.

5.24.4 Support for Responding to Emergencies:

5.24.4.1 Newmont Sites:

Newmont personnel are responsible for the initial, technical and specialized response to onsite emergencies.

5.24.4.2 Area Mines:

Newmont will work with area mines in developing mutual aid agreements. Response to off-site emergencies requires management approval.

5.24.5 On Site Contractors:

Contractors are required to supply an Emergency Procedure Plan and Training Program to Newmont for approval.

5.24.6 Suppliers and Carriers:

(a) Suppliers and Carriers are required to supply an Emergency Procedure Plan and Training Program to Newmont for approval.
(b) Suppliers and Carriers responsible for transporting hazardous material must provide that vehicles and drivers meet or exceed all DOT rules and regulations regarding the transportation of hazardous material.

(c) Suppliers, carriers and governmental agencies bear the primary responsibility to respond to hazardous chemical spills of their product prior to reaching Newmont mine sites.

5.24.7 Public Sector:

(a) Newmont will work with local and State Emergency Planning Committees in developing mutual aid agreements.
(b) Response to offsite emergencies requires a request from governmental agencies and Newmont management approval.

5.24.8 Annual Training Program:

(a) This Plan can only be successful if training programs are instituted.
(b) The main goal of the training programs is to prepare personnel in general and the members of the Emergency Response Team of Newmont Operations, to be able to act efficiently, speedily and safely during an incident.

5.24.9 Training for Employees:

All employees will receive training on pertinent sections of the site Emergency Response Plan.

5.24.10 Training for Management:

(a) Site and Regional Rapid Response teams will receive annual training in use of the Newmont Rapid Response process.
(b) All supervisors and lead men will receive training on the contents of the site Emergency Response Plan.

5.24.11 Carriers and Suppliers:

Suppliers and Carriers responsible for transporting hazardous material, must provide proof of required DOT training regarding the transportation of hazard material.

5.24.12 Emergency Response Team Training Program:

Each of the courses described must have a purpose, performance objectives and training objectives. This way, it will be possible to evaluate the training program, the subjects and student learning (training objective):

1) Course on Fire Fighting
2) Course on Hazardous Materials Emergencies
3) Course on Advanced First Aid
4) Course on Vehicle and Equipment Rescue
5) Course on Rope Rescue
6) Course on the Incidents Command
7) Course on Confined Space Rescue

5.24.13 Drills Program:

For the training program to be successful, ensure an adequate response and an adequate revision of this plan, it is necessary to establish a Drills Program.

5.24.14 Unannounced Drills:

An unannounced drill must be conducted each year, with the actual mobilization of equipment and resources, in a real time simulation.

5.25 Procedures for Updating and Revising the Plan

5.25.1 In order to evaluate and keep the Emergency Plan current, regular audits will be established and conducted with the assistance of consultants.

5.25.2 Review of the plan will be conducted annually or after emergencies. Updates of all information gathered on the field as well as the results of the simulations will be reflected.

Appendix A

When you get a call for an emergency:

Find Out

- If it is a first aid call or threat to life or property.
- The nature of the emergency, location, and number of people involved.

If emergency is life threatening or unknown

- Call Mayday

Inform Security of:

- Nature of the incident
- Location of the incident
- Number of people involved
- Who to contact and what channel to contact them on
- Call 911 and request an ambulance. Inform 911 that a CC&V team member will meet the ambulance at the designated Security Gate.
- Coordinate with supervisors, designee or rescue team to meet the ambulance at the gate. Escort them to the location.

Company Emergency Contacts:

Emergency Response Coordinator	Greg Raley	719-466-7513
HSSE Manager	Justin Raglin	775-934-9652
H&S Manager	Ryan Mullin	775-385-7334
Security	Jeff Roberts	719-685-6452
Environmental On Call		719-689-4300
Health & Safety On Call		719-689-4328
Ironclad Security:		719-689-4127

County Emergency Contact Numbers:

Teller County Ambulance, Fire, Sheriff	719-687-9652	or 911
Cripple Creek Fire Dept.:	719-689-0240	
Cripple Creek Fire P.D:	719-689-2655	
Pikes Peak Regional Hospital	719-687-9999	

ATTACHMENT 9

TECHNICAL MEMORANDUM

9400 Station Street
Suite 300
Lone Tree, CO 80124

T: 720.508.3300
F: 720.508.3339

To: **Jofreé Durán, Cripple Creek & Victor**

From: **Nick Rocco, NewFields**

Reviewed By: **Jay Moore, NewFields**

Project: **Cripple Creek & Victor Gold Mine VLF2 Stability Re-Evaluation**

Project No: 475.0106.028

Subject: **VLF2 Tailings Study Laboratory Testing & Stability Re-Evaluation**

Date: 19 February 2019

1.0 BACKGROUND

NewFields Companies (NewFields) was requested by Newmont Mining Corporation (Newmont) to perform testing on various ore and tailings samples as part of the current stability re-evaluation of the Squaw Gulch Valley Leach Fill facility (VLF2). Samples of ore and tailings were collected by Cripple Creek and Victor Gold Mine (CC&V) personnel and directly transferred to NewFields for subsequent laboratory testing.

NewFields contracted a regional soil and materials testing laboratory to perform index, hydraulic conductivity, and strength testing. Tests were performed on both virgin and composite mixtures of the ore and tailings. After completion of the laboratory test program, a stability re-evaluation of VLF2 slopes was performed. This technical memorandum summarizes the testing program and results, and presents the results of the stability evaluation.

2.0 LABORATORY TEST PROGRAM

2.1 Materials

Three types of ore were provided from the Globe Hill Pit; durable, non-durable, and clay-rich ores. Sample nomenclature was provided by CC&V. In addition a floatation (rougher) tailings sample was provided. Virgin materials, as well as composite samples of ore and tailings were



tested, as listed in **Table 1**, and results of the testing program are presented in the following subsections.

TABLE 1 – SUMMARY OF LABORATORY TESTS

Sample Type	Mix Ratio	Index	Hydraulic Conductivity	Strength
Durable Ore	100%	☑	☐	☐
Non-Durable Ore	100%	☑	☐	☐
Clay-Rich Ore	100%	☑	☑	☐
Tailings	100%	☑	☐	☐
Composite 1	80% Durable/ 10% Non-Durable/ 10% Tailings	☑	☑	☑
Composite 2	70% Durable/ 20% Non-Durable/ 10% Tailings	☑	☑	☑
Composite 3	60% Durable/ 30% Non-Durable/ 10% Tailings	☑	☑	☑
Composite 4	50% Durable/ 40% Non-Durable/ 10% Tailings	☑	☑	☑
Composite 5	70% Durable/ 20% Clay-Rich/ 10% Tailings	☑	☑	☑

2.2 Index Testing

The particle size distributions of the specimens were determined in accordance with ASTM D422 procedures, and the results for each sample were used to assess the percentages of gravel, sand, silt, and clay sized particles. The durable ore classifies as well-graded gravel with little to no fines, non-durable ore classified as poorly graded gravel with silt and sand, the clay-rich ore classified as clayey sand with gravel, and the tailings classified as sandy silty lean clay. The fines in the clay rich ore are of low plasticity. Results are summarized on **Table A.1** and laboratory data sheets are included in **Attachment A**.



2.3 Hydraulic Conductivity Tests

Rigid and flexible wall permeameter tests were performed to determine the hydraulic conductivity of the materials. Rigid wall tests were performed on the composite samples, and a large diameter flexible wall test was performed on the clay-rich ore. Hydraulic conductivity measurements were obtained at normal stresses of 25, and 50 kips per square foot (ksf), and results are summarized on **Table A.1**.

Results indicate that the composite samples were minimally influenced by increased applied stress. The clay-rich ore exhibited fairly low hydraulic conductivity under the selected applied stresses, and they conductivity decreased from increases in stress.

2.4 Strength Testing

Direct shear tests were performed on all composite samples. Normal loads applied for the testing were 11, 22, and 44 ksf. Testing was continued until approximately 15 percent strain was achieved, and in general samples exhibited strain hardening behavior. The strength of each sample was interpreted at both 10 percent and 15 percent strain. Results from the direct shear tests are presented in **Table A.1,** both in terms of a linear Mohr-Coulomb strength envelope and a nonlinear power curve.

3.0 STABILITY

Stability analyses were performed along multiple sections of VLF2. The stability analyses were performed using the computer program SLIDE 7 developed by Rocscience. SLIDE is a two-dimensional slope stability program for evaluating circular or noncircular failure surfaces in soil or rock slopes using limit equilibrium methods. Spencer's method of slices was utilized within the stability model and assumes all inter-slice forces are parallel and have the same inclination. The factor of safety can be defined generally as the resisting forces along a potential failure plane divided by the gravitational and dynamic driving forces, therefore factors of safety in excess of unity indicate stability and those less than unity indicate instability. Both static and seismic conditions were analyzed.

Minimum acceptable factors of safety for static and pseudostatic conditions were established as 1.3 and 1.15, respectively, based on Colorado Division of Reclamation Mining and Safety (DRMS) guidelines and the facility being designated a critical structure as slope failures could impact the adjacent highway or propagate outside of containment.

3.1 Design Ground Motions

To assess the stability of slopes during seismic loadings, a pseudostatic approach was utilized in which the potential sliding mass is subjected to an additional, destabilizing horizontal force that



represents the effects of earthquake motions and is related to the peak ground acceleration (PGA). The seismic force is the weight of the sliding mass multiplied by a horizontal pseudo-static earthquake coefficient (k_h).

The k_h is typically considered as a portion of the PGA because during an actual earthquake the acceleration within the potential sliding mass is cyclic and varies over the duration of the earthquake and the direction of the acceleration changes throughout the seismic event. Therefore, an average horizontal coefficient is assigned that is typically less than the PGA experienced at the base of the structure. Hynes-Griffin and Franklin (1984) discussed that use of one-half of the PGA for the horizontal pseudostatic earthquake coefficient will result in slope deformations that will be within tolerable limits. This reduction in the pseudostatic seismic coefficient is typically coupled to a 20 percent strength reduction for materials that are saturated or can soften during shaking. For the current VLF2 stability analysis, none of the materials are considered to be strain softening.

The PGA used in the current evaluation was based on a recent review of publically available information regarding the seismic hazard at the site using the United States Geologic Survey (USGS) interactive deaggregations tool. The updated PGA for the site is referenced as 0.14g for the 2,475-year-return seismic events, and the output report identifying the mean earthquake magnitude, and mean rupture distance is presented in **Attachment B**.

The current evaluation applied a one-third reduction to the PGA for k_h, which we consider reasonable and conservative based on the recommendations of Hynes-Griffin and Franklin (1984). This methodology is also consistent with previous stability evaluations for the facility.

3.2 Model Development

Both static and pseudostatic loadings were evaluated for four cross-sections along the VLF2 slopes. The stability models were developed by overlaying a revised ore stacking plan provided by CC&V on base grade contours from as-built surveys of already completed portions of the facility or existing design documents. The new operations plan considers revising the current stacked lift height of 100-feet to 50-feet. The locations of sections analyzed are shown on **Figure 1**.

3.3 Material Properties

Material properties used for the stability evaluation were develop in consideration of the results of the recent laboratory testing and existing data from the original facility design. Properties of the ore were based on the results of the recent direct shear tests that. As the durability of the ore, clay content, and the mix ratios of ore and tailings might change throughout facility operation, suitable conservative strength parameters were assumed. The composite liner for



VLF2 includes soil liner fill overlain by 80-mil, double-side textured LLDPE geomembrane, overlain by drain cover fill. The shear strength of the composite liner was taken from the original design of the facility that was based on test data interpreted at large strains. The foundation was assumed to have infinite strength to force the failures through the overlying composite liner interface and/or ore. The material properties are summarized in **Table 2**.

TABLE 2 – MATERIAL PROPERTIES

Material	Moist Unit Weight (lb/ft³)	Friction Angle (degrees)	Cohesion (lb/ft²)
Composite Ore	125	34.5	1500
Composite Liner Interface	120	18	0
Foundation	120	Infinite Strength	

3.4 Stability Evaluation Results

Results of the stability analysis are shown in **Table 3** and output graphics from the stability models are included in **Attachment C**. The results document the minimum static and pseudostatic factors of safety for both circular and block failure forms.

Results indicate that the facility will remain stable under static conditions and all pseudostatic conditions. Section D-D' was identified as the most critical slope, which is reasonable as the benching is reduced along this portion of the facility. In general, block failure surfaces sliding along a portion of the composite liner were determined to be the most critical. In the case of an extreme seismic event (2,475 year return event), minor slope movement and surface raveling may occur, but large rotational or block failure forms with significant moving material are not expected.

TABLE 3 – CALCULATED FACTORS OF SAFETY

Cross Section	Failure Mode	Static Stability Factor of Safety	Pseudostatic Stability Factor of Safety
A-A'	Circular	2.29	1.83
	Block	2.32	1.46
B-B'	Circular	2.10	1.63
	Block	2.03	1.48
C-C'	Circular	2.36	1.83
	Block	2.07	1.50
D-D'	Circular	1.84	1.47
	Block	1.76	1.41

4.0 DISCUSSION

Results indicate that the slopes of the proposed grading plan for VLF2 are stable considering both static and pseudostatic loading conditions.

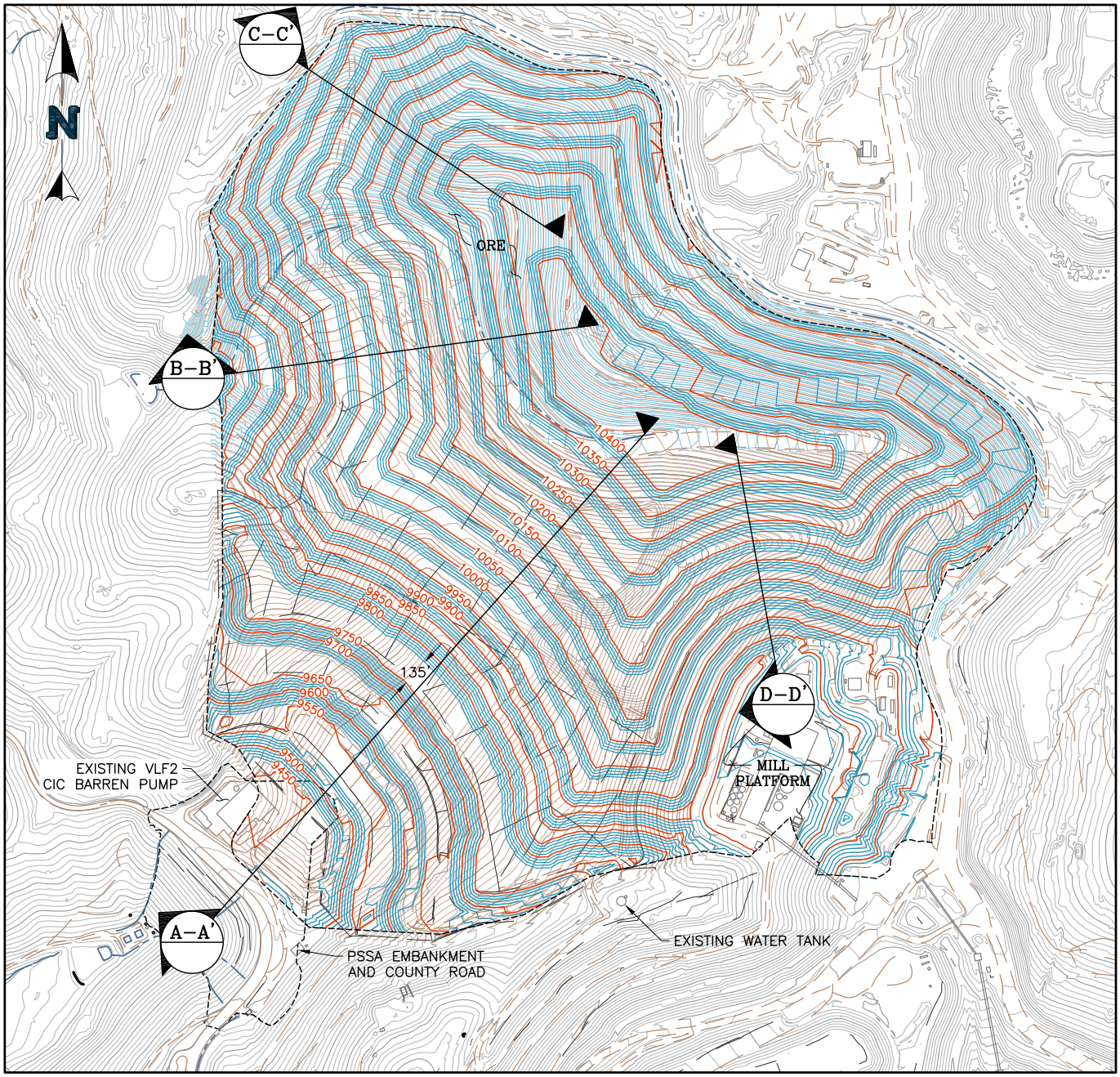
The following provides a discussion of the recent laboratory test data.

- The hydraulic conductivities of durable and non-durable ore and tailings composite mixtures were fairly consistent, approximately 0.5 to 0.7 cm/sec, for simulated heap heights of 200 feet and 0.4 to 0.5 cm/sec for simulated heap heights of 400 feet. Laboratory test measurements indicate that hydraulic conductivities of the composite mixtures are relatively insensitive to a simulated heap height increase from 200 to 400 feet. Similarly, adding in 20 percent clay rich ore did not have a significant impact on the measured hydraulic conductivity.
- Results from the shear strength tests indicate that the addition of non-durable or clay rich ore does not significantly affect the shear strength. In general, similar shear strengths were measured for the composite samples.
- Existing placement criteria requires that tailings not be placed within 25 feet of the crest of any ore lift, to minimize the potential for localized ore sloughing by blending tailings close to the ore face, and those recommendations are still valid and warranted for the slopes faces left at angle of repose.
- If the intermediate ore slope faces are regraded to shallower slope, such as 2(H):1(V), prior to start of leaching process, the 25-ft buffer for tailings placement is not required to maintain global stability. However, the maximum overall slope of the ore, inclusive of the intermediate benching and slope faces, shall be 2.5(H):1(V) or shallower.
- With forecasted campaigning of resource from multiple pits, it is recommended that CC&V conduct routine characterization testing of the current and future primary ore types at the site. These characterization tests should include particle-size distribution and Atterberg limits; and be used to identify potential changes in ore characteristics as the resource matures. If significant variations in material, or campaigning of the different ore types, are realized, additional strength and hydraulic tests should be performed to assess changes in the composite material being placed within the facility.

Attachments:

Figure 1 – Stability Analysis Cross Sections
Table A.1 – Laboratory Testing Summary
Attachment A – Laboratory Data Sheets
Attachment B – Seismic Hazard Data Sheets
Attachment C – Stability Model Output Graphics

FIGURES



0 400 800 FEET

LEGEND:

- EXISTING GROUND CONTOURS
- PROPOSED ORE STACKING CONTOURS
- PROPOSED PHASE 2 CONTOURS
- AS–BUILT LINER CONTOURS
- EXISTING ROADS/TRAILS
- EXISTING DRAINAGES
- EXISTING FENCE

REFERENCE:

NEWMONT PROVIDED 2017 FLYOVER DATA TO NEWFIELDS ON DECEMBER 14, 2017 IN THE FOLLOWING FILES: "MM173664_Topo_Plan–sheet1–final.DWG" and "MM173664_Topo_Plan–sheet2–final.DWG"
NEWMONT PROVIDED AN UPDATED STACKING PLAN ON NOVEMBER 8, 2018 IN FILE "VLF2 2019 50 LOM.DWG"

NewFields

CLIENT: CRIPPLE CREEK AND VICTOR GOLD MINE COMPANY

PROJECT: SQUAW GULCH VLF2 STABILITY RE–EVALUATION

TITLE: STABILITY ANALYSIS CROSS SECTIONS

FILENAME: 0106.028.002F

FIGURE NO.: 1

REVISION: A

P:\Projects\0106.028 CC&V VLF2 Stability Re–Evaluation\A–CAD\DWGS\0106.028.002F.dwg–11/20/2018 9:54 AM

TABLES

NewFields

Table A.1

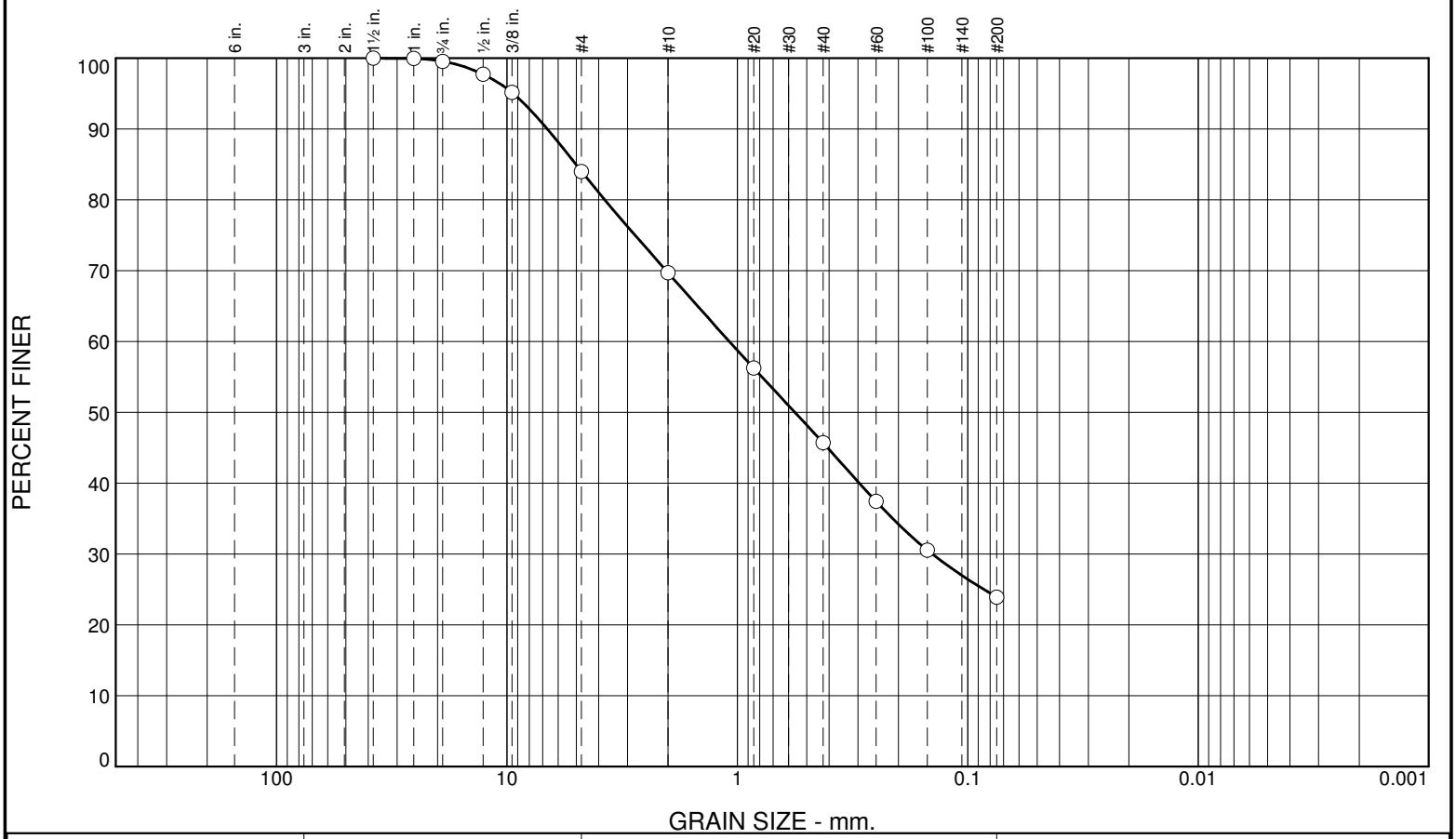
Laboratory Testing Summary

CC VLF2 Stability Re-Evaluation
NewFields Project No. 475.0106.028

SAMPLE DESCRIPTION	USCS GROUP SYMBOL	GRAIN SIZE DISTRIBUTION (% PASSING)													ATTERBERG LIMITS			Mohr Coulomb Strength Envelope				Power Fit ($\tau=A\sigma^B$)				K_{sat} @ 25 KSF (CM/S)	K_{sat} @ 50 KSF (CM/S)
				GRAVEL						SAND						FINES				τ_F @ 10% strain		τ_F @ 15% strain		τ_F @ 10% strain		τ_F @ 15% strain			
		3.0"	2.0"	1.0"	0.75"	0.5"	0.375"	#4	#10	#20	#40	#60	#100	#200	LIQUID LIMIT	PLASTIC LIMIT	PLASTIC INDEX	FRICTION ANGLE (deg)	COHESION (KSF)	FRICTION ANGLE (deg)	COHESION (KSF)	A	B	A	B		
Clay Rich Ore (from Globe Hill)	SC	100.0	100.0	100.0	99.6	97.7	95.2	84.0	69.7	56.3	45.7	37.4	30.6	23.9	39	19	20									2.2E-06	5.5E-07
Durable Ore (from Globe Hill)	GW	100.0	100.0	86.5	64.5	39.2	28.7	14.1	8.1	5.5	4.2	3.3	2.5	1.7	NP	NP	NP										
Non-Durable Ore (from Globe Hill; shows higher clay content)	GP-GM	100.0	100.0	95.8	90.6	80.3	71.7	49.7	33.4	22.3	16.7	13.9	11.9	9.9	NP	NP	NP										
Tailings (sandy silty clay)	CL-ML	100.0	100.0	99.9	99.5	98.6	98.4	98.2	98.0	97.7	95.1	85.5	71.0	53.8	22	17	5										
Composite 1: 80% Durable + 10% Non Durable + 10% Tailings	GP-GM	100.0	100.0	100.0	99.3	73.4	60.5	39.6	27.9	22.2	19.0	16.0	12.9	9.4	NP	NP	NP	33.7	3.8	37.8	5.1	5.3196	0.8175	6.4636	0.8158	4.6E-01	3.7E-01
Composite 2: 70% Durable + 20% Non-Durable + 10% Tailings	GP-GM	100.0	100.0	100.0	99.1	75.0	61.8	41.8	31.4	25.4	21.8	18.5	15.0	11.0	NP	NP	NP	33.7	3.8	38.5	4.5	5.5927	0.8125	6.6296	0.8130	5.2E-01	4.8E-01
Composite 3: 60% Durable + 30% Non-Durable + 10% Tailings	GP-GM	100.0	100.0	100.0	99.4	76.6	64.6	45.0	31.7	24.7	21.0	17.8	14.8	11.2	NP	NP	NP	35.4	2.8	40.8	2.2	4.2063	0.8405	2.4252	0.9085	6.9E-01	5.4E-01
Composite 4: 50% Durable + 40% Non-Durable + 10% Tailings	GM	100.0	100.0	100.0	99.1	78.6	67.5	47.3	34.3	26.5	22.4	19.1	15.9	12.1	NP	NP	NP	33.8	4.7	37.4	6.3	5.7729	0.8143	9.9260	0.7776	5.5E-01	4.1E-01
Composite 5: 70% Durable + 20% Clay Rich Ore + 10% Tailings	GM	100.0	100.0	100.0	98.9	77.2	65.3	47.3	36.7	30.0	25.5	21.4	17.5	13.1	NP	NP	NP	34.5	1.6	36.8	2.7	2.7907	0.8718	5.8362	0.8118	4.2E-01	2.2E-01
2017 TESTING PROGRAM																											
Ore 1 (Cresson)	GW-GC	100.0	98.3	73.9	62.4	48.5	41.7	34.3	24.0	16.7	13.0	11.4	9.2	7.7	30	20	10			40.3	0.0						
Ore 2 (WHEX)	GP-GC	100.0	100.0	87.7	76.6	56.1	41.7	22.1	22.1	16.0	13.1	11.7	9.8	8.5	37	17	20			40.1	0.0						
Flotation Tailings	SM	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.9	96.7	87.8	64.1	46.5	NP	NP	NP			36.9	0.0						
Concentrate Tailings	CL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.8	99.0	37	23	14										
90% Cresson Ore + 10% Tailings (92% Flot + 8% Conc)	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**			40.2	0.0						
90% WHEX Ore + 10% Tailings (92% Flot + 8% Conc)	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**			38.2	0.0						
2013 TESTING PROGRAM																											
Cresson Ore	SW-SM	100.0	100.0	100.0	100.0	100.0	84.0	55.1	34.6	21.9	14.9	11.1	8.3	5.7	NP	NP	NP										
WHEX Ore	SC	100.0	100.0	100.0	100.0	100.0	95.2	81.0	66.6	53.7	44.9	39.8	35.5	30.5	11	22	11			31.0	0.82						
90% Cresson Ore + 10% WHEX Ore	GP-GM	100.0	100.0	100.0	100.0	99.4	82.2	50.8	28.9	18.4	13.2	10.5	8.6	6.8	NP	NP	NP										
80% Cresson Ore + 20% WHEX Ore	GP-GM	100.0	100.0	100.0	100.0	99.6	85.7	54.7	37.1	26.3	19.9	16.2	13.3	10.5	21	21	0										
70% Cresson Ore + 30% WHEX Ore	SP-SM	100.0	100.0	100.0	100.0	99.6	86.0	58.0	38.7	27.3	20.8	17.4	14.6	11.8	18	21	3										

ATTACHMENT A
LABORATORY DATA SHEETS

Particle Size Distribution Report ASTM D6913



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.4	15.6	14.3	24.0	21.8	23.9	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1.5	100.0		
1	100.0		
.75	99.6		
.5	97.7		
.375	95.2		
#4	84.0		
#10	69.7		
#20	56.3		
#40	45.7		
#60	37.4		
#100	30.6		
#200	23.9		

* (no specification provided)

Soil Description

clayey sand with gravel

Atterberg Limits

PL= 19 LL= 39 PI= 20

Coefficients

D_{90}= 6.6783 D_{85}= 5.0240 D_{60}= 1.0830
D_{50}= 0.5625 D_{30}= 0.1428 D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= SC AASHTO= A-2-6(1)

Remarks

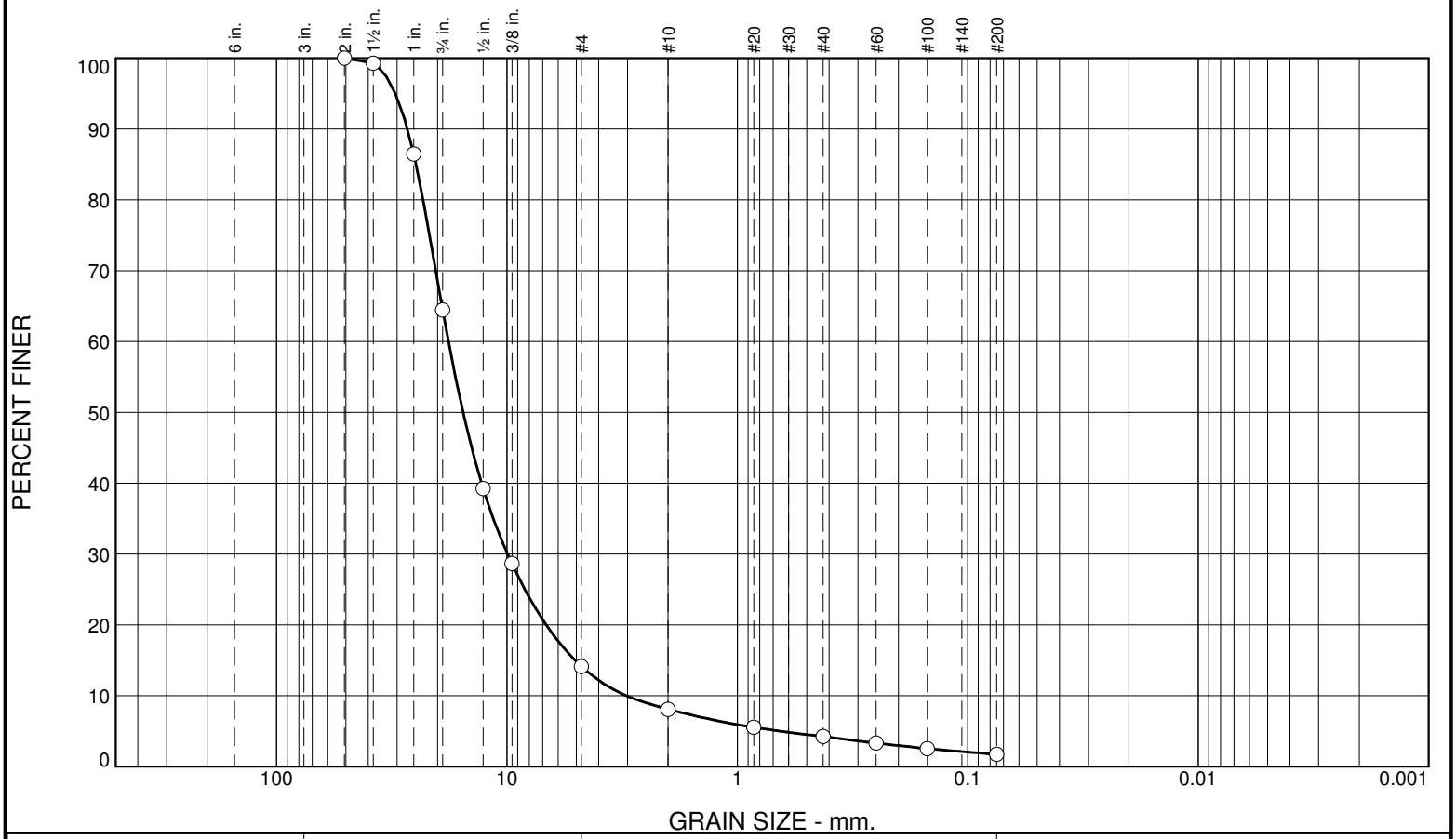
Sample No.: Clay Rich Ore **Source of Sample:** VLF2 Re-Evaluation **Date:** 7/24/18
Location: **Elev./Depth:**

Knight Piésold CONSULTING

Client: NewFields
Project: CC&V VLF2 Recertification
NF#475.0106.026
Project No: DV108-00305-07 **Figure**

Tested By: LEB **Checked By:** JDB

Particle Size Distribution Report ASTM D6913



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	35.5	50.4	6.0	3.9	2.5	1.7	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
2	100.0		
1.5	99.3		
1	86.5		
.75	64.5		
.5	39.2		
.375	28.7		
#4	14.1		
#10	8.1		
#20	5.5		
#40	4.2		
#60	3.3		
#100	2.5		
#200	1.7		

* (no specification provided)

Soil Description

well-graded gravel

Atterberg Limits

PL= NP LL= NP PI= NP

Coefficients

D_{90}= 27.0278 D_{85}= 24.8137 D_{60}= 17.9591
D_{50}= 15.4975 D_{30}= 9.9484 D_{15}= 5.0706
D_{10}= 3.0323 C_u= 5.92 C_c= 1.82

Classification

USCS= GW AASHTO= A-1-a

Remarks

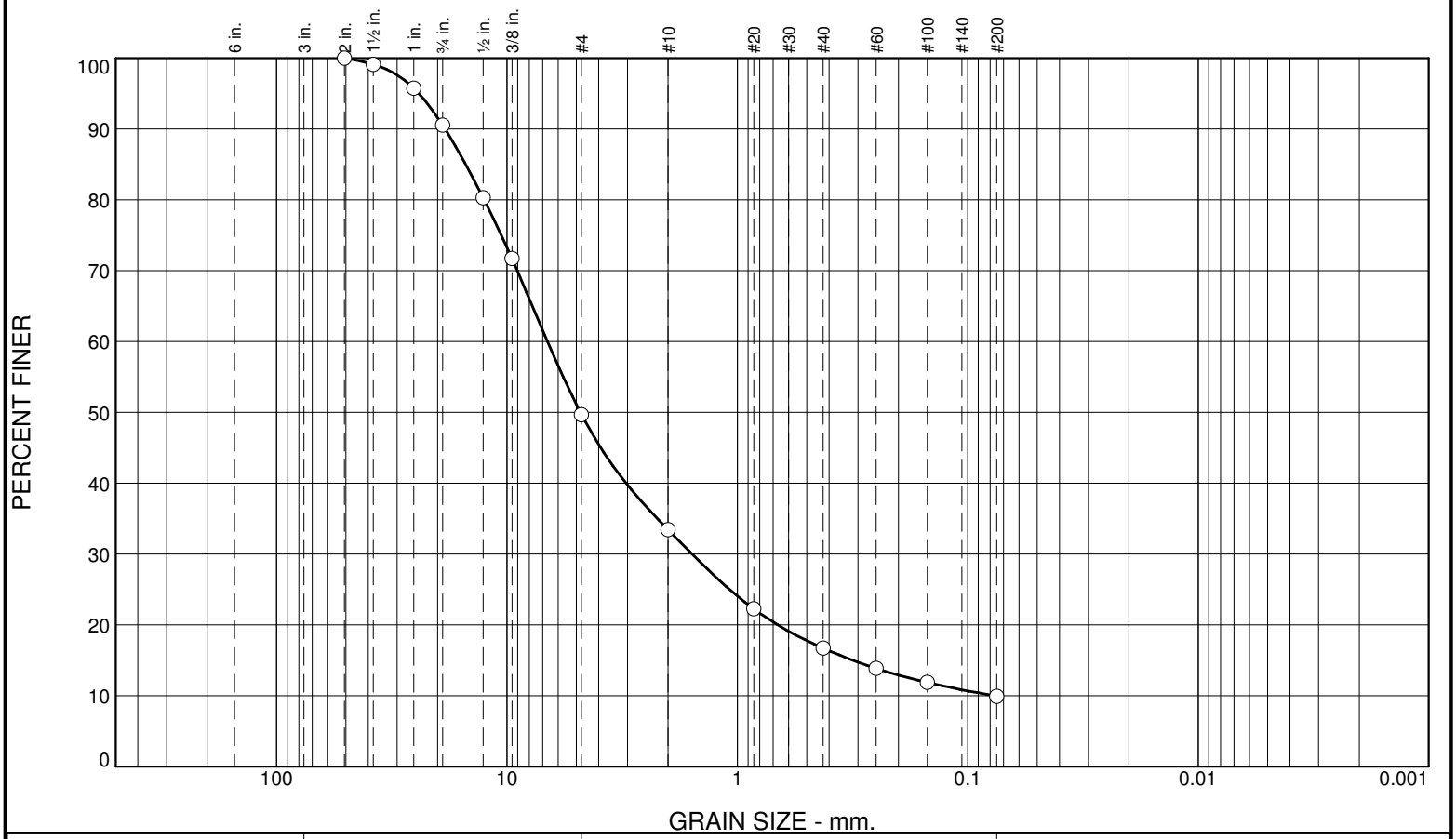
Sample No.: Durable Ore **Source of Sample:** VLF2 Re-Evaluation **Date:** 7/20/18
Location: **Elev./Depth:**

Knight Piésold CONSULTING

Client: NewFields
Project: CC&V VLF2 Recertification
NF#475.0106.026
Project No: DV108-00305-07 **Figure**

Tested By: EAG **Checked By:** JDB

Particle Size Distribution Report ASTM D6913



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	9.4	40.9	16.3	16.7	6.8	9.9	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
2	100.0		
1.5	99.1		
1	95.8		
.75	90.6		
.5	80.3		
.375	71.7		
#4	49.7		
#10	33.4		
#20	22.3		
#40	16.7		
#60	13.9		
#100	11.9		
#200	9.9		

* (no specification provided)

Soil Description

poorly graded gravel with silt and sand

Atterberg Limits

PL= NP LL= NP PI= NP

Coefficients

D_{90}= 18.5696 D_{85}= 15.0995 D_{60}= 6.6701
D_{50}= 4.8056 D_{30}= 1.5748 D_{15}= 0.3158
D_{10}= 0.0774 C_u= 86.14 C_c= 4.80

Classification

USCS= GP-GM AASHTO= A-1-a

Remarks

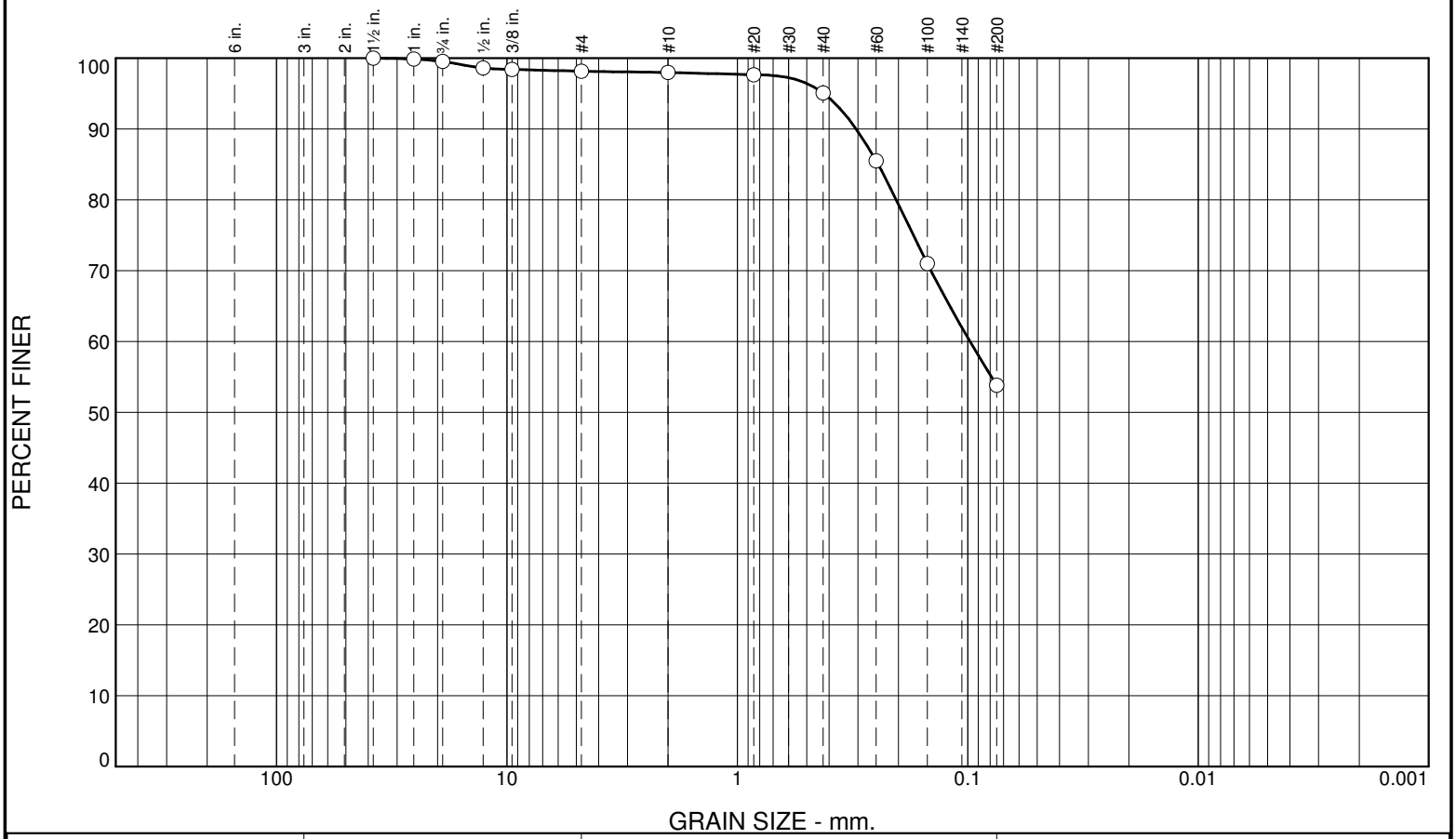
Sample No.: Non-Durable Ore **Source of Sample:** VLF2 Re-Evaluation **Date:** 7/24/18
Location: **Elev./Depth:**

Knight Piésold CONSULTING

Client: NewFields
Project: CC&V VLF2 Recertification
NF#475.0106.026
Project No: DV108-00305-07 **Figure**

Tested By: LEB **Checked By:** JDB

Particle Size Distribution Report ASTM D6913



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.5	1.3	0.2	2.9	41.3	53.8	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1.5	100.0		
1	99.9		
.75	99.5		
.5	98.6		
.375	98.4		
#4	98.2		
#10	98.0		
#20	97.7		
#40	95.1		
#60	85.5		
#100	71.0		
#200	53.8		

* (no specification provided)

Soil Description

sandy silty clay

Atterberg Limits

PL= 17 LL= 22 PI= 5

Coefficients

D_{90}= 0.3050 D_{85}= 0.2451 D_{60}= 0.0977
D_{50}= D_{30}= D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= CL-ML AASHTO= A-4(0)

