

September 30, 2019

Robert Salisbury
Senior Planner
Department of Planning and Development
County of Santa Clara
70 West Hedding Street
San Jose, CA 95110

Re: Permanente Quarry, Mine ID # 91-43-0004
Application for Reclamation Plan Amendment (PLN 19-0106)
Response to July 22, 2019 Incompleteness Determination

Dear Mr. Salisbury:

On behalf of Lehigh Southwest Cement Company (“Lehigh”), this letter responds to Santa Clara County’s July 22, 2019 letter which informed Lehigh that its May 2019 Application for a Reclamation Plan Amendment (“Application”) is incomplete.

Lehigh believes that its May 2019 Application satisfied all of the County’s application requirements, was legally “complete,” and that the County has not identified a valid basis for rejecting the Application. Nonetheless, Lehigh desires to work cooperatively with the County, under a full reservation of rights. Accordingly, Lehigh has worked since receiving the County’s letter to gather the substantial geotechnical information and data requested by the County, along with other data and studies the County has requested, which has delayed an expeditious response to the County. These materials are attached to supplement the Application on file. The following summarizes Lehigh’s responses to the County’s requests and makes other clarifications and corrections where appropriate.

I. Project Description

The County’s summary of the Project Description on page 2 of its letter is generally accurate with two important exceptions.

First, Section I.B of the letter states that Lehigh intends to import a total of 33 million cubic yards of clean fill. This overstates the planned volume of fill imports. The Application proposes to import approximately 20.4 million cubic yards of clean fill for placement in the North Quarry, with 14.1 million cubic yards of backfill generated onsite. This is described by the Amended Reclamation Plan in Appendix G-3, *North Quarry Backfill Geotechnical Evaluation*.

Second, Section I.G incorrectly states that the Plant Quarry Road will be reclaimed after the conclusion of mining. Lehigh plans to maintain this road for general-purpose access to the northwestern part of the property, which is otherwise inaccessible, as shown in Figure 6 of the Amended Reclamation Plan. Retaining a small number of general-purpose roads is consistent with open-space end uses. (See Code of Regs., tit. 14, § 3700(a)(2).)

II. Required Supplemental Information

Below, we have addressed each item of supplemental information which the County states is required in order to process the Application. For reference, we have set forth the salient portions of the County's requests in italics.

- A. ***Diagram showing extent of proposed mining within the 1972 Ridgeline Protection Easement.*** ...Please submit a diagram or diagrams which clearly shows the limits of the 1972 Easement, including the areas within the 1972 Easement where mining activities are forbidden, and the extent of proposed mining activities within or in close proximity to those areas.

The County's request does not identify any specific application requirement from SMARA or local ordinance that Lehigh failed to satisfy. In this regard, Lehigh ensured that all necessary SMARA elements, including those listed in Public Resources Code section 2772 and section 2773, were present. In particular, the Application contained several diagrams and simulations showing the 1972 easement relative to planned mining. (See Project Description, Aesthetics Technical Study and Ridgeline Protection Easement Analysis.)

Thus, while we appreciate that the County may find additional diagrams to be helpful, the County's comment does not raise any question of incompleteness. Nonetheless, Lehigh will submit additional diagrams as requested. **Attachment 1** to this letter includes additional figures, cross-sections and simulations that show the location of the 1972 easement and where mining and regrading would occur in proximity to the easement.

- B. ***Revisions to Permanente Creek Restoration Area ("PCRA") project timeline.*** ...Please clarify how the restoration time frames in the Application comply with the Consent Decree between the Sierra Club and Lehigh Southwest Cement Company and Hanson Permanente Cement, Inc.

This request concerns the Application's relationship to a separate agreement reached between Lehigh and the Sierra Club. Lehigh appreciates the County's desire for clarification; however, it is not a valid basis for determining the Application to be incomplete. Nonetheless, Lehigh responds as follows below.

The timing of restoration under the Consent Decree¹ depends on the completion of a process. The process anticipates that the County will prepare and certify a CEQA document for

¹ Specifically, the February 2016 Amended Consent Decree between Lehigh and the Sierra Club.

creek restoration, and subsequently, that Lehigh will secure resource agency approvals. Once Lehigh receives the agency approvals, the Consent Decree allows Lehigh five consecutive construction seasons for the restoration work to occur. Altogether the process will take several years but is not expected to take longer than 20 years.

The Application does not change the timing of creek restoration. It simply accommodates the timing likely to result through implementation of the process specified in the Consent Decree. Reclamation will proceed in three phases (I-III) as described in Table 12 in the Amended Reclamation Plan. Phase I spans 0-20 years from approval. Creek restoration was listed in Phase I to reflect the timing likely to result from implementing the Consent Decree, not to establish a different restoration schedule.

C. *Rock Plant Reserve Area Mining and Access Design.* ...Please provide an overview of [the Rock Plant Reserve area] on one sheet at a scale sufficient to show details, and include a separate sheet showing how this area will be accessed, along with details showing how this area and the access road will be reclaimed.

The level of detail in the May 2019 Application met SMARA's requirements. The Amended Reclamation Plan included a geotechnical report showing existing and final reclaimed topography with cross-sections and contours. (Appx. G-4, Rock Plant Reserve Geotech. Evaluation, Figs. 3.1-3.3.) This satisfied SMARA, which requires a proposed reclamation plan to show existing and final topography with contours. (See Pub. Resources Code, § 2772(c)(5)(C).) Accordingly, the Application was complete. Nonetheless, additional sheets and cross sections detailing the road access and reclaimed condition are included in **Attachment 2**, a memorandum prepared by Stantec with this information.

D. *Proposed Tree Removal and Replacement.* As required by 14 California Code of Regulations § 3503(c), all reasonable measures be taken to protect the habitat of fish and wildlife. Pursuant to this requirement, please provide in tabular format the number, species, and DBH (diameter breast height) of trees to be removed as part of this Application.

The Application included all of the information regarding tree removal that was necessary to evaluate the project against the County's tree protection guidelines. The accompanying Biological Resources Reports for the Rock Plant Reserve and North Highwall analyzed the effect of the project upon oak woodlands under the County's *Guidelines for Tree Protection and Guide to Evaluating Oak Woodland Impacts*. As required by these guidelines, Lehigh performed an evaluation of the amount of oak woodland canopy affected by a project. In addition, the Application calculated the specific acreages of each vegetation community (i.e., Oak Woodland, Oak Chaparral, California Bay Forest, Nonnative Annual Grassland, etc.) within the Rock Plant Reserve and North Highwall area that would be affected by the project.

In addition to this information, the County has asked for the number, species and dbh of all trees (not only oak woodlands) that would be removed through the Application. Section 3503(c) of SMARA's regulations, which the County's comment relies upon, does not require any additional information regarding tree removal for the Application to be deemed complete, and does not specifically address tree removal. Nonetheless, Lehigh has asked its arborists for an estimate

(by species/DBH, in tabular format) of the number of trees to be removed from each area based on past site visits. **Attachment 3** is a letter prepared by GEI with this information.

E. **Geology.** *Please submit updated geologic engineering reports prepared and signed by a Certified Engineering Geologist that adequately address the following issues.*

1. *...the signature of a California Certified Engineering Geologist needs to be included on the G-1 through G-4 reports and the supplemental materials described below.*

Lehigh has ensured that all geologic reports accompanying the Application (including Appendices G-1 through G-4) are signed by an engineering geologist certified by the State of California. The technical memorandum prepared by Stantec in **Attachment 2** includes these signatures.

2. *Subsurface geologic interpretations (fault planes, bedding planes, etc.) need to be added to all of the cross-sections (e.g. Figure 3.3 in Binder 1, Appendix G) and the “models” used in the slope stability analysis (including the additional cross-sections and analyses referred to in the following comments #3 and #4).*

The Application included a geotechnical analysis of all major cut and fill slopes to remain following reclamation pursuant to SMARA’s performance standards. (Code of Regs., tit. 14, § 3704.) This request does not identify any specific SMARA requirement or County requirement which Lehigh failed to satisfy. Nonetheless, Lehigh’s geotechnical consultant has added geologic interpretations, including bedding and fault planes, to all cross sections and models used in the slope stability analyses. The technical memorandum in **Attachment 2** contains this information.

3. *An additional cross-section and related slope stability analysis are needed for the south-facing slope in the Yeager Yard Area, including the area containing Well WMSA-DMW-11 located at the south end of the WMSA. Additional surface mapping and subsurface exploration are needed to thoroughly evaluate the extent of ground movement that appears to have occurred in response to the removal of a substantial amount of material from the lower portion of the slope.*

The Application included geotechnical reports for the WMSA as needed to render the Application complete. Due to recent concerns associated with the south-facing WMSA slopes, however, Lehigh’s geotechnical experts performed additional analysis and recommendations and designed a flatter slope for this area. **Attachment 4** contains a technical memorandum with this analysis and demonstrates that the modified slope designs for this area meets accepted static and seismic stability standards.

4. *An additional cross-section and related slope stability analysis are needed for the east-facing cut and fill slopes located north of the “County Jurisdiction” line in Figure No. 1 “Utility Road Grading Plan” in Appendix G-5.*

The request fails to identify any specific SMARA or County requirement that Lehigh did not satisfy. This appears to be a request for additional information that may be helpful to the

County but is not required for the Application to be complete. Nonetheless, Lehigh has included an additional cross-section for this area in **Attachment 2** (see Drawing Nos. 1 and 3). We understand, based on feedback from staff, that this additional information will satisfy the County's needs with respect to Application completeness.

5. *Supplemental geologic/geotechnical evaluation (geologic cross-sections and slope stability calculations) of the long-term stability of the proposed "layback" of northwest highwall of the main pit (Section D-D'). The existing slide plane of the 1988 landslide must be shown and its shear strength considered in the analysis.*

Again, the request fails to identify any specific SMARA or local application requirement that Lehigh did not satisfy. The slope stability calculations included in the original Application incorporated this information. Nonetheless, Lehigh has included an additional cross-section in **Attachment 2** (see Figure 3.4) to show that this information has already been evaluated. We understand from County staff that this additional information will satisfy the County's needs with respect to completeness.

6. *Supplemental geologic/geotechnical evaluation (geologic cross-sections and slope stability calculations) of the long-term stability of the upper portion of the proposed cut slope on the west side of the Rock Plant Reserve (Sections A-A', B-B' and C-C'). The stability models must include the eastern edge of the existing (mapped) shear zone which also underlies the failing cut slope in the adjacent Stevens Creek Quarry. Unless better test data are available, utilize the same shear strength values determined there.*

Again, the request fails to identify any specific SMARA or local application requirement that Lehigh did not satisfy. Further, the slope stability calculations in the original Application incorporated this information. Nonetheless, Lehigh has provided this information in the enhanced cross-sections in **Attachment 2** (see Figure 3.4) to illustrate that this data has already been considered. We understand that this additional information satisfies the County's needs.

III. Additional Issues / Areas of Concern

The County's July 22, 2019 letter also sets forth several additional "issues and policy conformance areas" that we understand to be general comments on the Application which do not require a specific response from Lehigh to render the Application complete. We respond below to certain of these comments as appropriate.

A. Existing Violations

The letter states that the County's Planning Department may recommend denial of the Application, and refuse to process it under CEQA, unless Lehigh first abates the June 13, 2019 and July 9, 2019 Notices of Violation issued by the County and by the San Francisco Bay RWQCB, respectively, alleging sediment discharges to Permanente Creek. Respectfully, a refusal to process the Application would be contrary to the County's ordinances.

The County's ordinances, which expressly incorporate SMARA, permit Lehigh to correct the asserted violation while the Application is processed by entering into a "Stipulated Order to Comply" with the County. (See S.C.C. Ord., § 4.10.370, Pt. III (C)(1)); Title C, § C1-71.) Also, to the extent that an amended Reclamation Plan is ultimately required to correct any violation, SMARA obligates the County to process that amendment. (See Pub. Resources Code, § 2777; Code of Regs., tit. 14, § 3502(e).) In sum, the Notices of Violation do not permit the County to refuse to process the Application.

Moreover, our review of the County's ordinances does not reveal any provision enabling the Planning Department to refuse to *process* an application where site operations are claimed not to comply with the law. That authority appears reserved for the Planning Commission or the Board of Supervisors. Section C1-71 states that the County may not "issue" a permit if a site is in noncompliance and *issuance* of a permits is a function within the purview of those bodies. Similarly, Section 5.20.140 of the County ordinances allows the "decision-making body" to deny an application based on an underlying violation. Neither provision authorizes staff to refuse to process an application.

B. Overlap with Utility Road Reclamation Plan Amendment

The County observes that the geographic area covered by the Amended Reclamation Plan overlaps with an area covered by a different application relating to the Utility Road, and that its processing of the Application does not necessitate approval of the separate application relating to the Utility Road. This comment is noted. The Application must include the Utility Road area pursuant to SMARA's "one-reclamation plan" rule. (See Cal. Code of Regs., tit. 14, § 3502(d).)

C. Environmental Impact Report

The letter states that the County intends to prepare an Environmental Impact Report ("EIR") under CEQA for the project, and may request additional information from Lehigh, after the Application is deemed complete, to assist the preparation of the EIR. This comment is noted. Lehigh will respond to such information requests in keeping with normal CEQA practice.

D. Import of Fill – Environmental Impacts

The County's letter states that the Application proposes to import approximately 33 million cubic yards of clean fill and that the associated effects upon truck traffic, greenhouse gas emissions, and public safety and congestion "likely constitute significant impacts under CEQA." A pre-determination that significant impacts exist before the County has prepared an impact analysis violates basic CEQA principles. The determination that an impact is significant under CEQA first requires a project to be analyzed in light of the existing conditions and applicable thresholds of significance. This analysis has not yet occurred. Further, as explained above, the Application proposes to import 20.4 million cubic yards of clean fill, not 33 million cubic yards as referenced by the County.

E. Import of Fill – Feasibility

The letter states that the County may conduct a peer review of the studies submitted in the Application to ensure that the Quarry can be feasibly reclaimed through, in part, the importation of clean fill. This comment is noted.

F. Retention of WMSA – Visual Impacts

The County states that the Application would increase the height of the WMSA by 160 feet. Lehigh presumes that the County calculated this according to the difference between the final reclaimed height of the WMSA under the 2012 Reclamation Plan (i.e., 1,900 amsl) and the reclaimed height under the Application (i.e., 1,060 amsl). For clarification, currently, the peak WMSA height is approximately 1,980 feet amsl (see Application, Appendix G-1, Figure 2.2). As such, the Application would increase the WMSA height by 80 feet at most in one area, not 160 feet as stated in the County's letter. Also, because a peak elevation of 1,060 amsl is proposed only for a small part of the WMSA, in most areas the increase would be less.

Further, the letter states that retaining that increasing the height of the WMSA may constitute a significant visual impact under CEQA. Lehigh presumes that an appropriate visual impacts analysis will be performed as part of the EIR to determine the significance of any visual impacts associated with the WMSA. Lehigh further notes, however, that no significant impact could arise based on the change in reclamation approach compared to 2012, because the condition proposed in 2012 is not part of the existing physical baseline.

G. Stevens Creek Quarry Haul Road

The letter states that Lehigh cannot transport aggregate products to the neighboring Stevens Creek Quarry "(SCQ)" over the existing or proposed haul road unless SCQ secures additional land use entitlements. The comment is noted. Lehigh takes no position on SCQ's entitlements and notes that SMARA authorizes a reclamation plan to be approved for future operations that ultimately do not materialize.

H. Stevens Creek Quarry Reclamation Plan

The letter notes that Lehigh's proposed Amended Reclamation Plan boundary includes real property owned by Hanson Permanente Cement, Inc. that SCQ intends to incorporate in its reclamation plan and seeks clarification regarding how the overlap can be resolved. To date, Lehigh has received no request from SCQ for permission to include this area in SCQ's reclamation plan. Lehigh will address the issue appropriately should SCQ make this request.

We appreciate the County's assistance and look forward to the County accepting Lehigh's Application for processing.

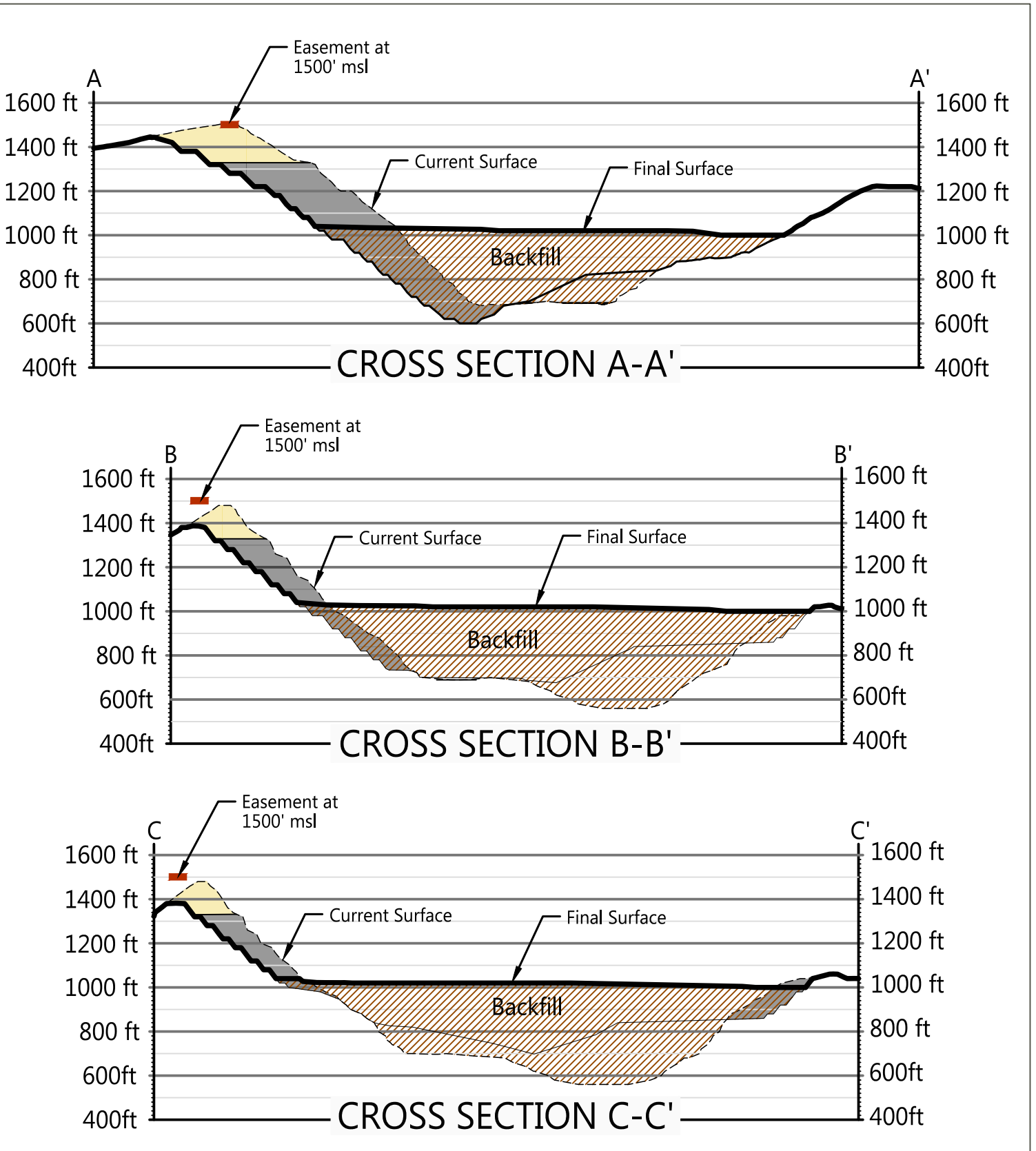
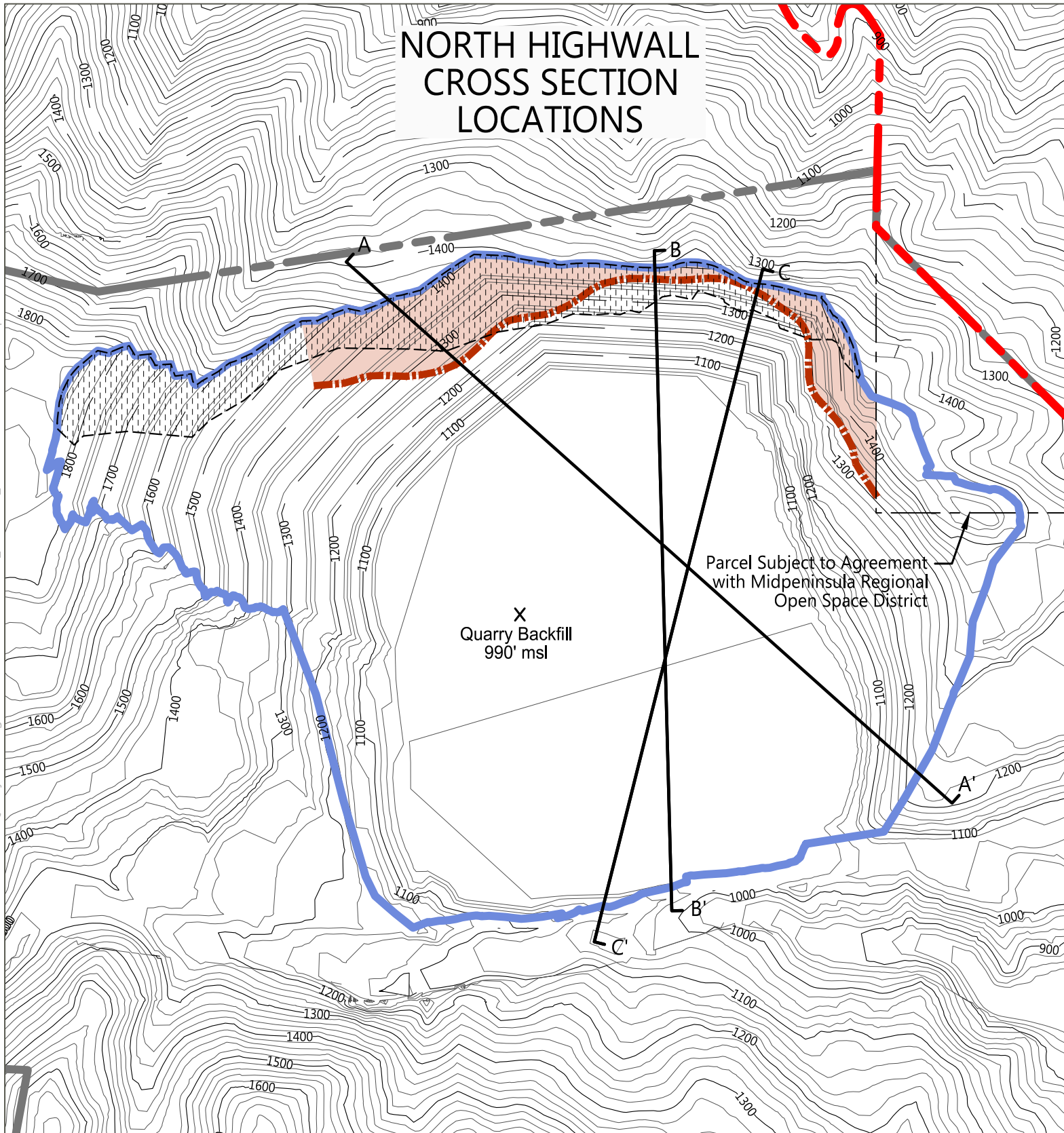
Thank you,

A handwritten signature in cursive script that reads "Erika Guerra".

Erika Guerra
Director Environment and Land Resources
Lehigh Hanson – West Region

cc: Jacqueline R. Onciano, Director of Planning and Development
Rob Eastwood, Planning Manager, Santa Clara County
Manira Sandhir, Principal Planner, AICP, Santa Clara County
Jim Baker, County Geologist, Santa Clara County
Elizabeth G. Pianca, Lead Deputy County Counsel, Santa Clara County
Michael Rossi, Lead Deputy County Counsel
Kristina Loquist, Office of Supervisor Simitian, Santa Clara County
Beth Hendrickson, Division of Mine Reclamation
Paul Fry, Engineering and Geology Unit Manager, Division of Mine Reclamation
Kristin Garrison, Environmental Scientist, CA Department of Fish & Wildlife
Lindsay Whalin, San Francisco Bay Regional Water Quality Control Board
Lisa Horowitz McCann, Asst. Executive Officer, SF Bay RWQCB
Roger Lee, Acting Public Works Director, City of Cupertino
Deborah L. Feng, City Manager, City of Cupertino

V:\DATA\CURRENT PROJECTS\396 - Permanente Quarry\396 - Figures\396 - Figures\19-07-31_19-07-30_Easement Volume 3D Graphics



SOURCES: Site Boundary/Reclamation Boundaries/Reserves/Haul Route Areas/Topography—Lehigh Southwest Cement Company, generated in 2019; compiled by Benchmark Resources in 2019

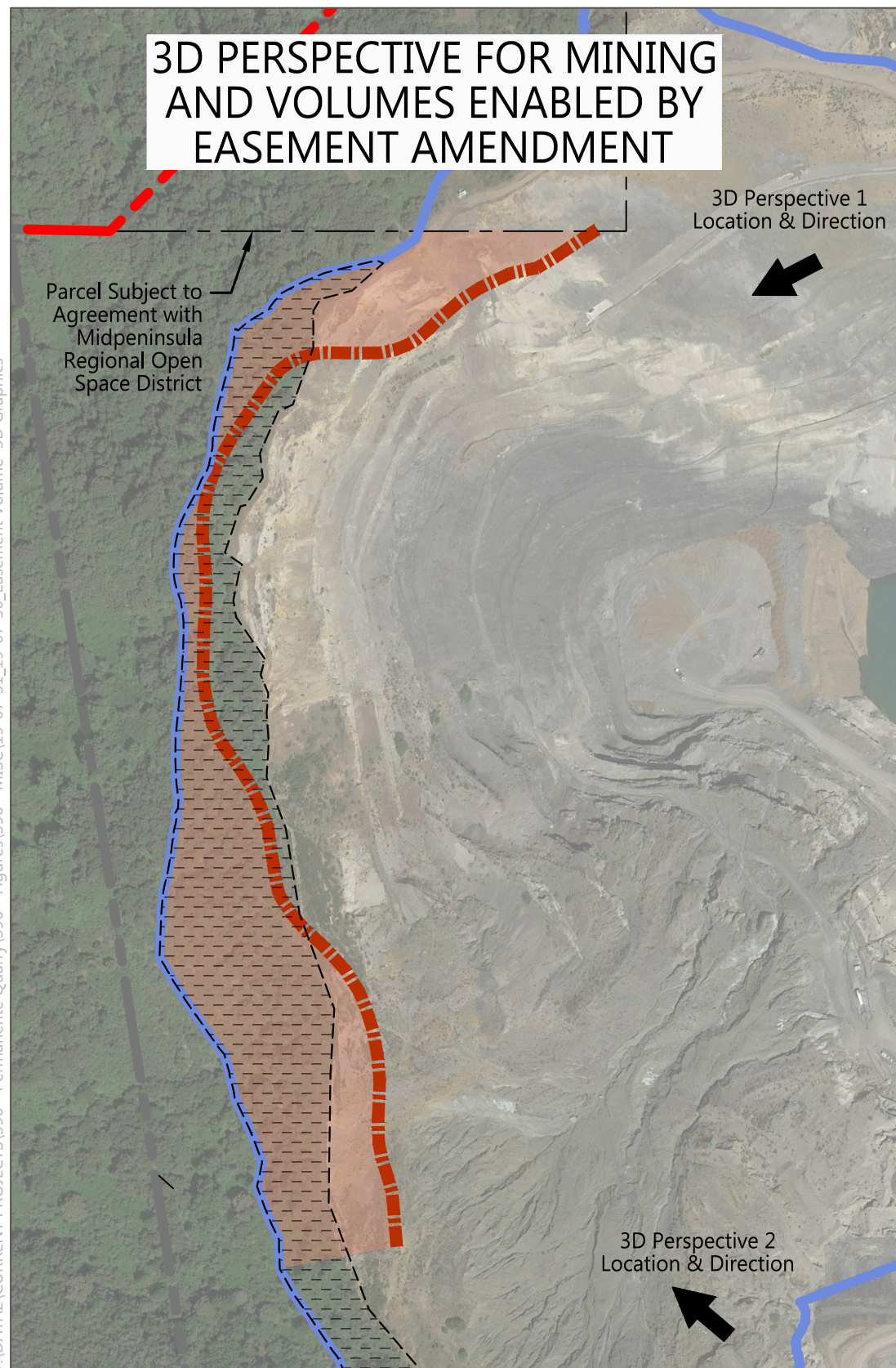
NOTES:

1. msl = mean sea level.
2. Topography shown is final mine and reclamation surface.