Remarks

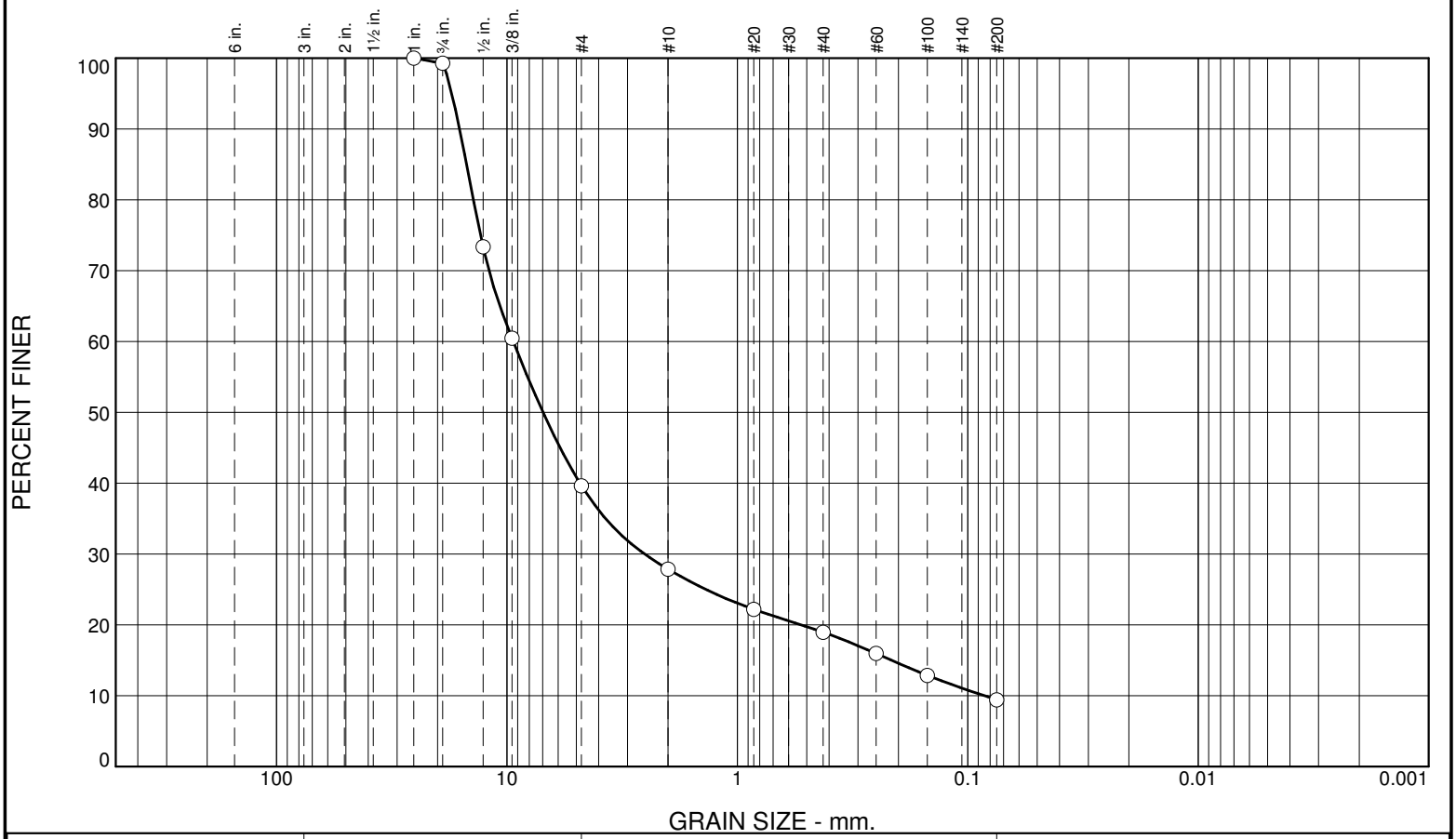
Sample No.: Tailings **Source of Sample:** VLF2 Re-Evaluation **Date:** 7/24/18
Location: **Elev./Depth:**

Knight Piésold CONSULTING

Client: NewFields
Project: CC&V VLF2 Recertification
NF#475.0106.026
Project No: DV108-00305-07 **Figure**

Tested By: LEB **Checked By:** JDB

Particle Size Distribution Report ASTM D6913



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.7	59.7	11.7	8.9	9.6	9.4	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	99.3		
.5	73.4		
.375	60.5		
#4	39.6		
#10	27.9		
#20	22.2		
#40	19.0		
#60	16.0		
#100	12.9		
#200	9.4		

* (no specification provided)

Soil Description

poorly graded gravel with silt and sand

Atterberg Limits

PL= NP LL= NP PI= NP

Coefficients

D_{90}= 16.0421 D_{85}= 14.9692 D_{60}= 9.3959
D_{50}= 6.9692 D_{30}= 2.5297 D_{15}= 0.2142
D_{10}= 0.0848 C_u= 110.74 C_c= 8.03

Classification

USCS= GP-GM AASHTO= A-1-a

Remarks

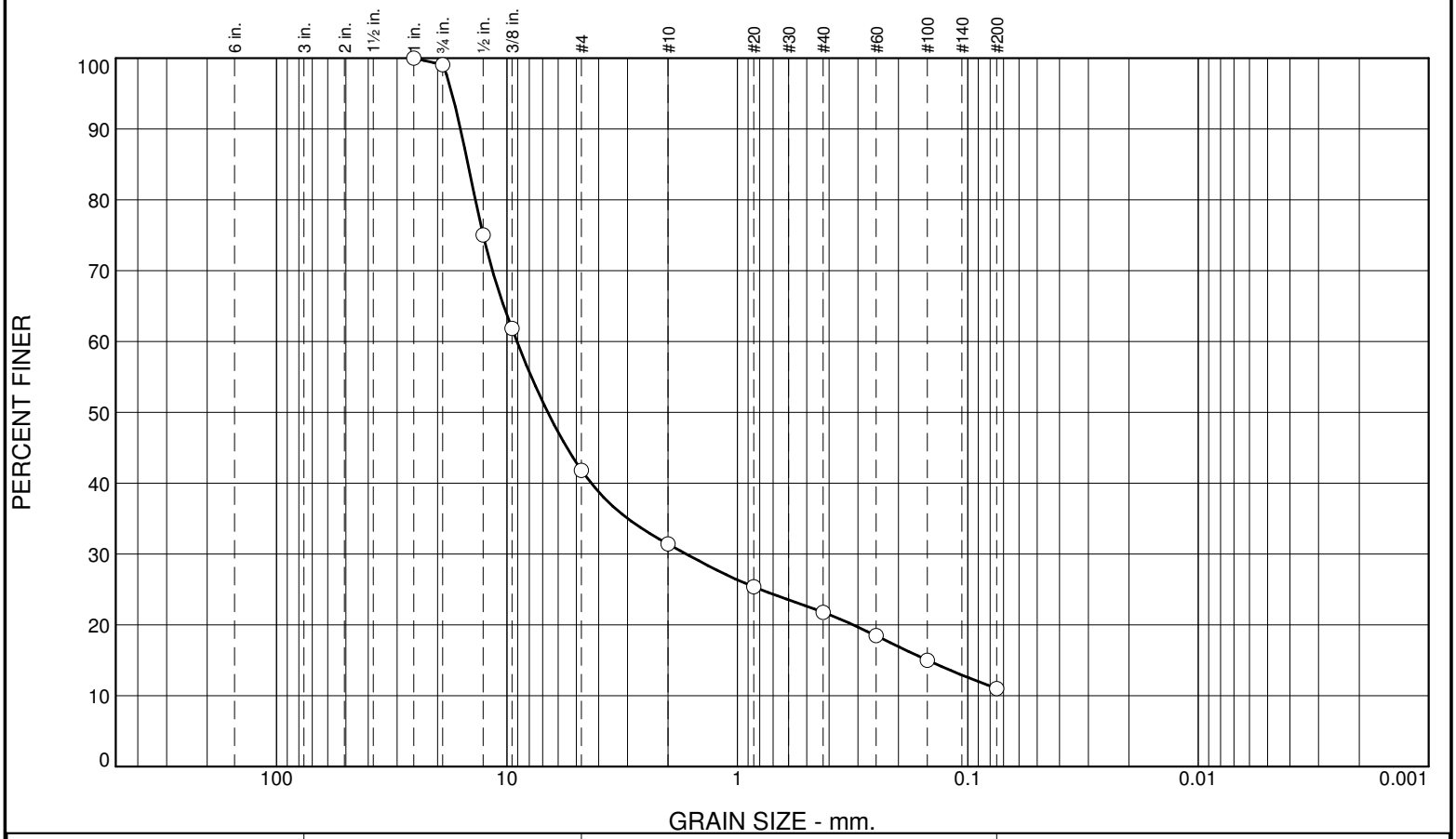
Sample No.: Comp 1 **Source of Sample:** VLF2 Re-Evaluation **Date:** 8/1/18
Location: **Elev./Depth:**

Knight Piésold CONSULTING

Client: NewFields
Project: CC&V VLF2 Recertification
NF#475.0106.026
Project No: DV108-00305-07 **Figure**

Tested By: LW **Checked By:** JDB

Particle Size Distribution Report ASTM D6913



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.9	57.3	10.4	9.6	10.8	11.0	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	99.1		
.5	75.0		
.375	61.8		
#4	41.8		
#10	31.4		
#20	25.4		
#40	21.8		
#60	18.5		
#100	15.0		
#200	11.0		

* (no specification provided)

Soil Description

poorly graded gravel with silt and sand

Atterberg Limits

PL= NP LL= NP PI= NP

Coefficients

D_{90}= 15.8968 D_{85}= 14.7562 D_{60}= 9.0568
D_{50}= 6.6489 D_{30}= 1.6687 D_{15}= 0.1497
D_{10}= C_u= C_c=

Classification

USCS= GP-GM AASHTO= A-1-a

Remarks

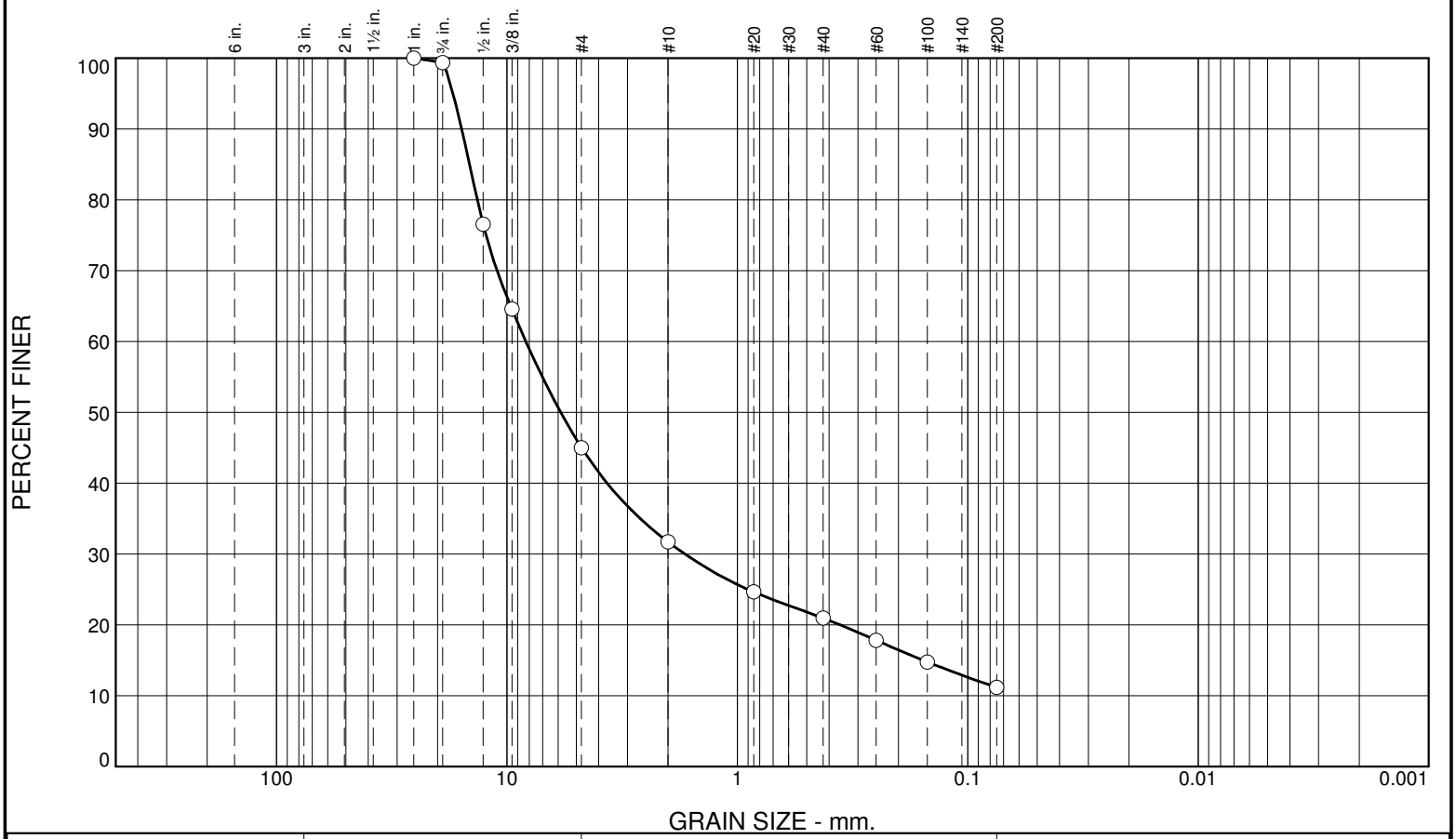
Sample No.: Comp 2 **Source of Sample:** VLF2 Re-Evaluation **Date:** 8/2/18
Location: **Elev./Depth:**

Knight Piésold CONSULTING

Client: NewFields
Project: CC&V VLF2 Recertification
NF#475.0106.026
Project No: DV108-00305-07 **Figure**

Tested By: LW **Checked By:** JDB

Particle Size Distribution Report ASTM D6913



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.6	54.4	13.3	10.7	9.8	11.2	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	99.4		
.5	76.6		
.375	64.6		
#4	45.0		
#10	31.7		
#20	24.7		
#40	21.0		
#60	17.8		
#100	14.8		
#200	11.2		

* (no specification provided)

Soil Description

poorly graded gravel with silt and sand

Atterberg Limits

PL= NP LL= NP PI= NP

Coefficients

D_{90}= 15.7096 D_{85}= 14.5390 D_{60}= 8.2807
D_{50}= 5.8505 D_{30}= 1.6908 D_{15}= 0.1565
D_{10}= C_u= C_c=

Classification

USCS= GP-GM AASHTO= A-1-a

Remarks

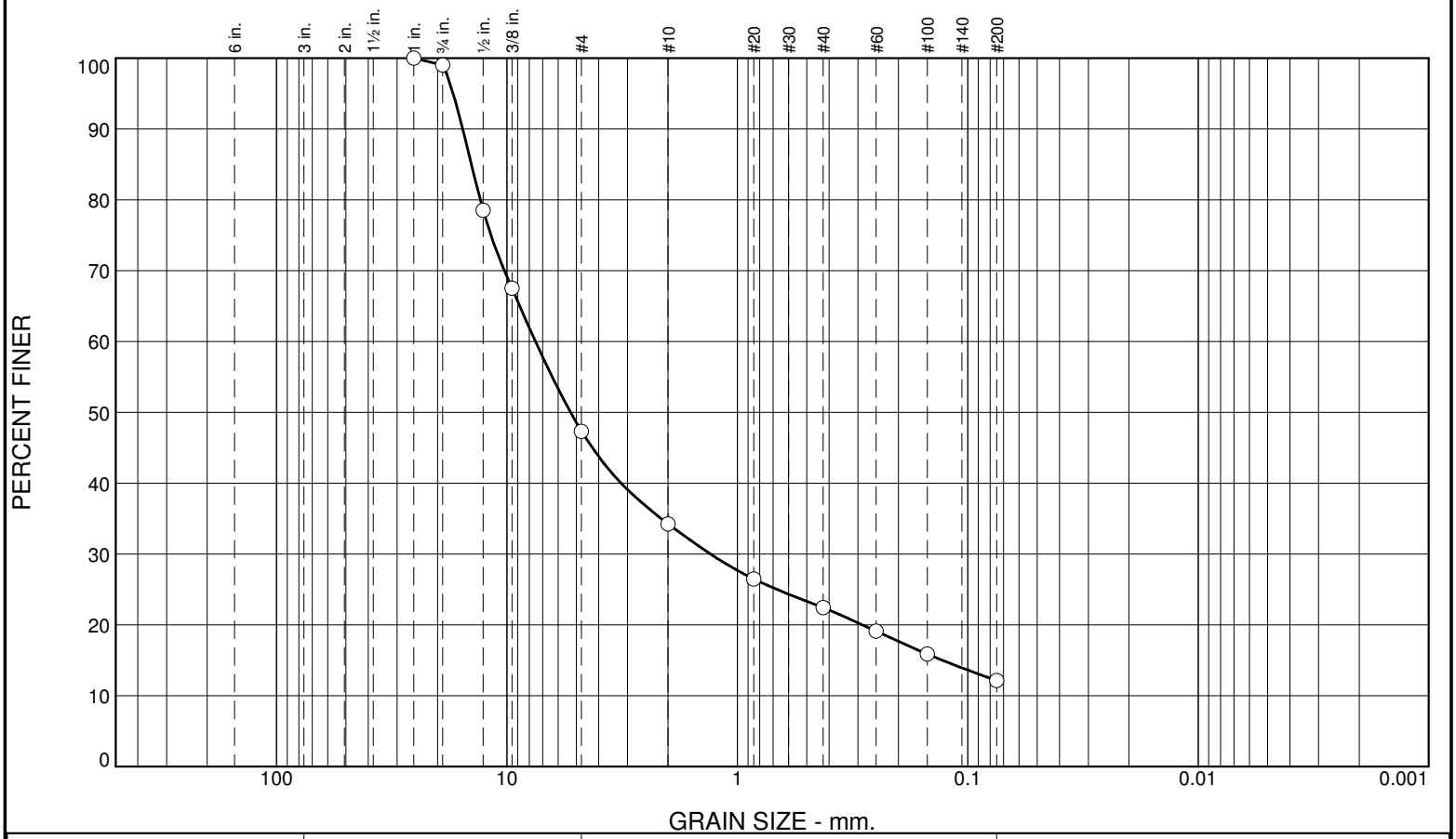
Sample No.: Comp 3 **Source of Sample:** VLF2 Re-Evaluation **Date:** 8/8/18
Location: **Elev./Depth:**

Knight Piésold CONSULTING

Client: NewFields
Project: CC&V VLF2 Recertification
NF#475.0106.026
Project No: DV108-00305-07 **Figure**

Tested By: LEB **Checked By:** JDB

Particle Size Distribution Report ASTM D6913



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.9	51.8	13.0	11.9	10.3	12.1	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	99.1		
.5	78.6		
.375	67.5		
#4	47.3		
#10	34.3		
#20	26.5		
#40	22.4		
#60	19.1		
#100	15.9		
#200	12.1		

* (no specification provided)

Soil Description

silty gravel with sand

Atterberg Limits

PL= NP LL= NP PI= NP

Coefficients

D_{90}= 15.5522 D_{85}= 14.2702 D_{60}= 7.5166
D_{50}= 5.3037 D_{30}= 1.3078 D_{15}= 0.1287
D_{10}= C_u= C_c=

Classification

USCS= GM AASHTO= A-1-a

Remarks

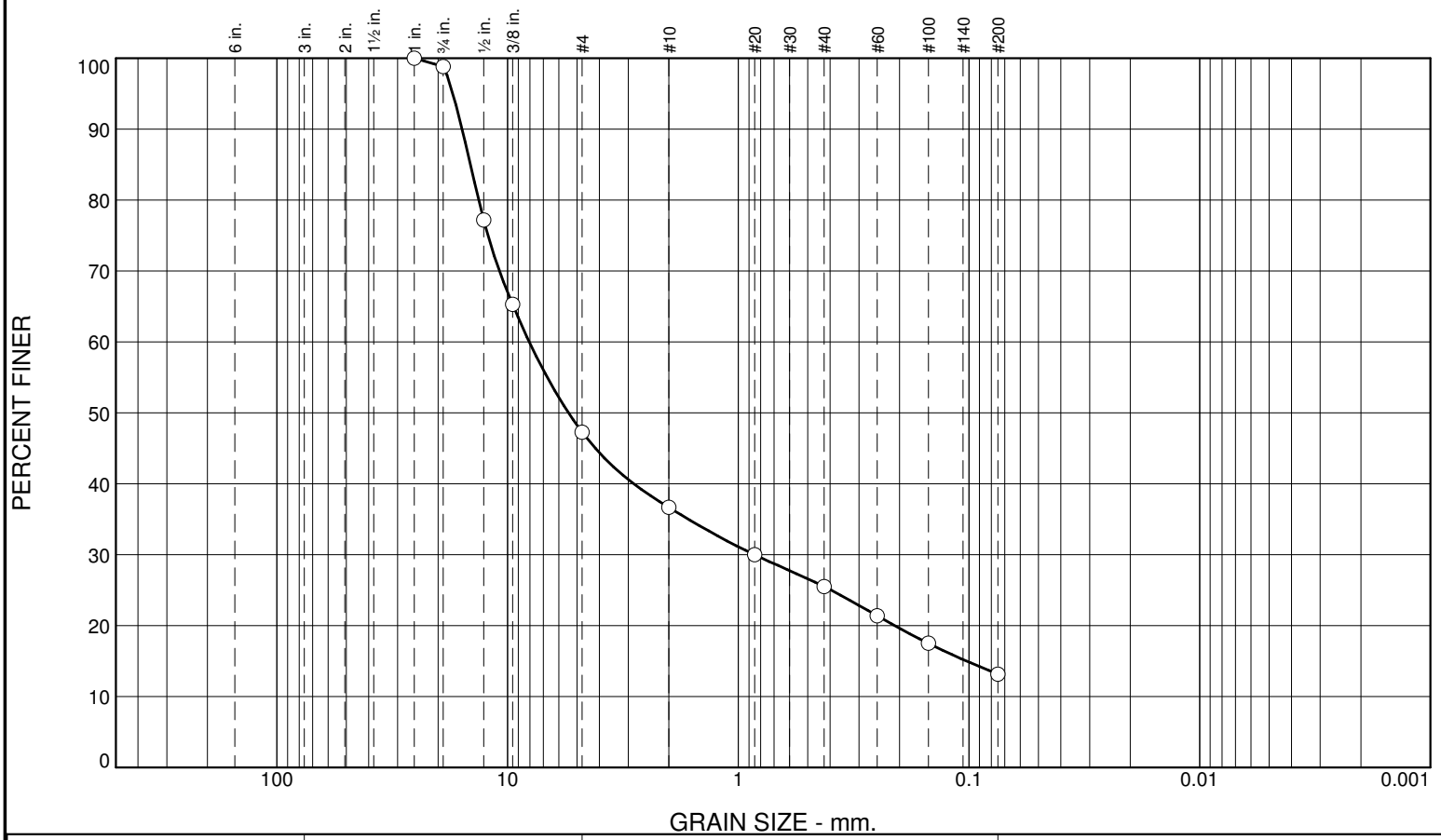
Sample No.: Comp 4 **Source of Sample:** VLF2 Re-Evaluation **Date:** 8/14/18
Location: **Elev./Depth:**

Knight Piésold CONSULTING

Client: NewFields
Project: CC&V VLF2 Recertification
NF#475.0106.026
Project No: DV108-00305-07 **Figure**

Tested By: LEB **Checked By:** JDB

Particle Size Distribution Report ASTM D6913



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	1.1	51.6	10.6	11.2	12.4	13.1	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	98.9		
.5	77.2		
.375	65.3		
#4	47.3		
#10	36.7		
#20	30.0		
#40	25.5		
#60	21.4		
#100	17.5		
#200	13.1		

* (no specification provided)

Soil Description

silty gravel with sand

Atterberg Limits

PL= NP LL= NP PI= NP

Coefficients

D_{90}= 15.7306 D_{85}= 14.4922 D_{60}= 8.0501
D_{50}= 5.4464 D_{30}= 0.8518 D_{15}= 0.1023
D_{10}= C_u= C_c=

Classification

USCS= GM AASHTO= A-1-a

Remarks

Sample No.: Comp 5 **Source of Sample:** VLF2 Re-Evaluation **Date:** 8/17/18
Location: **Elev./Depth:**

Knight Piésold CONSULTING

Client: NewFields
Project: CC&V VLF2 Recertification
NF#475.0106.026
Project No: DV108-00305-07 **Figure**

Tested By: LEB **Checked By:** JDB

Knight Piésold CONSULTING

Constant Head Permeability

USBR 5605 - Amended

Project	*VLF2 ReCetification*	*Project No.*	*DV108-00305/07*
Lab No.	*L2018-074*	*Date of Test*	*07/30/18*
Composite No.	*1*	*Tested By*	*LEB*
80% Durable Ore + 10% NonDurable Ore + 10% Tailings		*Checked By*	*JDB*

Specimen Data

Target Wet Density, pcf	NA		Wet Sample Wt. + Tare, lbs.	81.518
Target Density, t/m^3	NA		Tare, lbs.	0.000
Moisture Content, %	1.9		Wet Sample Wt., lbs.	81.518
Mold Diameter, in.	13.28		Sample Length, in.	10.100
Mold Area, in.^{2}	138.51		Sample Volume, in.^{3}	1399.0
Mold Area, ft^2	0.9619		Sample Volume, ft^3	0.8096
Depth to Mold Bottom, in.	14.500		Wet Density, pcf	85.5
			Initial Depth to Plate, in.	4.400
Normal Stress Range, ksf	25	50		

Permeability Trial Data

Normal Stress, ksf	25			Head, cm	0.1
Avg. Depth to Plate, in.	5.125	Consolidated Length, in.	9.375	Wet Density, pcf	108.5

Trial No.	Q cc	Time sec	Flow cc/sec	Permeability k, cm/sec
1	92.6	53.5	1.732	4.6E-01
2	92.6	53.4	1.734	4.6E-01
3	92.6	53.6	1.728	4.6E-01
4	92.6	52.9	1.750	4.7E-01
5	92.6	53.7	1.723	4.6E-01
Averages			1.733	4.6E-01

Permeability Trial Data

Normal Stress, ksf	50			Head, cm	0.1
Avg. Depth to Plate, in.	5.425	Consolidated Length, in.	9.075	Wet Density, pcf	112.1

Trial No.	Q cc	Time sec	Flow cc/sec	Permeability k, cm/sec
1	46.30	32.8	1.4137	3.6E-01
2	46.30	32.8	1.4137	3.6E-01
3	46.30	31.6	1.4670	3.8E-01
4	46.30	31.9	1.4523	3.7E-01
4	46.30	32.7	1.4176	3.7E-01
Averages			1.4367	3.7E-01

General Notes:

1) Tap water was used as permeant.

2) Flow conditions may vary depending on the particle distribution in the field.

3) The sample was placed in the mold using a nominal compactive effort

4) Particles coarser than 2" were removed and not included in the test.

5) The sample was not agglomerated.

Knight Piésold CONSULTING

Constant Head Permeability

USBR 5605 - Amended

Project	*VLF2 ReCetification*	*Project No.*	*DV108-00305/07*
Lab No.	*L2018-074*	*Date of Test*	*07/31/18*
Composite No.	*2*	*Tested By*	*LEB*
70% Durable Ore + 20% NonDurable Ore + 10% Tailings		*Checked By*	*JDB*

Specimen Data

Target Wet Density, pcf	NA		Wet Sample Wt. + Tare, lbs.	80.918
Target Density, t/m^3	NA		Tare, lbs.	0.000
Moisture Content, %	1.9		Wet Sample Wt., lbs.	80.918
Mold Diameter, in.	13.28		Sample Length, in.	11.500
Mold Area, in.^{2}	138.51		Sample Volume, in.^{3}	1592.9
Mold Area, ft^2	0.9619		Sample Volume, ft^3	0.9218
Depth to Mold Bottom, in.	14.500		Wet Density, pcf	74.6
			Initial Depth to Plate, in.	3.000
Normal Stress Range, ksf	25	50		

Permeability Trial Data

Normal Stress, ksf	25			Head, cm	0.1
Avg. Depth to Plate, in.	4.000	Consolidated Length, in.	10.500	Wet Density, pcf	96.1

Trial No.	Q cc	Time sec	Flow cc/sec	Permeability k, cm/sec
1	92.6	52.6	1.762	5.3E-01
2	92.6	53.7	1.726	5.1E-01
3	92.6	52.9	1.751	5.2E-01
4	92.6	53.4	1.735	5.2E-01
5	92.6	53.6	1.726	5.2E-01
Averages			1.740	5.2E-01

Permeability Trial Data

Normal Stress, ksf	50			Head, cm	0.1
Avg. Depth to Plate, in.	4.430	Consolidated Length, in.	10.070	Wet Density, pcf	100.2

Trial No.	Q cc	Time sec	Flow cc/sec	Permeability k, cm/sec
1	46.30	28.6	1.6206	4.6E-01
2	46.30	27.7	1.6745	4.8E-01
3	46.30	27.1	1.7072	4.9E-01
4	46.30	27.2	1.7010	4.9E-01
4	46.30	27.7	1.6739	4.8E-01
Averages			1.6758	4.8E-01

General Notes:

1) Tap water was used as permeant.

2) Flow conditions may vary depending on the particle distribution in the field.

3) The sample was placed in the mold using a nominal compactive effort

4) Particles coarser than 2" were removed and not included in the test.

5) The sample was not agglomerated.

Knight Piésold CONSULTING

Constant Head Permeability

USBR 5605 - Amended

Project	*VLF2 ReCetification*	*Project No.*	*DV108-00305/07*
Lab No.	*L2018-074*	*Date of Test*	*08/01/18*
Composite No.	*3*	*Tested By*	*LEB*
60% Durable Ore + 30% NonDurable Ore + 10% Tailings		*Checked By*	*JDB*

Specimen Data

Target Wet Density, pcf	NA		Wet Sample Wt. + Tare, lbs.	80.918
Target Density, t/m^3	NA		Tare, lbs.	0.000
Moisture Content, %	1.8		Wet Sample Wt., lbs.	80.918
Mold Diameter, in.	13.28		Sample Length, in.	10.500
Mold Area, in.^{2}	138.51		Sample Volume, in.^{3}	1454.4
Mold Area, ft^2	0.9619		Sample Volume, ft^3	0.8417
Depth to Mold Bottom, in.	14.500		Wet Density, pcf	81.7
			Initial Depth to Plate, in.	4.000
Normal Stress Range, ksf	25	50		

Permeability Trial Data

Normal Stress, ksf	25			Head, cm	0.1
Avg. Depth to Plate, in.	4.360	Consolidated Length, in.	10.140	Wet Density, pcf	99.6

Trial No.	Q cc	Time sec	Flow cc/sec	Permeability k, cm/sec
1	46.3	19.2	2.413	7.0E-01
2	46.3	19.1	2.424	7.0E-01
3	46.3	19.1	2.424	7.0E-01
4	46.3	19.6	2.362	6.8E-01
5	46.3	19.8	2.336	6.7E-01
Averages			2.392	6.9E-01

Permeability Trial Data

Normal Stress, ksf	50			Head, cm	0.1
Avg. Depth to Plate, in.	5.230	Consolidated Length, in.	9.270	Wet Density, pcf	108.9

Trial No.	Q cc	Time sec	Flow cc/sec	Permeability k, cm/sec
1	46.30	23.3	1.9914	5.2E-01
2	46.30	22.3	2.0734	5.5E-01
3	46.30	22.3	2.0809	5.5E-01
4	46.30	22.8	2.0307	5.4E-01
4	46.30	22.1	2.0960	5.5E-01
Averages			2.0441	5.4E-01

General Notes:

1) Tap water was used as permeant.

2) Flow conditions may vary depending on the particle distribution in the field.

3) The sample was placed in the mold using a nominal compactive effort

4) Particles coarser than 2" were removed and not included in the test.

5) The sample was not agglomerated.

Knight Piésold CONSULTING

Constant Head Permeability

USBR 5605 - Amended

Project	*VLF2 ReCetification*	*Project No.*	*DV108-00305/07*
Lab No.	*L2018-074*	*Date of Test*	*08/04/18*
Composite No.	*4*	*Tested By*	*LEB*
50% Durable Ore + 40% NonDurable Ore + 10% Tailings		*Checked By*	*JDB*

Specimen Data

Target Wet Density, pcf	NA		Wet Sample Wt. + Tare, lbs.	80.918
Target Density, t/m^3	NA		Tare, lbs.	0.000
Moisture Content, %	1.8		Wet Sample Wt., lbs.	80.918
Mold Diameter, in.	13.28		Sample Length, in.	10.700
Mold Area, in.^{2}	138.51		Sample Volume, in.^{3}	1482.1
Mold Area, ft^2	0.9619		Sample Volume, ft^3	0.8577
Depth to Mold Bottom, in.	14.500		Wet Density, pcf	80.2
			Initial Depth to Plate, in.	3.800
Normal Stress Range, ksf	25	50		

Permeability Trial Data

Normal Stress, ksf	25			Head, cm	0.1
Avg. Depth to Plate, in.	4.500	Consolidated Length, in.	10.000	Wet Density, pcf	100.9

Trial No.	Q cc	Time sec	Flow cc/sec	Permeability k, cm/sec
1	46.3	23.3	1.986	5.6E-01
2	46.3	23.4	1.981	5.6E-01
3	46.3	24.4	1.899	5.4E-01
4	46.3	23.7	1.957	5.6E-01
5	46.3	23.9	1.939	5.5E-01
Averages			1.952	5.5E-01

Permeability Trial Data

Normal Stress, ksf	50			Head, cm	0.1
Avg. Depth to Plate, in.	5.530	Consolidated Length, in.	8.970	Wet Density, pcf	112.5

Trial No.	Q cc	Time sec	Flow cc/sec	Permeability k, cm/sec
1	46.30	28.8	1.6104	4.1E-01
2	46.30	28.7	1.6155	4.1E-01
3	46.30	28.1	1.6500	4.2E-01
4	46.30	29.2	1.5862	4.0E-01
4	46.30	29.4	1.5727	4.0E-01
Averages			1.6155	4.1E-01

General Notes:

1) Tap water was used as permeant.

2) Flow conditions may vary depending on the particle distribution in the field.

3) The sample was placed in the mold using a nominal compactive effort

4) Particles coarser than 2" were removed and not included in the test.

5) The sample was not agglomerated.

Knight Piésold CONSULTING

Constant Head Permeability

USBR 5605 - Amended

Project	*VLF2 ReCetification*	*Project No.*	*DV108-00305/07*
Lab No.	*L2018-074*	*Date of Test*	*08/08/18*
Composite No.	*5*	*Tested By*	*LEB*
70% Durable Ore + 20% Clay Rich Ore + 10% Tailings		*Checked By*	*JDB*

Specimen Data

Target Wet Density, pcf	NA	Wet Sample Wt. + Tare, lbs.	80.918
Target Density, t/m^3	NA	Tare, lbs.	0.000
Moisture Content, %	3.4	Wet Sample Wt., lbs.	80.918
Mold Diameter, in.	13.28	Sample Length, in.	10.300
Mold Area, in.^{2}	138.51	Sample Volume, in.^{3}	1426.7
Mold Area, ft^2	0.9619	Sample Volume, ft^3	0.8256
Depth to Mold Bottom, in.	14.500	Wet Density, pcf	83.3
		Initial Depth to Plate, in.	4.200
Normal Stress Range, ksf	25 50		

Permeability Trial Data

Normal Stress, ksf	25			Head, cm	0.1
Avg. Depth to Plate, in.	5.400	Consolidated Length, in.	9.100	Wet Density, pcf	110.9

Trial No.	Q cc	Time sec	Flow cc/sec	Permeability k, cm/sec
1	46.3	27.8	1.664	4.3E-01
2	46.3	28.6	1.618	4.2E-01
3	46.3	28.2	1.642	4.2E-01
4	46.3	28.2	1.641	4.2E-01
5	46.3	28.6	1.621	4.2E-01
Averages			1.637	4.2E-01

Permeability Trial Data

Normal Stress, ksf	50			Head, cm	0.1
Avg. Depth to Plate, in.	5.730	Consolidated Length, in.	8.770	Wet Density, pcf	115.1

Trial No.	Q cc	Time sec	Flow cc/sec	Permeability k, cm/sec
1	46.30	51.9	0.8921	2.2E-01
2	46.30	51.7	0.8956	2.2E-01
3	46.30	52.2	0.8866	2.2E-01
4	46.30	52.4	0.8839	2.2E-01
4	46.30	52.5	0.8816	2.2E-01
Averages			0.8896	2.2E-01

General Notes:

1) Tap water was used as permeant.

2) Flow conditions may vary depending on the particle distribution in the field.

3) The sample was placed in the mold using a nominal compactive effort

4) Particles coarser than 2" were removed and not included in the test.

5) The sample was not agglomerated.

FLEXIBLE WALL PERMEABILITY TEST
ASTM D 5084-10
Falling Head / Increasing Tailwater Pressure

CLIENT:	NewFields		
PROJECT:	VLF2 Stability Re-Evaluation	PROJECT NO. :	DV201-00434/40
LOCATION:	Clay Rich Ore	LAB NO. :	L2018-074
DEPTH:		SAMPLE ID:	2018-074-04
SAMPLE NO.:		TEST STARTED :	08/28/18
SAMPLE TYPE:	Reconstituted	TEST FINISHED :	09/12/18
CONF. PRESSURE. (ksf):	25	SATURATED TEST:	YES

MOISTURE/DENSITY DATA	BEFORE TEST	AFTER TEST
Wt. Soil + Moisture (g)	1290.30	1402.78
Wt. Wet Soil & Pan (g)	1290.30	1548.10
Wt. Dry Soil & Pan (g)	1171.40	1316.70
Wt. Moisture Lost (g)	118.90	231.40
Wt. of Pan Only (g)	0.00	145.32
Wt. of Dry Soil (g)	1171.40	1171.38
Moisture Content %	10.2	19.8
Wet Density (pcf)	100.1	144.7
Dry Density (pcf)	90.9	120.8

Init. Diameter (in)	3.950	(cm)	10.033
Init. Area (sq in)	12.254	(sq cm)	79.059
Init. Height (in)	4.007	(cm)	10.178
Height Change (in)	0.200	(cm)	0.508
Consol. Height (in)	3.807	(cm)	9.670
Area After Consol. (sq in)	9.699	(sq cm)	62.581
Vol. Before Consol. (cu ft)	0.02842	Specific Gravity	2.7
Vol. Before Consol. (cc)	804.6	Assumed?	Yes
Change in Vol. (cc)	199.5		
Cell Exp. (cc)	0.0	Init. Saturation	32.1
Vol. After Consol. (cc)	605.1	Init. Void Ratio	0.855
Vol. After Consol. (cu ft)	0.02137	Final Saturation	100.0
Effective Porosity %	46.08	Final Void Ratio	0.395
Pressure Difference (psi):	0.05		
C =	0.16398	Buret Constant, a	0.922
k, cm/s = C/t*log(h1/h2)			

Permeability Test Trials

Time	Cap Elevation	Pedestal Elevation	Elevation Head	Total Head	Coefficient of Permeability, k
min.	cc	cc	cm	cm	cm/sec
0.0	1.6	47.9	46.3	53.8	
24.0	2.7	46.8	44.1	51.4	2.2E-06
39.0	4.5	45.1	40.6	47.6	2.3E-06
32.0	5.7	43.8	38.1	44.9	2.2E-06
34.0	7.0	42.6	35.6	42.1	2.2E-06
			Avg.of Last 4 Rdgs.		**2.2E-06**
			Max.Hyd.Gradient:	5.4	

General Test Notes:
1) Tap water was used as the permeant.
2) Back pressure saturation continued until 'B' parameter a minimum of 0.95.
3) Target remolding parameters: Loose

Tested By: JHS Checked By: JDB

FLEXIBLE WALL PERMEABILITY TEST
ASTM D 5084-10
Constant Volume-Falling Head (by mercury)

CLIENT:	NewFields		
PROJECT:	VLF2 Stability Re-Evaluation	PROJECT NO. :	DV201-00434/40
LOCATION:	Clay Rich Ore	LAB NO. :	L2018-074
DEPTH:		SAMPLE ID:	2018-074-04
SAMPLE NO.:		TEST STARTED :	08/28/18
SAMPLE TYPE:	Reconstituted	TEST FINISHED :	09/12/18
CONF. PRESSURE. (ksf):	50	SATURATED TEST:	YES

MOISTURE/DENSITY DATA	BEFORE TEST	AFTER TEST
Wt. Soil + Moisture (g)	1290.30	1378.38
Wt. Wet Soil & Pan (g)	1290.30	1523.70
Wt. Dry Soil & Pan (g)	1171.40	1316.70
Wt. Moisture Lost (g)	118.90	207.00
Wt. of Pan Only (g)	0.00	145.32
Wt. of Dry Soil (g)	1171.40	1171.38
Moisture Content %	10.2	17.7
Wet Density (pcf)	100.1	148.2
Dry Density (pcf)	90.9	125.9

Init. Diameter (in)	3.950	(cm)	10.033
Init. Area (sq in)	12.254	(sq cm)	79.059
Init. Height (in)	4.007	(cm)	10.178
Height Change (in)	0.387	(cm)	0.983
Consol. Height (in)	3.620	(cm)	9.195
Area After Consol. (sq in)	9.789	(sq cm)	63.160
Vol. Before Consol. (cu ft)	0.02842	Specific Gravity	2.7
Vol. Before Consol. (cc)	804.6	Assumed?	Yes
Change in Vol. (cc)	223.9		
Cell Exp. (cc)	0.0	Init. Saturation	32.1
Vol. After Consol. (cc)	580.7	Init. Void Ratio	0.855
Vol. After Consol. (cu ft)	0.02051	Final Saturation	100.0
Effective Porosity %	46.08	Final Void Ratio	0.339
Pressure Difference (psi):	0.00	Pipette area (aout), cm2	0.0314
		Annulus area (ain), cm2	0.767

Permeability Flow Trials

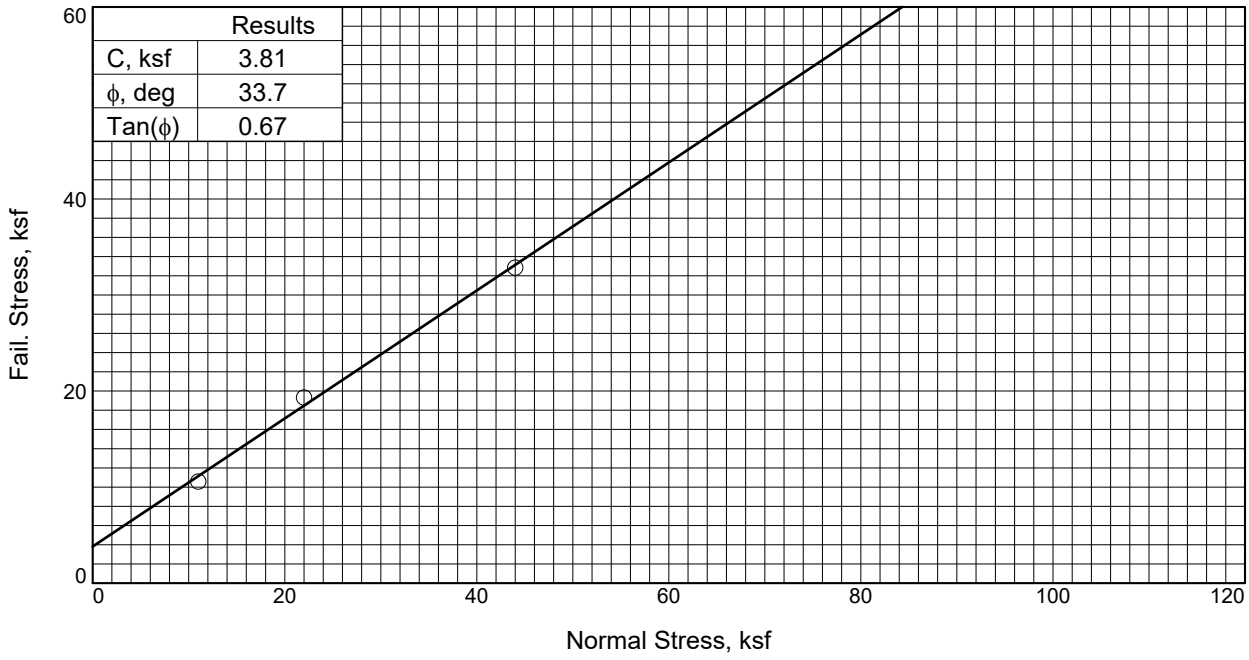
Time	Pipette	Annulus		D	Coefficient of
	Elevation	Elevation	Z1	zp	Permeability, k
Min.	cm	cm	cm	cm	cm/sec
0	22.5	1.05	21.45		
0.5	21.6	1.10	20.5	0.9	5.4E-07
0.5	20.6	1.20	19.4	1.0	6.4E-07
0.5	19.7	1.25	18.5	0.9	6.1E-07
0.5	19.1	1.30	17.8	0.6	4.2E-07
			Avg.of Last 4 Rdgs.		**5.5E-07**

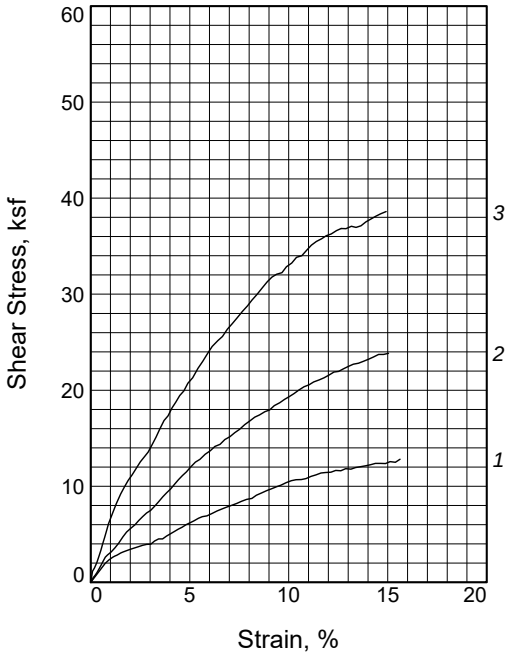
General Test Notes: Max.Hyd.Gradient: 29.3

1) Tap water was used as the permeant.
2) Back pressure saturation continued until 'B' parameter a minimum of 0.95.
3) Target remolding parameters: Loose

Tested By: JHS Checked By: JDB

Cursory interpretations provided require review by a professional engineer. Knight Piesold accepts no responsibility in subsequent analyses.