- Site Boundary
- Modified (Proposed) Reclamation Boundary
- North Quarry
- Ridgeline Protection Easement (1972)
- Lay-Back Area

- Mining Enabled by Amended Easement (±15 acres)
- Overburden Removal
- Cement-Grade Limestone
- Quarry Backfill

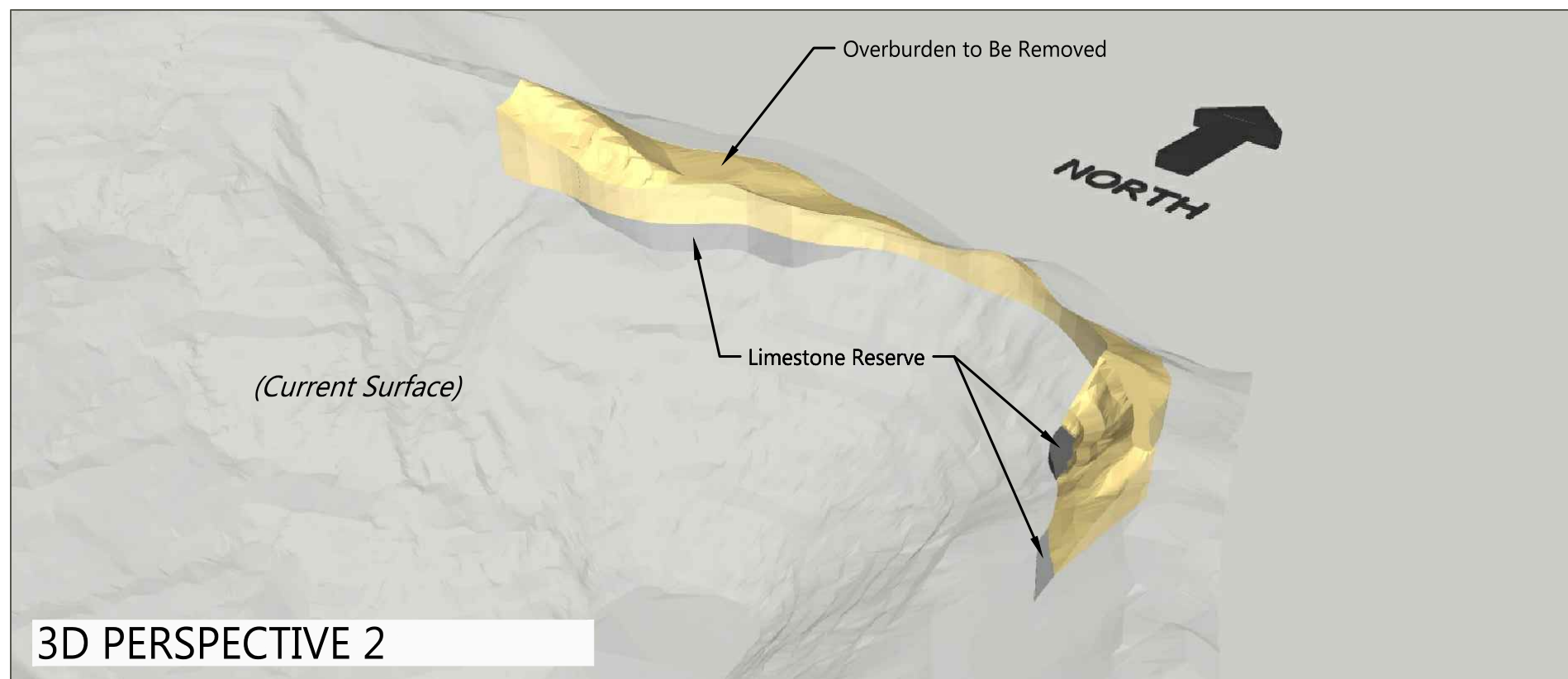
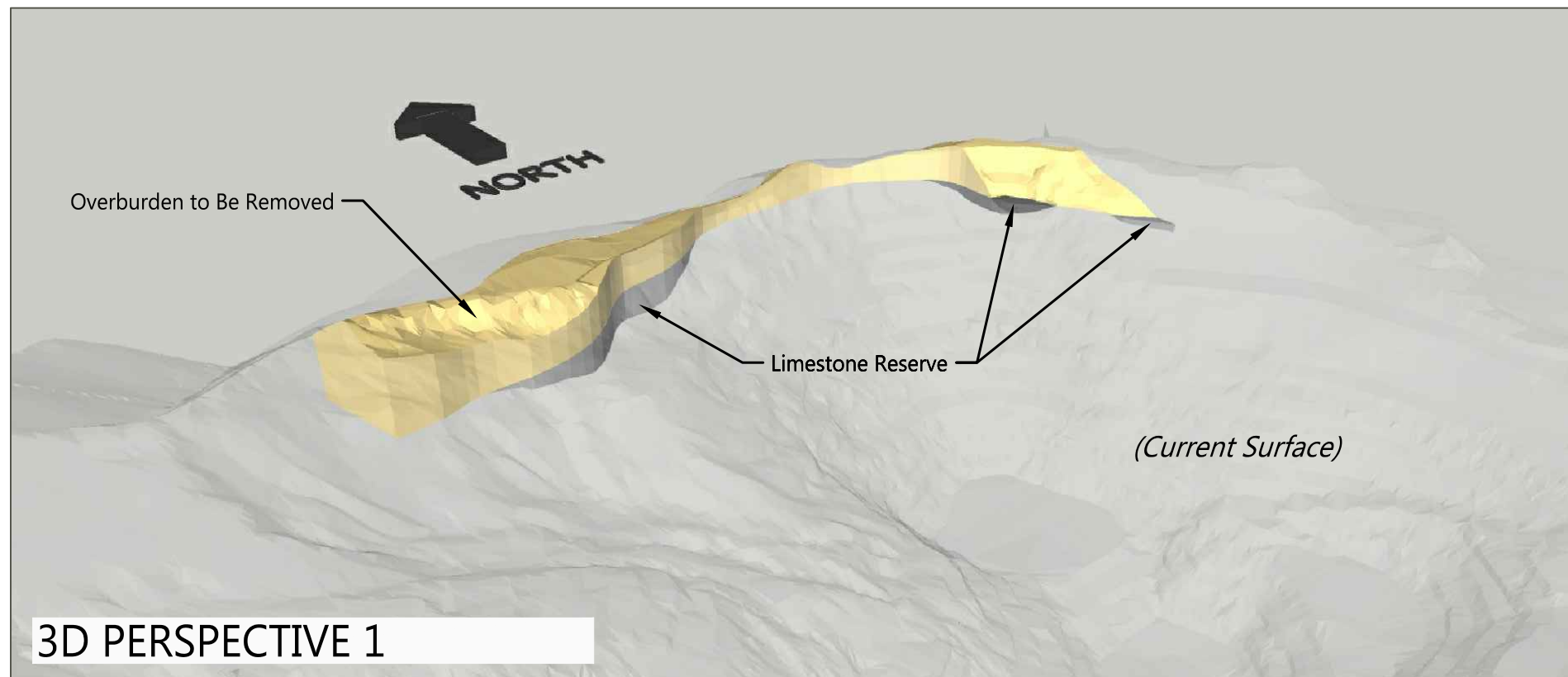
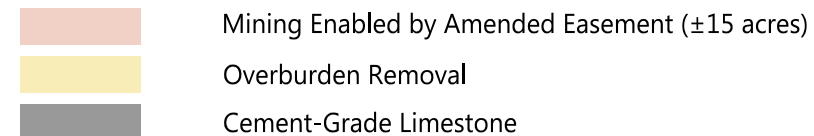
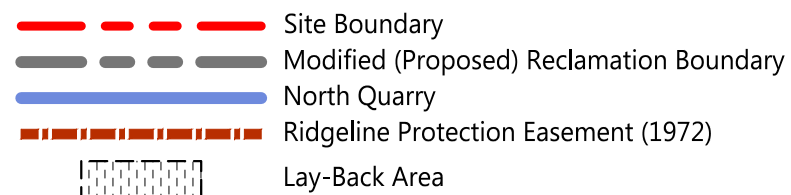
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SOURCES: Site Boundary/Reclamation Boundaries/Reserves/Haul Route Areas/Topography—Lehigh Southwest Cement Company, generated in 2019; Aerial—Google Earth (8-9-2018); compiled by Benchmark Resources in 2019

NOTES:

1. CY=cubic yards.
2. 3D=3-dimensional



To:	Erika Guerra	From:	Paul Kos
	Lehigh Permanente Quarry		Denver, CO
File:	Response to SCC	Date:	August 30, 2019

Reference: Responses to SCC Incompleteness Determination for Permanente Quarry

This memorandum summarizes Stantec's responses to the incompleteness determination letter provided by Santa Clara County to Lehigh Southwest Cement Company on the Reclamation Plan Amendment application for the Permanente Quarry.

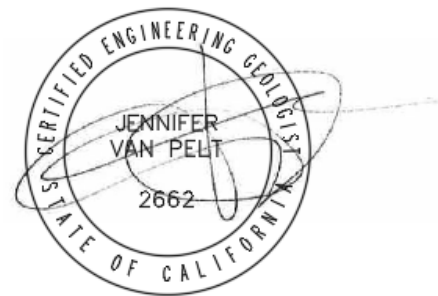
II.C. Rock Plant Reserve Area Mining and Access Design.

Stantec has revised the figures included in the Rock Plant Reserve Geotechnical Evaluation to include the demonstrate access to the area throughout the life of the project. The Rock Plant Reserve area will be accessed using the "Utility Road" and a proposed road that contained within the quarry footprint. The roads have also been updated on the mine plan and reclamation plan sheets. The following figures have been revised:

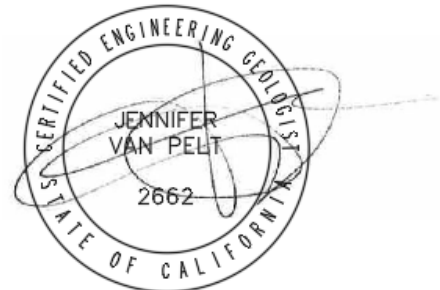
- Figure 2-2 Mine Plan
- Figure 3-1 Reclamation Plan
- Rock Plant Reserve Figure 3.1 has been revised to include the utility road alignment and new cross-section E.
- Rock Plant Reserve Figure 3.2 is a new figure that presents the access to the quarry area.
- Rock Plant Reserve Figure 3.3 (previously Figure 3.2) has been revised to include the utility road alignment and new cross-section E.
- Rock Plant Reserve Figure 3.4 (previously Figure 3.3) shows the cross-sections including E-E'.

II.E.1. Geology. CEG Certifications

The geologic information contained in the North Highwall Reserve Geotechnical Evaluation was prepared by or reviewed by Jennifer Van Pelt, CEG. This includes information contained in the April 5, 2019 report and information included in this memorandum.

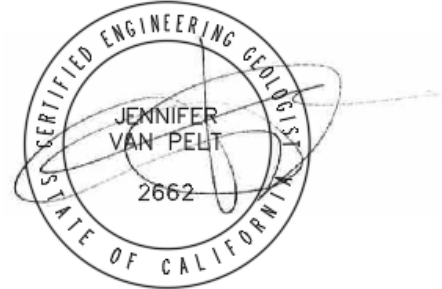


The geologic information contained in the North Quarry Backfill Geotechnical Evaluation was prepared by or reviewed by Jennifer Van Pelt, CEG. This includes information contained in the April 5, 2019 report and information included in this memorandum.

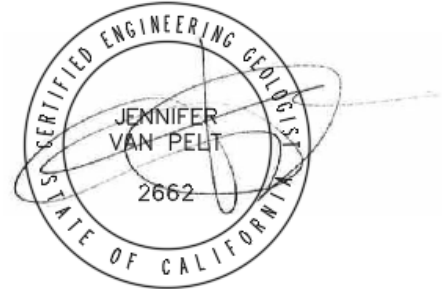


Reference: Responses to SCC Incompleteness Determination for Permanente Quarry

The geologic information contained in the West Materials Storage Area Geotechnical Evaluation was prepared by or reviewed by Jennifer Van Pelt, CEG. This includes information contained in the April 5, 2019 report and information included in this memorandum.



The geologic information contained in the Rock Plant Reserve Geotechnical Evaluation was prepared by or reviewed by Jennifer Van Pelt, CEG. This includes information contained in the April 5, 2019 report and information included in this memorandum.



II.E.2. Geology. Cross-Section Information

Stantec has revised the cross-sections associated with each of the geotechnical reports to include lithology, bedding planes, boreholes, and fault planes. These geologic data were considered when preparing the mining and reclamation plans and were utilized in the slope stability analysis calculations. The revised cross-sections are included as attachments to this memorandum. These figures include:

- North Highwall Reserve Figures 3.4 a, b, and c Cross-Sections
- North Quarry Backfill Figure 2.4 Cross-Section
- West Material Storage Area Figure 2.5 Cross-Sections
- Rock Plant Reserve Figures 3.4 Cross-Sections

II.E.4. Geology. Utility Road Cross-Section

Stantec has prepared a cross-section (D-D') of the Utility Road that is located in County Jurisdiction. The section location is shown on revised Drawing 1, and the cross-section is included on Drawing 3.

II.E.5. Geology. Main Pit Northwest Highwall Cross-Section

Stantec has revised the cross-section associated with the northwest highwall and the historic landslide to include lithology, bedding planes, boreholes, fault planes, and the slide plane. These geologic data were considered when preparing the mining and reclamation plans and were utilized in the slope stability analysis calculations. The revised cross-section (D-D') is included as attached Figure 3.4b.

II.E.6. Geology. Rock Plant Reserve Cross-Section

Stantec has revised the cross-sections associated with the Rock Plant Reserve Geotechnical Evaluation to include lithology, bedding planes, boreholes, and fault planes. These geologic data and the landslide in the

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Erika Guerra

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Reference: Responses to SCC Incompleteness Determination for Permanente Quarry

adjacent Stevens Creek Quarry were considered when preparing the mining and reclamation plans and were utilized in the slope stability analysis calculations. The revised cross-sections are included as Figures 3.4.

Stantec Consulting Services Inc.



Paul Kos

Senior Geological Engineer

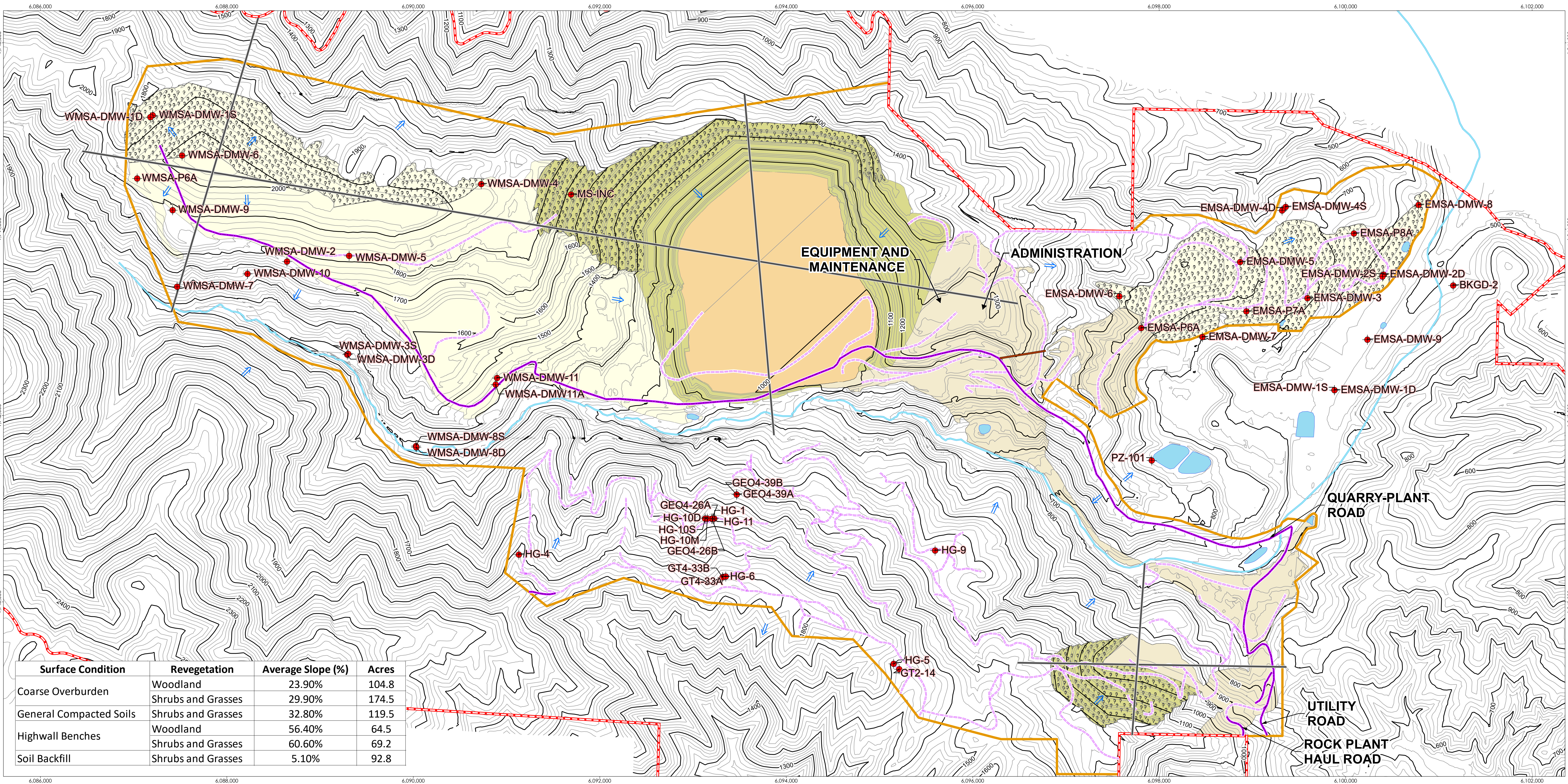
Phone: 720 889 6122

paul.kos@stantec.com

Attachment: Attachment

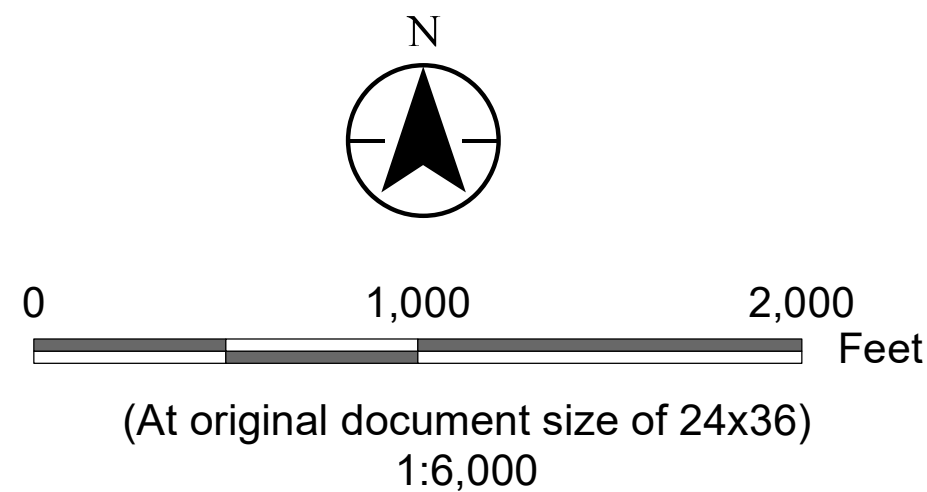
c. C.C.

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Legend

- Well Location
- Surface Flow Drainage
- Permanente Creek
- Road (Retained)
- Road (Reclaimed)
- Abandoned Conveyor Tunnel
- Cross-Section
- Phase 4 - Reclamation Topography
- 100 ft Index Contour
- 20 ft Contour
- Stormwater Pond
- RPA Boundary
- Property Boundary
- Coarse Overburden (Woodland)
- Coarse Overburden (Shrubs and Grasses)
- General Compacted Soils (Shrubs and Grasses)
- Highwall Benches (Woodland)
- Highwall Benches (Shrubs and Grasses)
- Soil Backfill (Shrubs and Grasses)



Notes

- Coordinate System: NAD 1983 StatePlane California III FIPS 0403 Feet
- Background: Phase 4 - Reclamation Topography
- The planned surface disturbance boundary and depth are shown; however, the extent of operations may or may not reach these limits. Total acreage to be disturbed and reclaimed will be within the limits of the reclamation plan boundary. Facilities and configurations within this boundary are approximate. All acreages are approximate and not intended to reflect goals for any particular surface type. Variations are subject to actual mined conditions and will not affect success of postmining land uses.
- Some mined materials will be unusable and varying market conditions may result in additional unsaleable materials (e.g., greenstone). Thus, the volumes of overburden and fill material and, therefore, the ultimate configuration of the reclaimed quarry may vary from the configuration shown. The graphic represents the types of surfaces that would be reclaimed (e.g., overburden, backfill, highwall benches). The final configuration of these surfaces has no bearing on the success of mine reclamation because reclamation would be completed according to plan surface treatment criteria.



Project Location
T07S, R02W
Santa Clara County, CA

Review
Prepared by JAJ on 2019-08-29
Final Review by PK on 2019-08-29

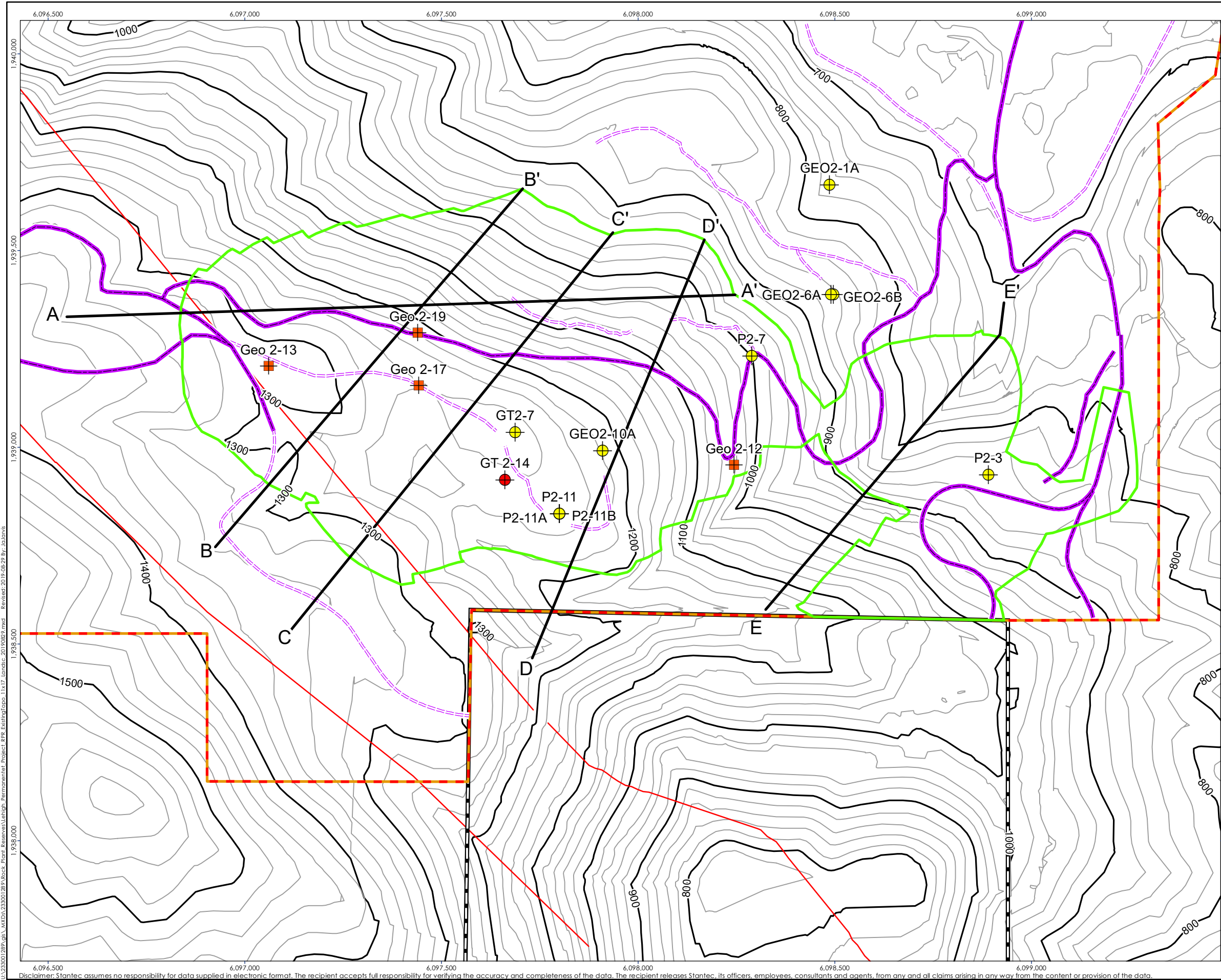
Client/Project
Lehigh Southwest Cement Company
Permanent Quarry Reclamation Plan Amendment

Figure No.