Specimen No.		1	2	3
Initial	Water Content, %	3.8	3.8	5.0
	Dry Density, pcf	95.1	95.1	94.0
	Saturation, %	13.2	13.2	17.0
	Void Ratio	0.7733	0.7733	0.7941
	Side Length, in.	8.00	8.00	8.00
	Height, in.	4.00	4.00	4.00
At Test	Water Content, %	28.5	21.9	20.9
	Dry Density, pcf	95.2	105.9	107.7
	Saturation, %	100.0	100.0	100.0
	Void Ratio	0.7701	0.5919	0.5651
	Side Length, in.	8.00	8.00	8.00
	Height, in.	3.99	3.59	3.49
Normal Stress, ksf		11.00	22.00	44.00
Fail. Stress, ksf		10.58	19.33	32.86
Strain, %		10.1	10.0	9.9
Ult. Stress, ksf				
Strain, %				
Strain rate, in./min.		0.010	0.010	0.010

Sample Type: Remolded
Description: poorly graded gravel with silt and sand

LL= NP **PI=** NP
Assumed Specific Gravity= 2.7
Remarks: Failure chosen at 10% strain. Particles larger than 3/4" were removed prior to test. Test was inundated. Gap=0.4".

Figure _____

Client: NewFields

Project: CC&V VLF2 Recertification
NF#475.0106.026
Source of Sample: VLF2 Re-Evaluation
Sample Number: Comp 1
Proj. No.: DV108-00305-07 **Date Sampled:** 8/1/18

Knight Piésold CONSULTING

Tested By: LEB **Checked By:** JDB

DIRECT SHEAR TEST

9/4/2018

Date: 8/1/18
Client: NewFields
Project: CC&V VLF2 Recertification
NF#475.0106.026
Project No.: DV108-00305-07
Location: VLF2 Re-Evaluation
Sample Number: Comp 1
Description: poorly graded gravel with silt and sand
Remarks: Failure chosen at 10% strain. Particles larger than 3/4" were removed prior to test. Test was inundated. Gap=0.4".
Type of Sample: Remolded
Assumed Specific Gravity=2.7 **LL=**NP **PL=** **PI=**NP

Parameters for Specimen No. 1

Specimen Parameter	Initial	Consolidated	Final
Moisture content: Moist soil+tare, gms.	6629.500		10306.000
Moisture content: Dry soil+tare, gms.	6387.400		8504.500
Moisture content: Tare, gms.	0.000		2191.000
Moisture, %	3.8	28.5	28.5
Moist specimen weight, gms.	6629.5		
Side Length, in.	8.00	8.00	
Area, in.²	64.00	64.00	
Height, in.	4.00	3.99	
Net decrease in height, in.		0.01	
Wet density, pcf	98.7	122.4	
Dry density, pcf	95.1	95.2	
Void ratio	0.7733	0.7701	
Saturation, %	13.2	100.0	

Test Readings for Specimen No. 1

Normal stress = 11 ksf
Strain rate, in./min. = 0.010
Fail. Stress = 10.58 ksf **at reading no.** 47

No.	Horizontal Def. Dial in.	Load Dial	Load lbs.	Strain %	Shear Stress ksf
0	0.0000	0.000	0.0	0.0	0.00
1	0.0587	875.000	875.0	0.7	1.97
2	0.0740	1034.000	1034.0	0.9	2.33
3	0.0831	1108.000	1108.0	1.0	2.49
4	0.0893	1163.000	1163.0	1.1	2.62
5	0.0981	1214.000	1214.0	1.2	2.73
6	0.1054	1248.000	1248.0	1.3	2.81
7	0.1144	1313.000	1313.0	1.4	2.95
8	0.1208	1354.000	1354.0	1.5	3.05
9	0.1304	1397.000	1397.0	1.6	3.14
10	0.1459	1466.000	1466.0	1.8	3.30
11	0.1618	1535.000	1535.0	2.0	3.45
12	0.1779	1592.000	1592.0	2.2	3.58

Test Readings for Specimen No. 1

No.	Horizontal Def. Dial in.	Load Dial	Load lbs.	Strain %	Shear Stress ksf
13	0.1939	1654.000	1654.0	2.4	3.72
14	0.2099	1713.000	1713.0	2.6	3.85
15	0.2262	1753.000	1753.0	2.8	3.94
16	0.2425	1765.000	1765.0	3.0	3.97
17	0.2583	1911.000	1911.0	3.2	4.30
18	0.2744	2009.000	2009.0	3.4	4.52
19	0.2906	2006.000	2006.0	3.6	4.51
20	0.3063	2142.000	2142.0	3.8	4.82
21	0.3223	2246.000	2246.0	4.0	5.05
22	0.3379	2345.000	2345.0	4.2	5.28
23	0.3535	2460.000	2460.0	4.4	5.54
24	0.3692	2548.000	2548.0	4.6	5.73
25	0.3854	2664.000	2664.0	4.8	5.99
26	0.4017	2754.000	2754.0	5.0	6.20
27	0.4172	2840.000	2840.0	5.2	6.39
28	0.4349	2961.000	2961.0	5.4	6.66
29	0.4510	3039.000	3039.0	5.6	6.84
30	0.4697	3076.000	3076.0	5.9	6.92
31	0.4902	3181.000	3181.0	6.1	7.16
32	0.5105	3303.000	3303.0	6.4	7.43
33	0.5312	3402.000	3402.0	6.6	7.65
34	0.5497	3477.000	3477.0	6.9	7.82
35	0.5699	3563.000	3563.0	7.1	8.02
36	0.5906	3653.000	3653.0	7.4	8.22
37	0.6093	3748.000	3748.0	7.6	8.43
38	0.6297	3832.000	3832.0	7.9	8.62
39	0.6509	3880.000	3880.0	8.1	8.73
40	0.6693	4027.000	4027.0	8.4	9.06
41	0.6901	4128.000	4128.0	8.6	9.29
42	0.7110	4242.000	4242.0	8.9	9.54
43	0.7298	4326.000	4326.0	9.1	9.73
44	0.7505	4417.000	4417.0	9.4	9.94
45	0.7689	4494.000	4494.0	9.6	10.11
46	0.7897	4614.000	4614.0	9.9	10.38
47	0.8110	4701.000	4701.0	10.1	10.58
48	0.8294	4745.000	4745.0	10.4	10.68
49	0.8505	4752.000	4752.0	10.6	10.69
50	0.8693	4801.000	4801.0	10.9	10.80
51	0.8902	4899.000	4899.0	11.1	11.02
52	0.9094	4970.000	4970.0	11.4	11.18
53	0.9304	5058.000	5058.0	11.6	11.38
54	0.9491	5078.000	5078.0	11.9	11.43
55	0.9706	5098.000	5098.0	12.1	11.47
56	0.9895	5178.000	5178.0	12.4	11.65
57	1.0107	5164.000	5164.0	12.6	11.62
58	1.0295	5257.000	5257.0	12.9	11.83
59	1.0513	5236.000	5236.0	13.1	11.78

Test Readings for Specimen No. 1

No.	Horizontal Def. Dial in.	Load Dial	Load lbs.	Strain %	Shear Stress ksf
60	1.0696	5312.000	5312.0	13.4	11.95
61	1.0887	5349.000	5349.0	13.6	12.04
62	1.1103	5389.000	5389.0	13.9	12.13
63	1.1313	5440.000	5440.0	14.1	12.24
64	1.1498	5501.000	5501.0	14.4	12.38
65	1.1711	5500.000	5500.0	14.6	12.38
66	1.1905	5495.000	5495.0	14.9	12.36
67	1.2092	5581.000	5581.0	15.1	12.56
68	1.2310	5555.000	5555.0	15.4	12.50
69	1.2495	5696.000	5696.0	15.6	12.82

Parameters for Specimen No. 2

Specimen Parameter	Initial	Consolidated	Final
Moisture content: Moist soil+tare, gms.	6629.500		9681.500
Moisture content: Dry soil+tare, gms.	6387.400		8361.000
Moisture content: Tare, gms.	0.000		2335.000
Moisture, %	3.8	21.9	21.9
Moist specimen weight, gms.	6629.5		
Side Length, in.	8.00	8.00	
Area, in.²	64.00	64.00	
Height, in.	4.00	3.59	
Net decrease in height, in.		0.41	
Wet density, pcf	98.7	129.1	
Dry density, pcf	95.1	105.9	
Void ratio	0.7733	0.5919	
Saturation, %	13.2	100.0	

Test Readings for Specimen No. 2

Normal stress = 22 ksf

Strain rate, in./min. = 0.010

Fail. Stress = 19.33 ksf **at reading no.** 51

No.	Horizontal Def. Dial in.	Load Dial	Load lbs.	Strain %	Shear Stress ksf
0	0.0000	0.000	0.0	0.0	0.00
1	0.0022	6.000	6.0	0.0	0.01
2	0.0100	215.000	215.0	0.1	0.48
3	0.0178	320.000	320.0	0.2	0.72
4	0.0256	450.000	450.0	0.3	1.01
5	0.0333	603.000	603.0	0.4	1.36
6	0.0413	783.000	783.0	0.5	1.76
7	0.0510	999.000	999.0	0.6	2.25
8	0.0592	1164.000	1164.0	0.7	2.62
9	0.0678	1266.000	1266.0	0.8	2.85
10	0.0745	1328.000	1328.0	0.9	2.99
11	0.0829	1408.000	1408.0	1.0	3.17
12	0.0980	1593.000	1593.0	1.2	3.58
13	0.1132	1816.000	1816.0	1.4	4.09
14	0.1303	2100.000	2100.0	1.6	4.72

Test Readings for Specimen No. 2

No.	Horizontal Def. Dial in.	Load Dial	Load lbs.	Strain %	Shear Stress ksf
15	0.1449	2323.000	2323.0	1.8	5.23
16	0.1632	2512.000	2512.0	2.0	5.65
17	0.1788	2659.000	2659.0	2.2	5.98
18	0.1939	2860.000	2860.0	2.4	6.43
19	0.2097	3034.000	3034.0	2.6	6.83
20	0.2259	3205.000	3205.0	2.8	7.21
21	0.2420	3325.000	3325.0	3.0	7.48
22	0.2575	3506.000	3506.0	3.2	7.89
23	0.2734	3720.000	3720.0	3.4	8.37
24	0.2913	3957.000	3957.0	3.6	8.90
25	0.3073	4146.000	4146.0	3.8	9.33
26	0.3230	4315.000	4315.0	4.0	9.71
27	0.3386	4537.000	4537.0	4.2	10.21
28	0.3546	4744.000	4744.0	4.4	10.67
29	0.3707	4939.000	4939.0	4.6	11.11
30	0.3867	5106.000	5106.0	4.8	11.49
31	0.4025	5314.000	5314.0	5.0	11.96
32	0.4227	5562.000	5562.0	5.3	12.51
33	0.4411	5684.000	5684.0	5.5	12.79
34	0.4623	5923.000	5923.0	5.8	13.33
35	0.4833	6090.000	6090.0	6.0	13.70
36	0.5018	6287.000	6287.0	6.3	14.15
37	0.5227	6384.000	6384.0	6.5	14.36
38	0.5416	6605.000	6605.0	6.8	14.86
39	0.5628	6739.000	6739.0	7.0	15.16
40	0.5818	6920.000	6920.0	7.3	15.57
41	0.6005	7073.000	7073.0	7.5	15.91
42	0.6221	7296.000	7296.0	7.8	16.42
43	0.6433	7473.000	7473.0	8.0	16.81
44	0.6627	7639.000	7639.0	8.3	17.19
45	0.6819	7742.000	7742.0	8.5	17.42
46	0.7034	7895.000	7895.0	8.8	17.76
47	0.7227	7977.000	7977.0	9.0	17.95
48	0.7416	8177.000	8177.0	9.3	18.40
49	0.7634	8311.000	8311.0	9.5	18.70
50	0.7826	8461.000	8461.0	9.8	19.04
51	0.8017	8590.000	8590.0	10.0	19.33
52	0.8210	8728.000	8728.0	10.3	19.64
53	0.8402	8890.000	8890.0	10.5	20.00
54	0.8619	9050.000	9050.0	10.8	20.36
55	0.8817	9137.000	9137.0	11.0	20.56
56	0.9008	9273.000	9273.0	11.3	20.86
57	0.9234	9369.000	9369.0	11.5	21.08
58	0.9428	9466.000	9466.0	11.8	21.30
59	0.9624	9589.000	9589.0	12.0	21.58
60	0.9823	9729.000	9729.0	12.3	21.89
61	1.0016	9761.000	9761.0	12.5	21.96

Test Readings for Specimen No. 2

No.	Horizontal Def. Dial in.	Load Dial	Load lbs.	Strain %	Shear Stress ksf
62	1.0218	9888.000	9888.0	12.8	22.25
63	1.0423	9997.000	9997.0	13.0	22.49
64	1.0611	10095.000	10095.0	13.3	22.71
65	1.0815	10136.000	10136.0	13.5	22.81
66	1.1016	10230.000	10230.0	13.8	23.02
67	1.1220	10321.000	10321.0	14.0	23.22
68	1.1421	10429.000	10429.0	14.3	23.47
69	1.1628	10544.000	10544.0	14.5	23.72
70	1.1827	10544.000	10544.0	14.8	23.72
71	1.2029	10597.000	10597.0	15.0	23.84

Parameters for Specimen No. 3

Specimen Parameter	Initial	Consolidated	Final
Moisture content: Moist soil+tare, gms.	6629.500		9818.500
Moisture content: Dry soil+tare, gms.	6313.500		8470.000
Moisture content: Tare, gms.	0.000		2026.000
Moisture, %	5.0	20.9	20.9
Moist specimen weight, gms.	6629.5		
Side Length, in.	8.00	8.00	
Area, in.²	64.00	64.00	
Height, in.	4.00	3.49	
Net decrease in height, in.		0.51	
Wet density, pcf	98.7	130.2	
Dry density, pcf	94.0	107.7	
Void ratio	0.7941	0.5651	
Saturation, %	17.0	100.0	

Test Readings for Specimen No. 3

Normal stress = 44 ksf

Strain rate, in./min. = 0.010

Fail. Stress = 32.86 ksf **at reading no.** 49

No.	Horizontal Def. Dial in.	Load Dial	Load lbs.	Strain %	Shear Stress ksf
0	0.0000	0.000	0.0	0.0	0.00
1	0.0071	510.000	510.0	0.1	1.15
2	0.0154	656.000	656.0	0.2	1.48
3	0.0248	912.000	912.0	0.3	2.05
4	0.0323	1178.000	1178.0	0.4	2.65
5	0.0407	1476.000	1476.0	0.5	3.32
6	0.0485	1791.000	1791.0	0.6	4.03
7	0.0563	2081.000	2081.0	0.7	4.68
8	0.0642	2388.000	2388.0	0.8	5.37
9	0.0722	2706.000	2706.0	0.9	6.09
10	0.0894	3226.000	3226.0	1.1	7.26
11	0.1036	3644.000	3644.0	1.3	8.20
12	0.1210	4088.000	4088.0	1.5	9.20
13	0.1362	4409.000	4409.0	1.7	9.92
14	0.1516	4718.000	4718.0	1.9	10.62

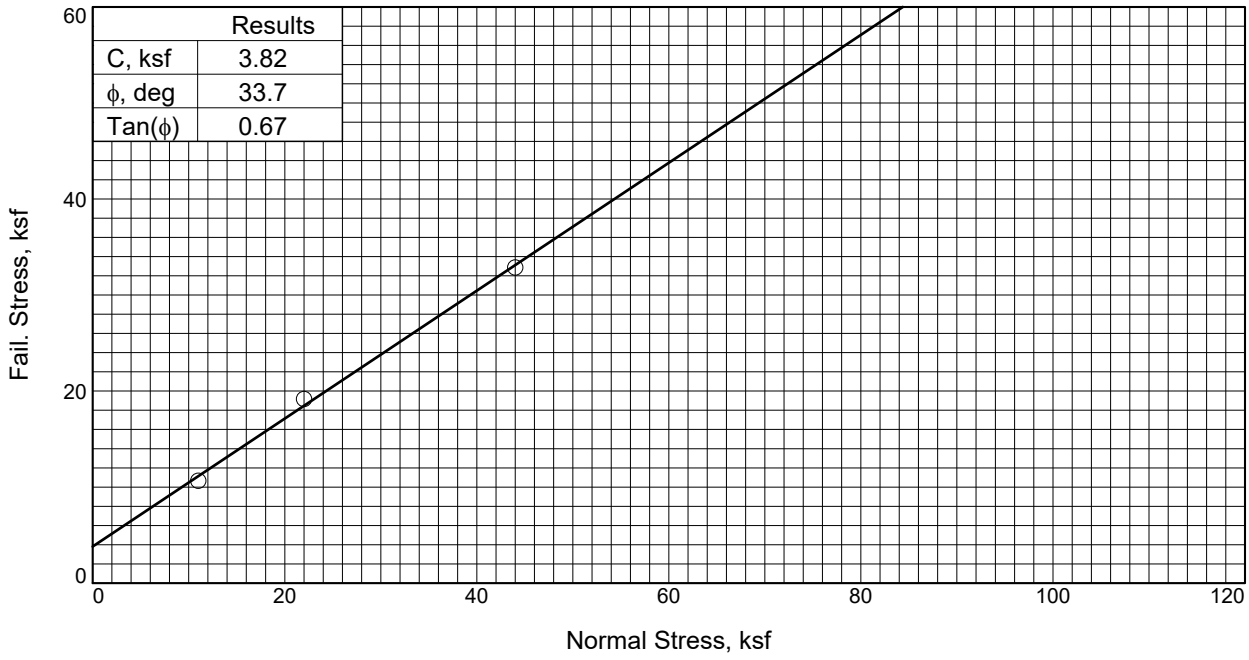
Test Readings for Specimen No. 3

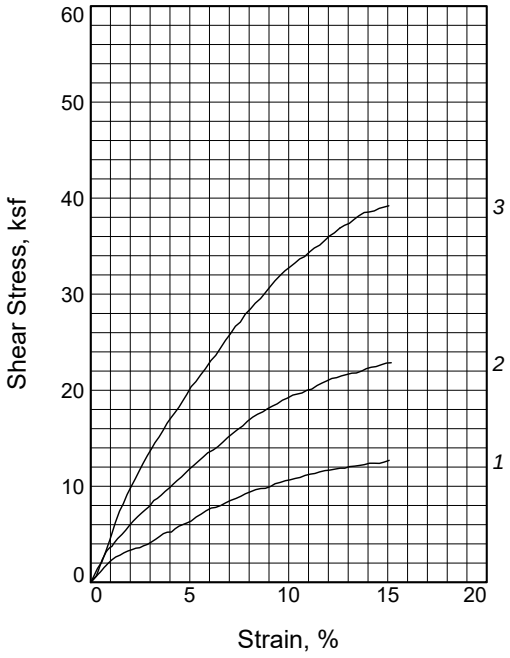
No.	Horizontal Def. Dial in.	Load Dial	Load lbs.	Strain %	Shear Stress ksf
15	0.1678	4978.000	4978.0	2.1	11.20
16	0.1851	5295.000	5295.0	2.3	11.91
17	0.2007	5574.000	5574.0	2.5	12.54
18	0.2167	5806.000	5806.0	2.7	13.06
19	0.2321	6028.000	6028.0	2.9	13.56
20	0.2482	6379.000	6379.0	3.1	14.35
21	0.2638	6714.000	6714.0	3.3	15.11
22	0.2797	7102.000	7102.0	3.5	15.98
23	0.2962	7486.000	7486.0	3.7	16.84
24	0.3126	7699.000	7699.0	3.9	17.32
25	0.3287	8074.000	8074.0	4.1	18.17
26	0.3433	8334.000	8334.0	4.3	18.75
27	0.3593	8641.000	8641.0	4.5	19.44
28	0.3762	8857.000	8857.0	4.7	19.93
29	0.3925	9214.000	9214.0	4.9	20.73
30	0.4122	9467.000	9467.0	5.2	21.30
31	0.4335	9897.000	9897.0	5.4	22.27
32	0.4524	10225.000	10225.0	5.7	23.01
33	0.4717	10577.000	10577.0	5.9	23.80
34	0.4908	10918.000	10918.0	6.1	24.57
35	0.5137	11183.000	11183.0	6.4	25.16
36	0.5322	11375.000	11375.0	6.7	25.59
37	0.5520	11712.000	11712.0	6.9	26.35
38	0.5725	11971.000	11971.0	7.2	26.93
39	0.5924	12251.000	12251.0	7.4	27.56
40	0.6129	12534.000	12534.0	7.7	28.20
41	0.6337	12793.000	12793.0	7.9	28.78
42	0.6512	13058.000	13058.0	8.1	29.38
43	0.6720	13325.000	13325.0	8.4	29.98
44	0.6924	13621.000	13621.0	8.7	30.65
45	0.7132	13909.000	13909.0	8.9	31.30
46	0.7321	14124.000	14124.0	9.2	31.78
47	0.7505	14253.000	14253.0	9.4	32.07
48	0.7723	14329.000	14329.0	9.7	32.24
49	0.7909	14604.000	14604.0	9.9	32.86
50	0.8122	14775.000	14775.0	10.2	33.24
51	0.8311	15038.000	15038.0	10.4	33.84
52	0.8525	15114.000	15114.0	10.7	34.01
53	0.8742	15385.000	15385.0	10.9	34.62
54	0.8918	15605.000	15605.0	11.1	35.11
55	0.9114	15771.000	15771.0	11.4	35.48
56	0.9329	15902.000	15902.0	11.7	35.78
57	0.9519	16037.000	16037.0	11.9	36.08
58	0.9716	16120.000	16120.0	12.1	36.27
59	0.9929	16280.000	16280.0	12.4	36.63
60	1.0117	16371.000	16371.0	12.6	36.83
61	1.0310	16368.000	16368.0	12.9	36.83

Test Readings for Specimen No. 3

No.	Horizontal Def. Dial in.	Load Dial	Load lbs.	Strain %	Shear Stress ksf
62	1.0528	16480.000	16480.0	13.2	37.08
63	1.0717	16422.000	16422.0	13.4	36.95
64	1.0918	16498.000	16498.0	13.6	37.12
65	1.1112	16674.000	16674.0	13.9	37.52
66	1.1328	16814.000	16814.0	14.2	37.83
67	1.1517	16945.000	16945.0	14.4	38.13
68	1.1711	17055.000	17055.0	14.6	38.37
69	1.1931	17159.000	17159.0	14.9	38.61

Cursory interpretations provided require review by a professional engineer. Knight Piesold accepts no responsibility in subsequent analyses.





Specimen No.		1	2	3
Initial	Water Content, %	1.8	1.9	1.9
	Dry Density, pcf	99.0	99.0	99.0
	Saturation, %	7.1	7.2	7.1
	Void Ratio	0.7018	0.7020	0.7020
	Side Length, in.	8.00	8.00	8.00
	Height, in.	4.25	4.25	4.25
At Test	Water Content, %	22.7	20.3	18.2
	Dry Density, pcf	104.6	108.8	113.0
	Saturation, %	100.0	100.0	100.0
	Void Ratio	0.6121	0.5494	0.4915
	Side Length, in.	8.00	8.00	8.00
	Height, in.	4.03	3.87	3.72
Normal Stress, ksf		11.00	22.00	44.00
Fail. Stress, ksf		10.66	19.18	32.88
Strain, %		10.1	9.9	10.1
Ult. Stress, ksf				
Strain, %				
Strain rate, in./min.		0.010	0.010	0.010

Sample Type: Remolded
Description: poorly graded gravel with silt and sand

LL= NP **PI=** NP
Assumed Specific Gravity= 2.7
Remarks: Failure chosen at 10% strain. Test was inundated. Particles larger than 3/4" were removed prior to test. Gap = 0.4".

Figure _____

Client: NewFields

Project: CC&V VLF2 Recertification
NF#475.0106.026
Source of Sample: VLF2 Re-Evaluation
Sample Number: Comp 2
Proj. No.: DV108-00305-07 **Date Sampled:** 8/2/18

Knight Piésold CONSULTING

Tested By: LEB **Checked By:** JDB

DIRECT SHEAR TEST

9/4/2018

Date: 8/2/18
Client: NewFields
Project: CC&V VLF2 Recertification
NF#475.0106.026
Project No.: DV108-00305-07
Location: VLF2 Re-Evaluation
Sample Number: Comp 2
Description: poorly graded gravel with silt and sand
Remarks: Failure chosen at 10% strain. Test was inundated. Particles larger than 3/4" were removed prior to test. Gap = 0.4".
Type of Sample: Remolded
Assumed Specific Gravity=2.7 **LL=**NP **PL=** **PI=**NP

Parameters for Specimen No. 1

Specimen Parameter	Initial	Consolidated	Final
Moisture content: Moist soil+tare, gms.	7202.500		10653.000
Moisture content: Dry soil+tare, gms.	7071.700		9068.500
Moisture content: Tare, gms.	0.000		2076.500
Moisture, %	1.8	22.7	22.7
Moist specimen weight, gms.	7202.5		
Side Length, in.	8.00	8.00	
Area, in.²	64.00	64.00	
Height, in.	4.25	4.03	
Net decrease in height, in.		0.22	
Wet density, pcf	100.9	128.2	
Dry density, pcf	99.0	104.6	
Void ratio	0.7018	0.6121	
Saturation, %	7.1	100.0	

Test Readings for Specimen No. 1

Normal stress = 11 ksf
Strain rate, in./min. = 0.010
Fail. Stress = 10.66 ksf **at reading no.** 50

No.	Horizontal Def. Dial in.	Load Dial	Load lbs.	Strain %	Shear Stress ksf
0	0.0000	0.000	0.0	0.0	0.00
1	0.0139	165.000	165.0	0.2	0.37
2	0.0224	268.000	268.0	0.3	0.60
3	0.0302	368.000	368.0	0.4	0.83
4	0.0381	468.000	468.0	0.5	1.05
5	0.0463	572.000	572.0	0.6	1.29
6	0.0546	685.000	685.0	0.7	1.54
7	0.0607	762.000	762.0	0.8	1.71
8	0.0695	863.000	863.0	0.9	1.94
9	0.0775	958.000	958.0	1.0	2.16
10	0.0862	1047.000	1047.0	1.1	2.36
11	0.1012	1169.000	1169.0	1.3	2.63
12	0.1190	1255.000	1255.0	1.5	2.82

Test Readings for Specimen No. 1

No.	Horizontal Def. Dial in.	Load Dial	Load lbs.	Strain %	Shear Stress ksf
13	0.1340	1364.000	1364.0	1.7	3.07
14	0.1498	1441.000	1441.0	1.9	3.24
15	0.1668	1511.000	1511.0	2.1	3.40
16	0.1826	1577.000	1577.0	2.3	3.55
17	0.1983	1602.000	1602.0	2.5	3.60
18	0.2137	1690.000	1690.0	2.7	3.80
19	0.2296	1755.000	1755.0	2.9	3.95
20	0.2447	1861.000	1861.0	3.1	4.19
21	0.2627	1991.000	1991.0	3.3	4.48
22	0.2782	2119.000	2119.0	3.5	4.77
23	0.2937	2251.000	2251.0	3.7	5.06
24	0.3094	2318.000	2318.0	3.9	5.22
25	0.3259	2327.000	2327.0	4.1	5.24
26	0.3412	2481.000	2481.0	4.3	5.58
27	0.3569	2601.000	2601.0	4.5	5.85
28	0.3742	2681.000	2681.0	4.7	6.03
29	0.3905	2757.000	2757.0	4.9	6.20
30	0.4062	2836.000	2836.0	5.1	6.38
31	0.4261	3019.000	3019.0	5.3	6.79
32	0.4461	3154.000	3154.0	5.6	7.10
33	0.4661	3312.000	3312.0	5.8	7.45
34	0.4869	3434.000	3434.0	6.1	7.73
35	0.5048	3466.000	3466.0	6.3	7.80
36	0.5256	3556.000	3556.0	6.6	8.00
37	0.5454	3682.000	3682.0	6.8	8.28
38	0.5658	3792.000	3792.0	7.1	8.53
39	0.5869	3882.000	3882.0	7.3	8.73
40	0.6070	3984.000	3984.0	7.6	8.96
41	0.6248	4092.000	4092.0	7.8	9.21
42	0.6457	4189.000	4189.0	8.1	9.43
43	0.6664	4285.000	4285.0	8.3	9.64
44	0.6871	4336.000	4336.0	8.6	9.76
45	0.7056	4348.000	4348.0	8.8	9.78
46	0.7266	4434.000	4434.0	9.1	9.98
47	0.7447	4563.000	4563.0	9.3	10.27
48	0.7655	4623.000	4623.0	9.6	10.40
49	0.7867	4705.000	4705.0	9.8	10.59
50	0.8049	4740.000	4740.0	10.1	10.66
51	0.8265	4803.000	4803.0	10.3	10.81
52	0.8453	4850.000	4850.0	10.6	10.91
53	0.8661	4946.000	4946.0	10.8	11.13
54	0.8877	5003.000	5003.0	11.1	11.26
55	0.9059	5037.000	5037.0	11.3	11.33
56	0.9249	5112.000	5112.0	11.6	11.50
57	0.9462	5171.000	5171.0	11.8	11.63
58	0.9653	5190.000	5190.0	12.1	11.68
59	0.9861	5234.000	5234.0	12.3	11.78

Test Readings for Specimen No. 1

No.	Horizontal Def. Dial in.	Load Dial	Load lbs.	Strain %	Shear Stress ksf
60	1.0078	5276.000	5276.0	12.6	11.87
61	1.0264	5281.000	5281.0	12.8	11.88
62	1.0456	5350.000	5350.0	13.1	12.04
63	1.0668	5375.000	5375.0	13.3	12.09
64	1.0850	5407.000	5407.0	13.6	12.17
65	1.1050	5440.000	5440.0	13.8	12.24
66	1.1264	5511.000	5511.0	14.1	12.40
67	1.1453	5511.000	5511.0	14.3	12.40
68	1.1663	5503.000	5503.0	14.6	12.38
69	1.1848	5559.000	5559.0	14.8	12.51
70	1.2059	5645.000	5645.0	15.1	12.70

Parameters for Specimen No. 2

Specimen Parameter	Initial	Consolidated	Final
Moisture content: Moist soil+tare, gms.	7202.500		11220.900
Moisture content: Dry soil+tare, gms.	7071.000		9797.000
Moisture content: Tare, gms.	0.000		2796.000
Moisture, %	1.9	20.3	20.3
Moist specimen weight, gms.	7202.5		
Side Length, in.	8.00	8.00	
Area, in.²	64.00	64.00	
Height, in.	4.25	3.87	
Net decrease in height, in.		0.38	
Wet density, pcf	100.9	130.9	
Dry density, pcf	99.0	108.8	
Void ratio	0.7020	0.5494	
Saturation, %	7.2	100.0	

Test Readings for Specimen No. 2

Normal stress = 22 ksf

Strain rate, in./min. = 0.010

Fail. Stress = 19.18 ksf **at reading no.** 49

No.	Horizontal Def. Dial in.	Load Dial	Load lbs.	Strain %	Shear Stress ksf
0	0.0000	0.000	0.0	0.0	0.00
1	0.0226	304.000	304.0	0.3	0.68
2	0.0303	535.000	535.0	0.4	1.20
3	0.0365	723.000	723.0	0.5	1.63
4	0.0462	1035.000	1035.0	0.6	2.33
5	0.0543	1223.000	1223.0	0.7	2.75
6	0.0622	1405.000	1405.0	0.8	3.16
7	0.0682	1498.000	1498.0	0.9	3.37
8	0.0773	1605.000	1605.0	1.0	3.61
9	0.0856	1660.000	1660.0	1.1	3.73
10	0.0942	1806.000	1806.0	1.2	4.06
11	0.1089	2022.000	2022.0	1.4	4.55
12	0.1263	2214.000	2214.0	1.6	4.98
13	0.1416	2411.000	2411.0	1.8	5.42

Test Readings for Specimen No. 2

No.	Horizontal Def. Dial in.	Load Dial	Load lbs.	Strain %	Shear Stress ksf
14	0.1571	2644.000	2644.0	2.0	5.95
15	0.1725	2841.000	2841.0	2.2	6.39
16	0.1902	3045.000	3045.0	2.4	6.85
17	0.2057	3206.000	3206.0	2.6	7.21
18	0.2215	3361.000	3361.0	2.8	7.56
19	0.2370	3511.000	3511.0	3.0	7.90
20	0.2551	3784.000	3784.0	3.2	8.51
21	0.2691	3878.000	3878.0	3.4	8.73
22	0.2848	4031.000	4031.0	3.6	9.07
23	0.3005	4202.000	4202.0	3.8	9.45
24	0.3192	4381.000	4381.0	4.0	9.86
25	0.3325	4529.000	4529.0	4.2	10.19
26	0.3487	4704.000	4704.0	4.4	10.58
27	0.3667	4874.000	4874.0	4.6	10.97
28	0.3809	5034.000	5034.0	4.8	11.33
29	0.3988	5241.000	5241.0	5.0	11.79
30	0.4150	5396.000	5396.0	5.2	12.14
31	0.4334	5583.000	5583.0	5.4	12.56
32	0.4551	5807.000	5807.0	5.7	13.07
33	0.4729	5990.000	5990.0	5.9	13.48
34	0.4940	6120.000	6120.0	6.2	13.77
35	0.5131	6270.000	6270.0	6.4	14.11
36	0.5339	6485.000	6485.0	6.7	14.59
37	0.5526	6693.000	6693.0	6.9	15.06
38	0.5743	6895.000	6895.0	7.2	15.51
39	0.5929	7067.000	7067.0	7.4	15.90
40	0.6139	7235.000	7235.0	7.7	16.28
41	0.6331	7453.000	7453.0	7.9	16.77
42	0.6546	7641.000	7641.0	8.2	17.19
43	0.6738	7778.000	7778.0	8.4	17.50
44	0.6953	7884.000	7884.0	8.7	17.74
45	0.7147	8034.000	8034.0	8.9	18.08
46	0.7338	8153.000	8153.0	9.2	18.34
47	0.7534	8259.000	8259.0	9.4	18.58
48	0.7748	8426.000	8426.0	9.7	18.96
49	0.7943	8525.000	8525.0	9.9	19.18
50	0.8163	8661.000	8661.0	10.2	19.49
51	0.8335	8709.000	8709.0	10.4	19.60
52	0.8535	8757.000	8757.0	10.7	19.70
53	0.8731	8889.000	8889.0	10.9	20.00
54	0.8926	8939.000	8939.0	11.2	20.11
55	0.9145	9110.000	9110.0	11.4	20.50
56	0.9339	9216.000	9216.0	11.7	20.74
57	0.9542	9326.000	9326.0	11.9	20.98
58	0.9739	9432.000	9432.0	12.2	21.22
59	0.9935	9473.000	9473.0	12.4	21.31
60	1.0133	9555.000	9555.0	12.7	21.50

Test Readings for Specimen No. 2

No.	Horizontal Def. Dial in.	Load Dial	Load lbs.	Strain %	Shear Stress ksf
61	1.0332	9610.000	9610.0	12.9	21.62
62	1.0550	9678.000	9678.0	13.2	21.78
63	1.0732	9685.000	9685.0	13.4	21.79
64	1.0956	9785.000	9785.0	13.7	22.02
65	1.1133	9887.000	9887.0	13.9	22.25
66	1.1332	9951.000	9951.0	14.2	22.39
67	1.1524	9983.000	9983.0	14.4	22.46
68	1.1745	10074.000	10074.0	14.7	22.67
69	1.1944	10148.000	10148.0	14.9	22.83
70	1.2142	10158.000	10158.0	15.2	22.86

Parameters for Specimen No. 3

Specimen Parameter	Initial	Consolidated	Final
Moisture content: Moist soil+tare, gms.	7202.500		10386.000
Moisture content: Dry soil+tare, gms.	7071.500		9124.000
Moisture content: Tare, gms.	0.000		2192.000
Moisture, %	1.9	18.2	18.2
Moist specimen weight, gms.	7202.0		
Side Length, in.	8.00	8.00	
Area, in.²	64.00	64.00	
Height, in.	4.25	3.72	
Net decrease in height, in.		0.53	
Wet density, pcf	100.9	133.6	
Dry density, pcf	99.0	113.0	
Void ratio	0.7020	0.4915	
Saturation, %	7.1	100.0	

Test Readings for Specimen No. 3

Normal stress = 44 ksf

Strain rate, in./min. = 0.010

Fail. Stress = 32.88 ksf **at reading no.** 50

No.	Horizontal Def. Dial in.	Load Dial	Load lbs.	Strain %	Shear Stress ksf
0	0.0000	0.000	0.0	0.0	0.00
1	0.0116	268.000	268.0	0.1	0.60
2	0.0196	454.000	454.0	0.2	1.02
3	0.0275	639.000	639.0	0.3	1.44
4	0.0358	785.000	785.0	0.4	1.77
5	0.0447	931.000	931.0	0.6	2.09
6	0.0526	1176.000	1176.0	0.7	2.65
7	0.0608	1428.000	1428.0	0.8	3.21
8	0.0693	1702.000	1702.0	0.9	3.83
9	0.0773	1957.000	1957.0	1.0	4.40
10	0.0858	2253.000	2253.0	1.1	5.07
11	0.0995	2768.000	2768.0	1.2	6.23
12	0.1164	3294.000	3294.0	1.5	7.41
13	0.1320	3642.000	3642.0	1.7	8.19
14	0.1470	4057.000	4057.0	1.8	9.13

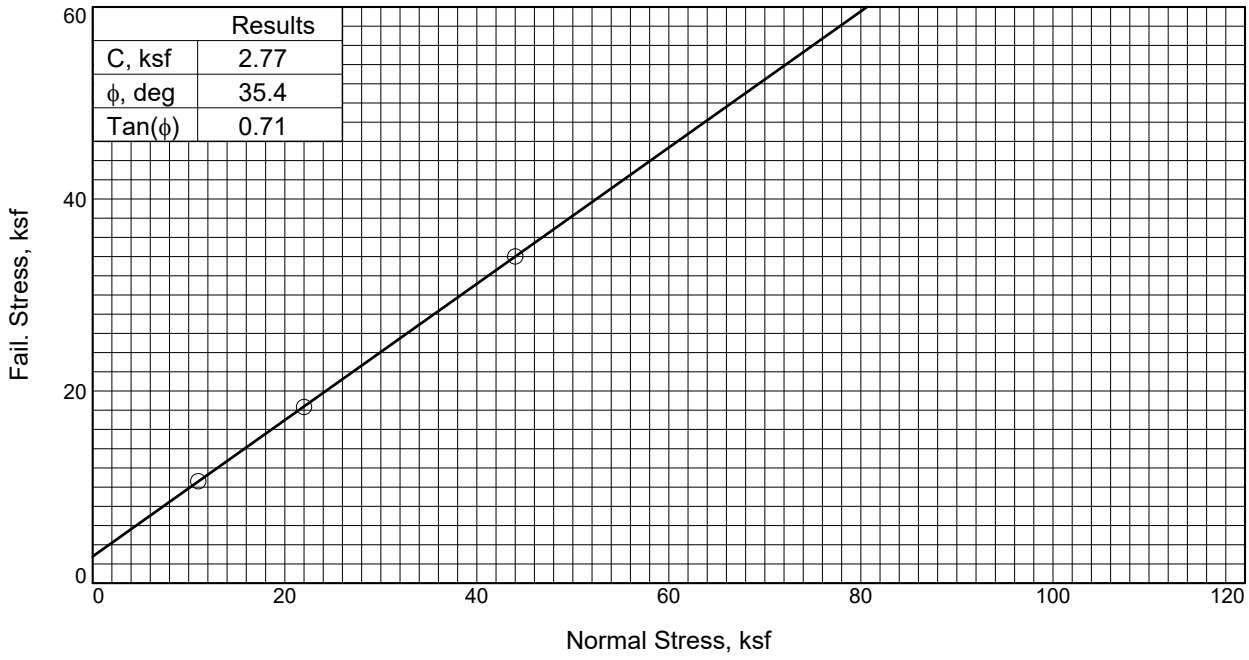
Test Readings for Specimen No. 3

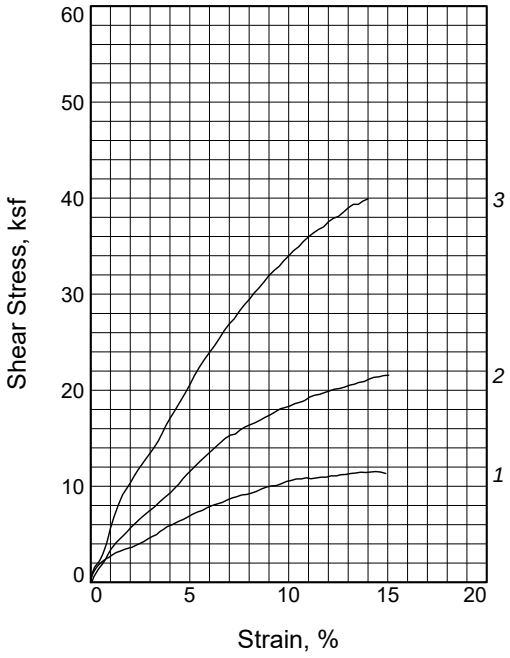
No.	Horizontal Def. Dial in.	Load Dial	Load lbs.	Strain %	Shear Stress ksf
15	0.1646	4447.000	4447.0	2.1	10.01
16	0.1798	4783.000	4783.0	2.2	10.76
17	0.1960	5156.000	5156.0	2.5	11.60
18	0.2114	5503.000	5503.0	2.6	12.38
19	0.2293	5866.000	5866.0	2.9	13.20
20	0.2456	6184.000	6184.0	3.1	13.91
21	0.2596	6457.000	6457.0	3.2	14.53
22	0.2763	6720.000	6720.0	3.5	15.12
23	0.2922	7028.000	7028.0	3.7	15.81
24	0.3083	7362.000	7362.0	3.9	16.56
25	0.3249	7619.000	7619.0	4.1	17.14
26	0.3394	7844.000	7844.0	4.2	17.65
27	0.3561	8103.000	8103.0	4.5	18.23
28	0.3724	8406.000	8406.0	4.7	18.91
29	0.3887	8698.000	8698.0	4.9	19.57
30	0.4056	9046.000	9046.0	5.1	20.35
31	0.4247	9289.000	9289.0	5.3	20.90
32	0.4436	9589.000	9589.0	5.5	21.58
33	0.4634	9886.000	9886.0	5.8	22.24
34	0.4856	10264.000	10264.0	6.1	23.09
35	0.5052	10499.000	10499.0	6.3	23.62
36	0.5246	10838.000	10838.0	6.6	24.39
37	0.5443	11198.000	11198.0	6.8	25.20
38	0.5642	11499.000	11499.0	7.1	25.87
39	0.5847	11849.000	11849.0	7.3	26.66
40	0.6047	12040.000	12040.0	7.6	27.09
41	0.6248	12413.000	12413.0	7.8	27.93
42	0.6450	12648.000	12648.0	8.1	28.46
43	0.6648	12918.000	12918.0	8.3	29.07
44	0.6858	13128.000	13128.0	8.6	29.54
45	0.7035	13374.000	13374.0	8.8	30.09
46	0.7236	13662.000	13662.0	9.0	30.74
47	0.7449	13959.000	13959.0	9.3	31.41
48	0.7660	14209.000	14209.0	9.6	31.97
49	0.7851	14421.000	14421.0	9.8	32.45
50	0.8066	14613.000	14613.0	10.1	32.88
51	0.8253	14784.000	14784.0	10.3	33.26
52	0.8445	14965.000	14965.0	10.6	33.67
53	0.8634	15072.000	15072.0	10.8	33.91
54	0.8843	15294.000	15294.0	11.1	34.41
55	0.9032	15472.000	15472.0	11.3	34.81
56	0.9248	15606.000	15606.0	11.6	35.11
57	0.9434	15794.000	15794.0	11.8	35.54
58	0.9654	16029.000	16029.0	12.1	36.07
59	0.9843	16172.000	16172.0	12.3	36.39
60	1.0060	16391.000	16391.0	12.6	36.88
61	1.0252	16523.000	16523.0	12.8	37.18

Test Readings for Specimen No. 3

No.	Horizontal Def. Dial in.	Load Dial	Load lbs.	Strain %	Shear Stress ksf
62	1.0445	16608.000	16608.0	13.1	37.37
63	1.0638	16796.000	16796.0	13.3	37.79
64	1.0828	16961.000	16961.0	13.5	38.16
65	1.1046	17115.000	17115.0	13.8	38.51
66	1.1236	17133.000	17133.0	14.0	38.55
67	1.1457	17191.000	17191.0	14.3	38.68
68	1.1654	17310.000	17310.0	14.6	38.95
69	1.1847	17368.000	17368.0	14.8	39.08
70	1.2046	17423.000	17423.0	15.1	39.20

Cursory interpretations provided require review by a professional engineer. Knight Piesold accepts no responsibility in subsequent analyses.





Specimen No.		1	2	3
Initial	Water Content, %	2.1	2.1	2.1
	Dry Density, pcf	97.4	97.4	97.4
	Saturation, %	7.8	7.8	7.8
	Void Ratio	0.7299	0.7299	0.7300
	Side Length, in.	8.00	8.00	8.00
	Height, in.	4.35	4.35	4.35
At Test	Water Content, %	22.8	21.9	19.5
	Dry Density, pcf	104.3	105.9	110.5
	Saturation, %	100.0	100.0	100.0
	Void Ratio	0.6157	0.5910	0.5252
	Side Length, in.	8.00	8.00	8.00
	Height, in.	4.06	4.00	3.84
Normal Stress, ksf		11.00	22.00	44.00
Fail. Stress, ksf		10.61	18.34	34.02
Strain, %		10.1	10.0	10.0
Ult. Stress, ksf				
Strain, %				
Strain rate, in./min.		0.010	0.010	0.010

Sample Type: Remolded
Description: poorly graded gravel with silt and sand

LL= NP **PI=** NP
Assumed Specific Gravity= 2.7
Remarks: Failure chosen at 10% strain. Test was inundated. Particles larger than 3/4" were removed prior to test. Gap =0.4".