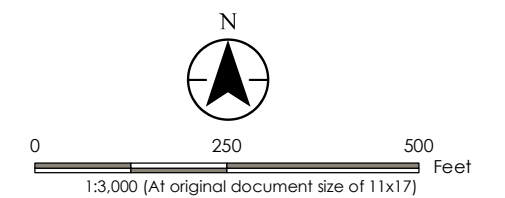
3-1

Title

Reclamation Plan



- Drill Hole (2007) - Core
- Drill Hole (2018) - Core
- Drill Hole (2018) - RC
- Rock Plant Reserve Boundary
- Road (Retained)
- Road (Reclaimed)
- Cross-Section
- Fault
- 100 ft Index Contour
- 20 ft Contour
- 2012 RPA Boundary
- Proposed RPA Boundary
- Property Boundary



Note
1. Coordinate System: NAD 1983 StatePlane California III FIPS 0403 Feet

Project Location	Review
107S, R02W	Prepared by JAJ on 2018-08-29
Santa Clara County, CA	Technical Review by PK on 2018-08-29
	Finalized on 2018-08-29

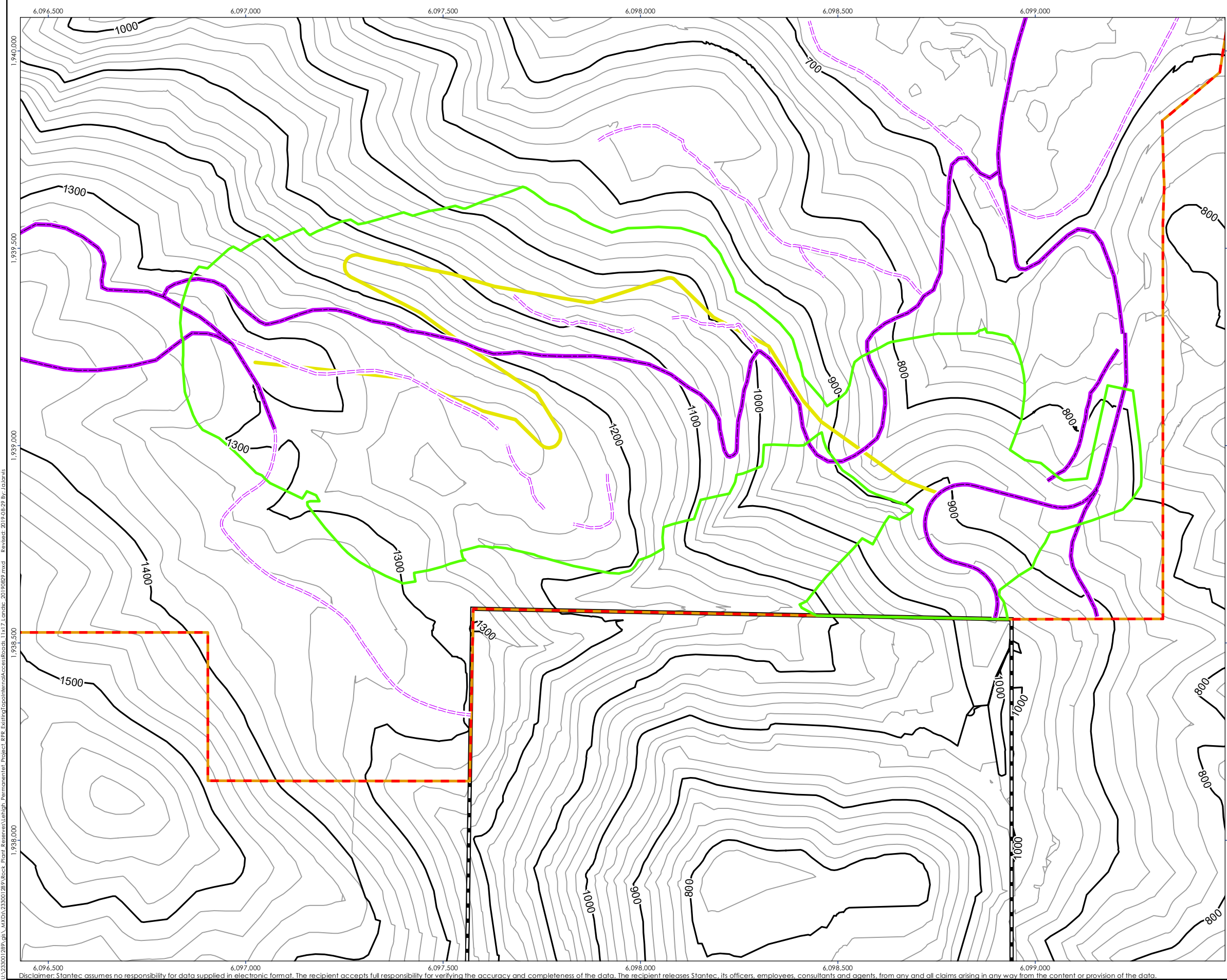
Client/Project
Lehigh Southwest Cement Company
Permanente Quarry

Figure No.

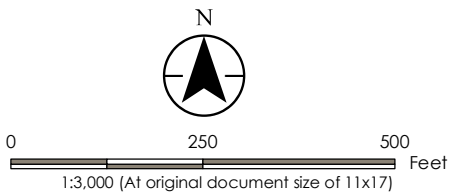
3.1

Title

**Rock Plant Reserve
Existing Topography**



- Rock Plant Reserve Boundary
- Road (Retained)
- Road (Reclaimed)
- Internal Access Road
- 100 ft Index Contour
- 20 ft Contour
- 2012 RPA Boundary
- Proposed RPA Boundary
- Property Boundary

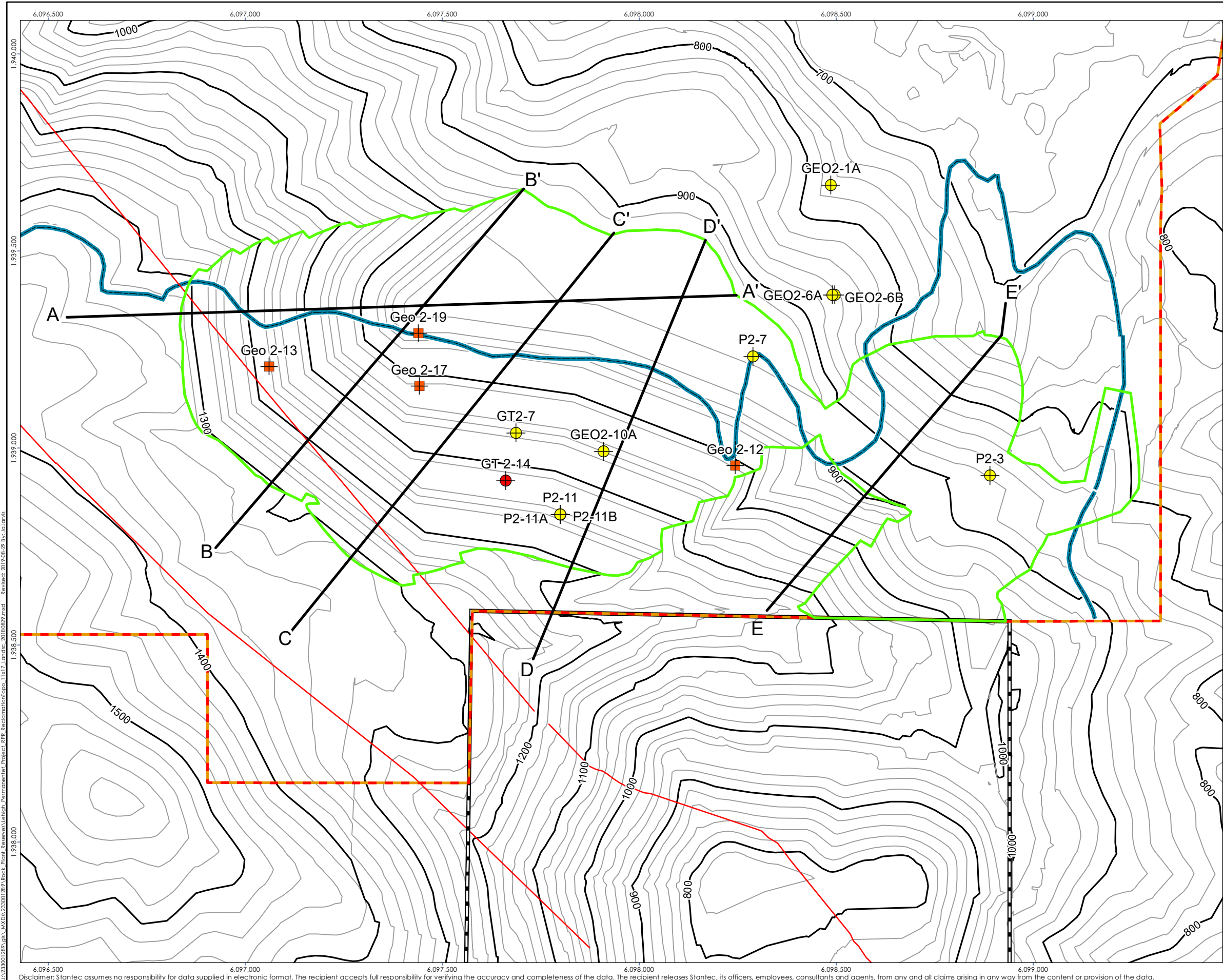


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Santa Clara County, CA	Technical Review by PK on 2019-08-29
Client/Project	Finalized on 2019-08-29
Lehigh Southwest Cement Company	
Permanente Quarry	
Figure No.	
3.2	
Title	

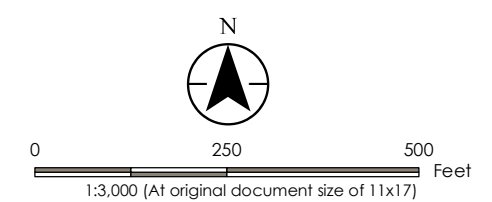
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Disclaimer: Stantec assumes no responsibility for data supplied in electronic format. The recipient accepts full responsibility for verifying the accuracy and completeness of the data. The recipient releases Stantec, its officers, employees, consultants and agents, from any and all claims arising in any way from the content or provision of the data.



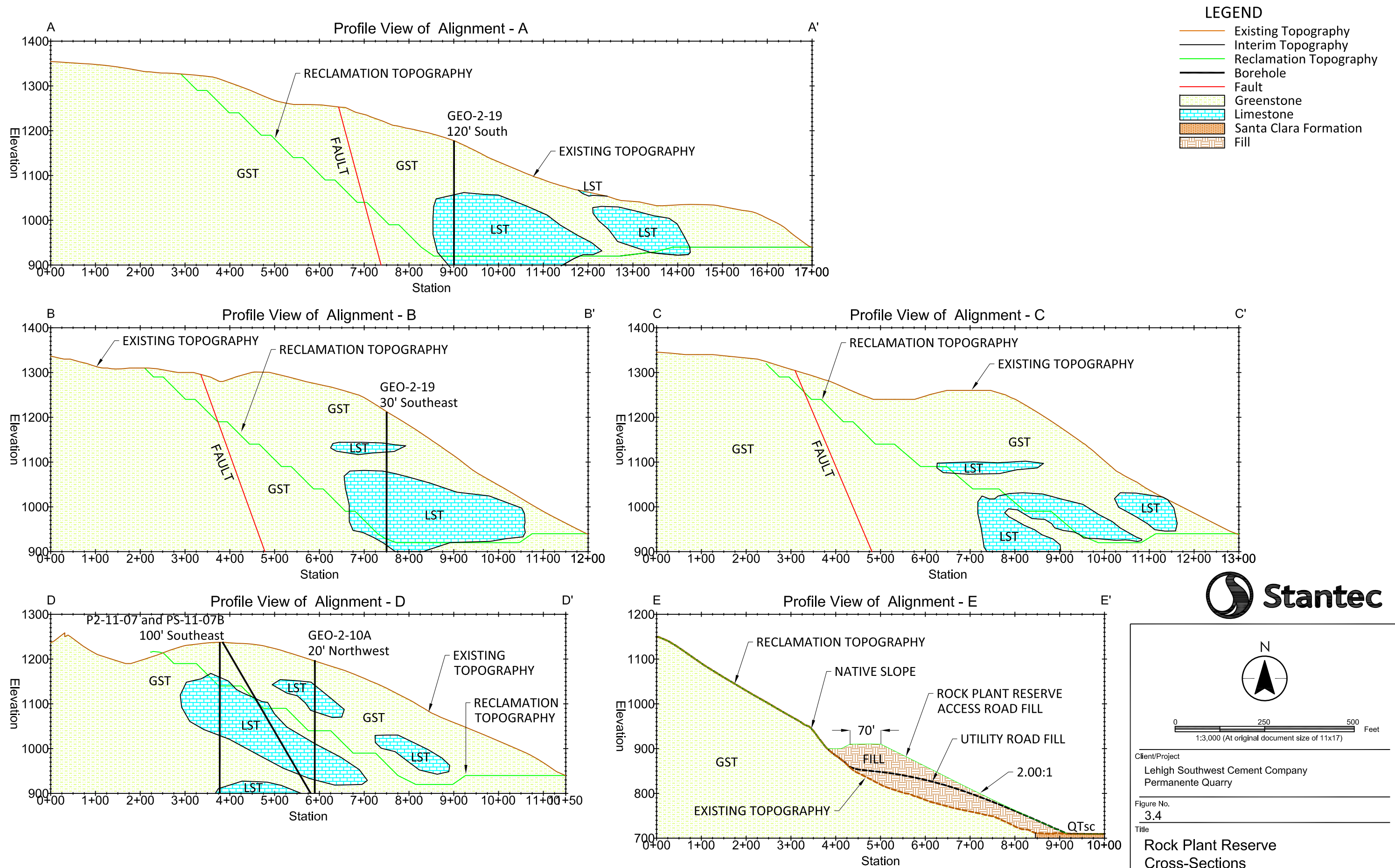
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- Drill Hole (2018) - Core
- Drill Hole (2018) - RC
- Rock Plant Reserve Boundary
- Utility Road
- Cross-Section
- Fault
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- 20 ft Contour
- 2012 RPA Boundary
- Proposed RPA Boundary
- Property Boundary



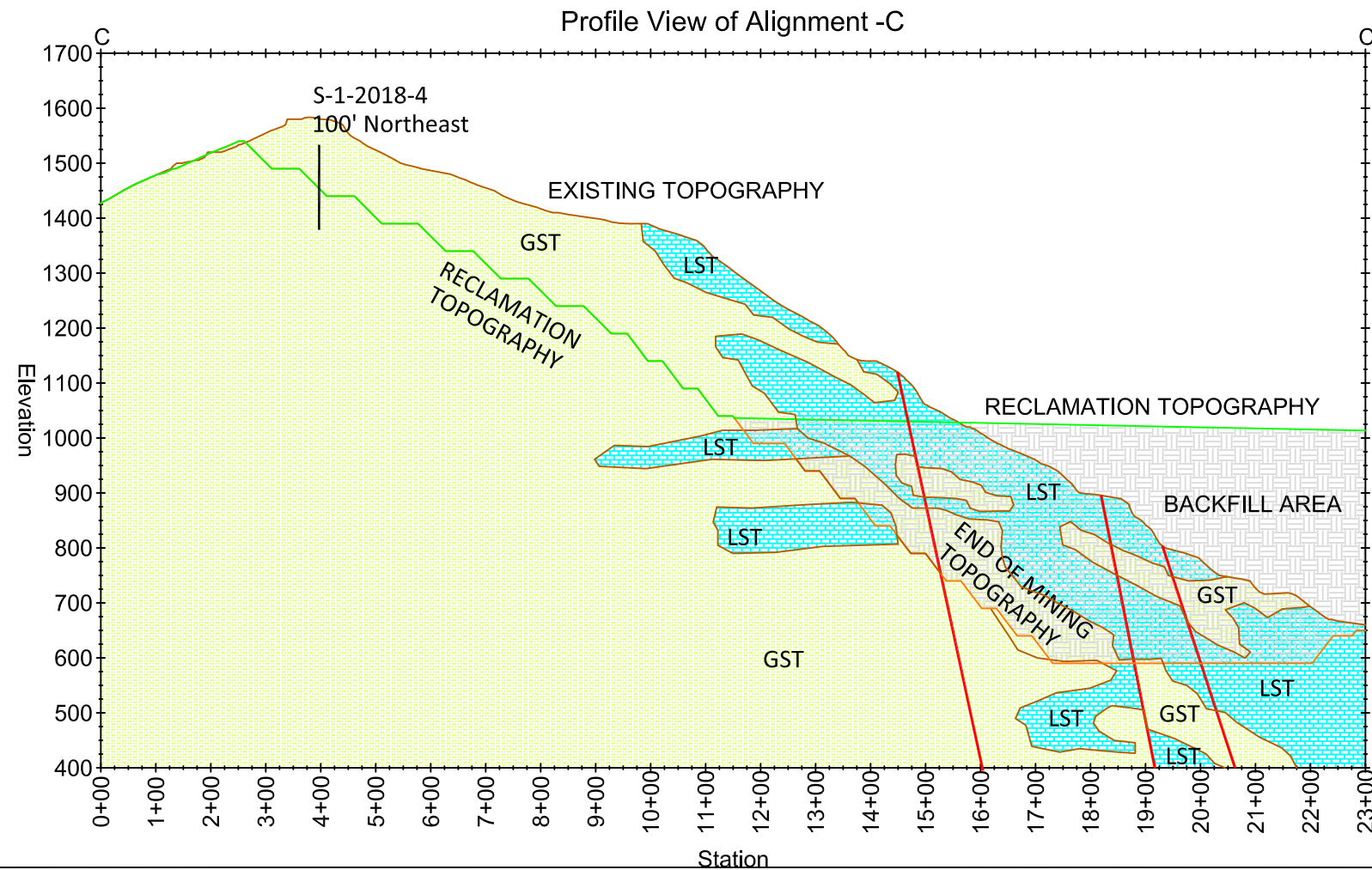
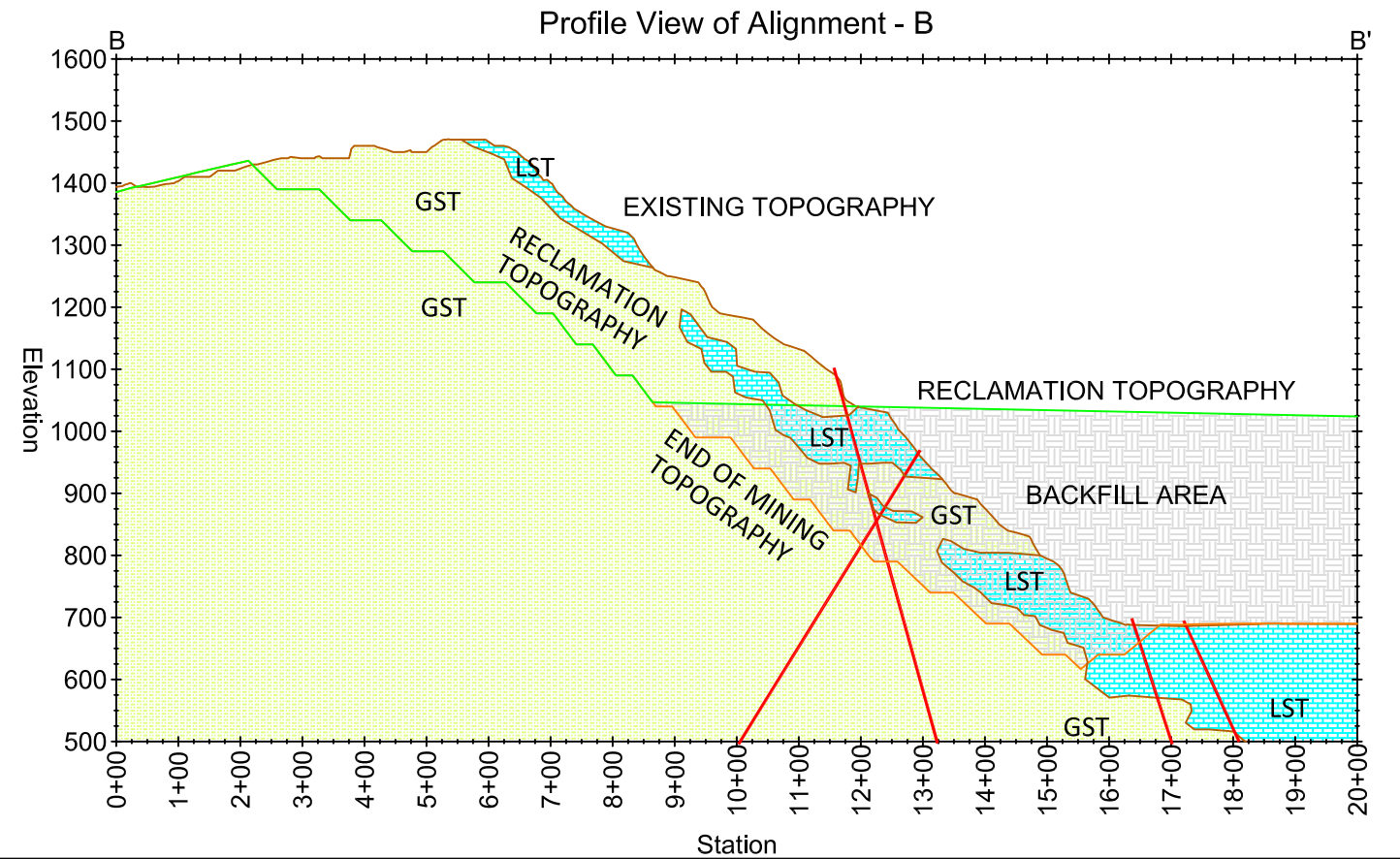
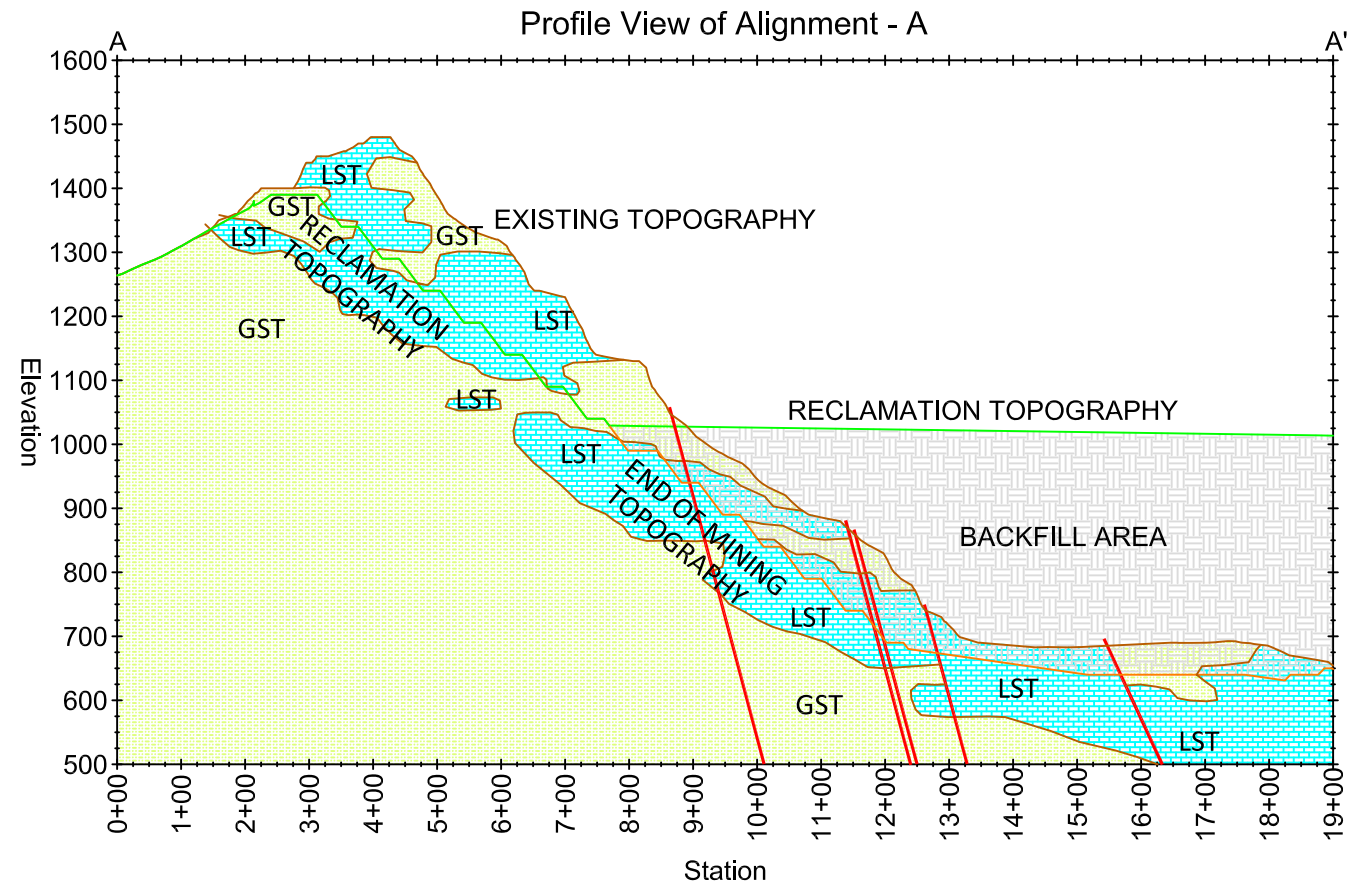
Note
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Project Location 107S, R02W Santa Clara County, CA	Review Prepared by JAJ on 2018-08-29 Technical Review by PK on 2018-08-29 Finalized on 2018-08-29
Client/Project Lehigh Southwest Cement Company Permanente Quarry	
Figure No. 3.3	
Title Rock Plant Reserve Reclamation Topography	

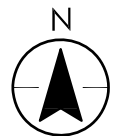
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- LEGEND
- Existing Topography
 - Interim Topography
 - Reclamation Topography
 - Borehole
 - Fault
 - Greenstone
 - Limestone
 - Fill



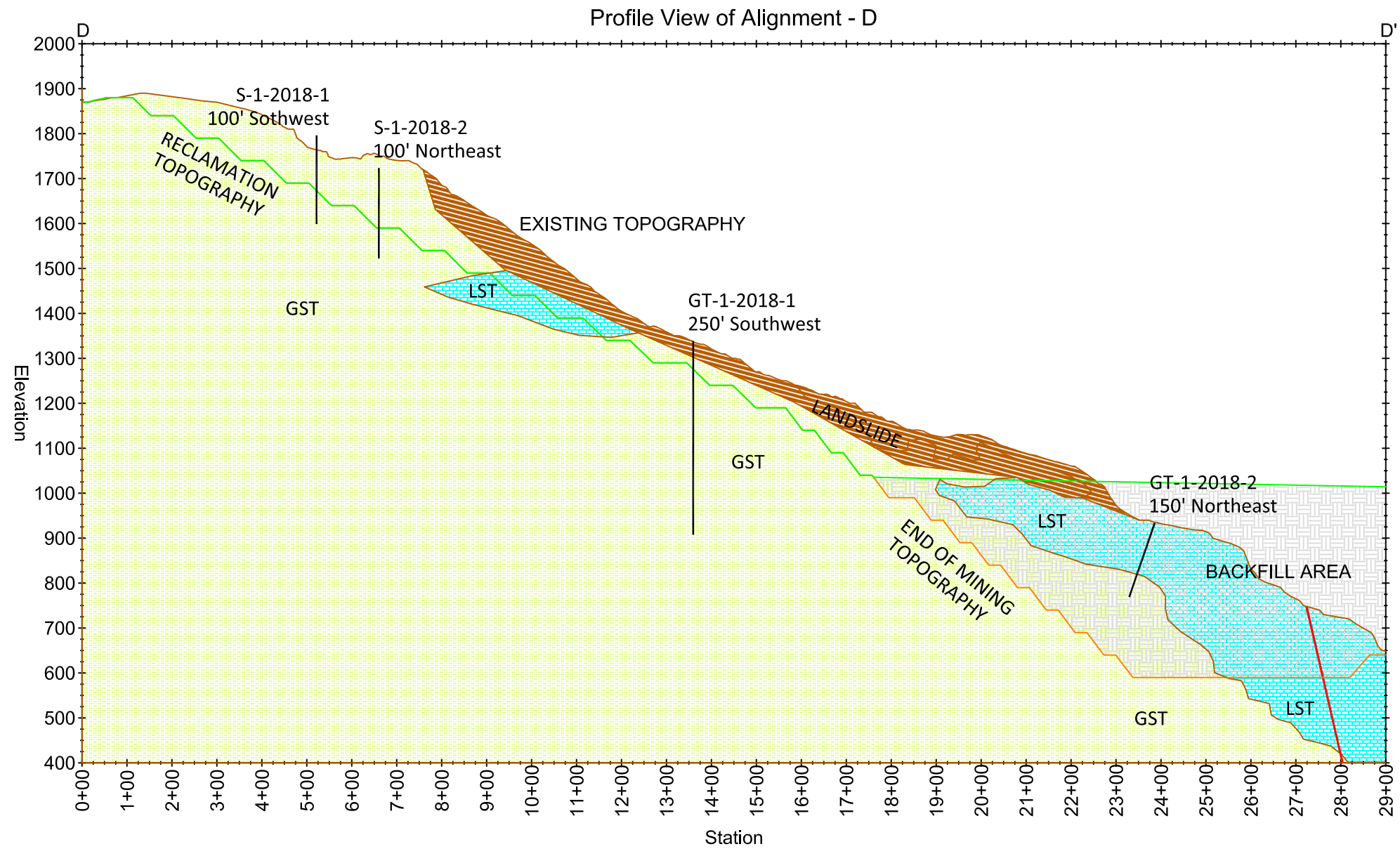
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Client/Project
Lehigh Southwest Cement Company
Permanente Quarry