Figure _____

Client: NewFields

Project: CC&V VLF2 Recertification
NF#475.0106.026
Source of Sample: VLF2 Re-Evaluation
Sample Number: Comp 3
Proj. No.: DV108-00305-07 **Date Sampled:** 8/8/18

Knight Piésold CONSULTING

Tested By: LEB **Checked By:** JDB

DIRECT SHEAR TEST

9/4/2018

Date: 8/8/18
Client: NewFields
Project: CC&V VLF2 Recertification
NF#475.0106.026
Project No.: DV108-00305-07
Location: VLF2 Re-Evaluation
Sample Number: Comp 3
Description: poorly graded gravel with silt and sand
Remarks: Failure chosen at 10% strain. Test was inundated. Particles larger than 3/4" were removed prior to test. Gap =0.4".
Type of Sample: Remolded
Assumed Specific Gravity=2.7 **LL=**NP **PL=** **PI=**NP

Parameters for Specimen No. 1

Specimen Parameter	Initial	Consolidated	Final
Moisture content: Moist soil+tare, gms.	7270.500		11480.900
Moisture content: Dry soil+tare, gms.	7120.500		9868.000
Moisture content: Tare, gms.	0.000		2795.500
Moisture, %	2.1	22.8	22.8
Moist specimen weight, gms.	7270.5		
Side Length, in.	8.00	8.00	
Area, in.²	64.00	64.00	
Height, in.	4.35	4.06	
Net decrease in height, in.		0.29	
Wet density, pcf	99.5	128.1	
Dry density, pcf	97.4	104.3	
Void ratio	0.7299	0.6157	
Saturation, %	7.8	100.0	

Test Readings for Specimen No. 1

Normal stress = 11 ksf
Strain rate, in./min. = 0.010
Fail. Stress = 10.61 ksf **at reading no.** 51

No.	Horizontal Def. Dial in.	Load Dial	Load lbs.	Strain %	Shear Stress ksf
0	0.0000	0.000	0.0	0.0	0.00
1	0.0020	210.000	210.0	0.0	0.47
2	0.0062	337.000	337.0	0.1	0.76
3	0.0153	538.000	538.0	0.2	1.21
4	0.0234	687.000	687.0	0.3	1.55
5	0.0313	791.000	791.0	0.4	1.78
6	0.0394	891.000	891.0	0.5	2.00
7	0.0481	972.000	972.0	0.6	2.19
8	0.0540	1022.000	1022.0	0.7	2.30
9	0.0627	1097.000	1097.0	0.8	2.47
10	0.0717	1141.000	1141.0	0.9	2.57
11	0.0862	1261.000	1261.0	1.1	2.84
12	0.1029	1374.000	1374.0	1.3	3.09

Test Readings for Specimen No. 1

No.	Horizontal Def. Dial in.	Load Dial	Load lbs.	Strain %	Shear Stress ksf
13	0.1182	1435.000	1435.0	1.5	3.23
14	0.1355	1519.000	1519.0	1.7	3.42
15	0.1524	1580.000	1580.0	1.9	3.56
16	0.1672	1622.000	1622.0	2.1	3.65
17	0.1840	1715.000	1715.0	2.3	3.86
18	0.1995	1801.000	1801.0	2.5	4.05
19	0.2140	1883.000	1883.0	2.7	4.24
20	0.2308	2009.000	2009.0	2.9	4.52
21	0.2482	2114.000	2114.0	3.1	4.76
22	0.2662	2203.000	2203.0	3.3	4.96
23	0.2791	2342.000	2342.0	3.5	5.27
24	0.2940	2454.000	2454.0	3.7	5.52
25	0.3106	2582.000	2582.0	3.9	5.81
26	0.3267	2653.000	2653.0	4.1	5.97
27	0.3440	2753.000	2753.0	4.3	6.19
28	0.3572	2825.000	2825.0	4.5	6.36
29	0.3747	2912.000	2912.0	4.7	6.55
30	0.3918	3019.000	3019.0	4.9	6.79
31	0.4114	3149.000	3149.0	5.1	7.09
32	0.4314	3253.000	3253.0	5.4	7.32
33	0.4510	3328.000	3328.0	5.6	7.49
34	0.4711	3459.000	3459.0	5.9	7.78
35	0.4911	3556.000	3556.0	6.1	8.00
36	0.5112	3630.000	3630.0	6.4	8.17
37	0.5318	3696.000	3696.0	6.6	8.32
38	0.5521	3811.000	3811.0	6.9	8.57
39	0.5718	3900.000	3900.0	7.1	8.78
40	0.5903	3958.000	3958.0	7.4	8.91
41	0.6105	4045.000	4045.0	7.6	9.10
42	0.6310	4066.000	4066.0	7.9	9.15
43	0.6512	4129.000	4129.0	8.1	9.29
44	0.6714	4213.000	4213.0	8.4	9.48
45	0.6899	4320.000	4320.0	8.6	9.72
46	0.7100	4408.000	4408.0	8.9	9.92
47	0.7307	4460.000	4460.0	9.1	10.04
48	0.7513	4483.000	4483.0	9.4	10.09
49	0.7718	4567.000	4567.0	9.6	10.28
50	0.7908	4662.000	4662.0	9.9	10.49
51	0.8114	4714.000	4714.0	10.1	10.61
52	0.8316	4780.000	4780.0	10.4	10.76
53	0.8507	4786.000	4786.0	10.6	10.77
54	0.8715	4834.000	4834.0	10.9	10.88
55	0.8896	4792.000	4792.0	11.1	10.78
56	0.9108	4830.000	4830.0	11.4	10.87
57	0.9318	4867.000	4867.0	11.6	10.95
58	0.9522	4865.000	4865.0	11.9	10.95
59	0.9707	4923.000	4923.0	12.1	11.08

Test Readings for Specimen No. 1

No.	Horizontal Def. Dial in.	Load Dial	Load lbs.	Strain %	Shear Stress ksf
60	0.9920	4924.000	4924.0	12.4	11.08
61	1.0102	4978.000	4978.0	12.6	11.20
62	1.0312	4992.000	4992.0	12.9	11.23
63	1.0509	5036.000	5036.0	13.1	11.33
64	1.0716	5059.000	5059.0	13.4	11.38
65	1.0906	5093.000	5093.0	13.6	11.46
66	1.1116	5080.000	5080.0	13.9	11.43
67	1.1302	5105.000	5105.0	14.1	11.49
68	1.1516	5126.000	5126.0	14.4	11.53
69	1.1706	5099.000	5099.0	14.6	11.47
70	1.1923	5034.000	5034.0	14.9	11.33

Parameters for Specimen No. 2

Specimen Parameter	Initial	Consolidated	Final
Moisture content: Moist soil+tare, gms.	7270.500		11408.000
Moisture content: Dry soil+tare, gms.	7120.500		9869.000
Moisture content: Tare, gms.	0.000		2835.500
Moisture, %	2.1	21.9	21.9
Moist specimen weight, gms.	7270.5		
Side Length, in.	8.00	8.00	
Area, in.²	64.00	64.00	
Height, in.	4.35	4.00	
Net decrease in height, in.		0.35	
Wet density, pcf	99.5	129.1	
Dry density, pcf	97.4	105.9	
Void ratio	0.7299	0.5910	
Saturation, %	7.8	100.0	

Test Readings for Specimen No. 2

Normal stress = 22 ksf

Strain rate, in./min. = 0.010

Fail. Stress = 18.34 ksf **at reading no.** 50

No.	Horizontal Def. Dial in.	Load Dial	Load lbs.	Strain %	Shear Stress ksf
0	0.0000	0.000	0.0	0.0	0.00
1	0.0046	7.000	7.0	0.1	0.02
2	0.0128	248.000	248.0	0.2	0.56
3	0.0203	399.000	399.0	0.3	0.90
4	0.0290	576.000	576.0	0.4	1.30
5	0.0366	690.000	690.0	0.5	1.55
6	0.0447	809.000	809.0	0.6	1.82
7	0.0527	930.000	930.0	0.7	2.09
8	0.0603	1062.000	1062.0	0.8	2.39
9	0.0683	1249.000	1249.0	0.9	2.81
10	0.0759	1416.000	1416.0	0.9	3.19
11	0.0837	1553.000	1553.0	1.0	3.49
12	0.1007	1804.000	1804.0	1.3	4.06
13	0.1176	2004.000	2004.0	1.5	4.51

Test Readings for Specimen No. 2

No.	Horizontal Def. Dial in.	Load Dial	Load lbs.	Strain %	Shear Stress ksf
14	0.1326	2171.000	2171.0	1.7	4.88
15	0.1492	2370.000	2370.0	1.9	5.33
16	0.1645	2564.000	2564.0	2.1	5.77
17	0.1798	2722.000	2722.0	2.2	6.12
18	0.1974	2919.000	2919.0	2.5	6.57
19	0.2129	3076.000	3076.0	2.7	6.92
20	0.2284	3222.000	3222.0	2.9	7.25
21	0.2445	3372.000	3372.0	3.1	7.59
22	0.2593	3501.000	3501.0	3.2	7.88
23	0.2771	3700.000	3700.0	3.5	8.32
24	0.2934	3876.000	3876.0	3.7	8.72
25	0.3089	4017.000	4017.0	3.9	9.04
26	0.3247	4174.000	4174.0	4.1	9.39
27	0.3406	4368.000	4368.0	4.3	9.83
28	0.3558	4536.000	4536.0	4.4	10.21
29	0.3721	4786.000	4786.0	4.7	10.77
30	0.3877	4985.000	4985.0	4.8	11.22
31	0.4042	5171.000	5171.0	5.1	11.63
32	0.4246	5405.000	5405.0	5.3	12.16
33	0.4448	5635.000	5635.0	5.6	12.68
34	0.4654	5851.000	5851.0	5.8	13.16
35	0.4835	6039.000	6039.0	6.0	13.59
36	0.5046	6255.000	6255.0	6.3	14.07
37	0.5439	6666.000	6666.0	6.8	15.00
38	0.5652	6815.000	6815.0	7.1	15.33
39	0.5838	6858.000	6858.0	7.3	15.43
40	0.6048	7060.000	7060.0	7.6	15.88
41	0.6240	7190.000	7190.0	7.8	16.18
42	0.6449	7294.000	7294.0	8.1	16.41
43	0.6643	7386.000	7386.0	8.3	16.62
44	0.6854	7511.000	7511.0	8.6	16.90
45	0.7044	7634.000	7634.0	8.8	17.18
46	0.7263	7755.000	7755.0	9.1	17.45
47	0.7441	7877.000	7877.0	9.3	17.72
48	0.7654	8024.000	8024.0	9.6	18.05
49	0.7849	8086.000	8086.0	9.8	18.19
50	0.8035	8152.000	8152.0	10.0	18.34
51	0.8254	8271.000	8271.0	10.3	18.61
52	0.8448	8331.000	8331.0	10.6	18.74
53	0.8638	8406.000	8406.0	10.8	18.91
54	0.8847	8577.000	8577.0	11.1	19.30
55	0.9041	8660.000	8660.0	11.3	19.48
56	0.9256	8701.000	8701.0	11.6	19.58
57	0.9450	8783.000	8783.0	11.8	19.76
58	0.9662	8866.000	8866.0	12.1	19.95
59	0.9852	8935.000	8935.0	12.3	20.10
60	1.0045	8964.000	8964.0	12.6	20.17

Test Readings for Specimen No. 2

No.	Horizontal Def. Dial in.	Load Dial	Load lbs.	Strain %	Shear Stress ksf
61	1.0241	9028.000	9028.0	12.8	20.31
62	1.0463	9122.000	9122.0	13.1	20.52
63	1.0655	9164.000	9164.0	13.3	20.62
64	1.0833	9252.000	9252.0	13.5	20.82
65	1.1056	9297.000	9297.0	13.8	20.92
66	1.1247	9403.000	9403.0	14.1	21.16
67	1.1445	9485.000	9485.0	14.3	21.34
68	1.1643	9510.000	9510.0	14.6	21.40
69	1.1837	9564.000	9564.0	14.8	21.52
70	1.2038	9585.000	9585.0	15.0	21.57

Parameters for Specimen No. 3

Specimen Parameter	Initial	Consolidated	Final
Moisture content: Moist soil+tare, gms.	7270.500		10370.000
Moisture content: Dry soil+tare, gms.	7120.300		9011.000
Moisture content: Tare, gms.	0.000		2025.000
Moisture, %	2.1	19.5	19.5
Moist specimen weight, gms.	7270.5		
Side Length, in.	8.00	8.00	
Area, in.²	64.00	64.00	
Height, in.	4.35	3.84	
Net decrease in height, in.		0.51	
Wet density, pcf	99.5	132.0	
Dry density, pcf	97.4	110.5	
Void ratio	0.7300	0.5252	
Saturation, %	7.8	100.0	

Test Readings for Specimen No. 3

Normal stress = 44 ksf

Strain rate, in./min. = 0.010

Fail. Stress = 34.02 ksf **at reading no.** 51

No.	Horizontal Def. Dial in.	Load Dial	Load lbs.	Strain %	Shear Stress ksf
0	0.0000	0.000	0.0	0.0	0.00
1	0.0001	45.000	45.0	0.0	0.10
2	0.0083	476.000	476.0	0.1	1.07
3	0.0159	693.000	693.0	0.2	1.56
4	0.0240	818.000	818.0	0.3	1.84
5	0.0323	933.000	933.0	0.4	2.10
6	0.0405	1090.000	1090.0	0.5	2.45
7	0.0485	1300.000	1300.0	0.6	2.92
8	0.0563	1541.000	1541.0	0.7	3.47
9	0.0646	1819.000	1819.0	0.8	4.09
10	0.0728	2171.000	2171.0	0.9	4.88
11	0.0805	2528.000	2528.0	1.0	5.69
12	0.0950	3068.000	3068.0	1.2	6.90
13	0.1118	3592.000	3592.0	1.4	8.08
14	0.1290	4048.000	4048.0	1.6	9.11

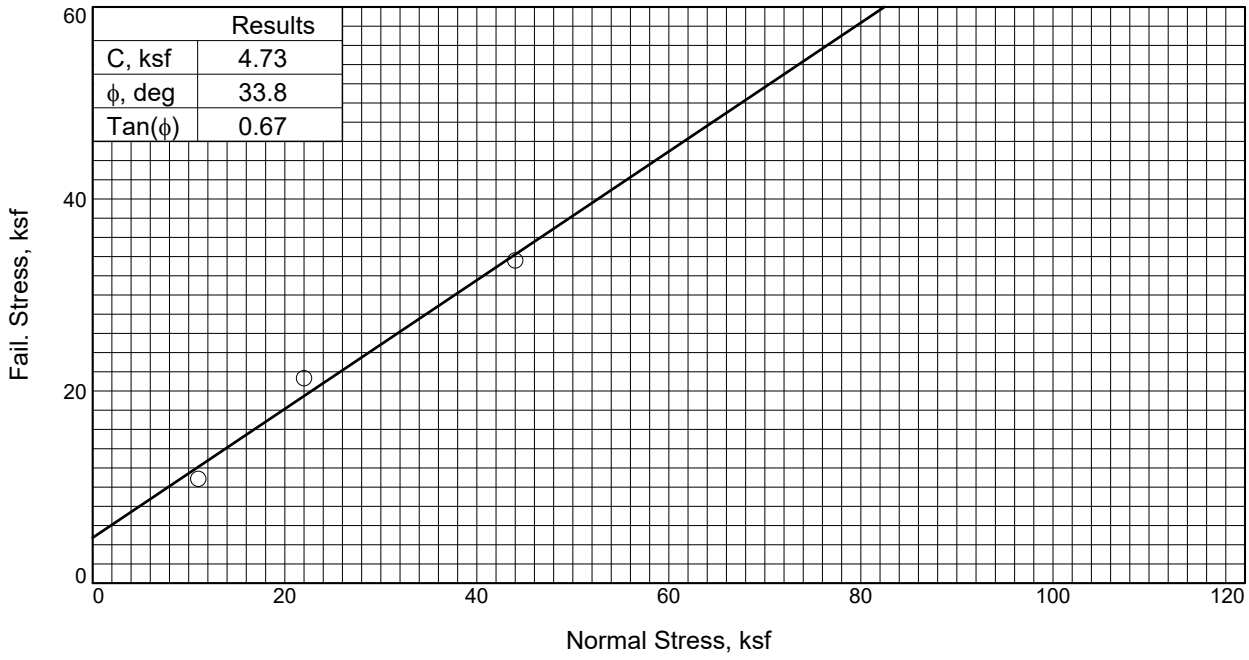
Test Readings for Specimen No. 3

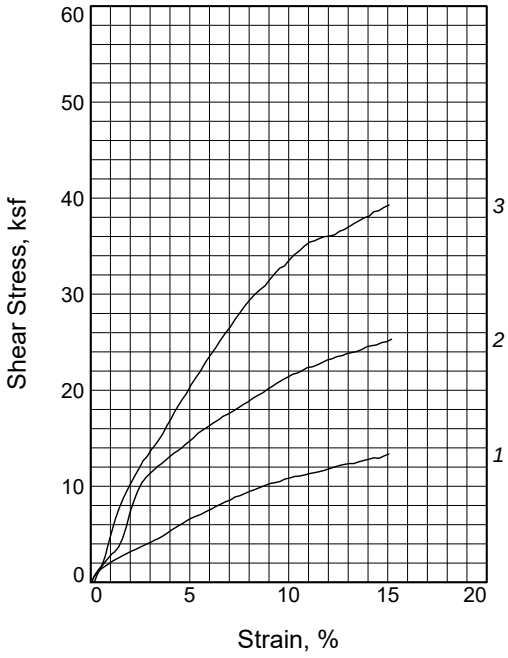
No.	Horizontal Def. Dial in.	Load Dial	Load lbs.	Strain %	Shear Stress ksf
15	0.1448	4330.000	4330.0	1.8	9.74
16	0.1602	4608.000	4608.0	2.0	10.37
17	0.1757	4924.000	4924.0	2.2	11.08
18	0.1915	5208.000	5208.0	2.4	11.72
19	0.2073	5458.000	5458.0	2.6	12.28
20	0.2229	5720.000	5720.0	2.8	12.87
21	0.2412	5995.000	5995.0	3.0	13.49
22	0.2569	6248.000	6248.0	3.2	14.06
23	0.2728	6538.000	6538.0	3.4	14.71
24	0.2891	6900.000	6900.0	3.6	15.53
25	0.3032	7240.000	7240.0	3.8	16.29
26	0.3220	7618.000	7618.0	4.0	17.14
27	0.3360	7877.000	7877.0	4.2	17.72
28	0.3521	8176.000	8176.0	4.4	18.40
29	0.3689	8501.000	8501.0	4.6	19.13
30	0.3859	8843.000	8843.0	4.8	19.90
31	0.3999	9122.000	9122.0	5.0	20.52
32	0.4189	9570.000	9570.0	5.2	21.53
33	0.4400	9971.000	9971.0	5.5	22.43
34	0.4593	10311.000	10311.0	5.7	23.20
35	0.4813	10658.000	10658.0	6.0	23.98
36	0.4990	10932.000	10932.0	6.2	24.60
37	0.5206	11299.000	11299.0	6.5	25.42
38	0.5397	11653.000	11653.0	6.7	26.22
39	0.5601	11957.000	11957.0	7.0	26.90
40	0.5797	12196.000	12196.0	7.2	27.44
41	0.6002	12540.000	12540.0	7.5	28.21
42	0.6207	12843.000	12843.0	7.8	28.90
43	0.6409	13090.000	13090.0	8.0	29.45
44	0.6610	13396.000	13396.0	8.3	30.14
45	0.6784	13607.000	13607.0	8.5	30.62
46	0.6987	13888.000	13888.0	8.7	31.25
47	0.7195	14187.000	14187.0	9.0	31.92
48	0.7401	14425.000	14425.0	9.3	32.46
49	0.7616	14628.000	14628.0	9.5	32.91
50	0.7792	14867.000	14867.0	9.7	33.45
51	0.8001	15118.000	15118.0	10.0	34.02
52	0.8194	15345.000	15345.0	10.2	34.53
53	0.8410	15538.000	15538.0	10.5	34.96
54	0.8591	15772.000	15772.0	10.7	35.49
55	0.8808	15995.000	15995.0	11.0	35.99
56	0.8994	16168.000	16168.0	11.2	36.38
57	0.9213	16337.000	16337.0	11.5	36.76
58	0.9404	16448.000	16448.0	11.8	37.01
59	0.9621	16696.000	16696.0	12.0	37.57
60	0.9808	16850.000	16850.0	12.3	37.91
61	1.0003	16932.000	16932.0	12.5	38.10

Test Readings for Specimen No. 3

No.	Horizontal Def. Dial in.	Load Dial	Load lbs.	Strain %	Shear Stress ksf
62	1.0194	17114.000	17114.0	12.7	38.51
63	1.0410	17337.000	17337.0	13.0	39.01
64	1.0608	17495.000	17495.0	13.3	39.36
65	1.0806	17495.000	17495.0	13.5	39.36
66	1.1000	17650.000	17650.0	13.8	39.71
67	1.1195	17742.000	17742.0	14.0	39.92

Cursory interpretations provided require review by a professional engineer. Knight Piesold accepts no responsibility in subsequent analyses.





Specimen No.		1	2	3
Initial	Water Content, %	2.0	2.1	2.1
	Dry Density, pcf	96.0	96.0	96.0
	Saturation, %	7.2	7.4	7.4
	Void Ratio	0.7560	0.7560	0.7560
	Side Length, in.	8.00	8.00	8.00
	Height, in.	4.35	4.35	4.35
At Test	Water Content, %	24.2	21.6	19.5
	Dry Density, pcf	101.9	106.4	110.5
	Saturation, %	100.0	100.0	100.0
	Void Ratio	0.6548	0.5837	0.5255
	Side Length, in.	8.00	8.00	8.00
	Height, in.	4.10	3.92	3.78
Normal Stress, ksf		11.00	22.00	44.00
Fail. Stress, ksf		10.87	21.34	33.61
Strain, %		10.1	9.9	10.0
Ult. Stress, ksf				
Strain, %				
Strain rate, in./min.		0.010	0.010	0.010

Sample Type: Remolded
Description: silty gravel with sand

LL= NP **PI=** NP
Assumed Specific Gravity= 2.7
Remarks: Failure chosen at 10% strain. Test was inundated. Particles larger than 3/4" were removed prior to test.

Figure _____

Client: NewFields

Project: CC&V VLF2 Recertification
NF#475.0106.026
Source of Sample: VLF2 Re-Evaluation
Sample Number: Comp 4
Proj. No.: DV108-00305-07 **Date Sampled:** 8/14/18

Knight Piésold CONSULTING

Tested By: LEB **Checked By:** JDB

DIRECT SHEAR TEST

9/4/2018

Date: 8/14/18
Client: NewFields
Project: CC&V VLF2 Recertification
NF#475.0106.026
Project No.: DV108-00305-07
Location: VLF2 Re-Evaluation
Sample Number: Comp 4
Description: silty gravel with sand
Remarks: Failure chosen at 10% strain. Test was inundated. Particles larger than 3/4" were removed prior to test.
Type of Sample: Remolded
Assumed Specific Gravity=2.7 **LL=**NP **PL=** **PI=**NP

Parameters for Specimen No. 1

Specimen Parameter	Initial	Consolidated	Final
Moisture content: Moist soil+tare, gms.	7156.500		11447.000
Moisture content: Dry soil+tare, gms.	7014.900		9759.000
Moisture content: Tare, gms.	0.000		2795.500
Moisture, %	2.0	24.2	24.2
Moist specimen weight, gms.	7156.5		
Side Length, in.	8.00	8.00	
Area, in.²	64.00	64.00	
Height, in.	4.35	4.10	
Net decrease in height, in.		0.25	
Wet density, pcf	97.9	126.6	
Dry density, pcf	96.0	101.9	
Void ratio	0.7560	0.6548	
Saturation, %	7.2	100.0	

Test Readings for Specimen No. 1

Normal stress = 11 ksf
Strain rate, in./min. = 0.010
Fail. Stress = 10.87 ksf **at reading no.** 51

No.	Horizontal Def. Dial in.	Load Dial	Load lbs.	Strain %	Shear Stress ksf
0	0.0000	0.000	0.0	0.0	0.00
1	0.0036	7.000	7.0	0.0	0.02
2	0.0117	217.000	217.0	0.1	0.49
3	0.0193	339.000	339.0	0.2	0.76
4	0.0268	444.000	444.0	0.3	1.00
5	0.0351	535.000	535.0	0.4	1.20
6	0.0432	625.000	625.0	0.5	1.41
7	0.0516	691.000	691.0	0.6	1.55
8	0.0600	758.000	758.0	0.8	1.71
9	0.0680	815.000	815.0	0.9	1.83
10	0.0762	881.000	881.0	1.0	1.98
11	0.0848	952.000	952.0	1.1	2.14
12	0.0998	1049.000	1049.0	1.2	2.36

Test Readings for Specimen No. 1

No.	Horizontal Def. Dial in.	Load Dial	Load lbs.	Strain %	Shear Stress ksf
13	0.1148	1137.000	1137.0	1.4	2.56
14	0.1319	1252.000	1252.0	1.6	2.82
15	0.1473	1336.000	1336.0	1.8	3.01
16	0.1648	1442.000	1442.0	2.1	3.24
17	0.1797	1512.000	1512.0	2.2	3.40
18	0.1950	1602.000	1602.0	2.4	3.60
19	0.2129	1696.000	1696.0	2.7	3.82
20	0.2278	1778.000	1778.0	2.8	4.00
21	0.2454	1863.000	1863.0	3.1	4.19
22	0.2605	1959.000	1959.0	3.3	4.41
23	0.2756	2035.000	2035.0	3.4	4.58
24	0.2904	2134.000	2134.0	3.6	4.80
25	0.3076	2267.000	2267.0	3.8	5.10
26	0.3252	2404.000	2404.0	4.1	5.41
27	0.3406	2517.000	2517.0	4.3	5.66
28	0.3555	2623.000	2623.0	4.4	5.90
29	0.3725	2733.000	2733.0	4.7	6.15
30	0.3879	2851.000	2851.0	4.8	6.41
31	0.4056	2964.000	2964.0	5.1	6.67
32	0.4225	3042.000	3042.0	5.3	6.84
33	0.4447	3141.000	3141.0	5.6	7.07
34	0.4639	3257.000	3257.0	5.8	7.33
35	0.4840	3366.000	3366.0	6.0	7.57
36	0.5037	3492.000	3492.0	6.3	7.86
37	0.5239	3603.000	3603.0	6.5	8.11
38	0.5443	3722.000	3722.0	6.8	8.37
39	0.5642	3806.000	3806.0	7.1	8.56
40	0.5825	3943.000	3943.0	7.3	8.87
41	0.6028	4008.000	4008.0	7.5	9.02
42	0.6246	4119.000	4119.0	7.8	9.27
43	0.6452	4222.000	4222.0	8.1	9.50
44	0.6627	4290.000	4290.0	8.3	9.65
45	0.6825	4386.000	4386.0	8.5	9.87
46	0.7026	4475.000	4475.0	8.8	10.07
47	0.7244	4568.000	4568.0	9.1	10.28
48	0.7424	4605.000	4605.0	9.3	10.36
49	0.7650	4668.000	4668.0	9.6	10.50
50	0.7843	4774.000	4774.0	9.8	10.74
51	0.8050	4829.000	4829.0	10.1	10.87
52	0.8226	4893.000	4893.0	10.3	11.01
53	0.8437	4918.000	4918.0	10.5	11.07
54	0.8623	4962.000	4962.0	10.8	11.16
55	0.8833	5029.000	5029.0	11.0	11.32
56	0.9038	5072.000	5072.0	11.3	11.41
57	0.9224	5113.000	5113.0	11.5	11.50
58	0.9431	5174.000	5174.0	11.8	11.64
59	0.9638	5257.000	5257.0	12.0	11.83

Test Readings for Specimen No. 1

No.	Horizontal Def. Dial in.	Load Dial	Load lbs.	Strain %	Shear Stress ksf
60	0.9845	5334.000	5334.0	12.3	12.00
61	1.0052	5404.000	5404.0	12.6	12.16
62	1.0230	5452.000	5452.0	12.8	12.27
63	1.0442	5492.000	5492.0	13.1	12.36
64	1.0629	5494.000	5494.0	13.3	12.36
65	1.0833	5577.000	5577.0	13.5	12.55
66	1.1047	5644.000	5644.0	13.8	12.70
67	1.1234	5697.000	5697.0	14.0	12.82
68	1.1440	5758.000	5758.0	14.3	12.96
69	1.1651	5735.000	5735.0	14.6	12.90
70	1.1841	5843.000	5843.0	14.8	13.15
71	1.2044	5940.000	5940.0	15.1	13.37

Parameters for Specimen No. 2

Specimen Parameter	Initial	Consolidated	Final
Moisture content: Moist soil+tare, gms.	7160.000		11348.000
Moisture content: Dry soil+tare, gms.	7014.900		9835.500
Moisture content: Tare, gms.	0.000		2835.500
Moisture, %	2.1	21.6	21.6
Moist specimen weight, gms.	7160.0		
Side Length, in.	8.00	8.00	
Area, in.²	64.00	64.00	
Height, in.	4.35	3.92	
Net decrease in height, in.		0.43	
Wet density, pcf	98.0	129.4	
Dry density, pcf	96.0	106.4	
Void ratio	0.7560	0.5837	
Saturation, %	7.4	100.0	

Test Readings for Specimen No. 2

Normal stress = 22 ksf

Strain rate, in./min. = 0.010

Fail. Stress = 21.34 ksf **at reading no.** 50

No.	Horizontal Def. Dial in.	Load Dial	Load lbs.	Strain %	Shear Stress ksf
0	0.0000	0.000	0.0	0.0	0.00
1	0.0151	12.000	12.0	0.2	0.03
2	0.0229	254.000	254.0	0.3	0.57
3	0.0314	472.000	472.0	0.4	1.06
4	0.0399	639.000	639.0	0.5	1.44
5	0.0463	755.000	755.0	0.6	1.70
6	0.0541	883.000	883.0	0.7	1.99
7	0.0640	1031.000	1031.0	0.8	2.32
8	0.0710	1117.000	1117.0	0.9	2.51
9	0.0780	1213.000	1213.0	1.0	2.73
10	0.0871	1327.000	1327.0	1.1	2.99
11	0.0957	1400.000	1400.0	1.2	3.15
12	0.1118	1616.000	1616.0	1.4	3.64

Test Readings for Specimen No. 2

No.	Horizontal Def. Dial in.	Load Dial	Load lbs.	Strain %	Shear Stress ksf
13	0.1281	2012.000	2012.0	1.6	4.53
14	0.1442	2587.000	2587.0	1.8	5.82
15	0.1580	3196.000	3196.0	2.0	7.19
16	0.1751	3791.000	3791.0	2.2	8.53
17	0.1900	4228.000	4228.0	2.4	9.51
18	0.2056	4592.000	4592.0	2.6	10.33
19	0.2233	4848.000	4848.0	2.8	10.91
20	0.2392	5033.000	5033.0	3.0	11.32
21	0.2574	5219.000	5219.0	3.2	11.74
22	0.2703	5361.000	5361.0	3.4	12.06
23	0.2883	5510.000	5510.0	3.6	12.40
24	0.3044	5670.000	5670.0	3.8	12.76
25	0.3180	5805.000	5805.0	4.0	13.06
26	0.3363	5979.000	5979.0	4.2	13.45
27	0.3517	6090.000	6090.0	4.4	13.70
28	0.3677	6221.000	6221.0	4.6	14.00
29	0.3836	6394.000	6394.0	4.8	14.39
30	0.4000	6535.000	6535.0	5.0	14.70
31	0.4157	6686.000	6686.0	5.2	15.04
32	0.4339	6901.000	6901.0	5.4	15.53
33	0.4549	7064.000	7064.0	5.7	15.89
34	0.4760	7215.000	7215.0	5.9	16.23
35	0.4947	7365.000	7365.0	6.2	16.57
36	0.5158	7514.000	7514.0	6.4	16.91
37	0.5353	7685.000	7685.0	6.7	17.29
38	0.5544	7782.000	7782.0	6.9	17.51
39	0.5755	7924.000	7924.0	7.2	17.83
40	0.5945	8065.000	8065.0	7.4	18.15
41	0.6163	8225.000	8225.0	7.7	18.51
42	0.6346	8349.000	8349.0	7.9	18.79
43	0.6568	8532.000	8532.0	8.2	19.20
44	0.6762	8657.000	8657.0	8.5	19.48
45	0.6951	8768.000	8768.0	8.7	19.73
46	0.7142	8931.000	8931.0	8.9	20.09
47	0.7336	9070.000	9070.0	9.2	20.41
48	0.7553	9232.000	9232.0	9.4	20.77
49	0.7769	9379.000	9379.0	9.7	21.10
50	0.7943	9484.000	9484.0	9.9	21.34
51	0.8158	9627.000	9627.0	10.2	21.66
52	0.8355	9684.000	9684.0	10.4	21.79
53	0.8547	9800.000	9800.0	10.7	22.05
54	0.8741	9930.000	9930.0	10.9	22.34
55	0.8960	9972.000	9972.0	11.2	22.44
56	0.9153	10064.000	10064.0	11.4	22.64
57	0.9346	10167.000	10167.0	11.7	22.88
58	0.9547	10284.000	10284.0	11.9	23.14
59	0.9752	10342.000	10342.0	12.2	23.27

Test Readings for Specimen No. 2

No.	Horizontal Def. Dial in.	Load Dial	Load lbs.	Strain %	Shear Stress ksf
60	0.9938	10438.000	10438.0	12.4	23.49
61	1.0168	10491.000	10491.0	12.7	23.60
62	1.0340	10581.000	10581.0	12.9	23.81
63	1.0737	10675.000	10675.0	13.4	24.02
64	1.0968	10781.000	10781.0	13.7	24.26
65	1.1161	10909.000	10909.0	14.0	24.55
66	1.1361	10950.000	10950.0	14.2	24.64
67	1.1540	10980.000	10980.0	14.4	24.70
68	1.1758	11092.000	11092.0	14.7	24.96
69	1.1960	11141.000	11141.0	14.9	25.07
70	1.2155	11249.000	11249.0	15.2	25.31

Parameters for Specimen No. 3

Specimen Parameter	Initial	Consolidated	Final
Moisture content: Moist soil+tare, gms.	7160.500		10577.900
Moisture content: Dry soil+tare, gms.	7014.900		9212.000
Moisture content: Tare, gms.	0.000		2190.500
Moisture, %	2.1	19.5	19.5
Moist specimen weight, gms.	7160.5		
Side Length, in.	8.00	8.00	
Area, in.²	64.00	64.00	
Height, in.	4.35	3.78	
Net decrease in height, in.		0.57	
Wet density, pcf	98.0	132.0	
Dry density, pcf	96.0	110.5	
Void ratio	0.7560	0.5255	
Saturation, %	7.4	100.0	

Test Readings for Specimen No. 3

Normal stress = 44 ksf

Strain rate, in./min. = 0.010

Fail. Stress = 33.61 ksf **at reading no.** 51

No.	Horizontal Def. Dial in.	Load Dial	Load lbs.	Strain %	Shear Stress ksf
0	0.0000	0.000	0.0	0.0	0.00
1	0.0041	7.000	7.0	0.1	0.02
2	0.0116	236.000	236.0	0.1	0.53
3	0.0194	391.000	391.0	0.2	0.88
4	0.0272	520.000	520.0	0.3	1.17
5	0.0356	644.000	644.0	0.4	1.45
6	0.0439	763.000	763.0	0.5	1.72
7	0.0516	964.000	964.0	0.6	2.17
8	0.0595	1249.000	1249.0	0.7	2.81
9	0.0669	1585.000	1585.0	0.8	3.57
10	0.0771	2021.000	2021.0	1.0	4.55
11	0.0848	2343.000	2343.0	1.1	5.27
12	0.0994	2907.000	2907.0	1.2	6.54
13	0.1158	3458.000	3458.0	1.4	7.78

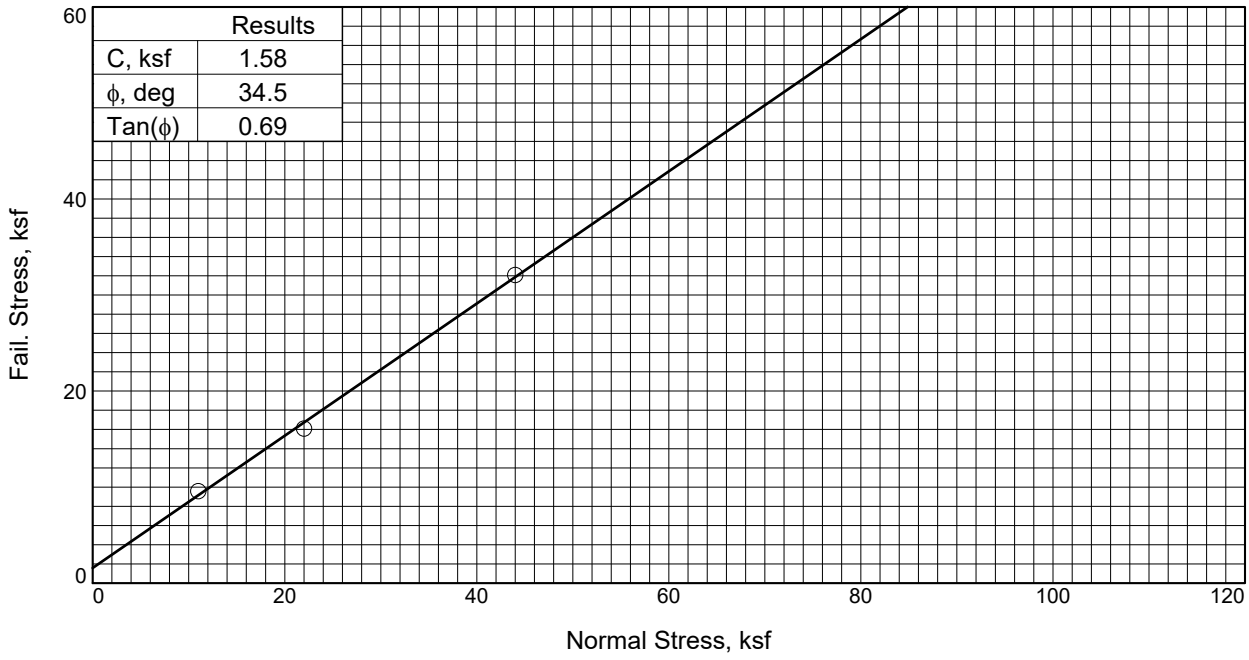
Test Readings for Specimen No. 3

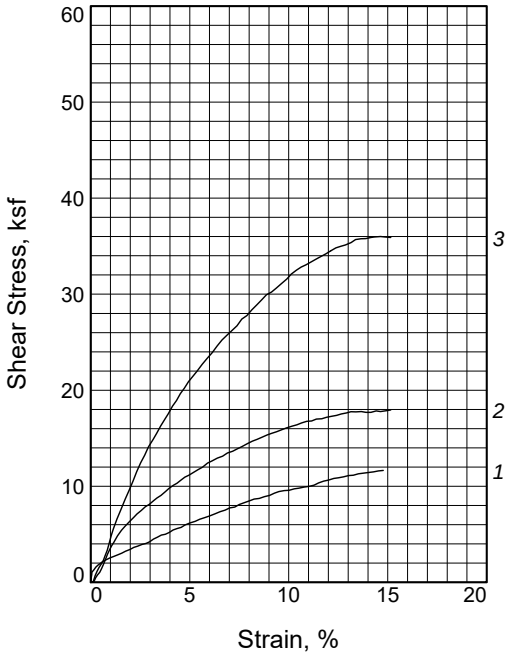
No.	Horizontal Def. Dial in.	Load Dial	Load lbs.	Strain %	Shear Stress ksf
14	0.1325	3915.000	3915.0	1.7	8.81
15	0.1478	4267.000	4267.0	1.8	9.60
16	0.1653	4644.000	4644.0	2.1	10.45
17	0.1806	4976.000	4976.0	2.3	11.20
18	0.1958	5281.000	5281.0	2.4	11.88
19	0.2118	5618.000	5618.0	2.6	12.64
20	0.2276	5820.000	5820.0	2.8	13.10
21	0.2456	6153.000	6153.0	3.1	13.84
22	0.2598	6347.000	6347.0	3.2	14.28
23	0.2756	6596.000	6596.0	3.4	14.84
24	0.2915	6879.000	6879.0	3.6	15.48
25	0.3073	7231.000	7231.0	3.8	16.27
26	0.3239	7550.000	7550.0	4.0	16.99
27	0.3398	7898.000	7898.0	4.2	17.77
28	0.3561	8219.000	8219.0	4.5	18.49
29	0.3724	8505.000	8505.0	4.7	19.14
30	0.3870	8734.000	8734.0	4.8	19.65
31	0.4054	9135.000	9135.0	5.1	20.55
32	0.4246	9470.000	9470.0	5.3	21.31
33	0.4434	9776.000	9776.0	5.5	22.00
34	0.4645	10198.000	10198.0	5.8	22.95
35	0.4839	10517.000	10517.0	6.0	23.66
36	0.5039	10832.000	10832.0	6.3	24.37
37	0.5236	11193.000	11193.0	6.5	25.18
38	0.5431	11517.000	11517.0	6.8	25.91
39	0.5634	11801.000	11801.0	7.0	26.55
40	0.5832	12165.000	12165.0	7.3	27.37
41	0.6031	12475.000	12475.0	7.5	28.07
42	0.6236	12811.000	12811.0	7.8	28.82
43	0.6438	13084.000	13084.0	8.0	29.44
44	0.6638	13335.000	13335.0	8.3	30.00
45	0.6850	13551.000	13551.0	8.6	30.49
46	0.7049	13728.000	13728.0	8.8	30.89
47	0.7255	14044.000	14044.0	9.1	31.60
48	0.7437	14286.000	14286.0	9.3	32.14
49	0.7639	14546.000	14546.0	9.5	32.73
50	0.7828	14643.000	14643.0	9.8	32.95
51	0.8035	14937.000	14937.0	10.0	33.61
52	0.8225	15157.000	15157.0	10.3	34.10
53	0.8438	15342.000	15342.0	10.5	34.52
54	0.8627	15550.000	15550.0	10.8	34.99
55	0.8844	15746.000	15746.0	11.1	35.43
56	0.9039	15806.000	15806.0	11.3	35.56
57	0.9245	15916.000	15916.0	11.6	35.81
58	0.9435	15992.000	15992.0	11.8	35.98
59	0.9648	16018.000	16018.0	12.1	36.04
60	0.9859	16083.000	16083.0	12.3	36.19

Test Readings for Specimen No. 3

No.	Horizontal Def. Dial in.	Load Dial	Load lbs.	Strain %	Shear Stress ksf
61	1.0049	16237.000	16237.0	12.6	36.53
62	1.0236	16320.000	16320.0	12.8	36.72
63	1.0455	16466.000	16466.0	13.1	37.05
64	1.0644	16614.000	16614.0	13.3	37.38
65	1.0836	16728.000	16728.0	13.5	37.64
66	1.1027	16856.000	16856.0	13.8	37.93
67	1.1252	16954.000	16954.0	14.1	38.15
68	1.1435	17153.000	17153.0	14.3	38.59
69	1.1634	17193.000	17193.0	14.5	38.68
70	1.1825	17335.000	17335.0	14.8	39.00
71	1.2050	17463.000	17463.0	15.1	39.29

Cursory interpretations provided require review by a professional engineer. Knight Piesold accepts no responsibility in subsequent analyses.





Specimen No.		1	2	3
Initial	Water Content, %	3.8	4.0	4.0
	Dry Density, pcf	96.2	96.2	96.2
	Saturation, %	13.5	14.4	14.5
	Void Ratio	0.7520	0.7520	0.7520
	Side Length, in.	8.00	8.00	8.00
	Height, in.	4.35	4.35	4.35
At Test	Water Content, %	22.7	20.2	18.2
	Dry Density, pcf	104.5	109.0	112.9
	Saturation, %	100.0	100.0	100.0
	Void Ratio	0.6131	0.5463	0.4925
	Side Length, in.	8.00	8.00	8.00
	Height, in.	4.01	3.84	3.71
Normal Stress, ksf		11.00	22.00	44.00
Fail. Stress, ksf		9.58	16.09	32.08
Strain, %		10.0	9.9	10.1
Ult. Stress, ksf				
Strain, %				
Strain rate, in./min.		0.010	0.010	0.010

Sample Type: Remolded
Description: silty gravel with sand

LL= NP **PI=** NP
Assumed Specific Gravity= 2.7
Remarks: Failure chosen at 10% strain. Test was inundated. Particles larger than 3/4" were removed prior to test. Gap =0.4".

Figure _____

Client: NewFields

Project: CC&V VLF2 Recertification
NF#475.0106.026
Source of Sample: VLF2 Re-Evaluation
Sample Number: Comp 5
Proj. No.: DV108-00305-07 **Date Sampled:** 8/17/18

Knight Piésold CONSULTING

Tested By: LEB **Checked By:** JDB

DIRECT SHEAR TEST

9/4/2018

Date: 8/17/18
Client: NewFields
Project: CC&V VLF2 Recertification
NF#475.0106.026
Project No.: DV108-00305-07
Location: VLF2 Re-Evaluation
Sample Number: Comp 5
Description: silty gravel with sand
Remarks: Failure chosen at 10% strain. Test was inundated. Particles larger than 3/4" were removed prior to test. Gap =0.4".
Type of Sample: Remolded
Assumed Specific Gravity=2.7 **LL=**NP **PL=** **PI=**NP

Parameters for Specimen No. 1

Specimen Parameter	Initial	Consolidated	Final
Moisture content: Moist soil+tare, gms.	7294.500		10669.000
Moisture content: Dry soil+tare, gms.	7030.800		9079.000
Moisture content: Tare, gms.	0.000		2076.000
Moisture, %	3.8	22.7	22.7
Moist specimen weight, gms.	7294.5		
Side Length, in.	8.00	8.00	
Area, in.²	64.00	64.00	
Height, in.	4.35	4.01	
Net decrease in height, in.		0.34	
Wet density, pcf	99.8	128.2	
Dry density, pcf	96.2	104.5	
Void ratio	0.7520	0.6131	
Saturation, %	13.5	100.0	

Test Readings for Specimen No. 1

Normal stress = 11 ksf
Strain rate, in./min. = 0.010
Fail. Stress = 9.58 ksf **at reading no.** 52

No.	Horizontal Def. Dial in.	Load Dial	Load lbs.	Strain %	Shear Stress ksf
0	0.0000	0.000	0.0	0.0	0.00
1	0.0010	18.000	18.0	0.0	0.04
2	0.0020	213.000	213.0	0.0	0.48
3	0.0040	347.000	347.0	0.1	0.78
4	0.0050	467.000	467.0	0.1	1.05
5	0.0128	573.000	573.0	0.2	1.29
6	0.0208	699.000	699.0	0.3	1.57
7	0.0301	799.000	799.0	0.4	1.80
8	0.0365	853.000	853.0	0.5	1.92
9	0.0447	927.000	927.0	0.6	2.09
10	0.0532	994.000	994.0	0.7	2.24
11	0.0617	1039.000	1039.0	0.8	2.34
12	0.0772	1122.000	1122.0	1.0	2.52

Test Readings for Specimen No. 1

No.	Horizontal Def. Dial in.	Load Dial	Load lbs.	Strain %	Shear Stress ksf
13	0.0941	1199.000	1199.0	1.2	2.70
14	0.1099	1271.000	1271.0	1.4	2.86
15	0.1254	1345.000	1345.0	1.6	3.03
16	0.1407	1434.000	1434.0	1.8	3.23
17	0.1585	1515.000	1515.0	2.0	3.41
18	0.1744	1611.000	1611.0	2.2	3.62
19	0.1902	1670.000	1670.0	2.4	3.76
20	0.2063	1744.000	1744.0	2.6	3.92
21	0.2240	1799.000	1799.0	2.8	4.05
22	0.2380	1875.000	1875.0	3.0	4.22
23	0.2534	2001.000	2001.0	3.2	4.50
24	0.2698	2084.000	2084.0	3.4	4.69
25	0.2853	2184.000	2184.0	3.6	4.91
26	0.3013	2220.000	2220.0	3.8	5.00
27	0.3170	2306.000	2306.0	4.0	5.19
28	0.3332	2420.000	2420.0	4.2	5.45
29	0.3493	2484.000	2484.0	4.4	5.59
30	0.3653	2542.000	2542.0	4.6	5.72
31	0.3809	2653.000	2653.0	4.8	5.97
32	0.4019	2746.000	2746.0	5.0	6.18
33	0.4224	2822.000	2822.0	5.3	6.35
34	0.4403	2915.000	2915.0	5.5	6.56
35	0.4607	2993.000	2993.0	5.8	6.73
36	0.4811	3073.000	3073.0	6.0	6.91
37	0.5023	3172.000	3172.0	6.3	7.14
38	0.5224	3265.000	3265.0	6.5	7.35
39	0.5429	3341.000	3341.0	6.8	7.52
40	0.5616	3441.000	3441.0	7.0	7.74
41	0.5821	3483.000	3483.0	7.3	7.84
42	0.6003	3595.000	3595.0	7.5	8.09
43	0.6214	3685.000	3685.0	7.8	8.29
44	0.6413	3765.000	3765.0	8.0	8.47
45	0.6603	3852.000	3852.0	8.3	8.67
46	0.6809	3880.000	3880.0	8.5	8.73
47	0.7015	3959.000	3959.0	8.8	8.91
48	0.7225	4022.000	4022.0	9.0	9.05
49	0.7422	4123.000	4123.0	9.3	9.28
50	0.7602	4197.000	4197.0	9.5	9.44
51	0.7814	4243.000	4243.0	9.8	9.55
52	0.8016	4256.000	4256.0	10.0	9.58
53	0.8225	4326.000	4326.0	10.3	9.73
54	0.8405	4354.000	4354.0	10.5	9.80
55	0.8616	4407.000	4407.0	10.8	9.92
56	0.8812	4434.000	4434.0	11.0	9.98
57	0.9023	4493.000	4493.0	11.3	10.11
58	0.9203	4599.000	4599.0	11.5	10.35
59	0.9407	4682.000	4682.0	11.8	10.53

Test Readings for Specimen No. 1

No.	Horizontal Def. Dial in.	Load Dial	Load lbs.	Strain %	Shear Stress ksf
60	0.9615	4732.000	4732.0	12.0	10.65
61	0.9821	4804.000	4804.0	12.3	10.81
62	1.0010	4833.000	4833.0	12.5	10.87
63	1.0215	4883.000	4883.0	12.8	10.99
64	1.0422	4941.000	4941.0	13.0	11.12
65	1.0605	4951.000	4951.0	13.3	11.14
66	1.0814	5020.000	5020.0	13.5	11.29
67	1.1214	5078.000	5078.0	14.0	11.43
68	1.1420	5110.000	5110.0	14.3	11.50
69	1.1623	5155.000	5155.0	14.5	11.60
70	1.1815	5176.000	5176.0	14.8	11.65

Parameters for Specimen No. 2

Specimen Parameter	Initial	Consolidated	Final
Moisture content: Moist soil+tare, gms.	7313.000		10651.000
Moisture content: Dry soil+tare, gms.	7030.800		9227.500
Moisture content: Tare, gms.	0.000		2192.500
Moisture, %	4.0	20.2	20.2
Moist specimen weight, gms.	7313.0		
Side Length, in.	8.00	8.00	
Area, in.²	64.00	64.00	
Height, in.	4.35	3.84	
Net decrease in height, in.		0.51	
Wet density, pcf	100.1	131.1	
Dry density, pcf	96.2	109.0	
Void ratio	0.7520	0.5463	
Saturation, %	14.4	100.0	

Test Readings for Specimen No. 2

Normal stress = 22 ksf

Strain rate, in./min. = 0.010

Fail. Stress = 16.09 ksf **at reading no.** 50

No.	Horizontal Def. Dial in.	Load Dial	Load lbs.	Strain %	Shear Stress ksf
0	0.0000	0.000	0.0	0.0	0.00
1	0.0121	2.000	2.0	0.2	0.00
2	0.0203	212.000	212.0	0.3	0.48
3	0.0278	350.000	350.0	0.3	0.79
4	0.0361	461.000	461.0	0.5	1.04
5	0.0433	620.000	620.0	0.5	1.40
6	0.0514	824.000	824.0	0.6	1.85
7	0.0596	1058.000	1058.0	0.7	2.38
8	0.0677	1288.000	1288.0	0.8	2.90
9	0.0758	1495.000	1495.0	0.9	3.36
10	0.0848	1694.000	1694.0	1.1	3.81
11	0.0937	1856.000	1856.0	1.2	4.18
12	0.1084	2145.000	2145.0	1.4	4.83
13	0.1242	2409.000	2409.0	1.6	5.42

Test Readings for Specimen No. 2

No.	Horizontal Def. Dial in.	Load Dial	Load lbs.	Strain %	Shear Stress ksf
14	0.1398	2608.000	2608.0	1.7	5.87
15	0.1557	2795.000	2795.0	1.9	6.29
16	0.1732	3001.000	3001.0	2.2	6.75
17	0.1870	3161.000	3161.0	2.3	7.11
18	0.2047	3325.000	3325.0	2.6	7.48
19	0.2205	3493.000	3493.0	2.8	7.86
20	0.2366	3604.000	3604.0	3.0	8.11
21	0.2546	3785.000	3785.0	3.2	8.52
22	0.2679	3903.000	3903.0	3.3	8.78
23	0.2841	4024.000	4024.0	3.6	9.05
24	0.3018	4201.000	4201.0	3.8	9.45
25	0.3154	4338.000	4338.0	3.9	9.76
26	0.3336	4484.000	4484.0	4.2	10.09
27	0.3483	4581.000	4581.0	4.4	10.31
28	0.3638	4727.000	4727.0	4.5	10.64
29	0.3802	4863.000	4863.0	4.8	10.94
30	0.3962	4957.000	4957.0	5.0	11.15
31	0.4145	5081.000	5081.0	5.2	11.43
32	0.4329	5203.000	5203.0	5.4	11.71
33	0.4515	5325.000	5325.0	5.6	11.98
34	0.4720	5517.000	5517.0	5.9	12.41
35	0.4909	5623.000	5623.0	6.1	12.65
36	0.5117	5748.000	5748.0	6.4	12.93
37	0.5328	5835.000	5835.0	6.7	13.13
38	0.5522	5980.000	5980.0	6.9	13.46
39	0.5732	6068.000	6068.0	7.2	13.65
40	0.5920	6174.000	6174.0	7.4	13.89
41	0.6110	6281.000	6281.0	7.6	14.13
42	0.6320	6413.000	6413.0	7.9	14.43
43	0.6530	6530.000	6530.0	8.2	14.69
44	0.6720	6612.000	6612.0	8.4	14.88
45	0.6911	6706.000	6706.0	8.6	15.09
46	0.7128	6823.000	6823.0	8.9	15.35
47	0.7314	6893.000	6893.0	9.1	15.51
48	0.7511	6970.000	6970.0	9.4	15.68
49	0.7727	7062.000	7062.0	9.7	15.89
50	0.7913	7149.000	7149.0	9.9	16.09
51	0.8137	7224.000	7224.0	10.2	16.25
52	0.8325	7287.000	7287.0	10.4	16.40
53	0.8519	7376.000	7376.0	10.6	16.60
54	0.8728	7447.000	7447.0	10.9	16.76
55	0.8922	7463.000	7463.0	11.2	16.79
56	0.9114	7554.000	7554.0	11.4	17.00
57	0.9332	7567.000	7567.0	11.7	17.03
58	0.9523	7632.000	7632.0	11.9	17.17
59	0.9715	7682.000	7682.0	12.1	17.28
60	0.9929	7723.000	7723.0	12.4	17.38

Test Readings for Specimen No. 2

No.	Horizontal Def. Dial in.	Load Dial	Load lbs.	Strain %	Shear Stress ksf
61	1.0125	7792.000	7792.0	12.7	17.53
62	1.0323	7838.000	7838.0	12.9	17.64
63	1.0514	7891.000	7891.0	13.1	17.75
64	1.0712	7888.000	7888.0	13.4	17.75
65	1.0930	7901.000	7901.0	13.7	17.78
66	1.1120	7864.000	7864.0	13.9	17.69
67	1.1319	7862.000	7862.0	14.1	17.69
68	1.1532	7930.000	7930.0	14.4	17.84
69	1.1710	7903.000	7903.0	14.6	17.78
70	1.1925	7937.000	7937.0	14.9	17.86
71	1.2120	7976.000	7976.0	15.2	17.95

Parameters for Specimen No. 3

Specimen Parameter	Initial	Consolidated	Final
Moisture content: Moist soil+tare, gms.	7314.500		10803.900
Moisture content: Dry soil+tare, gms.	7030.800		9544.000
Moisture content: Tare, gms.	0.000		2637.500
Moisture, %	4.0	18.2	18.2
Moist specimen weight, gms.	7314.5		
Side Length, in.	8.00	8.00	
Area, in.²	64.00	64.00	
Height, in.	4.35	3.71	
Net decrease in height, in.		0.64	
Wet density, pcf	100.1	133.5	
Dry density, pcf	96.2	112.9	
Void ratio	0.7520	0.4925	
Saturation, %	14.5	100.0	

Test Readings for Specimen No. 3

Normal stress = 44 ksf

Strain rate, in./min. = 0.010

Fail. Stress = 32.08 ksf **at reading no.** 51

No.	Horizontal Def. Dial in.	Load Dial	Load lbs.	Strain %	Shear Stress ksf
0	0.0000	0.000	0.0	0.0	0.00
1	0.0106	33.000	33.0	0.1	0.07
2	0.0183	315.000	315.0	0.2	0.71
3	0.0258	520.000	520.0	0.3	1.17
4	0.0337	688.000	688.0	0.4	1.55
5	0.0423	836.000	836.0	0.5	1.88
6	0.0504	1000.000	1000.0	0.6	2.25
7	0.0587	1235.000	1235.0	0.7	2.78
8	0.0671	1482.000	1482.0	0.8	3.33
9	0.0751	1826.000	1826.0	0.9	4.11
10	0.0829	2160.000	2160.0	1.0	4.86
11	0.0911	2467.000	2467.0	1.1	5.55
12	0.1064	2930.000	2930.0	1.3	6.59
13	0.1218	3356.000	3356.0	1.5	7.55

Test Readings for Specimen No. 3

No.	Horizontal Def. Dial in.	Load Dial	Load lbs.	Strain %	Shear Stress ksf
14	0.1392	3842.000	3842.0	1.7	8.64
15	0.1548	4246.000	4246.0	1.9	9.55
16	0.1708	4681.000	4681.0	2.1	10.53
17	0.1858	5115.000	5115.0	2.3	11.51
18	0.2020	5534.000	5534.0	2.5	12.45
19	0.2179	5880.000	5880.0	2.7	13.23
20	0.2336	6275.000	6275.0	2.9	14.12
21	0.2520	6613.000	6613.0	3.1	14.88
22	0.2666	6894.000	6894.0	3.3	15.51
23	0.2827	7235.000	7235.0	3.5	16.28
24	0.2996	7546.000	7546.0	3.7	16.98
25	0.3136	7805.000	7805.0	3.9	17.56
26	0.3302	8153.000	8153.0	4.1	18.34
27	0.3469	8415.000	8415.0	4.3	18.93
28	0.3623	8729.000	8729.0	4.5	19.64
29	0.3782	8981.000	8981.0	4.7	20.21
30	0.3952	9288.000	9288.0	4.9	20.90
31	0.4123	9530.000	9530.0	5.2	21.44
32	0.4292	9771.000	9771.0	5.4	21.98
33	0.4508	10092.000	10092.0	5.6	22.71
34	0.4709	10368.000	10368.0	5.9	23.33
35	0.4906	10624.000	10624.0	6.1	23.90
36	0.5105	10941.000	10941.0	6.4	24.62
37	0.5301	11209.000	11209.0	6.6	25.22
38	0.5503	11430.000	11430.0	6.9	25.72
39	0.5702	11650.000	11650.0	7.1	26.21
40	0.5908	11868.000	11868.0	7.4	26.70
41	0.6105	12183.000	12183.0	7.6	27.41
42	0.6311	12343.000	12343.0	7.9	27.77
43	0.6512	12610.000	12610.0	8.1	28.37
44	0.6712	12838.000	12838.0	8.4	28.89
45	0.6919	13087.000	13087.0	8.6	29.45
46	0.7101	13306.000	13306.0	8.9	29.94
47	0.7305	13431.000	13431.0	9.1	30.22
48	0.7493	13611.000	13611.0	9.4	30.62
49	0.7698	13820.000	13820.0	9.6	31.09
50	0.7919	14035.000	14035.0	9.9	31.58
51	0.8100	14259.000	14259.0	10.1	32.08
52	0.8314	14445.000	14445.0	10.4	32.50
53	0.8501	14592.000	14592.0	10.6	32.83
54	0.8693	14695.000	14695.0	10.9	33.06
55	0.8901	14827.000	14827.0	11.1	33.36
56	0.9093	14954.000	14954.0	11.4	33.65
57	0.9310	15083.000	15083.0	11.6	33.94
58	0.9502	15205.000	15205.0	11.9	34.21
59	0.9688	15335.000	15335.0	12.1	34.50
60	0.9904	15477.000	15477.0	12.4	34.82

Test Readings for Specimen No. 3

No.	Horizontal Def. Dial in.	Load Dial	Load lbs.	Strain %	Shear Stress ksf
61	1.0101	15554.000	15554.0	12.6	35.00
62	1.0288	15614.000	15614.0	12.9	35.13
63	1.0517	15718.000	15718.0	13.1	35.37
64	1.0700	15861.000	15861.0	13.4	35.69
65	1.0918	15901.000	15901.0	13.6	35.78
66	1.1110	15910.000	15910.0	13.9	35.80
67	1.1322	15955.000	15955.0	14.2	35.90
68	1.1448	15984.000	15984.0	14.3	35.96
69	1.1708	16006.000	16006.0	14.6	36.01
70	1.1894	15981.000	15981.0	14.9	35.96
71	1.2118	15959.000	15959.0	15.1	35.91

ATTACHMENT B
SEISMIC HAZARD

U.S. Geological Survey - Earthquake Hazards Program

Unified Hazard Tool

Please do not use this tool to obtain ground motion parameter values for the design code reference documents covered by the U.S. Seismic Design Maps web tools (e.g., the International Building Code and the ASCE 7 or 41 Standard). The values returned by the two applications are not identical.

Input

Edition

Dynamic: Conterminous U.S. 2014 (v4.1.

Spectral Period

Peak ground acceleration

Latitude

Decimal degrees

38.731

Time Horizon

Return period in years

2475

Longitude

Decimal degrees, negative values for western longitudes

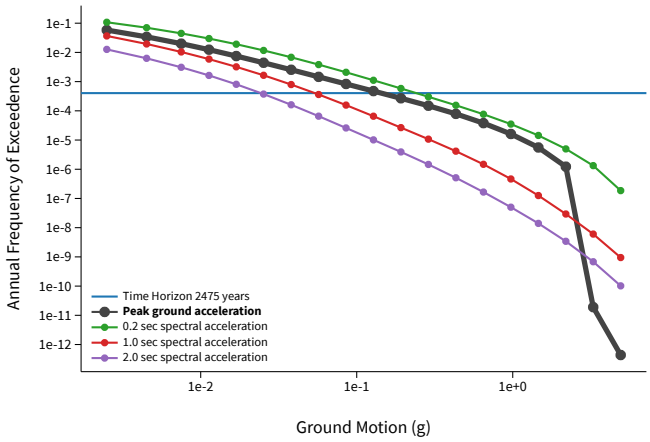
-105.164

Site Class

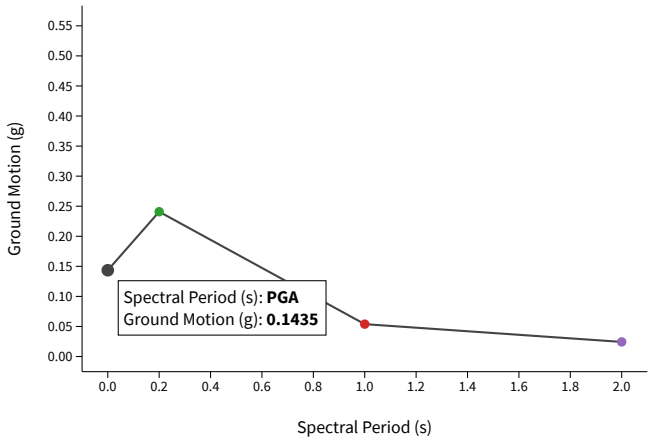
760 m/s (B/C boundary)

Hazard Curve

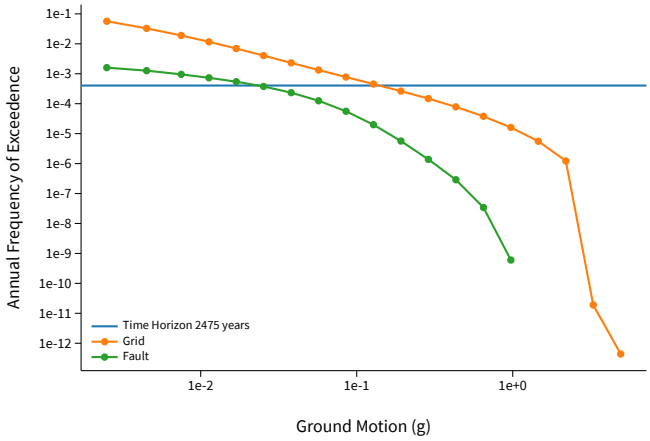
Hazard Curves



Uniform Hazard Response Spectrum



Component Curves for Peak ground acceleration

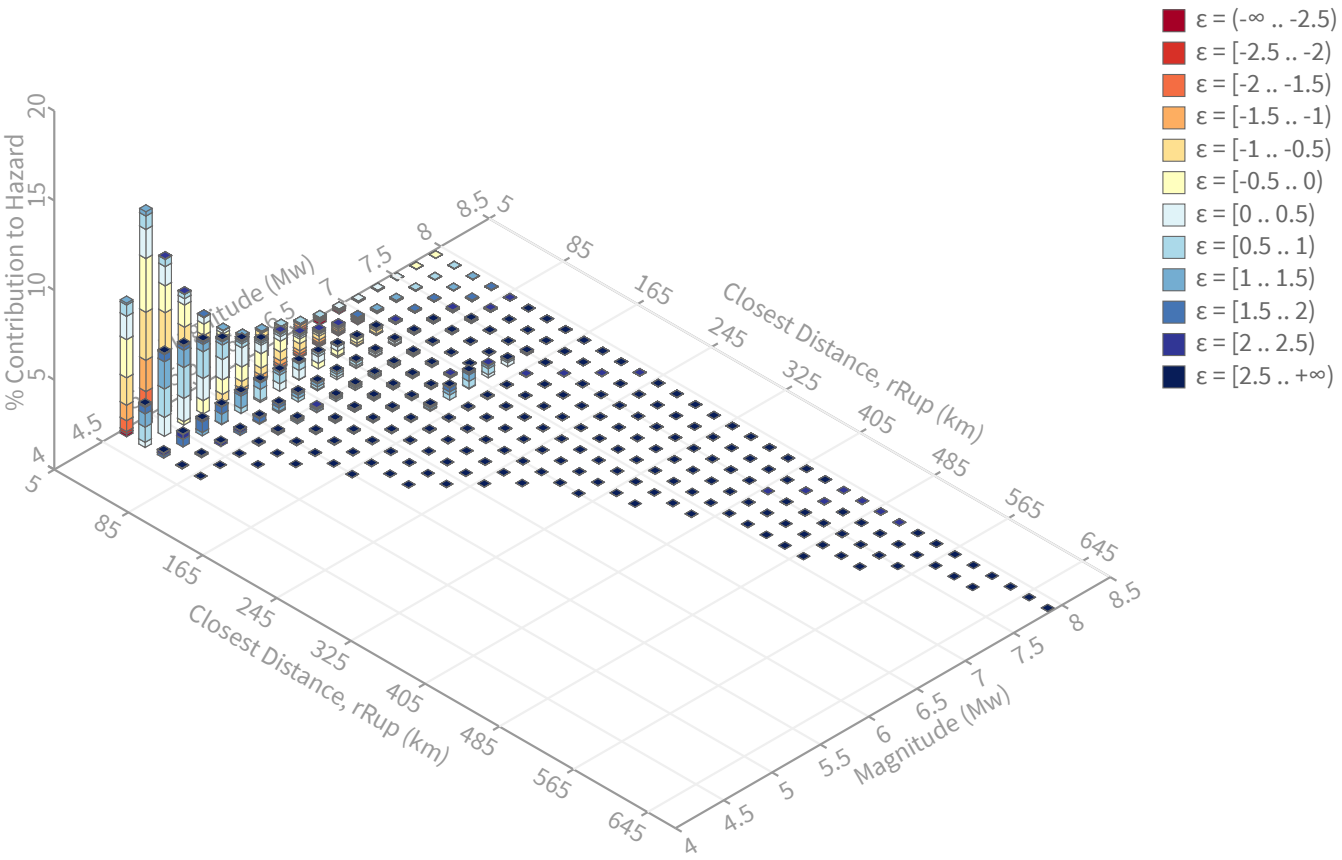


View Raw Data

Deaggregation

Component

Total



Summary statistics for, Deaggregation: Total

Deaggregation targets

Return period: 2475 yrs
Exceedance rate: 0.0004040404 yr^{-1}
PGA ground motion: 0.14347218 g

Recovered targets

Return period: 2479.8967 yrs
Exceedance rate: 0.00040324261 yr^{-1}

Totals

Binned: 100 %
Residual: 0 %
Trace: 1.48 %

Mean (for all sources)

r: 34.04 km
m: 5.53
ε_0: -0.12 σ

Mode (largest r-m bin)

r: 12.11 km
m: 4.9
ε_0: -0.63 σ
Contribution: 11.91 %

Mode (largest ε_0 bin)

r: 13.96 km
m: 4.9
ε_0: -0.27 σ
Contribution: 3 %

Discretization

r: min = 0.0, max = 1000.0, Δ = 20.0 km
m: min = 4.4, max = 9.4, Δ = 0.2
ε: min = -3.0, max = 3.0, Δ = 0.5 σ

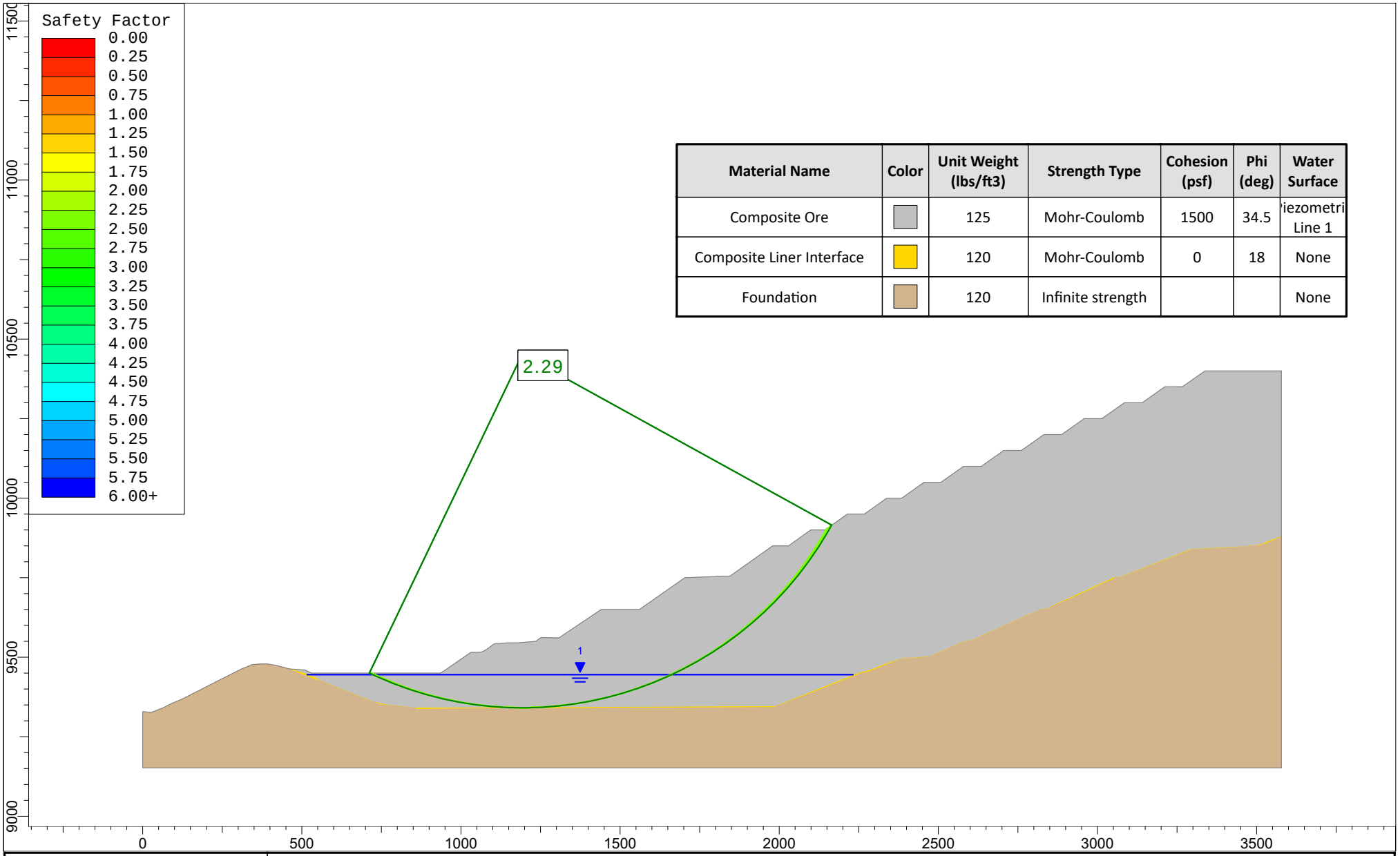
Epsilon keys

ε0: [-∞ .. -2.5)
ε1: [-2.5 .. -2.0)
ε2: [-2.0 .. -1.5)
ε3: [-1.5 .. -1.0)
ε4: [-1.0 .. -0.5)
ε5: [-0.5 .. 0.0)
ε6: [0.0 .. 0.5)
ε7: [0.5 .. 1.0)
ε8: [1.0 .. 1.5)
ε9: [1.5 .. 2.0)
ε10: [2.0 .. 2.5)
ε11: [2.5 .. +∞]

Deaggregation Contributors

Source Set ↳ Source	Type	r	m	ε_0	lon	lat	az	%
SSCn Fixed Smoothing Zone 9 (opt)	Grid							31.44
PointSourceFinite: -105.164, 38.843		13.25	5.20	-0.76	105.164°W	38.843°N	0.00	5.22
PointSourceFinite: -105.164, 38.798		8.90	5.16	-1.35	105.164°W	38.798°N	0.00	5.12
PointSourceFinite: -105.164, 38.888		17.86	5.27	-0.33	105.164°W	38.888°N	0.00	4.48
PointSourceFinite: -105.164, 38.933		22.56	5.35	-0.01	105.164°W	38.933°N	0.00	2.97
PointSourceFinite: -105.164, 38.978		27.27	5.44	0.22	105.164°W	38.978°N	0.00	2.75
PointSourceFinite: -105.164, 39.023		31.97	5.52	0.40	105.164°W	39.023°N	0.00	2.09
PointSourceFinite: -105.164, 38.753		5.57	5.13	-1.93	105.164°W	38.753°N	0.00	1.91
PointSourceFinite: -105.164, 39.068		36.65	5.61	0.54	105.164°W	39.068°N	0.00	1.42
USGS Fixed Smoothing Zone 3 (opt)	Grid							31.44
PointSourceFinite: -105.164, 38.843		13.25	5.20	-0.76	105.164°W	38.843°N	0.00	5.22
PointSourceFinite: -105.164, 38.798		8.90	5.16	-1.35	105.164°W	38.798°N	0.00	5.12
PointSourceFinite: -105.164, 38.888		17.86	5.27	-0.33	105.164°W	38.888°N	0.00	4.48
PointSourceFinite: -105.164, 38.933		22.56	5.35	-0.01	105.164°W	38.933°N	0.00	2.97
PointSourceFinite: -105.164, 38.978		27.27	5.44	0.22	105.164°W	38.978°N	0.00	2.75
PointSourceFinite: -105.164, 39.023		31.97	5.52	0.40	105.164°W	39.023°N	0.00	2.09
PointSourceFinite: -105.164, 38.753		5.57	5.13	-1.93	105.164°W	38.753°N	0.00	1.91
PointSourceFinite: -105.164, 39.068		36.65	5.61	0.54	105.164°W	39.068°N	0.00	1.42
SSCn Adaptive Smoothing Zone 9 (opt)	Grid							11.57
PointSourceFinite: -105.164, 38.798		8.90	5.16	-1.35	105.164°W	38.798°N	0.00	1.90
PointSourceFinite: -105.164, 38.843		13.25	5.20	-0.76	105.164°W	38.843°N	0.00	1.86
PointSourceFinite: -105.164, 38.888		17.86	5.27	-0.33	105.164°W	38.888°N	0.00	1.65
PointSourceFinite: -105.164, 38.933		22.56	5.35	-0.01	105.164°W	38.933°N	0.00	1.10
USGS Adaptive Smoothing Zone 3 (opt)	Grid							11.57
PointSourceFinite: -105.164, 38.798		8.90	5.16	-1.35	105.164°W	38.798°N	0.00	1.90
PointSourceFinite: -105.164, 38.843		13.25	5.20	-0.76	105.164°W	38.843°N	0.00	1.86
PointSourceFinite: -105.164, 38.888		17.86	5.27	-0.33	105.164°W	38.888°N	0.00	1.65
PointSourceFinite: -105.164, 38.933		22.56	5.35	-0.01	105.164°W	38.933°N	0.00	1.10
SSCn Fixed Smoothing Zone 1 (opt)	Grid							2.22
USGS Fixed Smoothing Zone 1 (opt)	Grid							2.22
SSCn Adaptive Smoothing Zone 1 (opt)	Grid							2.15
USGS Adaptive Smoothing Zone 1 (opt)	Grid							2.15
USGS Cheraw Meers	Fault							1.53

ATTACHMENT C
STABILITY MODEL OUTPUT GRAPHICS



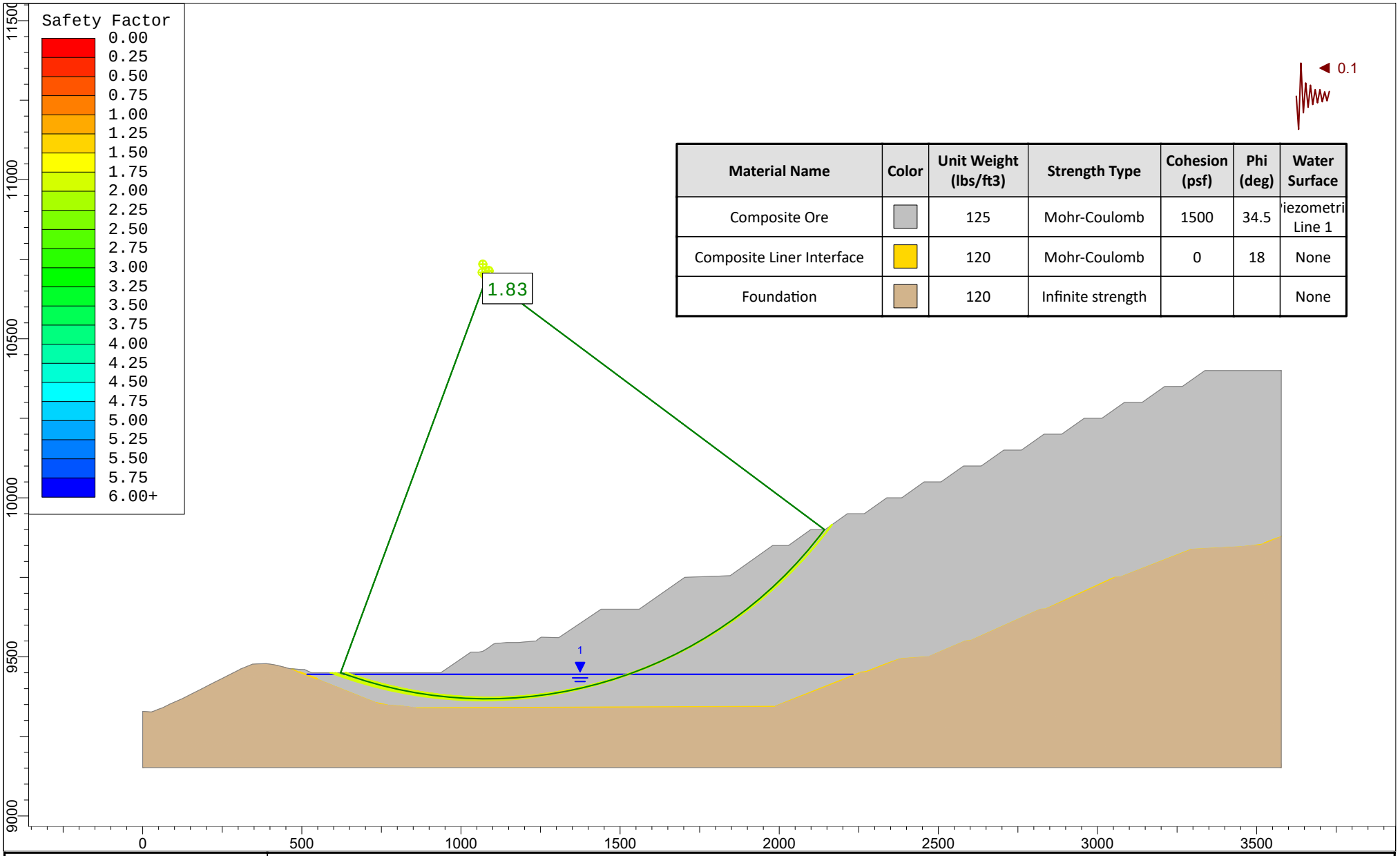
Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface
Composite Ore		125	Mohr-Coulomb	1500	34.5	iezometri Line 1
Composite Liner Interface		120	Mohr-Coulomb	0	18	None
Foundation		120	Infinite strength			None

NewFields

SLIDEINTERPRET 7.017

Cripple Creek & Victor Gold Mine - VLF2 Stability Re-Evaluation

Analysis Description	Section A-A' - Static Circular Failure				
Drawn By	NO	*Scale*	1:5000	*Company*	Newmont
Date Printed	11/19/2018			*File Name*	CROSS SECTION A-A'.slim



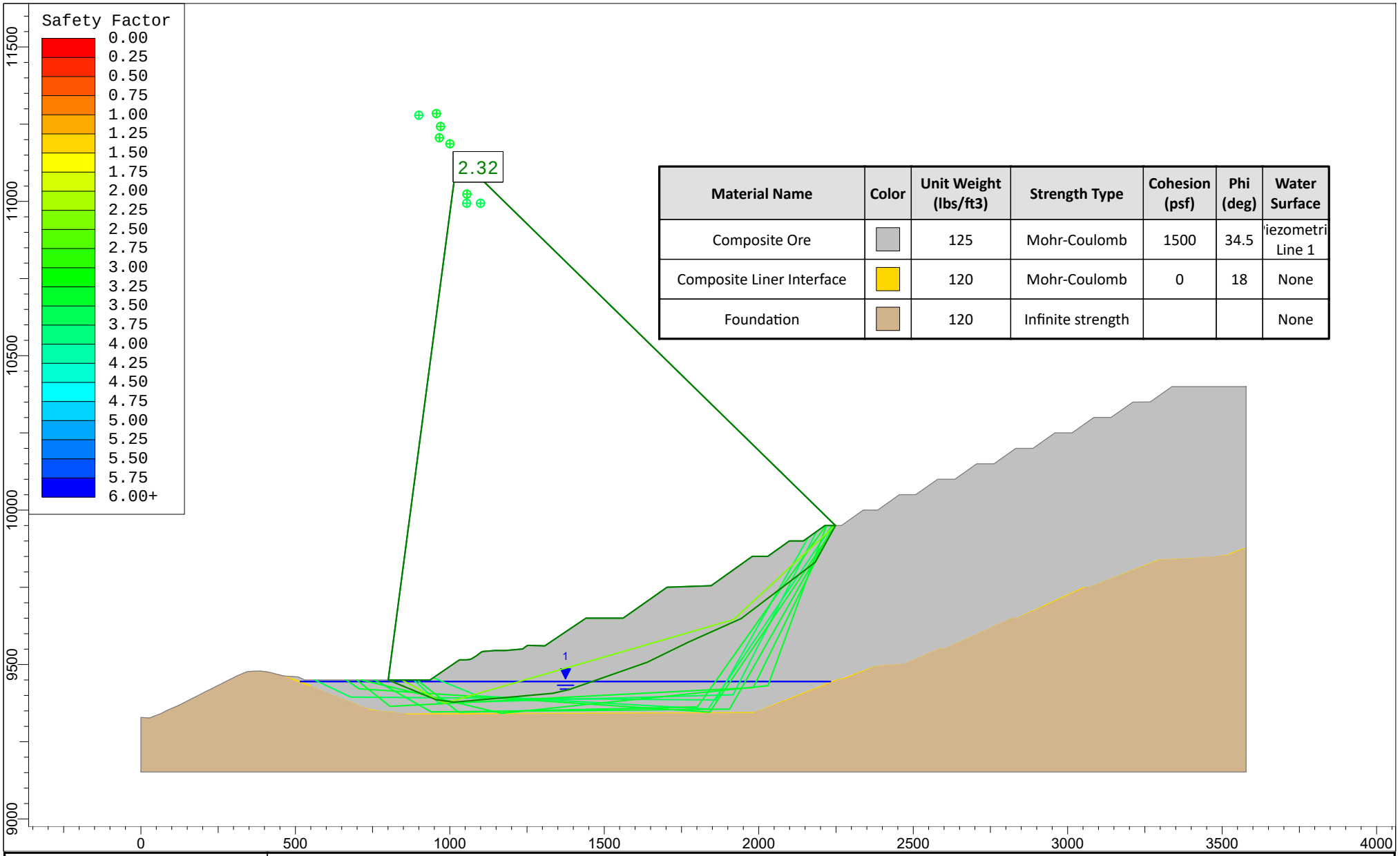
Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface
Composite Ore		125	Mohr-Coulomb	1500	34.5	iezometri Line 1
Composite Liner Interface		120	Mohr-Coulomb	0	18	None
Foundation		120	Infinite strength			None

NewFields

SLIDEINTERPRET 7.017

Cripple Creek & Victor Gold Mine - VLF2 Stability Re-Evaluation

Analysis Description	Section A-A' - Pseudostatic Circular Failure				
Drawn By	NO	*Scale*	1:5000	*Company*	Newmont
Date Printed	11/19/2018			*File Name*	CROSS SECTION A-A'.slim



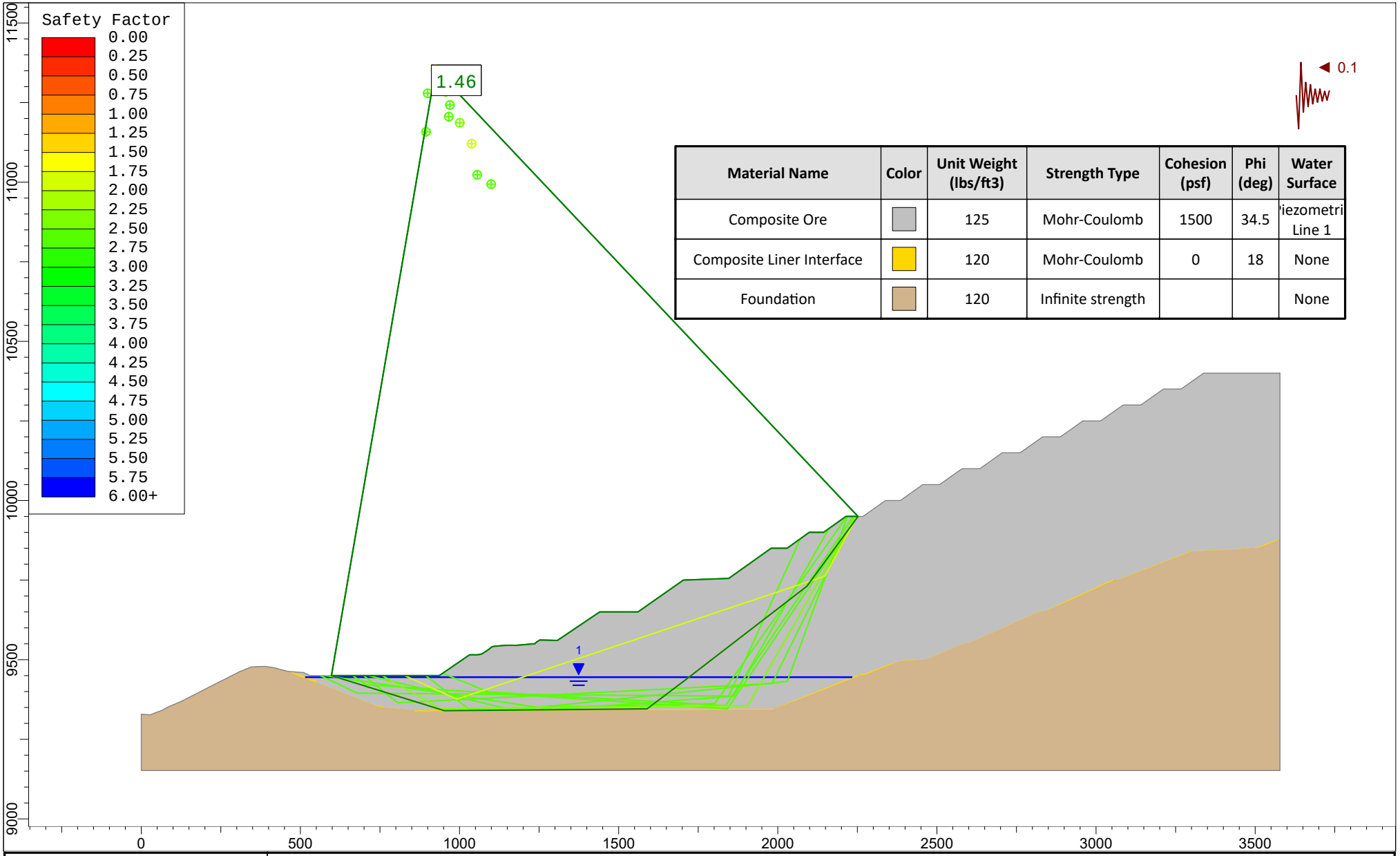
Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface
Composite Ore		125	Mohr-Coulomb	1500	34.5	iezometri Line 1
Composite Liner Interface		120	Mohr-Coulomb	0	18	None
Foundation		120	Infinite strength			None