Figure No.
3.4a

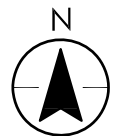
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Cross-Section

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LEGEND

- Existing Topography
- Interim Topography
- Reclamation Topography
- Borehole
- Fault
- Greenstone
- Limestone
- Landslide
- Fill



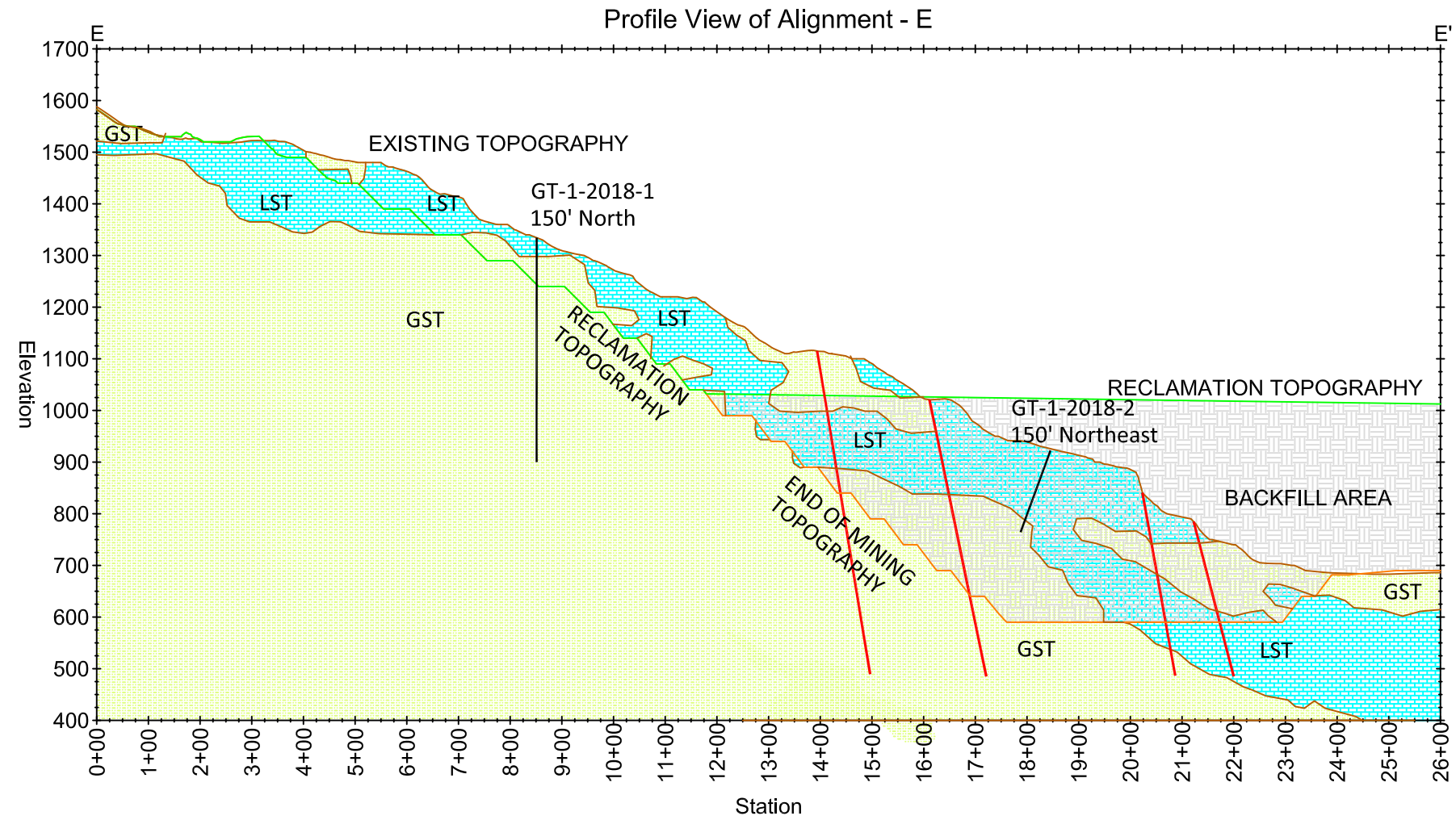
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Client/Project
Lehigh Southwest Cement Company
Permanente Quarry

Figure No.
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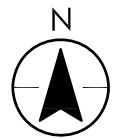
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Cross-Section

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LEGEND

- Existing Topography
- Interim Topography
- Reclamation Topography
- Borehole
- Fault
- Greenstone
- Limestone
- Fill



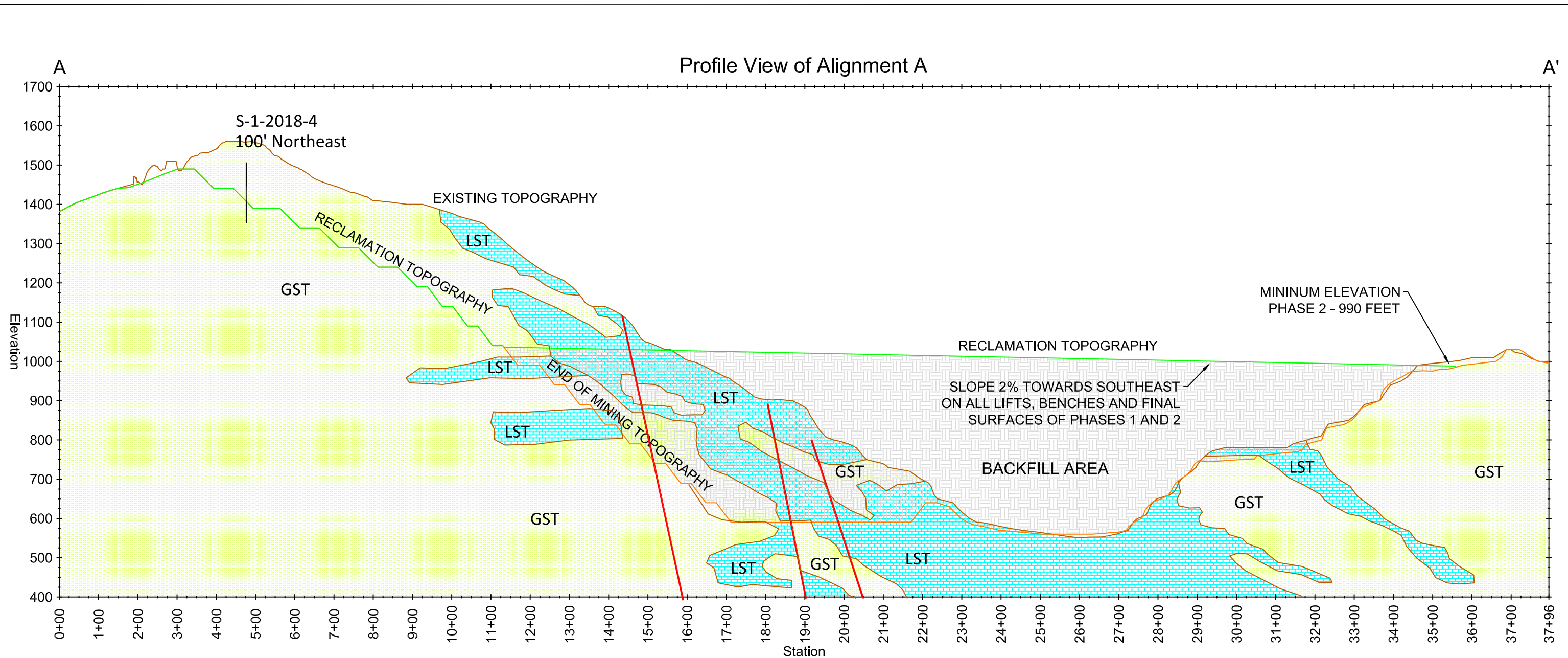
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Client/Project
Lehigh Southwest Cement Company
Permanente Quarry

Figure No.
3.4c

Title
North Highwall Reserve
Cross-Section

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North Arrow

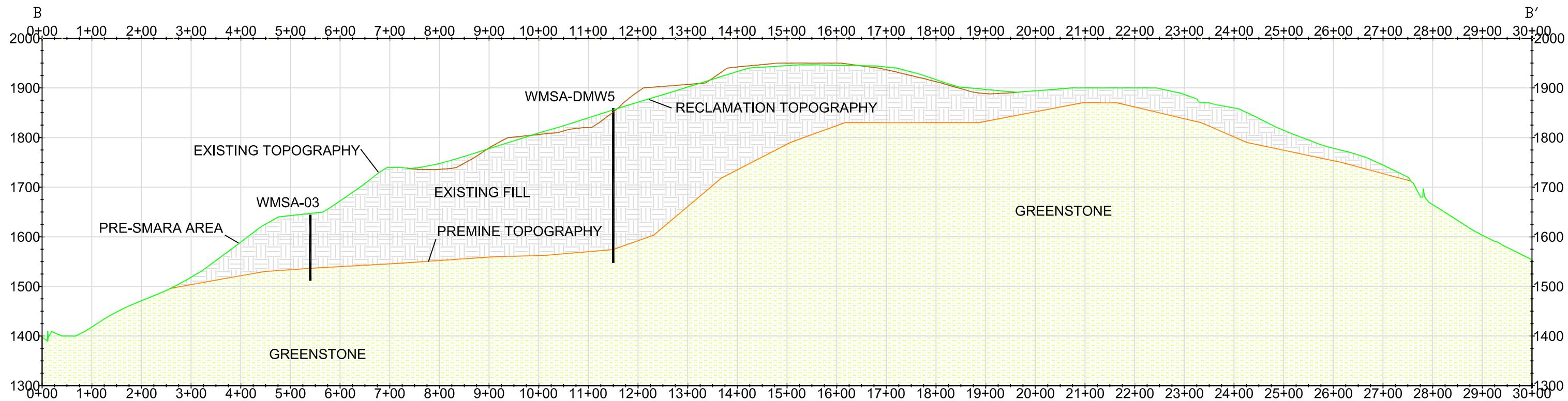
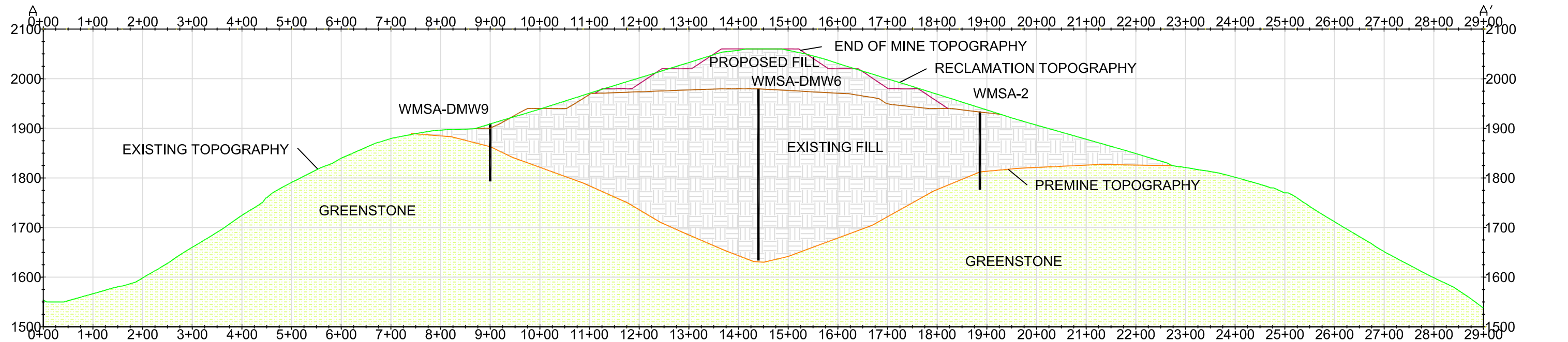
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Client/Project
Lehigh Southwest Cement Company
Permanente Quarry