NewFields

SLIDEINTERPRET 7.017

Cripple Creek & Victor Gold Mine - VLF2 Stability Re-Evaluation

Analysis Description	Section A-A' - Static Block Failure				
Drawn By	NO	*Scale*	1:5151	*Company*	Newmont
Date Printed	11/19/2018			*File Name*	CROSS SECTION A-A'.slim



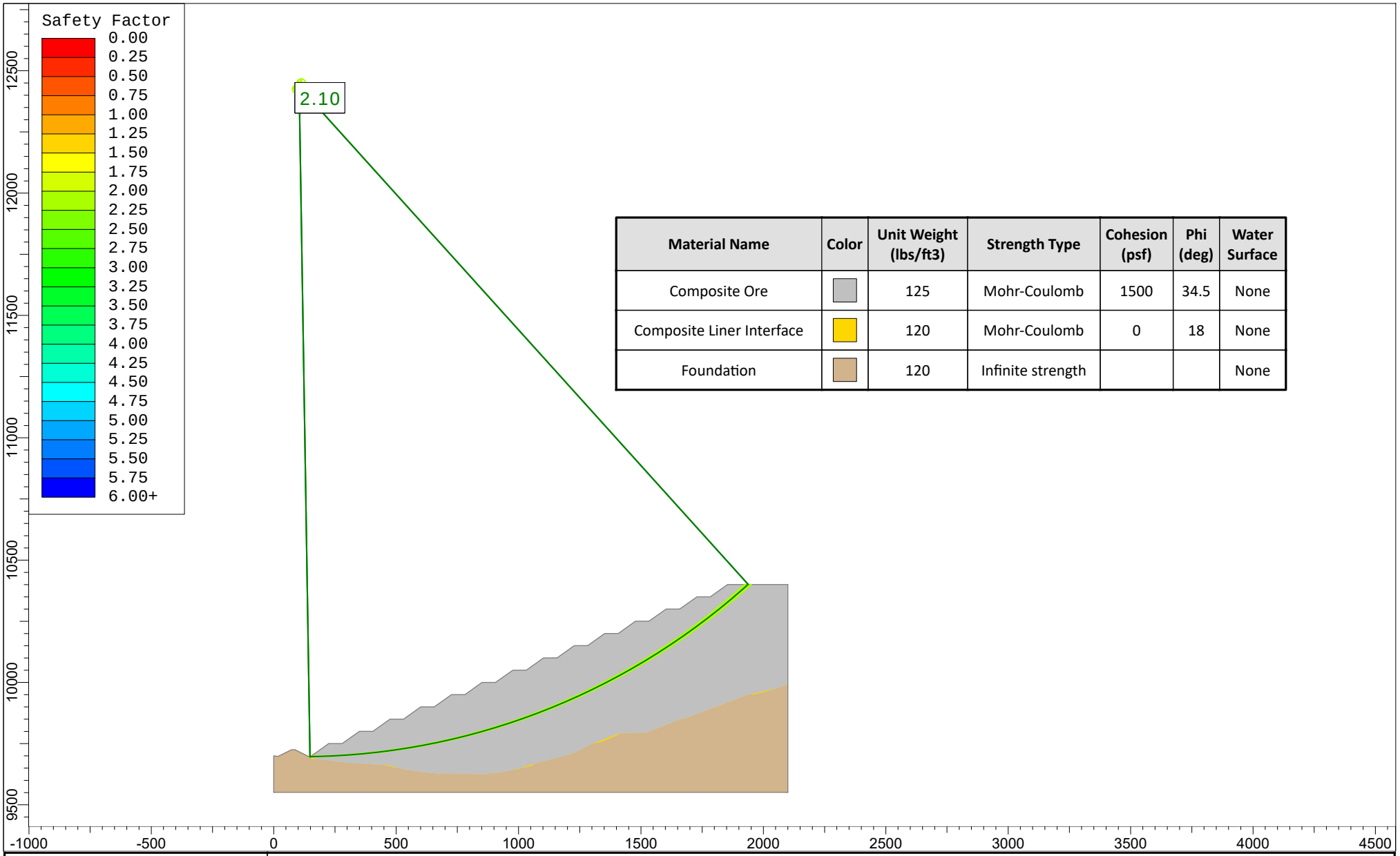
Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface
Composite Ore		125	Mohr-Coulomb	1500	34.5	iezometri Line 1
Composite Liner Interface		120	Mohr-Coulomb	0	18	None
Foundation		120	Infinite strength			None

NewFields

SLIDEINTERPRET 7.017

Cripple Creek & Victor Gold Mine - VLF2 Stability Re-Evaluation

Analysis Description	Section A-A' - Pseudostatic Block Failure		
Drawn By	NO	*Scale* 1:5000	*Company* Newmont
Date Printed	11/19/2018		*File Name* CROSS SECTION A-A'.slim



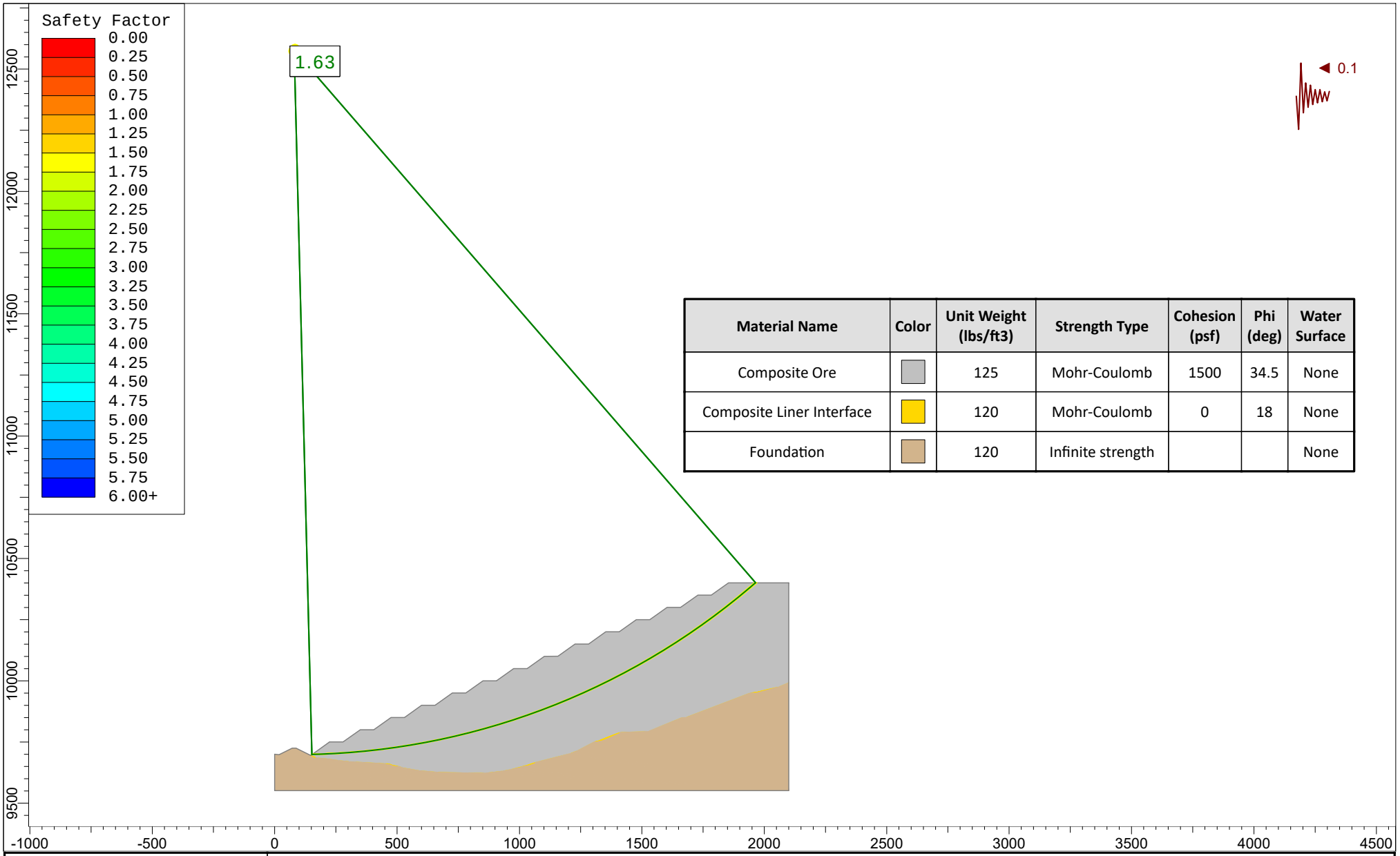
Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface
Composite Ore		125	Mohr-Coulomb	1500	34.5	None
Composite Liner Interface		120	Mohr-Coulomb	0	18	None
Foundation		120	Infinite strength			None

NewFields

SLIDEINTERPRET 7.017

Cripple Creek & Victor Gold Mine - VLF2 Stability Re-Evaluation

Analysis Description	Section B-B' - Static Circular Failure				
Drawn By	NO	*Scale*	1:6500	*Company*	Newmont
Date Printed	11/19/2018			*File Name*	CROSS SECTION B-B'.slim



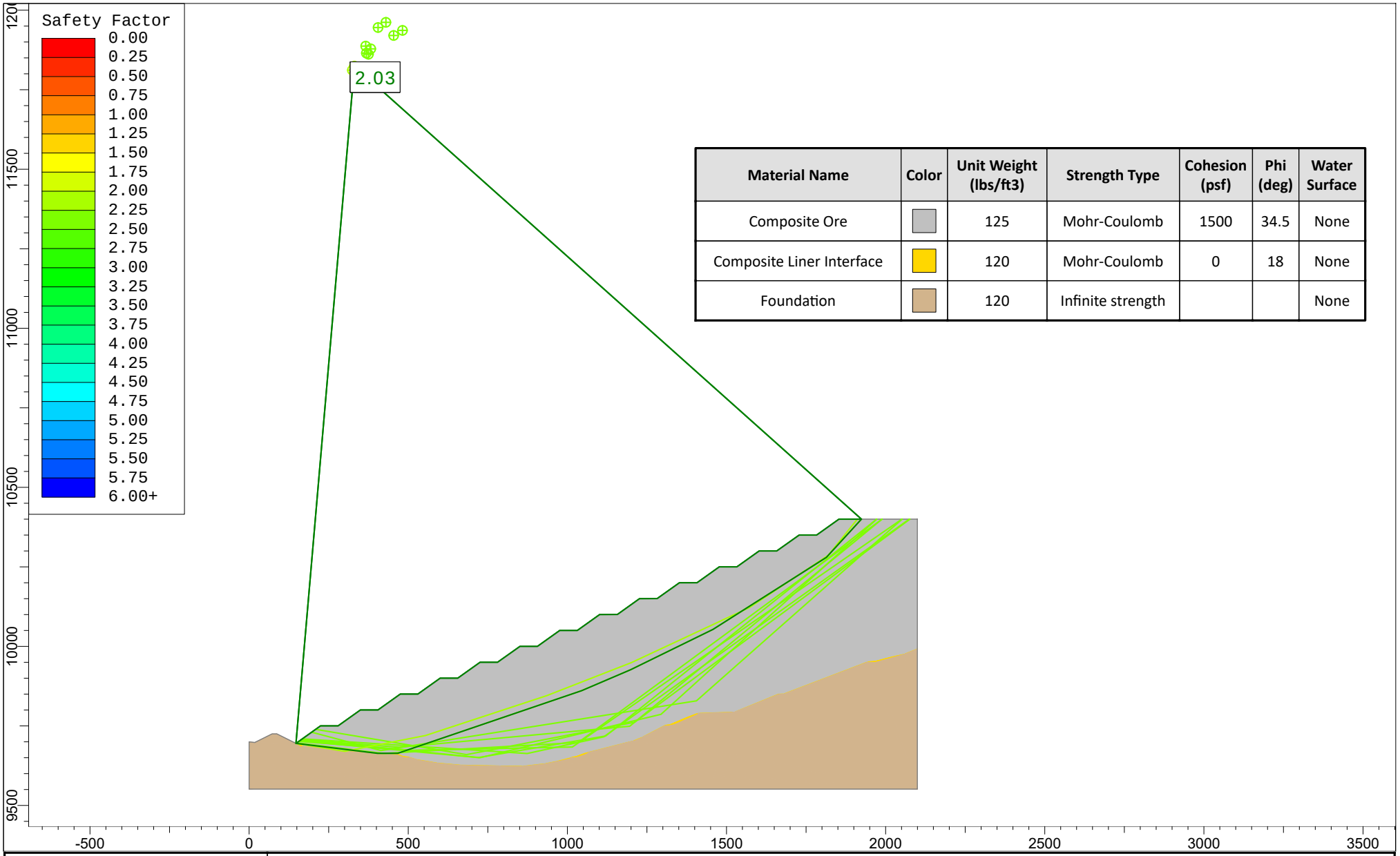
Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface
Composite Ore		125	Mohr-Coulomb	1500	34.5	None
Composite Liner Interface		120	Mohr-Coulomb	0	18	None
Foundation		120	Infinite strength			None

NewFields

SLIDEINTERPRET 7.017

Cripple Creek & Victor Gold Mine - VLF2 Stability Re-Evaluation

Analysis Description	Section B-B' - Pseudostatic Circular Failure				
Drawn By	NO	*Scale*	1:6500	*Company*	Newmont
Date Printed	11/19/2018			*File Name*	CROSS SECTION B-B'.slim



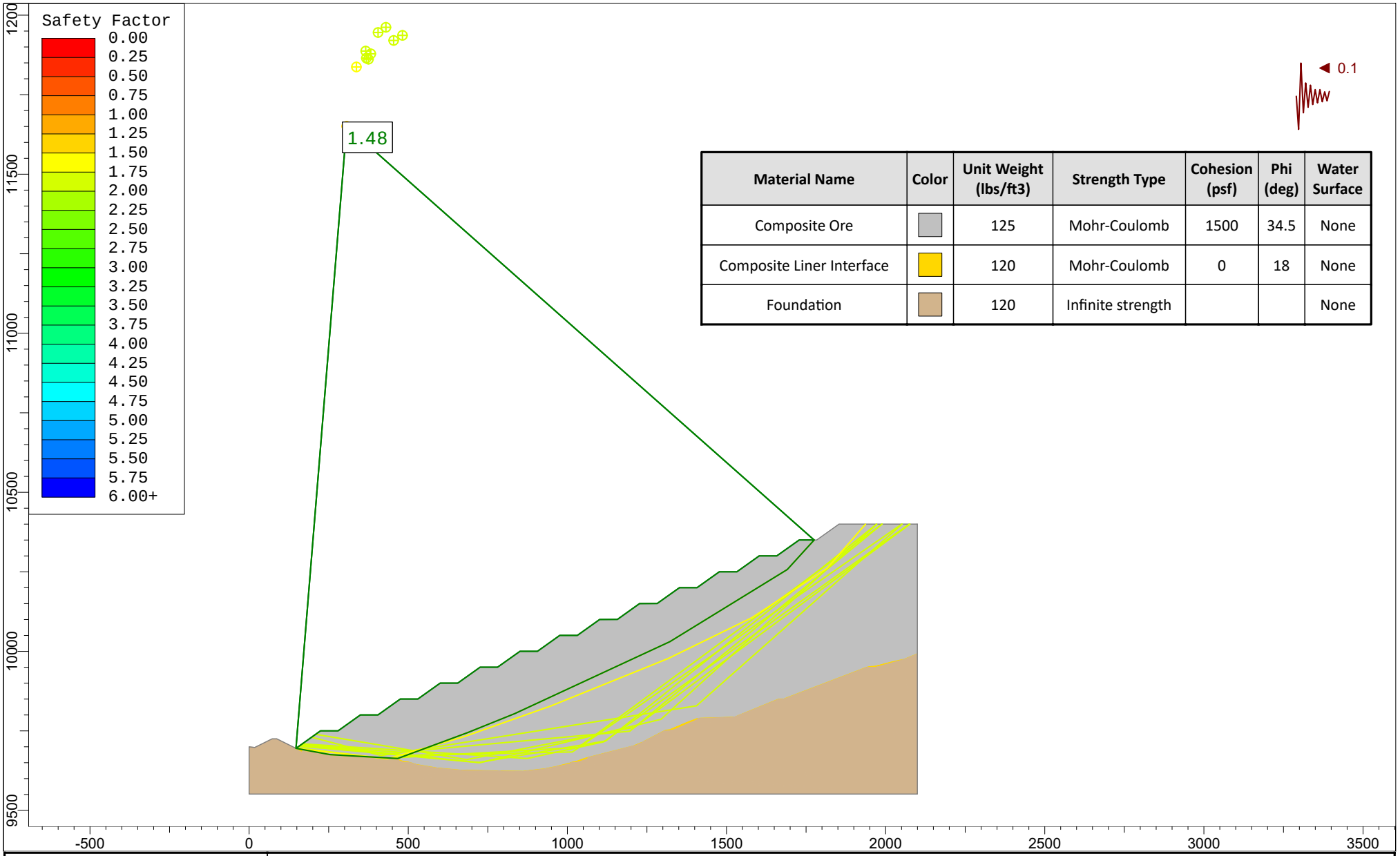
Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface
Composite Ore		125	Mohr-Coulomb	1500	34.5	None
Composite Liner Interface		120	Mohr-Coulomb	0	18	None
Foundation		120	Infinite strength			None

NewFields

SLIDEINTERPRET 7.017

Cripple Creek & Victor Gold Mine - VLF2 Stability Re-Evaluation

Analysis Description	Section B-B' - Static Block Failure				
Drawn By	NO	*Scale*	1:5000	*Company*	Newmont
Date Printed	11/19/2018			*File Name*	CROSS SECTION B-B'.slim



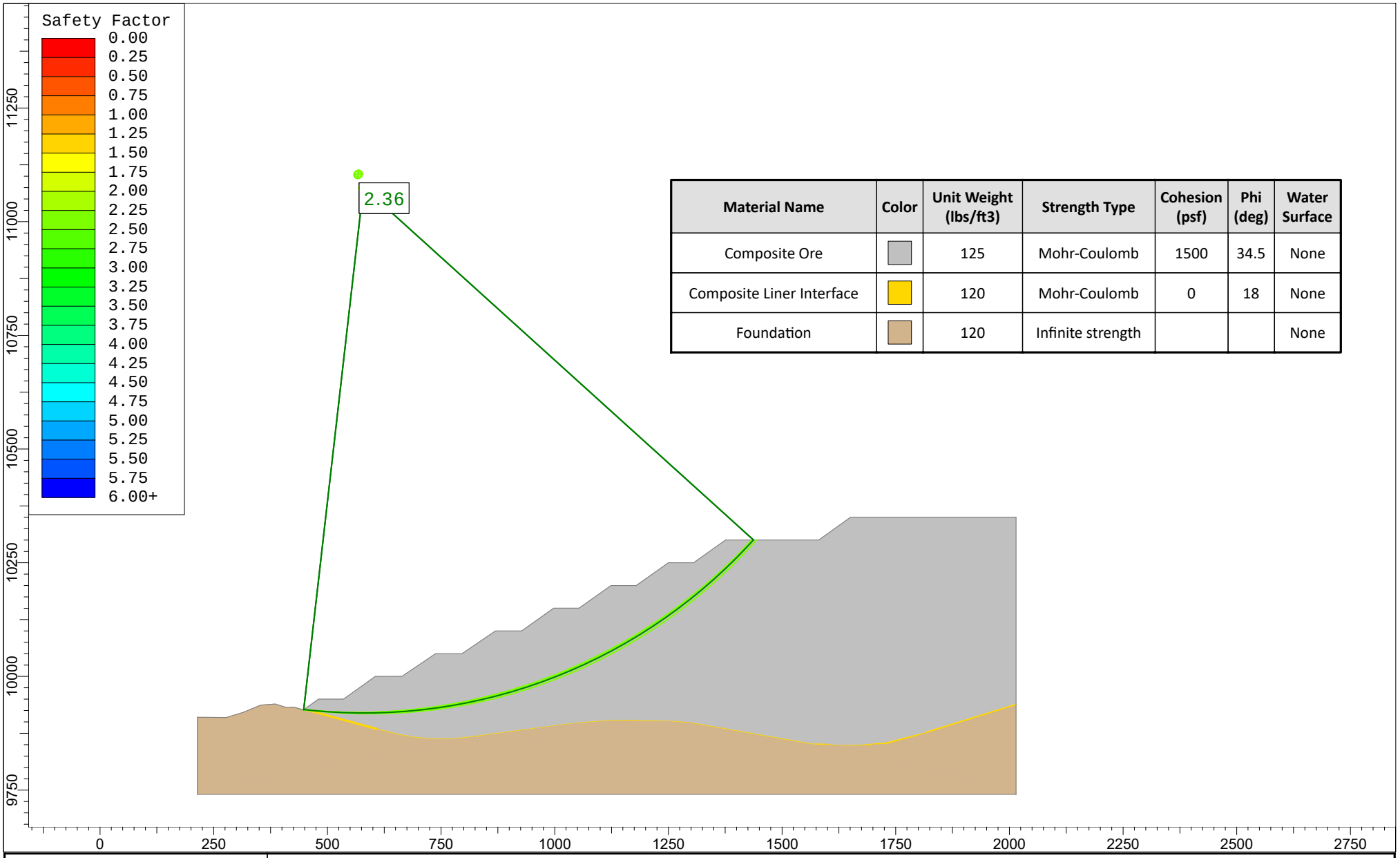
Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface
Composite Ore		125	Mohr-Coulomb	1500	34.5	None
Composite Liner Interface		120	Mohr-Coulomb	0	18	None
Foundation		120	Infinite strength			None

NewFields

SLIDEINTERPRET 7.017

Cripple Creek & Victor Gold Mine - VLF2 Stability Re-Evaluation

Analysis Description	Section B-B' - Pseudostatic Block Failure				
Drawn By	NO	*Scale*	1:5000	*Company*	Newmont
Date Printed	11/19/2018			*File Name*	CROSS SECTION B-B'.slim



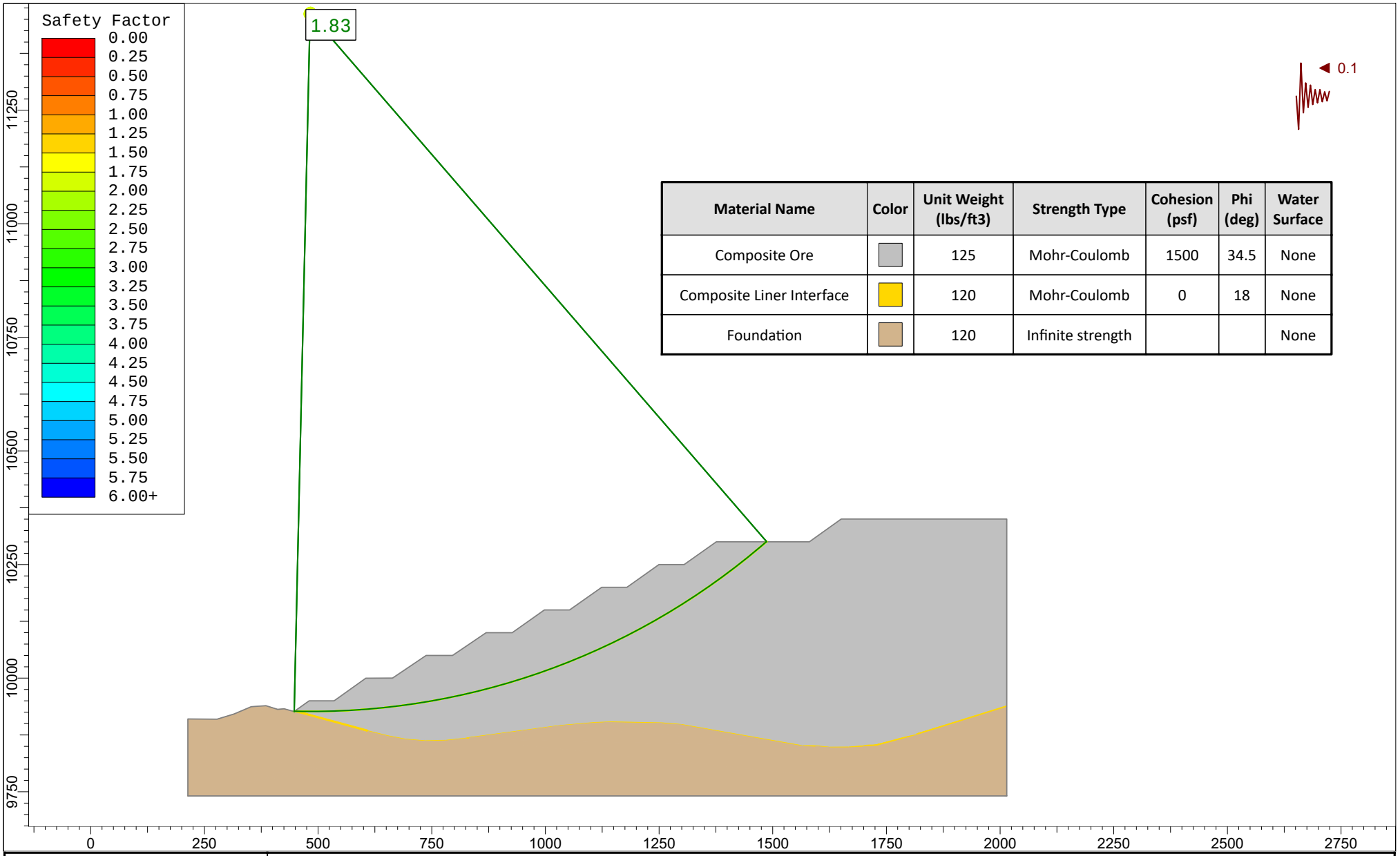
Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface
Composite Ore		125	Mohr-Coulomb	1500	34.5	None
Composite Liner Interface		120	Mohr-Coulomb	0	18	None
Foundation		120	Infinite strength			None

NewFields

SLIDEINTERPRET 7.017

Cripple Creek & Victor Gold Mine - VLF2 Stability Re-Evaluation

Analysis Description	Section C-C' - Static Circular Failure				
Drawn By	NO	*Scale*	1:3500	*Company*	Newmont
Date Printed	11/19/2018			*File Name*	CROSS SECTION C-C'.slim



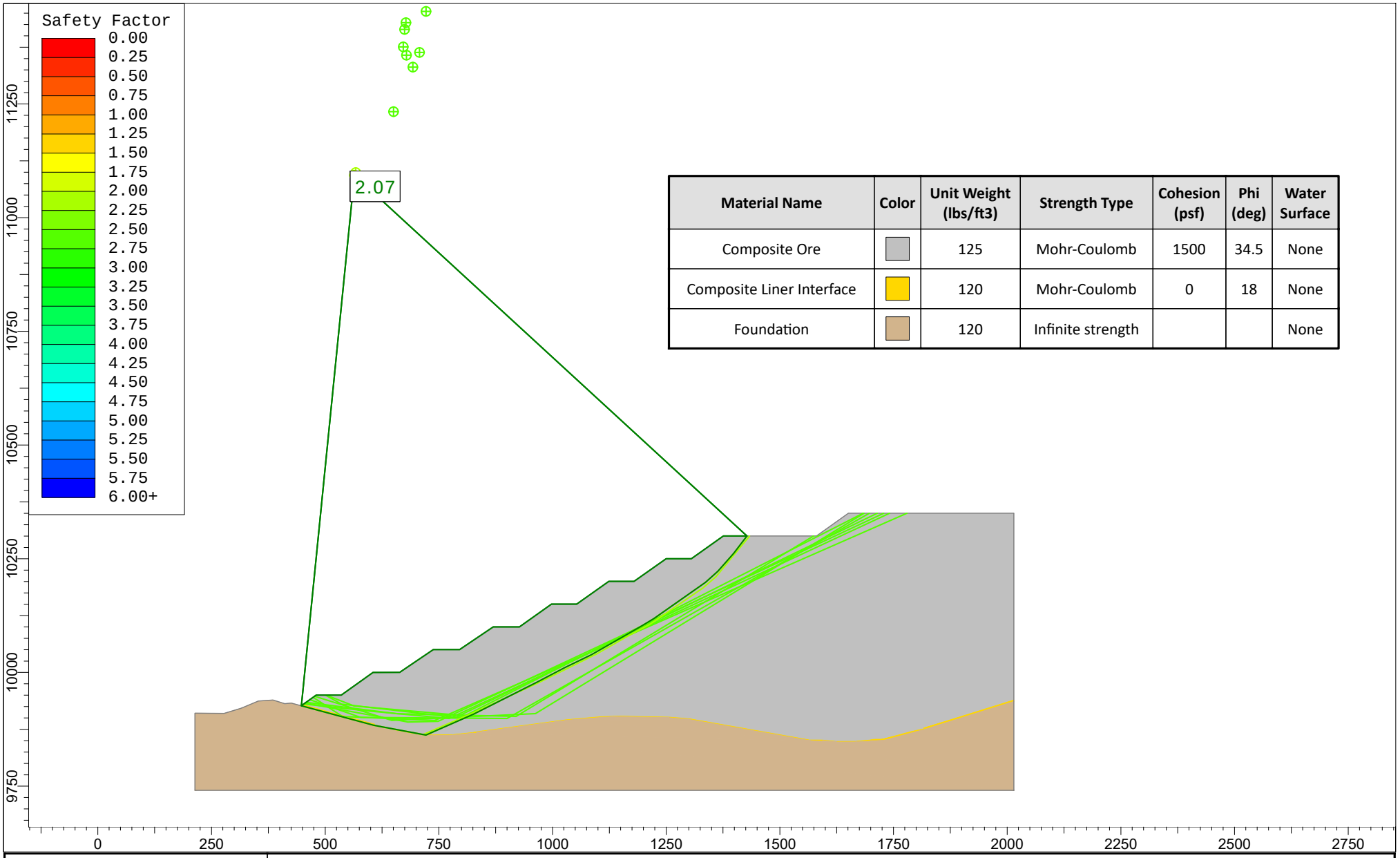
Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface
Composite Ore		125	Mohr-Coulomb	1500	34.5	None
Composite Liner Interface		120	Mohr-Coulomb	0	18	None
Foundation		120	Infinite strength			None

NewFields

SLIDEINTERPRET 7.017

Cripple Creek & Victor Gold Mine - VLF2 Stability Re-Evaluation

Analysis Description	Section C-C' - Pseudostatic Circular Failure				
Drawn By	NO	*Scale*	1:3500	*Company*	Newmont
Date Printed	11/19/2018			*File Name*	CROSS SECTION C-C'.slim



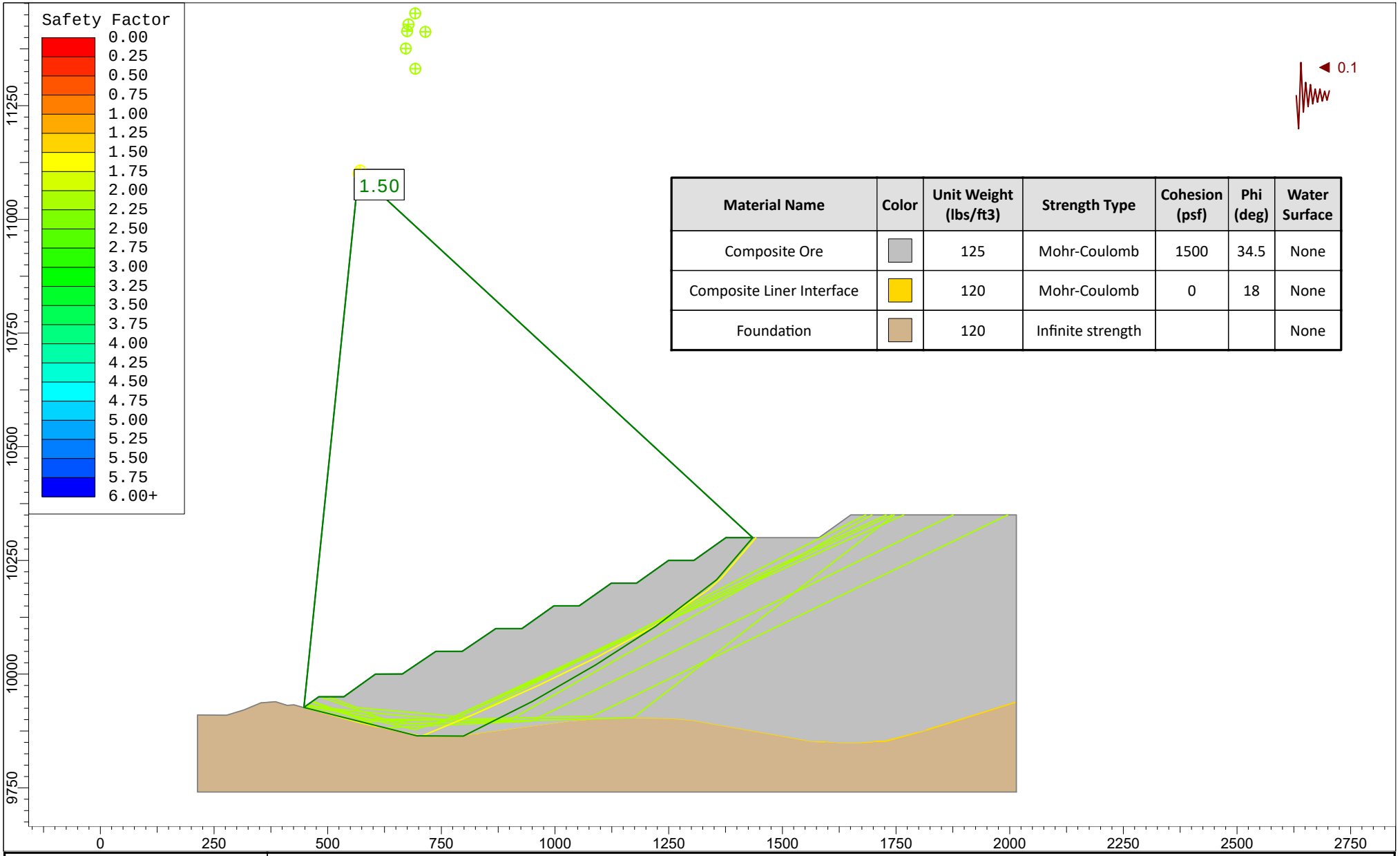
Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface
Composite Ore		125	Mohr-Coulomb	1500	34.5	None
Composite Liner Interface		120	Mohr-Coulomb	0	18	None
Foundation		120	Infinite strength			None

NewFields

SLIDEINTERPRET 7.017

Cripple Creek & Victor Gold Mine - VLF2 Stability Re-Evaluation

Analysis Description	Section C-C' - Static Block Failure				
Drawn By	NO	*Scale*	1:3500	*Company*	Newmont
Date Printed	11/19/2018			*File Name*	CROSS SECTION C-C'.slim



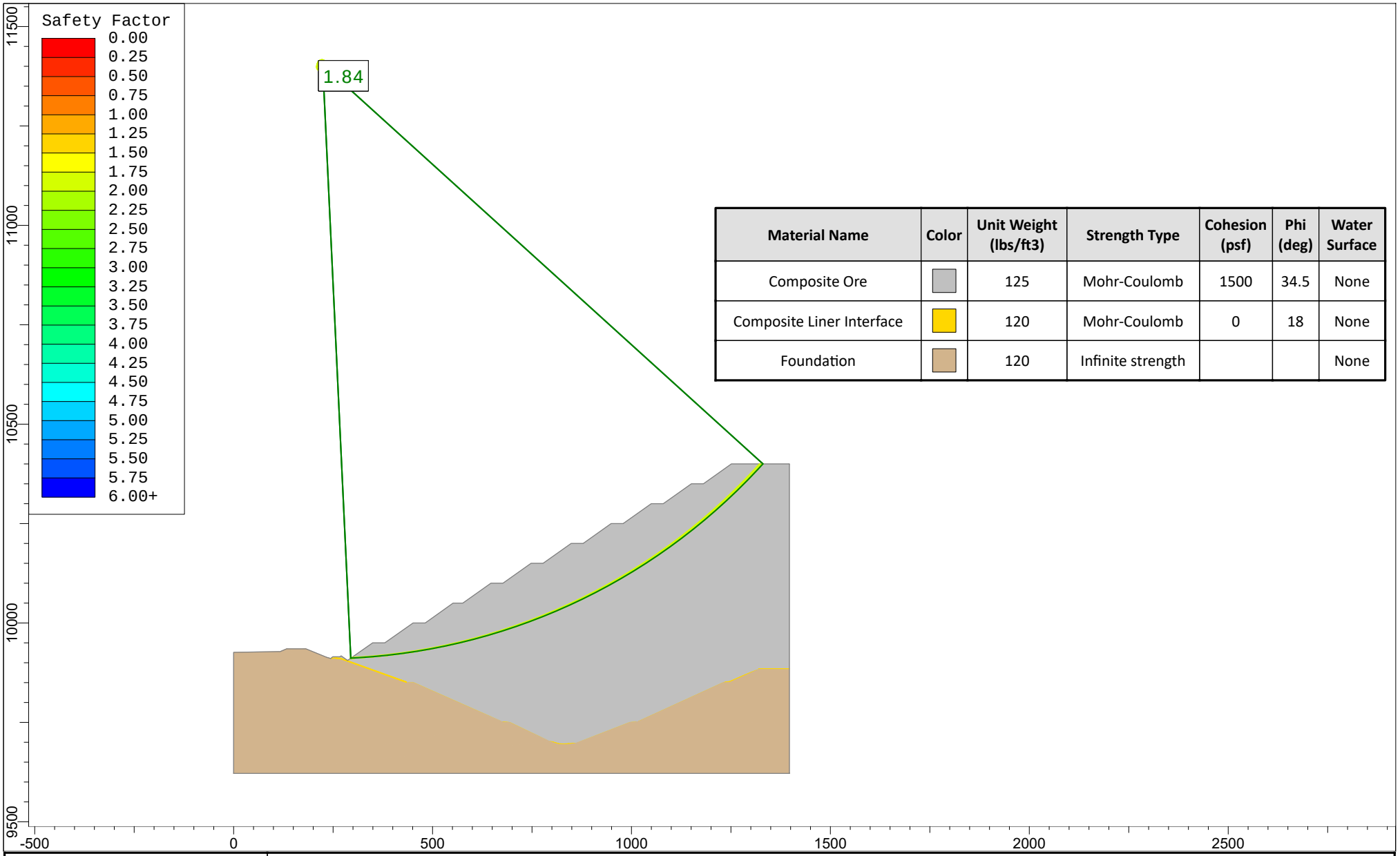
Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface
Composite Ore		125	Mohr-Coulomb	1500	34.5	None
Composite Liner Interface		120	Mohr-Coulomb	0	18	None
Foundation		120	Infinite strength			None

NewFields

SLIDEINTERPRET 7.017

Cripple Creek & Victor Gold Mine - VLF2 Stability Re-Evaluation

Analysis Description	Section C-C' - Pseudostatic Block Failure		
Drawn By	NO	*Scale* 1:3500	*Company* Newmont
Date Printed	11/19/2018		*File Name* CROSS SECTION C-C'.slim



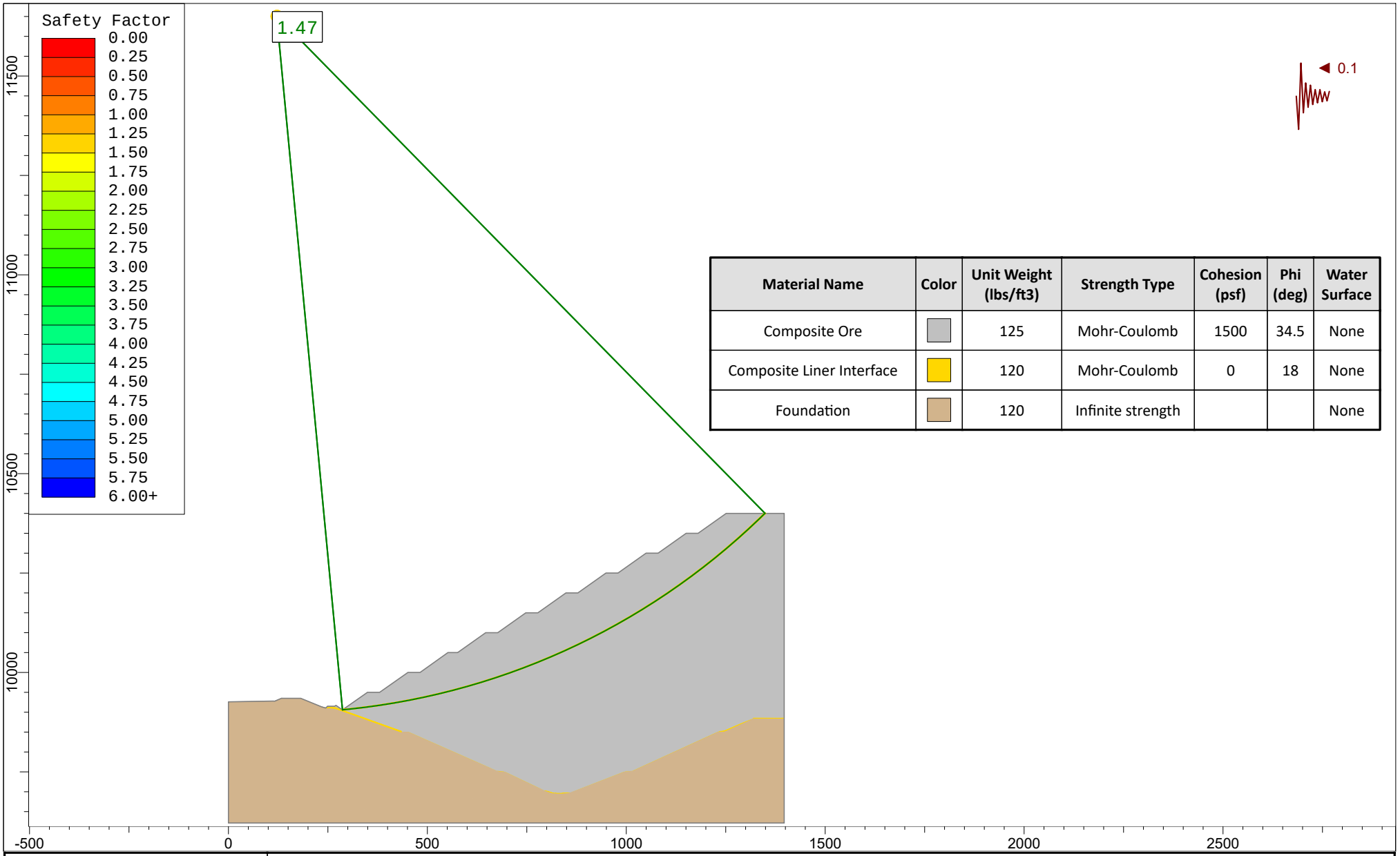
Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface
Composite Ore		125	Mohr-Coulomb	1500	34.5	None
Composite Liner Interface		120	Mohr-Coulomb	0	18	None
Foundation		120	Infinite strength			None

NewFields

SLIDEINTERPRET 7.017

Cripple Creek & Victor Gold Mine - VLF2 Stability Re-Evaluation

Analysis Description	Section D-D' - Static Circular Failure				
Drawn By	NO	*Scale*	1:4000	*Company*	Newmont
Date Printed	11/19/2018			*File Name*	CROSS SECTION D-D'.slim



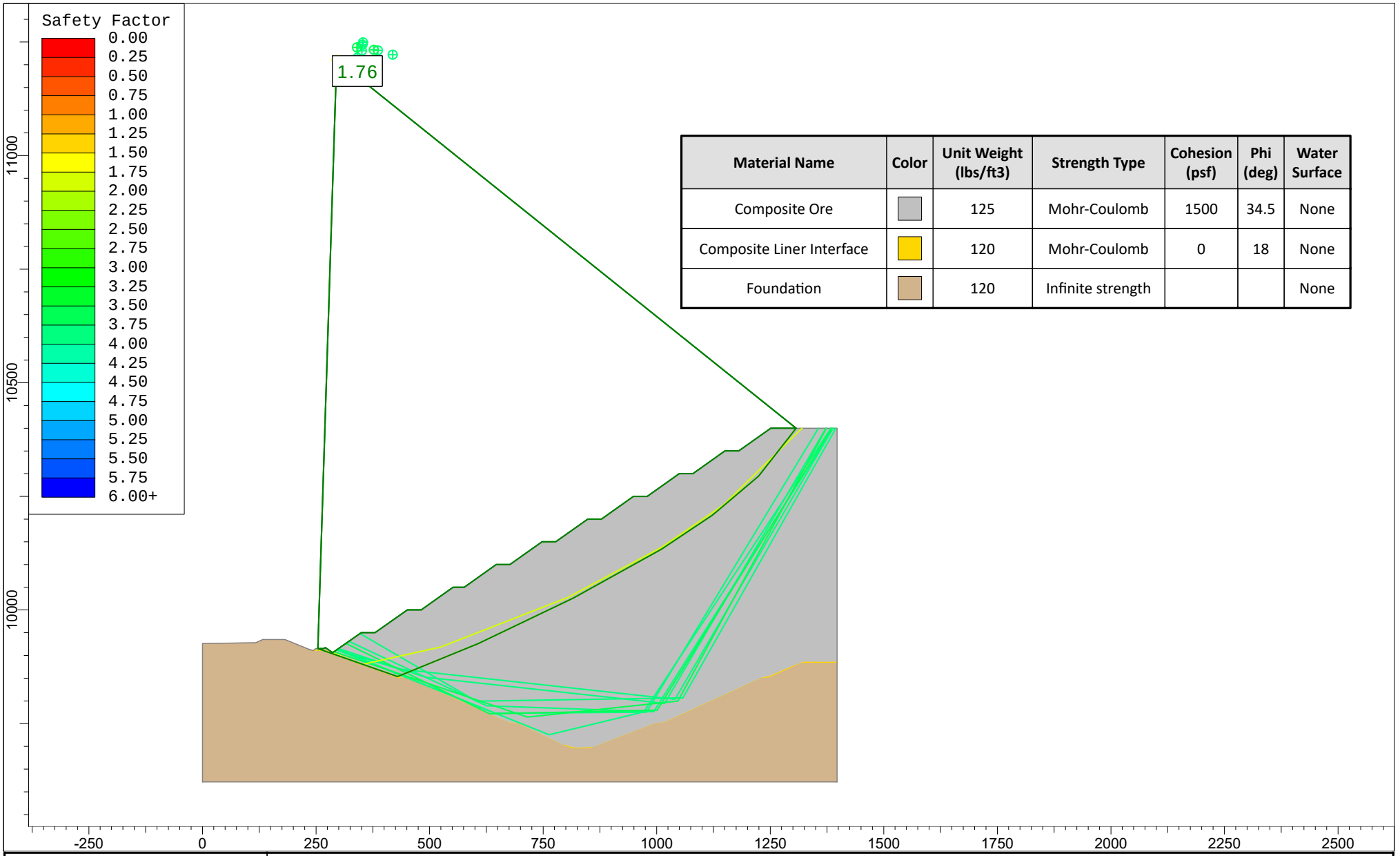
Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface
Composite Ore		125	Mohr-Coulomb	1500	34.5	None
Composite Liner Interface		120	Mohr-Coulomb	0	18	None
Foundation		120	Infinite strength			None

NewFields

SLIDEINTERPRET 7.017

Cripple Creek & Victor Gold Mine - VLF2 Stability Re-Evaluation

Analysis Description	Section D-D' - Pseudostatic Circular Failure		
Drawn By	NO	*Scale* 1:4000	*Company* Newmont
Date Printed	11/19/2018		*File Name* CROSS SECTION D-D'.slim



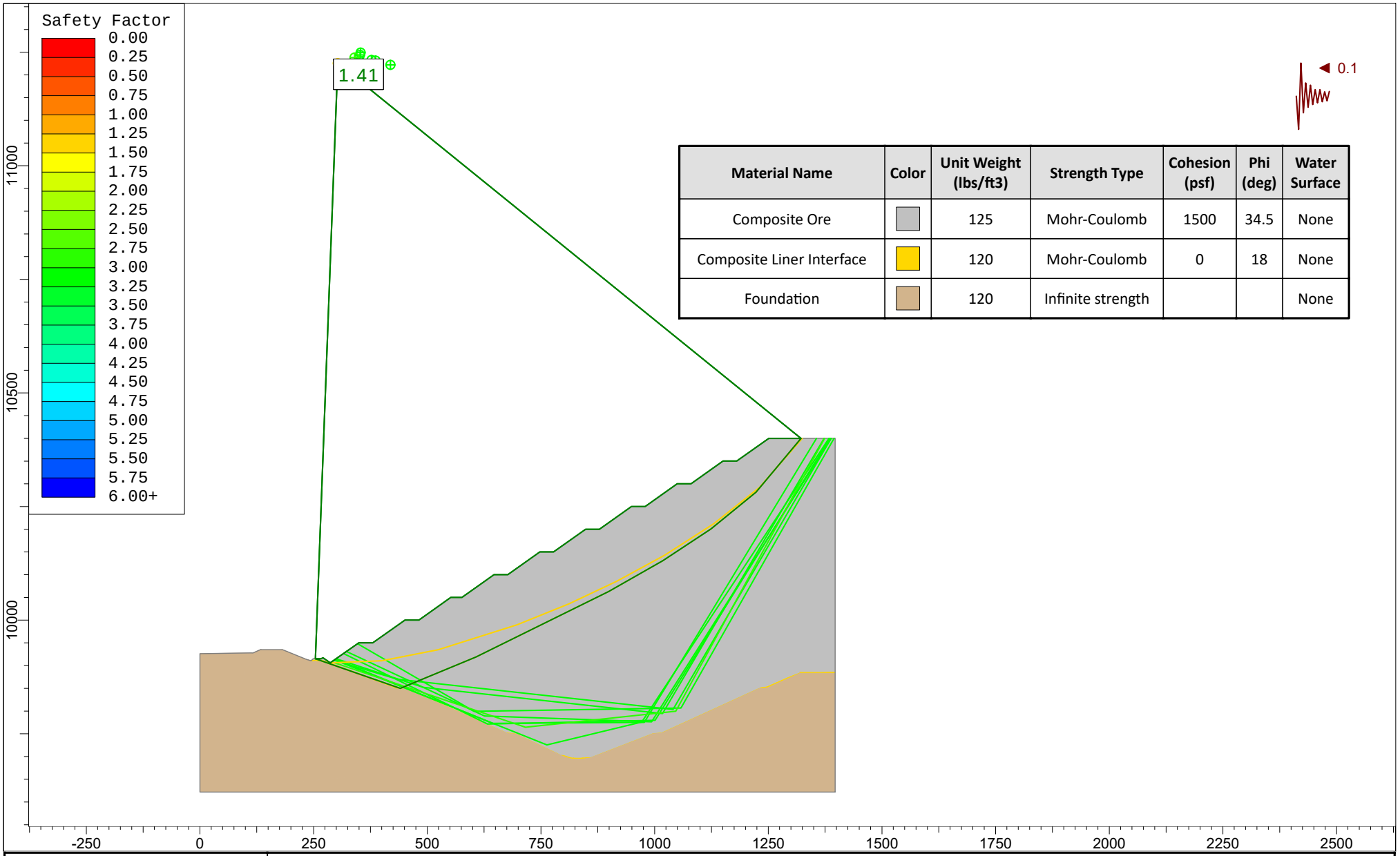
Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface
Composite Ore		125	Mohr-Coulomb	1500	34.5	None
Composite Liner Interface		120	Mohr-Coulomb	0	18	None
Foundation		120	Infinite strength			None

NewFields

SLIDEINTERPRET 7.017

Cripple Creek & Victor Gold Mine - VLF2 Stability Re-Evaluation

Analysis Description	Section D-D' - Static Block Failure		
Drawn By	NO	*Scale* 1:3500	*Company* Newmont
Date Printed	11/19/2018		*File Name* CROSS SECTION D-D'.slim



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface
Composite Ore		125	Mohr-Coulomb	1500	34.5	None
Composite Liner Interface		120	Mohr-Coulomb	0	18	None
Foundation		120	Infinite strength			None

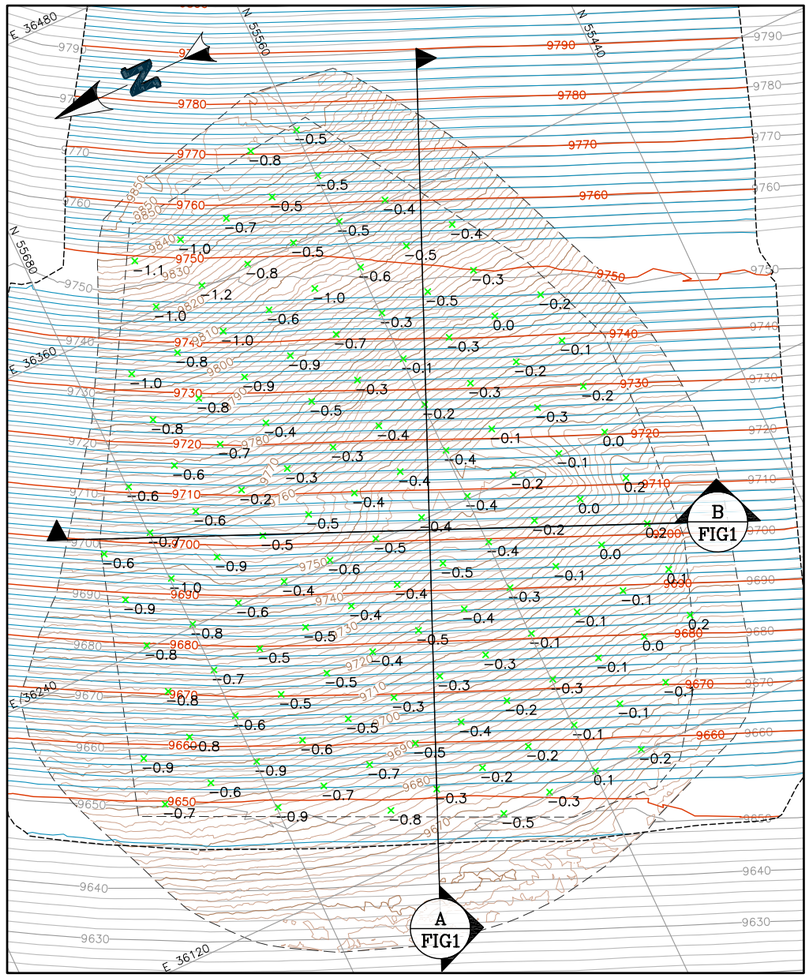
NewFields

SLIDEINTERPRET 7.017

Cripple Creek & Victor Gold Mine - VLF2 Stability Re-Evaluation

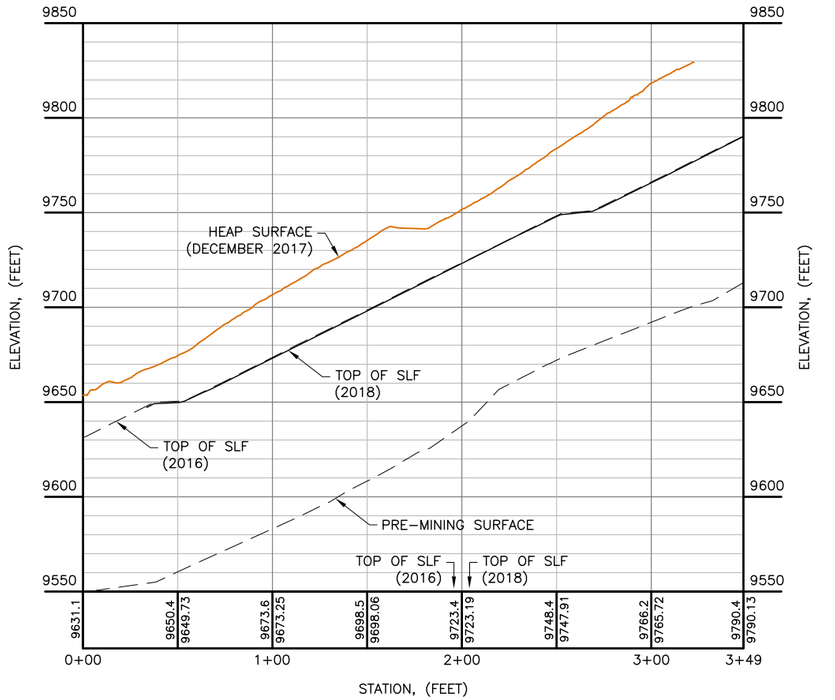
Analysis Description	Section D-D' - Pseudostatic Block Failure		
Drawn By	NO	*Scale* 1:3500	*Company* Newmont
Date Printed	11/19/2018		*File Name* CROSS SECTION D-D'.slim

ATTACHMENT 10



LEGEND:

- AS-BUILT TOP OF SLF (2016)
- TOP OF SLF (2018)
- TOP OF HEAP (DECEMBER 2017)
- −.10 SETTLEMENT IN FEET

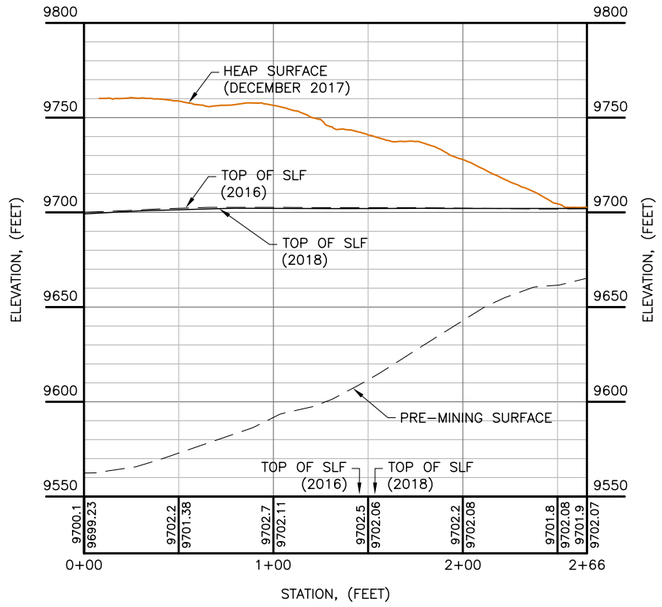


A FIG1 PERPENDICULAR TO SLOPE

0 40 80 FEET HORIZONTAL

0 40 80 FEET VERTICAL

NO EXAGGERATION



B FIG1 PARALLEL TO SLOPE

0 40 80 FEET HORIZONTAL

0 40 80 FEET VERTICAL

NO EXAGGERATION

NewFields

CLIENT CRIPPLE CREEK & VICTOR GOLD MINING COMPANY

PROJECT VLF2 PHASE 3

TITLE MILL PLATFORM SETTLEMENT AFTER ORE LOADING (2017)

FILENAME 0106.033.020F

FIGURE NO. 1

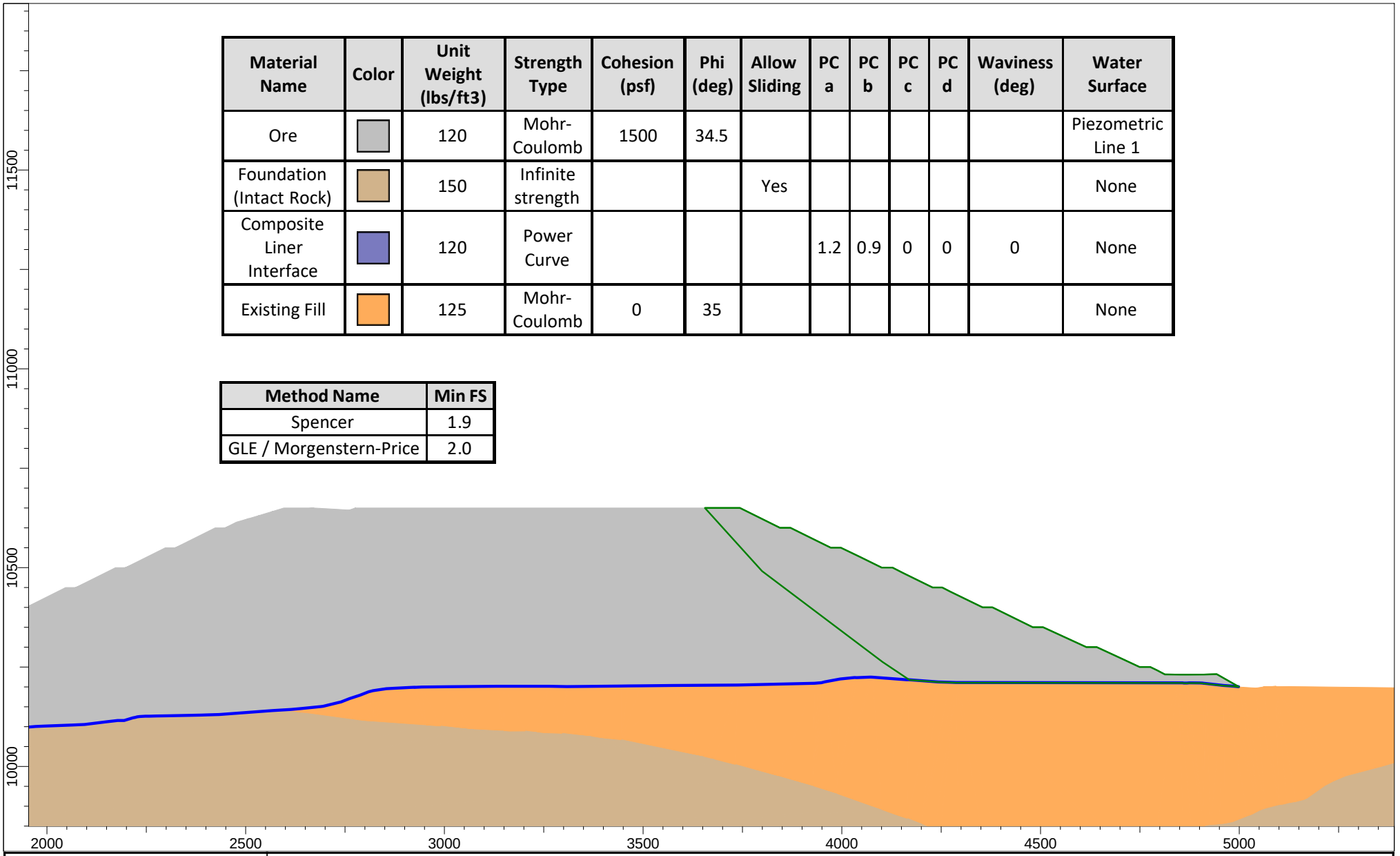
REVISION A

X:\Projects\0106.033 VLF2 Phase 3 Detailed Design\A-CAD\FIGS\0106.033.020F.dwg-11/10/2020 8:36 AM

ATTACHMENT 11

Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Allow Sliding	PC a	PC b	PC c	PC d	Waviness (deg)	Water Surface
Ore		120	Mohr-Coulomb	1500	34.5							Piezometric Line 1
Foundation (Intact Rock)		150	Infinite strength			Yes						None
Composite Liner Interface		120	Power Curve				1.2	0.9	0	0	0	None
Existing Fill		125	Mohr-Coulomb	0	35							None

Method Name	Min FS
Spencer	1.9
GLE / Morgenstern-Price	2.0



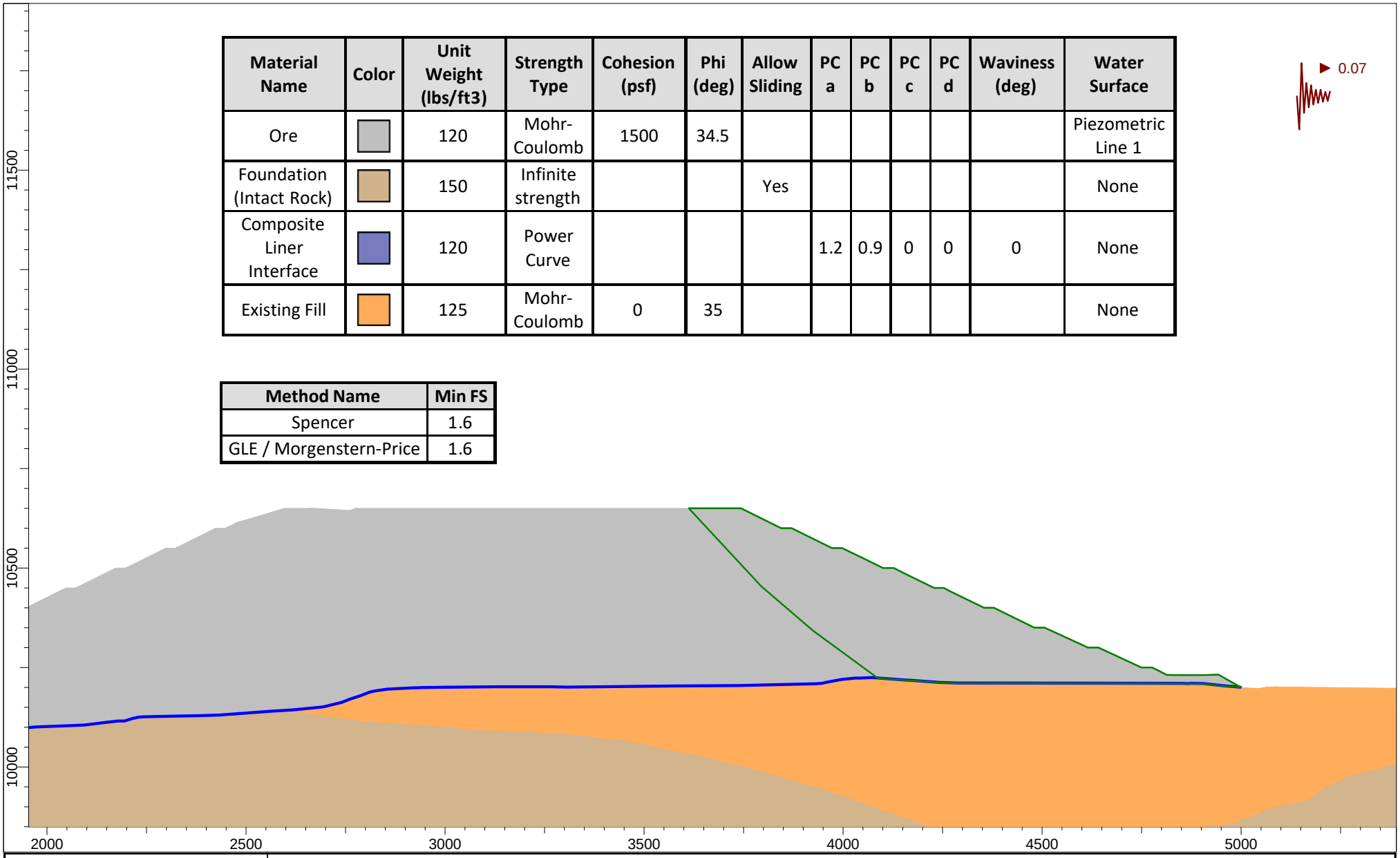
NewFields

SLIDEINTERPRET 9.009

Project:	**Phase 3 Valley Leach Facility Stability Analysis**		
Analysis Description	Section 1 South Leg- Static		
Drawn By	JJS	*Scale* 1:4000	*Company* Cripple Creek and Victor Mine
Date Printed	11/12/2020		*File Name* Section 1-South Leg_Pre_Mining_Updated.slmd

Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Allow Sliding	PC a	PC b	PC c	PC d	Waviness (deg)	Water Surface
Ore		120	Mohr-Coulomb	1500	34.5							Piezometric Line 1
Foundation (Intact Rock)		150	Infinite strength			Yes						None
Composite Liner Interface		120	Power Curve				1.2	0.9	0	0	0	None
Existing Fill		125	Mohr-Coulomb	0	35							None

Method Name	Min FS
Spencer	1.6
GLE / Morgenstern-Price	1.6



NewFields

SLIDEINTERPRET 9.009

Project: **Phase 3 Valley Leach Facility Stability Analysis**

Analysis Description: Section 1 South Leg- Pseudostatic

Drawn By: JJS | Scale: 1:4000 | Company: Cripple Creek and Victor Mine

Date Printed: 11/12/2020 | File Name: Section 1-South Leg_Pre_Mining_Updated.slmd

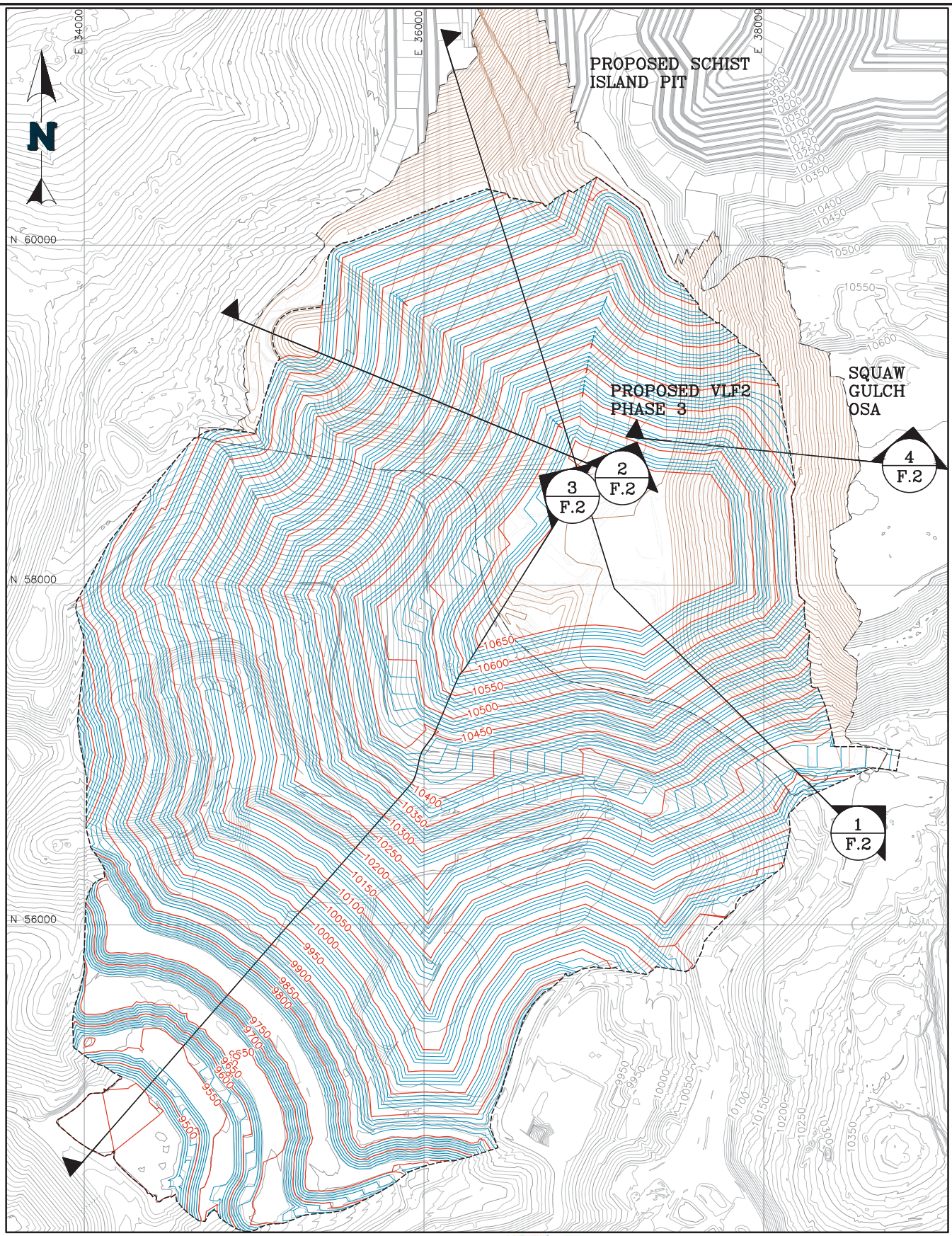
ATTACHMENT 12

APPENDIX F – Slope Stability Results

F.1 – Plan & Profile Figures

F.2 – Stability Graphics

APPENDIX F.1 – Plan & Profile Figures



LEGEND:

- EXISTING GROUND CONTOURS
- PROPOSED PHASE 3 STACKING CONTOURS
- PROPOSED PHASE 3 PAD CONTOURS

Reference:

NEWMONT PROVIDED THE 2017 FLYOVER DATA TO NEWFIELDS ON DEC. 14, 2017 IN THE FOLLOWING FILES: "MM173664_Topo_Plan-sheet1-final.DWG" and "MM173664_Topo_Plan-sheet2-final.DWG"

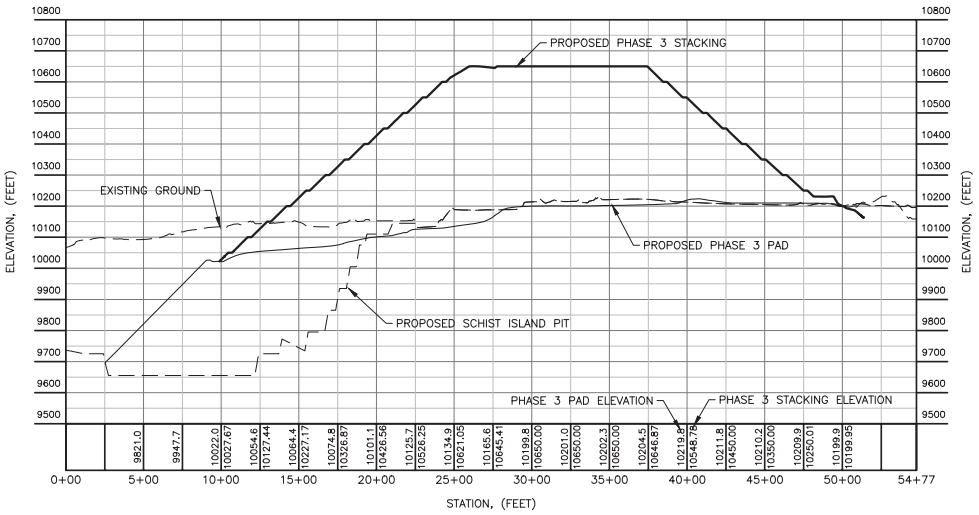
Jay T. Jaramay Moore
7-24-2020

NewFields

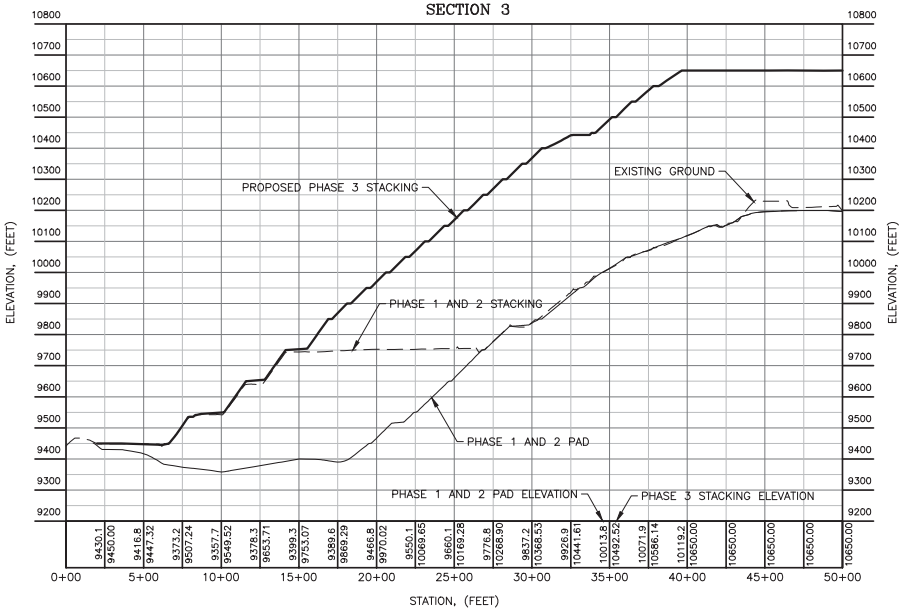
CLIENT	CRIPPLE CREEK & VICTOR GOLD MINING COMPANY
PROJECT	VLF2 PHASE 3
TITLE	STABILITY SECTIONS PLAN VIEW
FILENAME	0106.033.017F
FIGURE NO.	F.1
REVISION	B

P:\Projects\0106.033 VLF2 Phase 3 Detailed Design\A-CAD\FIGS\0106.033.017F.dwg-7/20/2020 3:58 PM

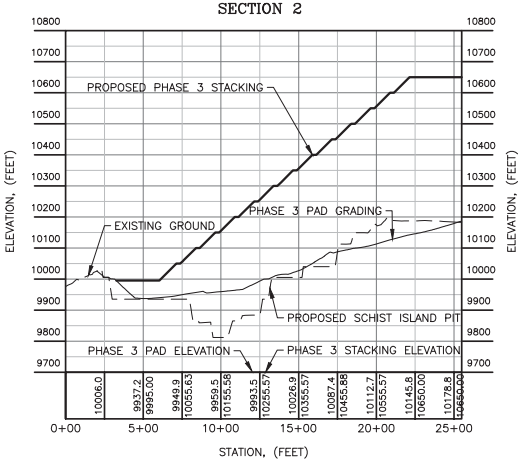
SECTION 1



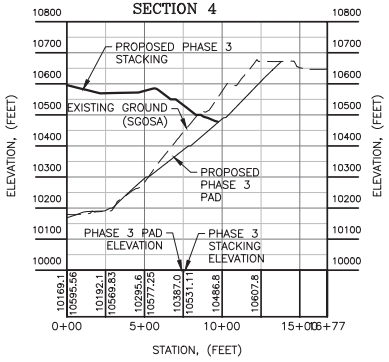
SECTION 3



SECTION 2



SECTION 4



Reference:

NEWMONT PROVIDED THE 2017 FLYOVER DATA TO NEWFIELDS ON DEC. 14, 2017 IN THE FOLLOWING FILES: "MM173664_Topo_Plan-sheet1-final.DWG" and "MM173664_Topo_Plan-sheet2-final.DWG"

0 400 800 FEET
HORIZONTAL

0 200 400 FEET
VERTICAL

2X EXAGGERATION

NewFields

CLIENT CRIPPLE CREEK & VICTOR GOLD MINING COMPANY

PROJECT SQUAW GULCH VLF PHASE 3

TITLE STABILITY SECTIONS

FILENAME 0106.033.017F

FIGURE NO. F.2

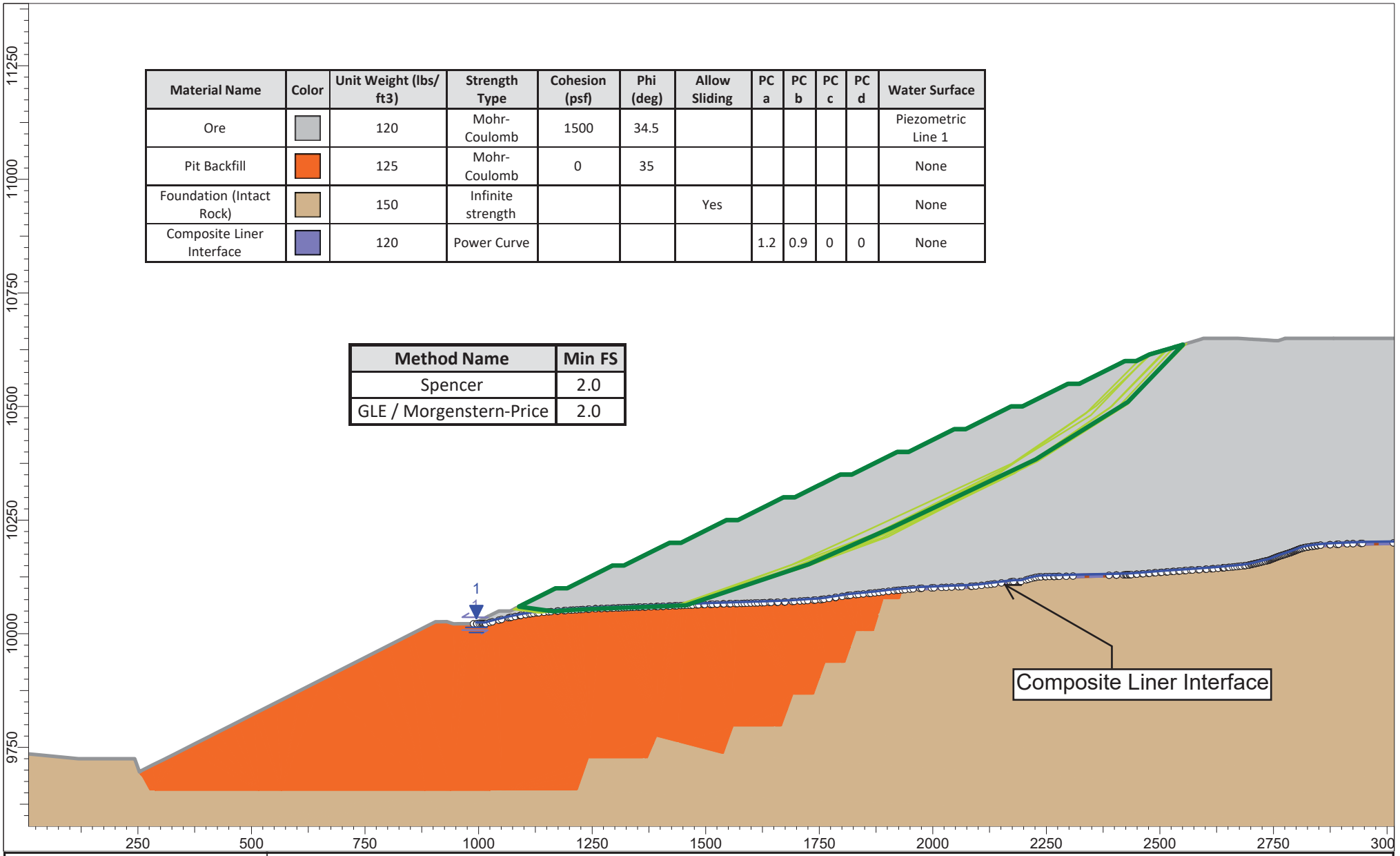
REVISION B

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APPENDIX F.2 – Stability Graphics

Material Name	Color	Unit Weight (lbs/ ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Allow Sliding	PC a	PC b	PC c	PC d	Water Surface
Ore		120	Mohr-Coulomb	1500	34.5						Piezometric Line 1
Pit Backfill		125	Mohr-Coulomb	0	35						None
Foundation (Intact Rock)		150	Infinite strength			Yes					None
Composite Liner Interface		120	Power Curve				1.2	0.9	0	0	None

Method Name	Min FS
Spencer	2.0
GLE / Morgenstern-Price	2.0



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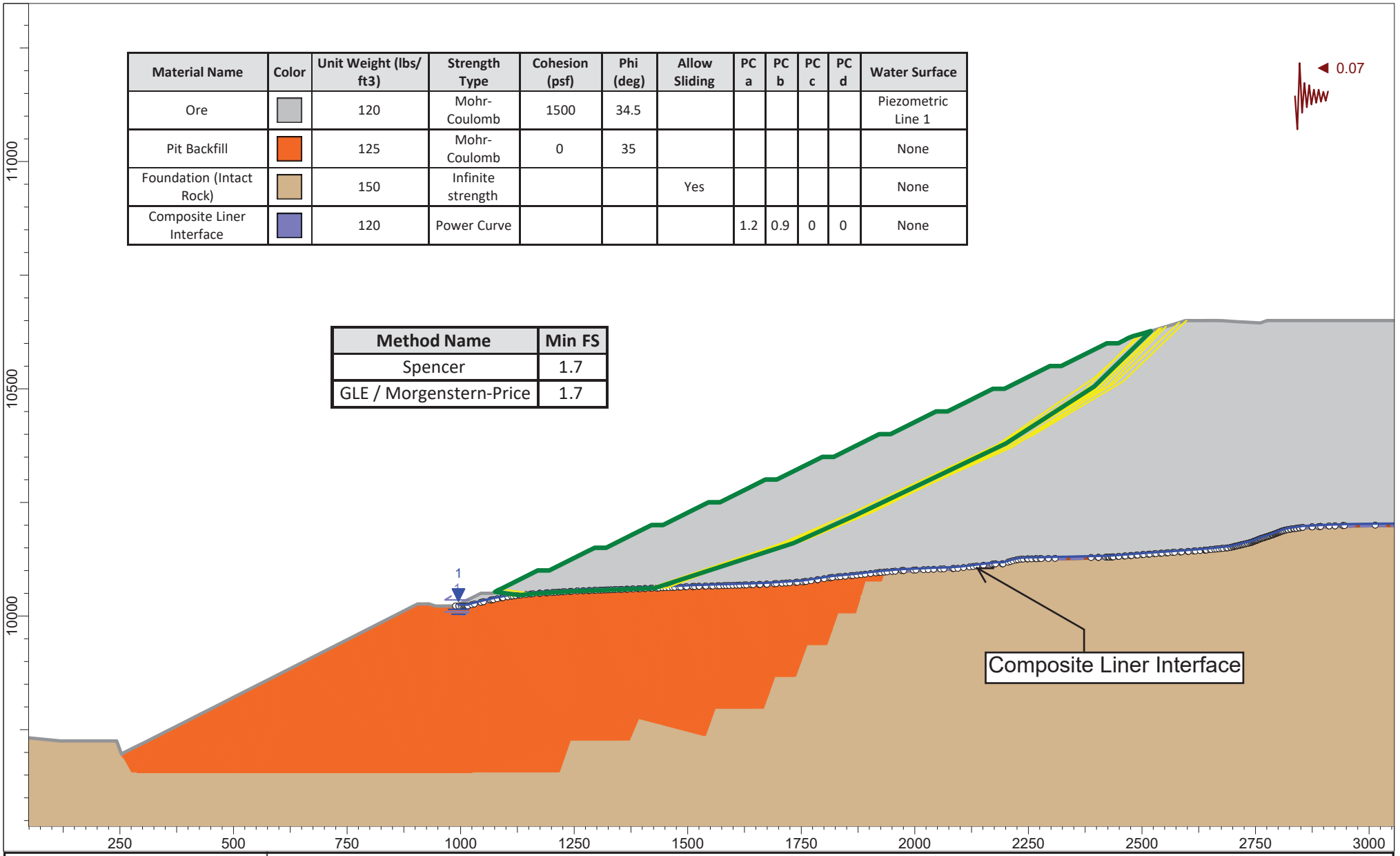
SLIDEINTERPRET 9.010

Phase 3 Valley Leach Facility Stability Analysis

Analysis Description	Section 1 - Static				
Drawn By	JJS	*Scale*	1:3500	*Company*	Cripple Creek and Victor Mine
Date Printed	11/30/2020			*File Name*	Section 1.slmd

Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Allow Sliding	PC a	PC b	PC c	PC d	Water Surface
Ore		120	Mohr-Coulomb	1500	34.5						Piezometric Line 1
Pit Backfill		125	Mohr-Coulomb	0	35						None
Foundation (Intact Rock)		150	Infinite strength			Yes					None
Composite Liner Interface		120	Power Curve				1.2	0.9	0	0	None

Method Name	Min FS
Spencer	1.7
GLE / Morgenstern-Price	1.7



NewFields

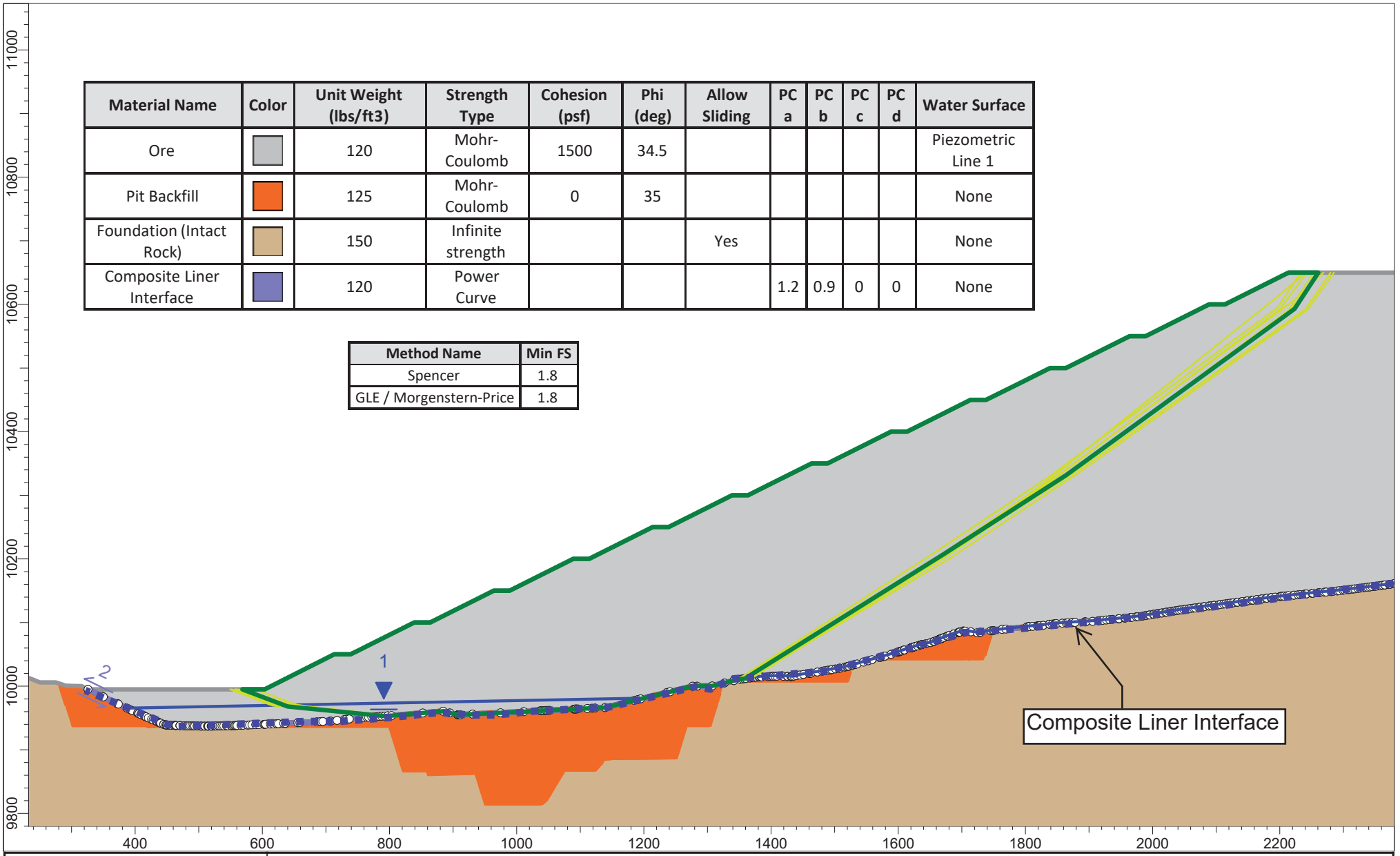
SLIDEINTERPRET 9.010

Phase 3 Valley Leach Facility Stability Analysis

Analysis Description	Section 1 - Pseudostatic				
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Date Printed	11/30/2020			*File Name*	Section 1.slmd

Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Allow Sliding	PC a	PC b	PC c	PC d	Water Surface
Ore		120	Mohr-Coulomb	1500	34.5						Piezometric Line 1
Pit Backfill		125	Mohr-Coulomb	0	35						None
Foundation (Intact Rock)		150	Infinite strength			Yes					None
Composite Liner Interface		120	Power Curve				1.2	0.9	0	0	None

Method Name	Min FS
Spencer	1.8
GLE / Morgenstern-Price	1.8



NewFields

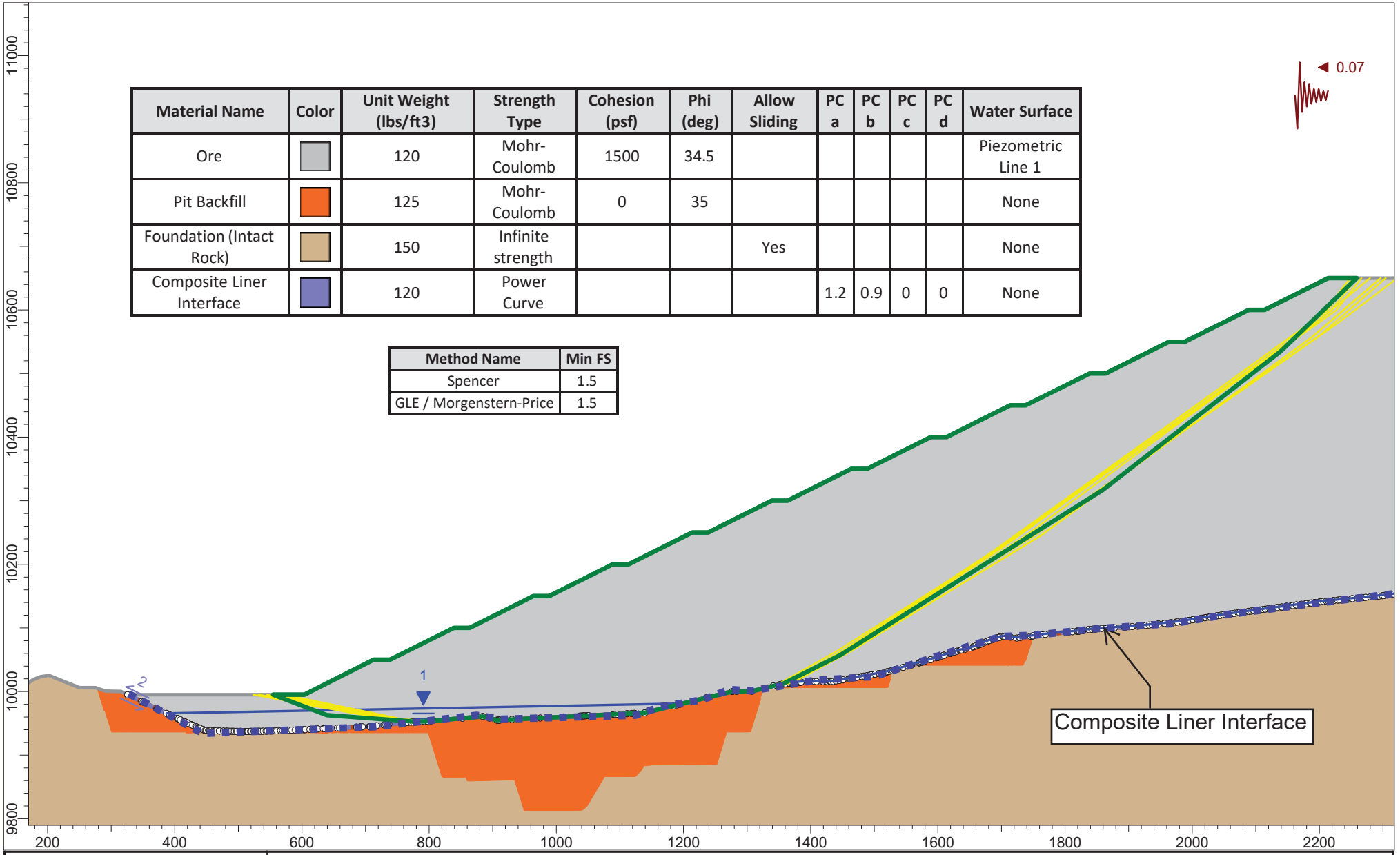
SLIDEINTERPRET 9.008

Phase 3 Valley Leach Facility Stability Analysis

Analysis Description	Section 2 - Static				
Drawn By	JJS	Scale	1:2500	Company	Cripple Creek and Victor Mine
Date Printed	7/22/2020			File Name	Section 2.slmd

Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Allow Sliding	PC a	PC b	PC c	PC d	Water Surface
Ore		120	Mohr-Coulomb	1500	34.5						Piezometric Line 1
Pit Backfill		125	Mohr-Coulomb	0	35						None
Foundation (Intact Rock)		150	Infinite strength			Yes					None
Composite Liner Interface		120	Power Curve				1.2	0.9	0	0	None

Method Name	Min FS
Spencer	1.5
GLE / Morgenstern-Price	1.5



NewFields

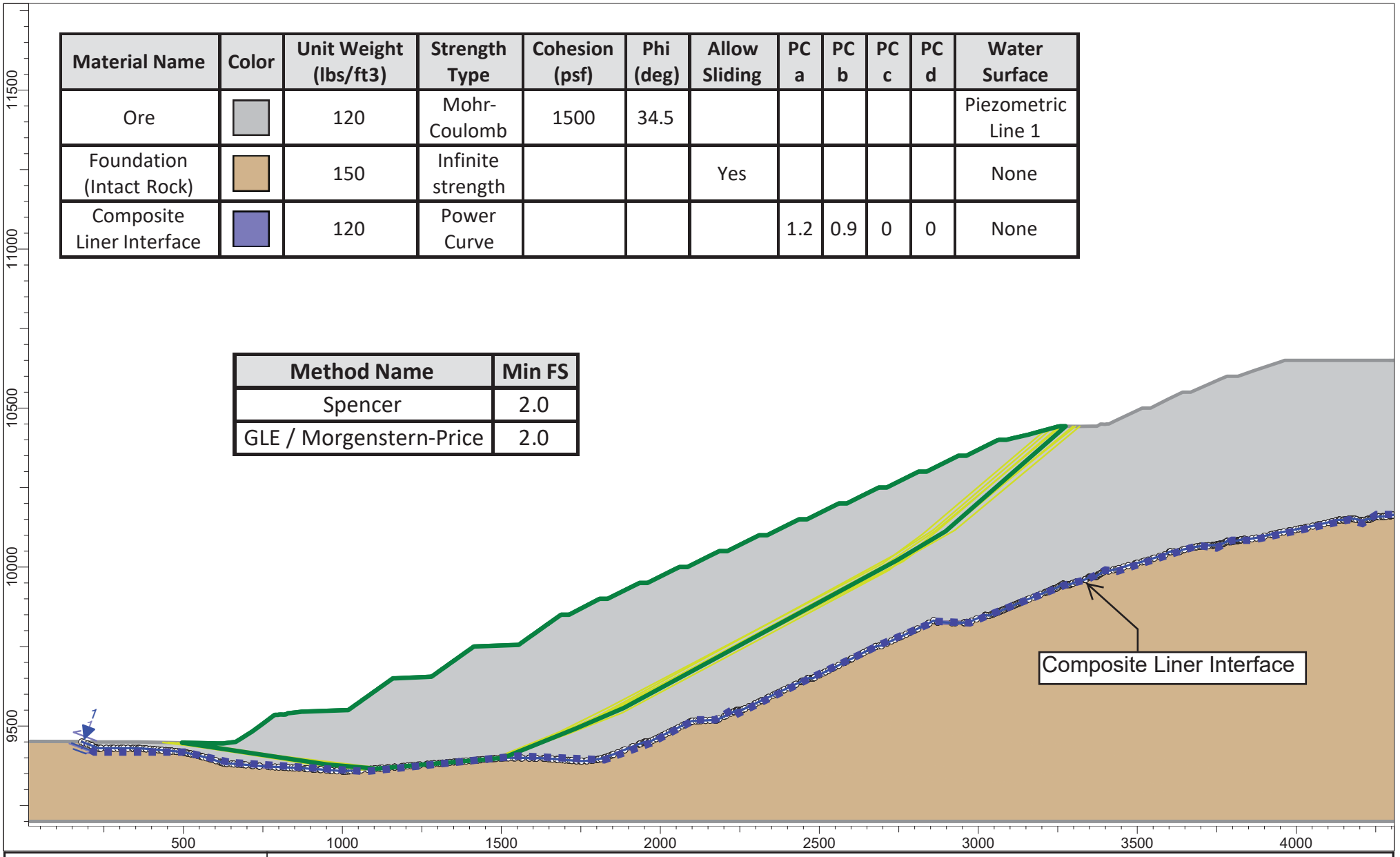
SLIDEINTERPRET 9.008

Phase 3 Valley Leach Facility Stability Analysis

Analysis Description	Section 2 - Pseudostatic		
Drawn By	JJS	Scale	1:2500
Company	Cripple Creek and Victor Mine		
Date Printed	7/22/2020	File Name	Section 2.slmd

Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Allow Sliding	PC a	PC b	PC c	PC d	Water Surface
Ore		120	Mohr-Coulomb	1500	34.5						Piezometric Line 1
Foundation (Intact Rock)		150	Infinite strength			Yes					None
Composite Liner Interface		120	Power Curve				1.2	0.9	0	0	None

Method Name	Min FS
Spencer	2.0
GLE / Morgenstern-Price	2.0



NewFields

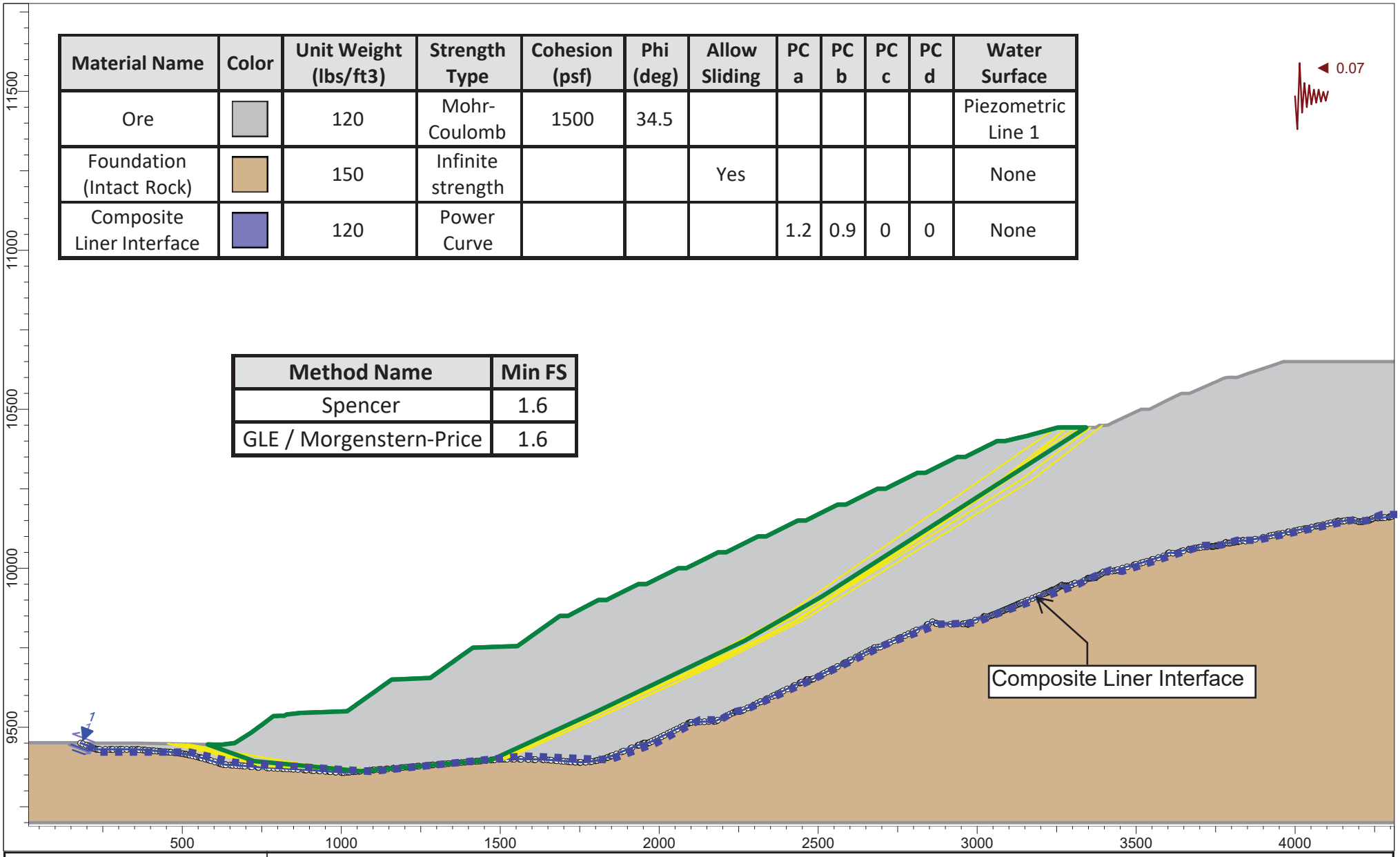
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Phase 3 Valley Leach Facility Stability Analysis

Analysis Description	Section 3 - Static				
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Date Printed	7/22/2020			File Name	Section 3.slmd

Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Allow Sliding	PC a	PC b	PC c	PC d	Water Surface
Ore		120	Mohr-Coulomb	1500	34.5						Piezometric Line 1
Foundation (Intact Rock)		150	Infinite strength			Yes					None
Composite Liner Interface		120	Power Curve				1.2	0.9	0	0	None

Method Name	Min FS
Spencer	1.6
GLE / Morgenstern-Price	1.6



NewFields

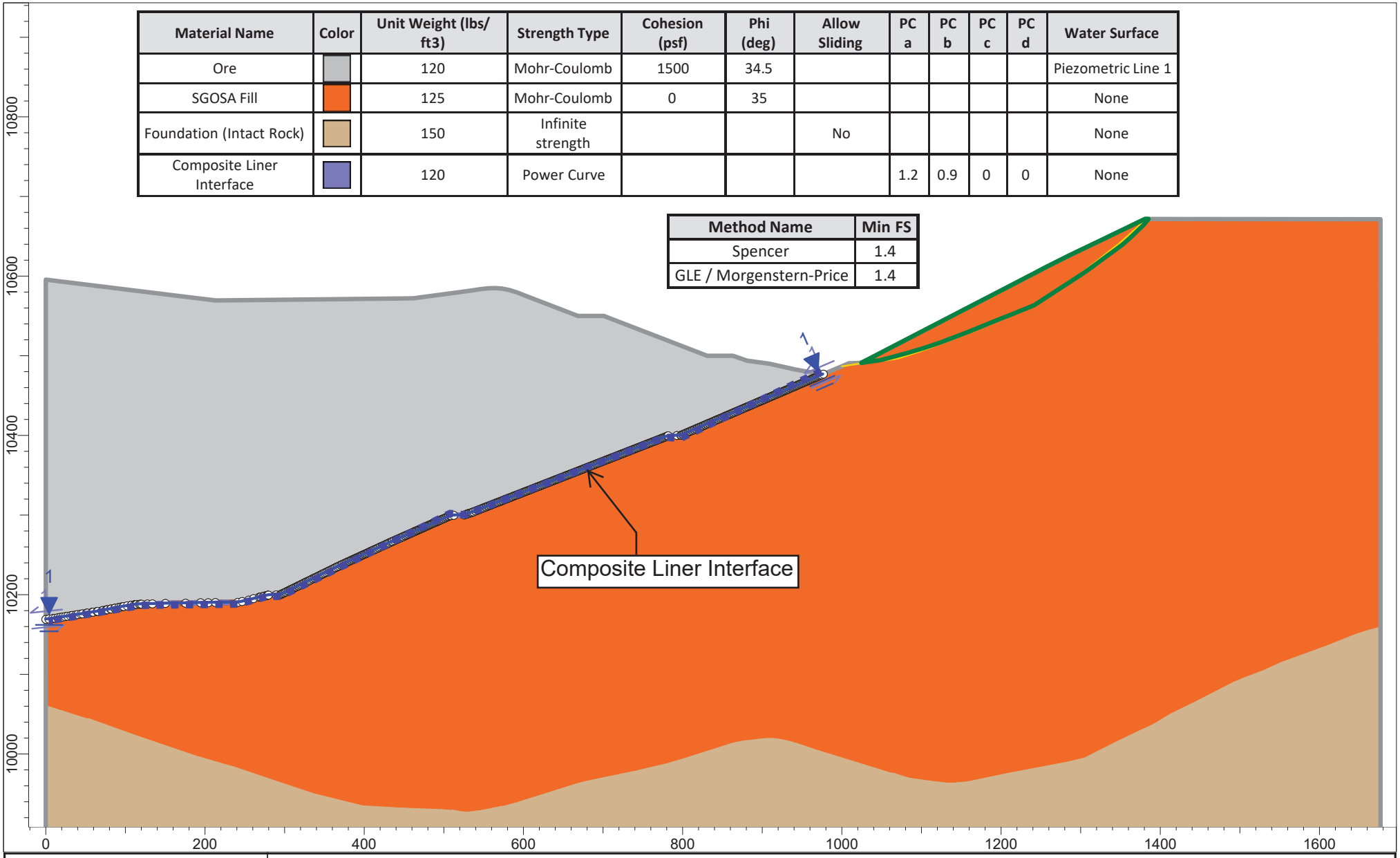
Phase 3 Valley Leach Facility Stability Analysis

Analysis Description	Section 3 - Pseudostatic				
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Date Printed	7/22/2020			File Name	Section 3.slmd

SLIDEINTERPRET 9.008

Material Name	Color	Unit Weight (lbs/ ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Allow Sliding	PC a	PC b	PC c	PC d	Water Surface
Ore		120	Mohr-Coulomb	1500	34.5						Piezometric Line 1
SGOSA Fill		125	Mohr-Coulomb	0	35						None
Foundation (Intact Rock)		150	Infinite strength			No					None
Composite Liner Interface		120	Power Curve				1.2	0.9	0	0	None

Method Name	Min FS
Spencer	1.4
GLE / Morgenstern-Price	1.4



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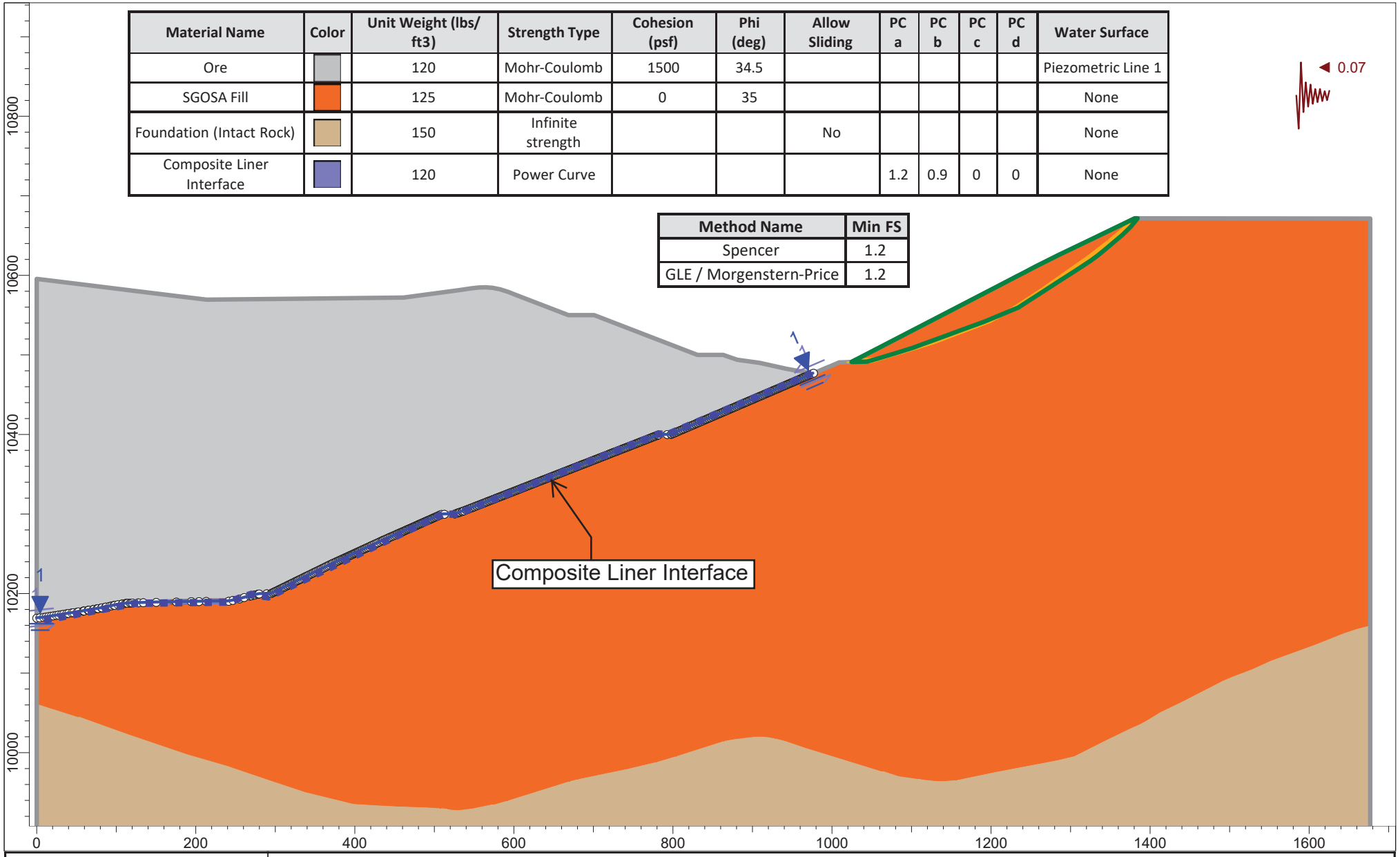
SLIDEINTERPRET 9.008

SGOSA Stability Analysis

Analysis Description	Section 4 - With Ore - Static - Local Failure				
Drawn By	JJS	*Scale*	1:2000	*Company*	Cripple Creek and Victor Mine
Date Printed	7/15/2020			*File Name*	SECTION 5 STABILITY.slmd

Material Name	Color	Unit Weight (lbs/ ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Allow Sliding	PC a	PC b	PC c	PC d	Water Surface
Ore		120	Mohr-Coulomb	1500	34.5						Piezometric Line 1
SGOSA Fill		125	Mohr-Coulomb	0	35						None
Foundation (Intact Rock)		150	Infinite strength			No					None
Composite Liner Interface		120	Power Curve				1.2	0.9	0	0	None

Method Name	Min FS
Spencer	1.2
GLE / Morgenstern-Price	1.2



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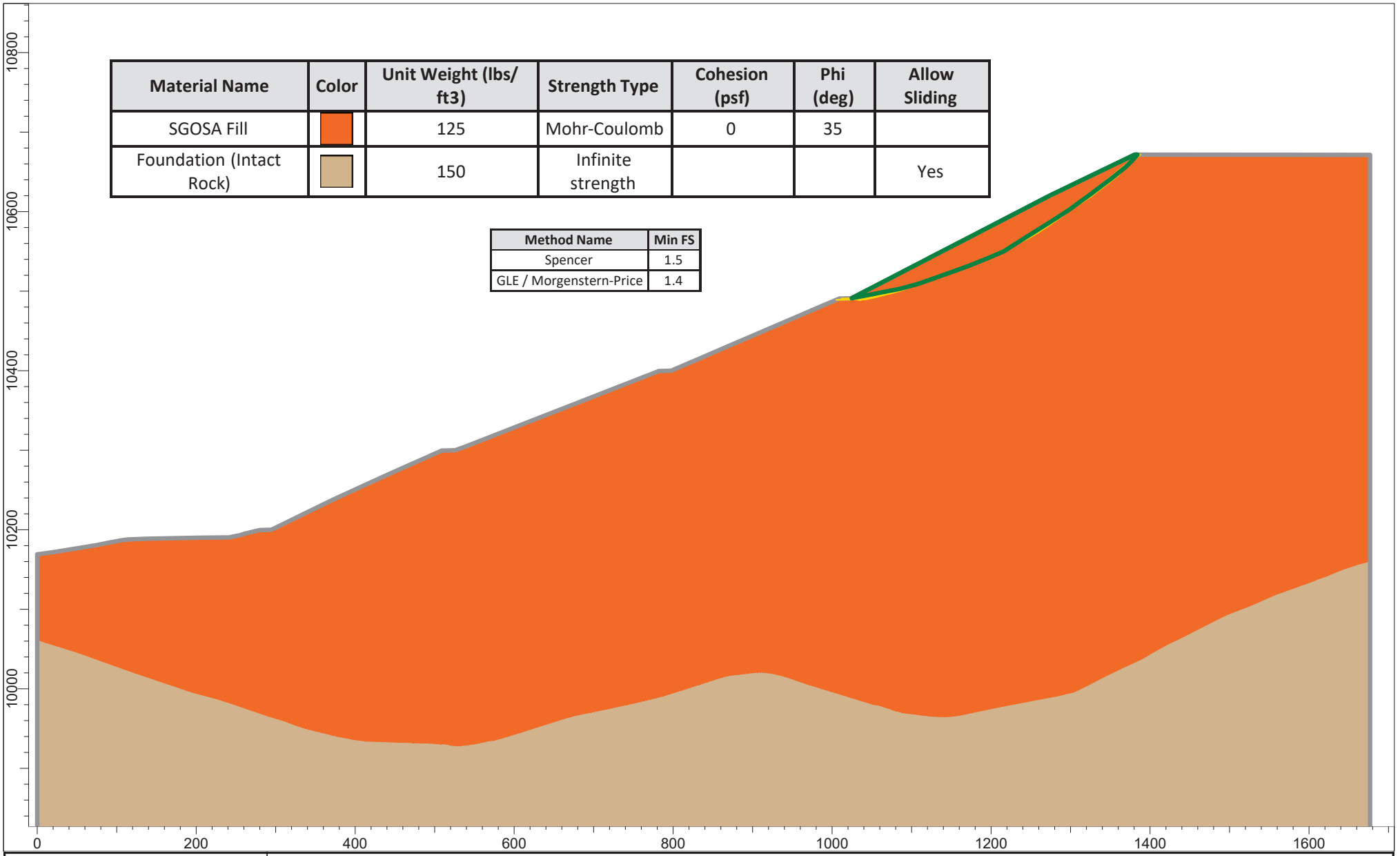
SLIDEINTERPRET 9.008

SGOSA Stability Analysis

Analysis Description	Section 4 - With Ore - Pseudostatic - Local Failure				
Drawn By	JJS	*Scale*	1:2000	*Company*	Cripple Creek and Victor Mine
Date Printed	7/15/2020			*File Name*	SECTION 5 STABILITY.slmd

Material Name	Color	Unit Weight (lbs/ ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Allow Sliding
SGOSA Fill		125	Mohr-Coulomb	0	35	
Foundation (Intact Rock)		150	Infinite strength			Yes

Method Name	Min FS
Spencer	1.5
GLE / Morgenstern-Price	1.4



NewFields

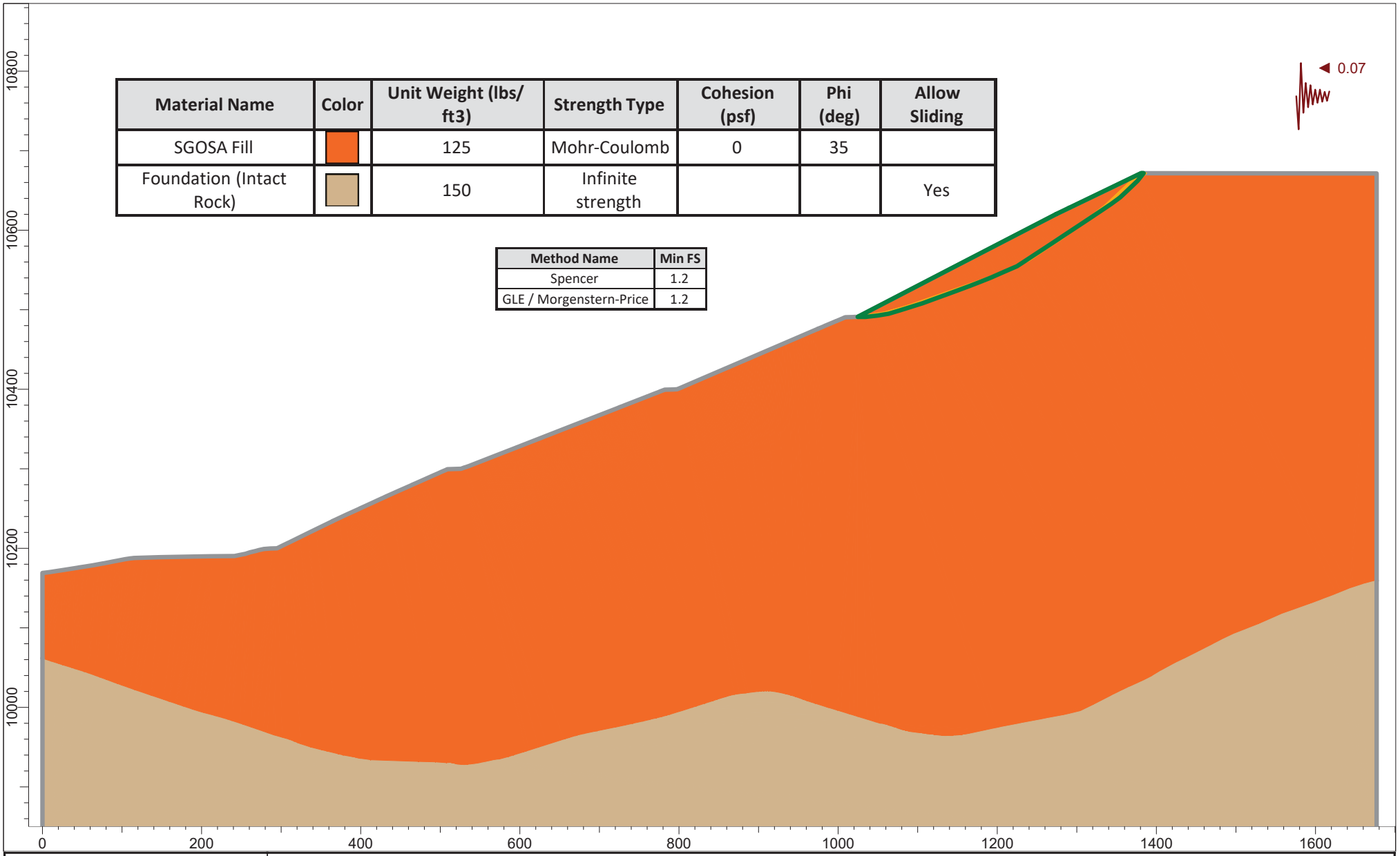
SLIDEINTERPRET 9.008

SGOSA Stability Analysis

Analysis Description	Section 4 - Without Ore - Static - Local Failure				
Drawn By	JJS	*Scale*	1:2000	*Company*	Cripple Creek and Victor Mine
Date Printed	7/16/2020			*File Name*	Section 5 stability without ore.slmd

Material Name	Color	Unit Weight (lbs/ ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Allow Sliding
SGOSA Fill		125	Mohr-Coulomb	0	35	
Foundation (Intact Rock)		150	Infinite strength			Yes

Method Name	Min FS
Spencer	1.2
GLE / Morgenstern-Price	1.2



NewFields

SLIDEINTERPRET 9.008

SGOSA Stability Analysis

Analysis Description	Section 4 - Without Ore - Pseudostatic - Local Failure				
Drawn By	JJS	Scale	1:2000	Company	Cripple Creek and Victor Mine
Date Printed	7/16/2020			File Name	Section 5 stability without ore.slmd

ATTACHMENT 13

Newmont™

Rockfill Construction Projects Summary

Projects Highlighted:
- Yanacocha Tailings Storage Facility
- Peñasquito Tailings Storage Facility
- Twin Creeks Fuel Island

Yanacocha La Quinua Tailings Facilities



La Quinua Leach Pad

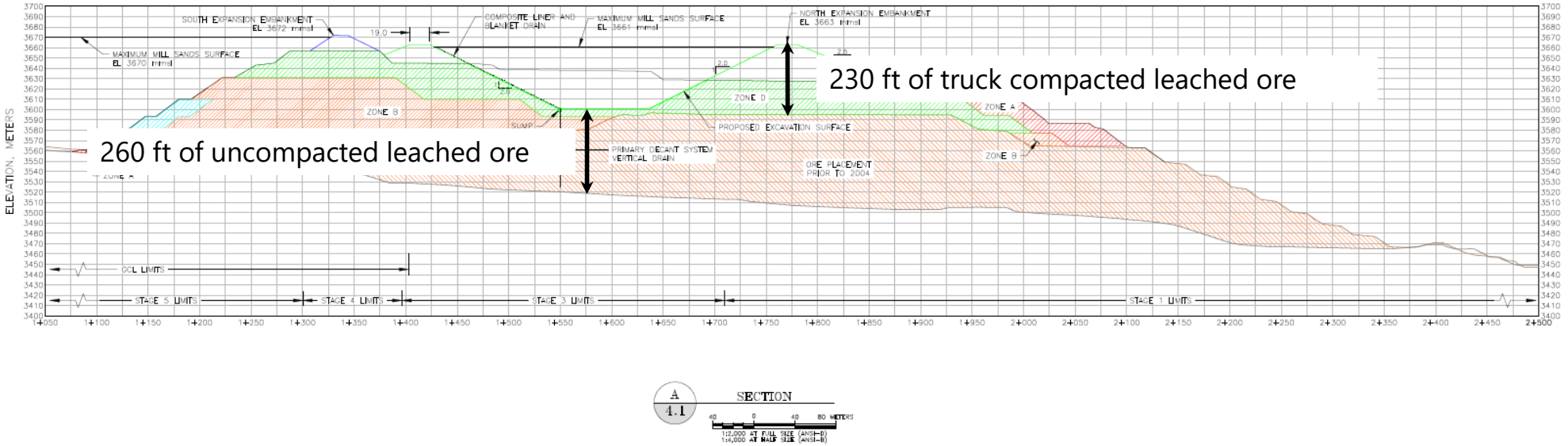
La Quinua North Tailings Storage Facility

La Quinua South Tailings Storage Facility

La Quinua Leach Pad

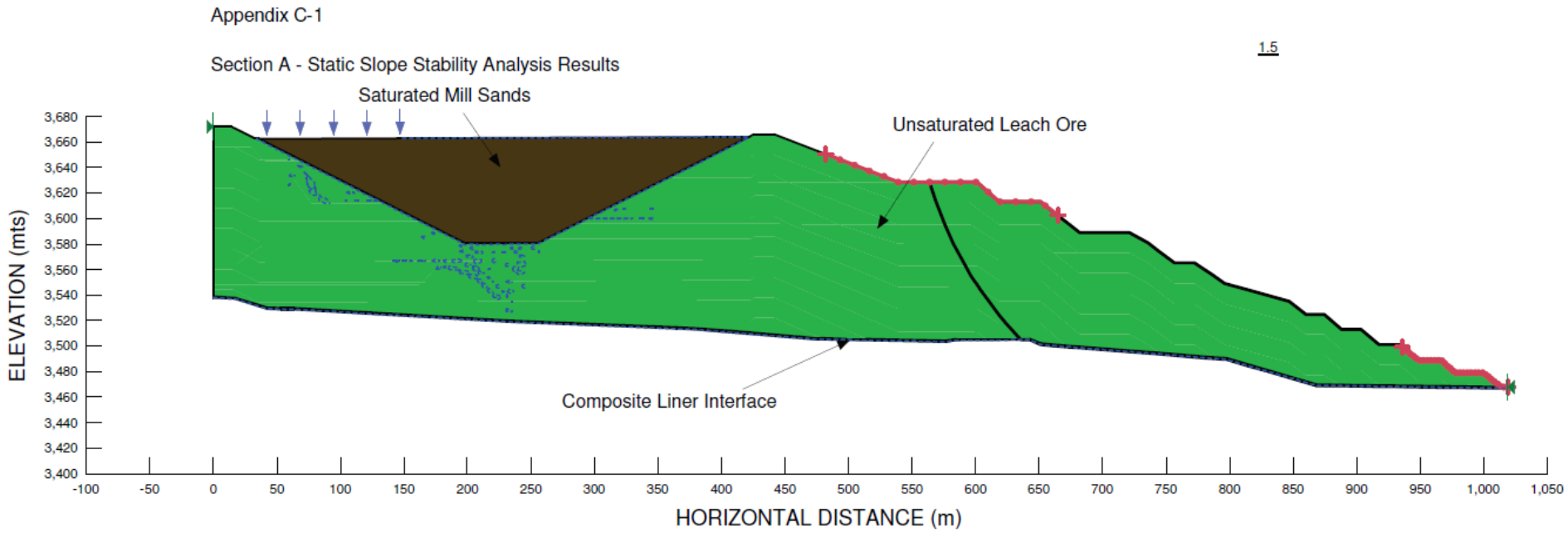
- Constructed in the late 1990's to leach oxide run-of-mine (e.g. no crushing) ore from the mine. Ore placed in leach pad by end dumping. Ore particle size ranging from clay to boulders (+3.5 feet).
- Leach pad converted to store mill tailings in 2008 (LQ South TSF). The TSF was constructed by excavating a basin in the leached ore and constructing containment embankments on the surface. The facility is fully lined with a geomembrane. The basin is sited on +260 feet of uncompacted leached. The containment embankments were constructed using leached ore compacted by haul trucks to a nominal height of 230 ft above the leach surface (see typical cross-section).
- The LQ North TSF was constructed in 2018 using the same approach as the LQ South TSF. The LQ North TSF is sited on ~200 ft of uncompacted leached ore.
- Both have been in constant operations without any issues.

LQ South TSF Cross-Section



A 4.1 SECTION

LQ North TSF Cross-Section



Key Construction Points

- Thick embankment fills placed by mining fleet.
- All fill was placed by method specification (e.g. number of passes of loaded haul trucks).
- Method specification controlled fills on moisture content and density.
- Original maximum lift was 2 m (6.5 ft) but was increased to 5 m (16 ft) to 8 m (26 ft), depending on material type (finer grain materials – smaller lift). Fill material consisting of leached ore and waste rock.
- Upper sections of fill (last several meters) were constructed using smaller contractor fleet compacting fill in 1 m (3.3 ft) lifts with vibratory roller compactor.
- Since operation, settlement and seepage has been monitored. Settlements have been within the values predicted by designer. No seepage has been noted nor measured.



Test Fill for Method Specification compaction

TSF Deformation Analyses

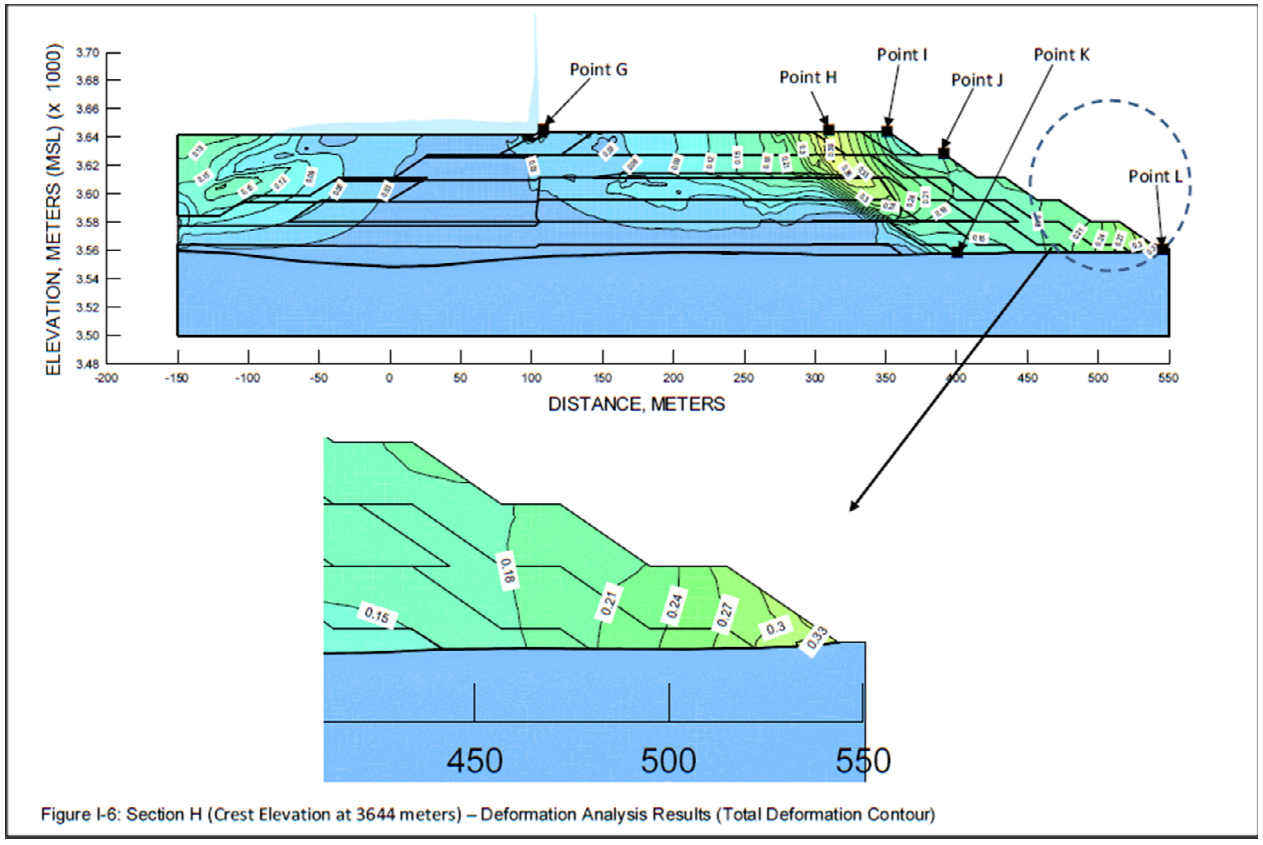


Figure I-6: Section H (Crest Elevation at 3644 meters) – Deformation Analysis Results (Total Deformation Contour)

Example of deformation analyses conducted by designer.

Peñasquito Tailings Facility

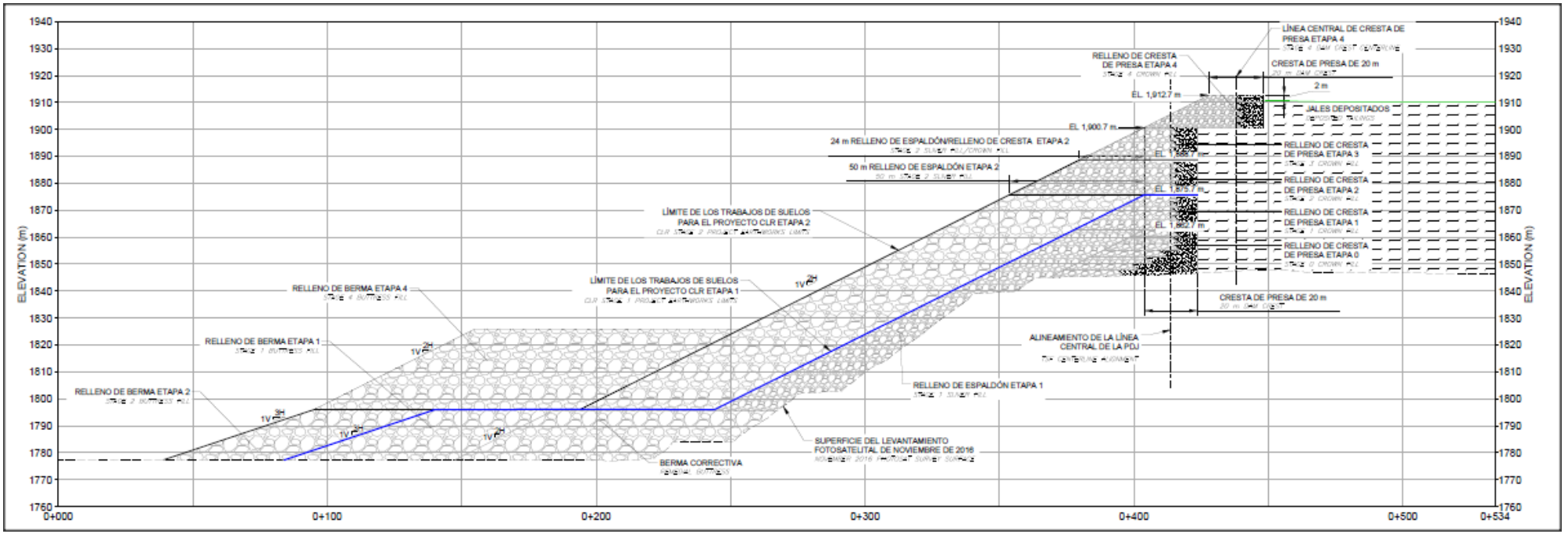


Lined TSF with a 130 m (430 ft) high rockfill embankment.

Large-fleet construction: Minus 600 mm (24-inch) rockfill placed in 8m (26 ft) lifts.

Facility has been in operation since 2010. No issues with construction or operation.

TSF Embankment Cross-Section



Test Fill and Construction Photographs







Key Construction Notes

- Facility is constructed on a soft foundation.
- Continuous monitoring of settlement and pore pressures conducted while thick fills are placed.
- Rockfill is placed by haul trucks using method specification on moisture and density.
- Thick rockfills placed in nominal 8 m lifts with haul trucks. Thinner lifts place by contractor using smaller equipment.

Twin Creeks – Pit Backfill



Twin Creeks Mine – construction of 800 ft of end-dumped backfill of run-of-mine waste rock, no compaction other than truck trafficking on platform.

Construction of a lined-fuel station on backfill platform. Completed in 2019.