Figure No.
2.4

Title
**North Quarry Backfill
Cross-Section**

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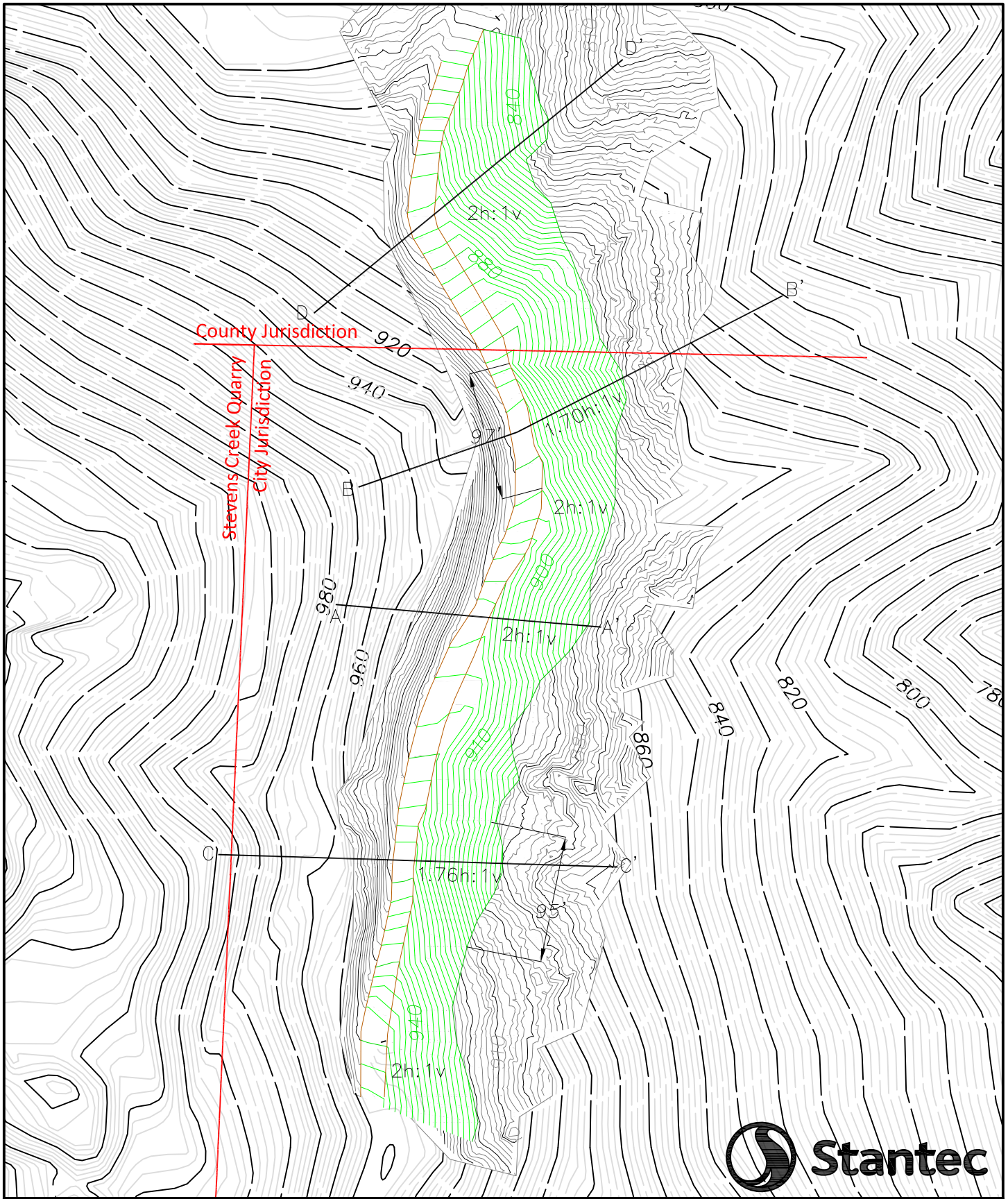
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Client/Project
Lehigh Southwest Cement Company
Permanente Quarry
Figure No.
2.5
Title
West Material Storage Area
Cross-Sections

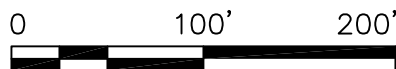
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2019.08.28 2:29:03 PM



Legend

- 2007 Topography
- 2018 Topography
- Proposed Topography
- Proposed Utility Road
- Property Boundary
- Extent of Fill
- Cross-Section



Client/Project

Lehigh Southwest Cement Company
Permanente Quarry

Drawing

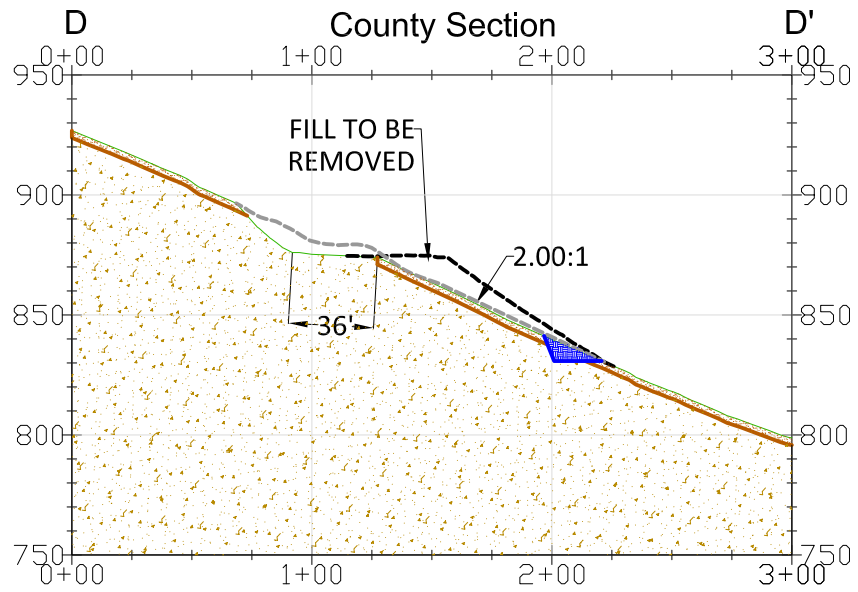
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Title

Utility Road Grading Plan

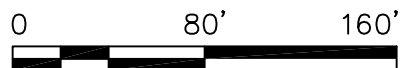
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Legend

- PROPOSED SURFACE
- EXISTING SURFACE
- ORIGINAL SURFACE
- COMPACTED KEY
- SOIL LAYER



Client/Project

Lehigh Southwest Cement Company
Permanente Quarry

Drawing

3

Title

Utility Road Cross-Sections



Consulting
Engineers and
Scientists

September 6, 2019
Project 1902867

VIA EMAIL: Talia.Flagan@LehighHanson.com

Ms. Talia Flagan
Lehigh Southwest Cement Company
24001 Stevens Creek Boulevard
Cupertino, CA 95014

Dear Ms. Flagan:

Re: Estimated Tree Composition and Density on the North Highwall Lay-Back and Rock Plant Project Sites

This letter is intended to support your ongoing discussions with Santa Clara County staff regarding Lehigh Southwest Cement Company's application for a Reclamation Plan Amendment for Lehigh Permanente Quarry. In response to your request for additional information regarding trees on the Rock Plant and North Highwall Lay-Back sites, GEI Consultants, Inc. Senior Botanist Sarah Norris reviewed data and qualitative information collected during field surveys associated with the Rock Plant wetland delineation, North Highwall Lay-Back soil borings, and tree removal for road construction near the North Highwall Lay-Back area.

Although tree composition and size data have not been collected on the Rock Plant and North Highwall Lay-Back sites, such data has been collected near the North Highwall Layback area. Based on this data and observations made during surveys of the sites in question, GEI estimates the Rock Plant and North Highwall Lay-Back sites support a typical tree density of approximately 80 to 110 trees per acre, for trees greater than 5 inches (1,000 to 1,250 aggregate inches per acre). The primary tree species on the sites are coast live oak (*Quercus agrifolia*), interior live oak (*Q. wislizeni*), blue oak (*Q. douglasii*), California bay (*Umbellularia californica*), and California buckeye (*Aesculus californica*), with coast live oak and California bay likely the most common species. The average diameter at breast height of trees on the Rock Plant and North Highwall Lay-Back sites is expected to be approximately 12 inches.

If you have any questions, please feel free to contact Cindy Davis at 916.631.4500 or cdavis@geiconsultants.com.

Sincerely,

GEI CONSULTANTS, INC.

A handwritten signature in blue ink that reads "Cindy Davis".

Cindy Davis
Project Manager

A handwritten signature in blue ink that reads "Sarah A. Norris".

Sarah Norris
Senior Botanist, Regulatory Specialist

J:\Lehigh Hanson\Permanente Property\1902867_NHLB + RPR Report Revisions\County Incomplete Letter\Tree estimate letter_090619_.docx

To:	Erika Guerra	From:	Paul Kos
	Lehigh Southwest Cement Company		Denver, CO
File:	233001289	Date:	September 27, 2019

Reference: Permanente Quarry – WMSA Slope Instability Remediation Plan

1.0 INTRODUCTION

Stantec Consulting Services Inc. (Stantec) has been engaged by Lehigh Southwest Cement Company (Lehigh) to provide professional engineering services to investigate slope movements in the eastern extent of the West Material Storage Area (WMSA), specifically in an area referred to as the “Yeager Yard” at their existing Permanente Quarry located near Cupertino, California. Lehigh requested that Stantec evaluate remediation efforts to address the slope movements above Permanente Creek. Stantec has investigated the slope movements, evaluated material strength properties, and prepared an initial remediation plan to halt the slope movements. This memorandum summarizes the investigation, analysis, and remediation plan.

The WMSA instability is located on the north side of Permanente Creek, as shown on Figure 1. This area is suspected to be part of an ancient landslide considering the notable deflection of the creek in this area. This area was previously quarried and backfilled with greenstone overburden. Surface cracking has been noted in this area for several years; however, recent grading and heavy rains caused increased movements in the WMSA instability area (Golder 2019). Additional cracks formed at the crest, lateral extents, and toe of the movement area, and the cracks and movement areas were mapped, as shown on Figure 2. Lehigh has and continues to monitor the movements, which have significantly reduced due to additional grading, surface water controls, and decreased precipitation during the summer.

Stantec’s investigation has occurred in coordination with analysis performed in 2019 by Golder Associates Inc. (Golder 2019). Golder created a conceptualized surface to regrade the WMSA instability to increase the stability of the slope and limit further slope movements. Golder’s regrade plan significantly improved slope stability on an interim basis. This memorandum incorporates Golder’s regrade plan and provides additional recommendations to ensure that the final reclaimed slopes in this area satisfy appropriate Factors of Safety (FOS) under static ($FOS > 1.3$) and pseudo-static (seismic) ($FOS > 1.0$) conditions that comport with the Surface Mining and Reclamation Act (SMARA).

This memorandum relies on information obtained from previous reports and permit applications for the Permanente Quarry, site investigations and observations made by Stantec in 2018 and 2019, Stantec’s slope analyses of the area, and Golder’s regrading plan for the WMSA instability. The monitoring of slope movements is ongoing, and the remediation plan discussed in this memorandum is based on available information and is subject to change as the nature of the slope movements observed in the WMSA area are monitored.

2.0 POTENTIAL FAILURE MECHANISM

The area of WMSA instability is shown on Figure 1 (Site Map). The overall slopes in this area are relatively shallow at approximately 3H:1V. This indicates that the instability occurs in a weak layer of rock or sediments beneath the slope. The presence of seeps along the toe of the instability suggest elevated pore water pressures along the slide plane. Aerial photographs from the 1960’s show quarrying of limestone near the toe of the instability and the presence of rock outcrops in the area. These rock outcrops remained after mining, and this competent material causes the WMSA instability movements to shift towards the southeast on the lower part of the instability and cause the toe of the WMSA instability to daylight above Permanente Creek. Movements are towards the south on the upper part of the instability.

The basal surface appears to occur in greenstone/metavolcanic breccia near or at the contact between the greenstone overburden and the existing in-place greenstone bedrock. It is unclear whether the failure surface occurs along pre-existing discontinuities within the rock, or along the overburden/bedrock interface. Regardless of the exact location of the failure surface, the site observations and geotechnical assessment suggests a weak layer that is causing the instability. Stantec's assessment uses conservative assumptions and recommends verification of these assumptions through monitoring and testing as a result of this uncertainty.

An initial estimate of the strength of the basal rupture surface was made by Stantec using the program Slope-W®. The software uses limit equilibrium to calculate the FOS against slope movements. Cross-section C is representative conditions of the slope movements and was developed for modeling purposes, based on available data. Site observations indicate the slope movements curve towards the southeast on the lower extent of the instability due to the presence of the remaining competent bedrock suggesting a three-dimensional complexity that is not considered in the 2-D analysis completed. The analyses completed to date do not consider the bedrock and resulting deflected movements, which provide additional resistance. These three-dimensional impacts tend to increase the computed FOS. The 2-D analyses are therefore considered conservative.

Four surfaces were developed for the cross-sections to represent the pre-mine topography, 2017 topography, 2017-2018 topography (when overburden was removed from the toe of the slope), and current topography after placement of overburden near the head scarp. Survey data were available for all surfaces except the pre-mine topography, and Stantec developed the surface using US Geologic Survey (USGS) topographic maps from 1955. This surface is an approximate representation of the pre-mine topography. Figure 2 shows the cross-section line which was used for the stability model of the WMSA instability area.

Assumptions were made regarding the stratigraphy and composition of the slope. Boreholes along the alignment of cross-section C were used to delineate the pre-mining and current geologic conditions, including WMSA-2019, 165, 168, and 361. Historic drilling logs show the occurrence of limestone near the surface, as well as the presence of greenstone below; however, historical aerial photographs show that the limestone was quarried and the area backfilled with greenstone overburden.

A back analysis of the slope at the start of the instability (before Golder's 2019 regrade was started) was created by estimating the current conditions based on limited field observations. The FOS was inferred to be equal to 1.0 because of the slope movements in the area. Limited pore-water pressure conditions are known from borehole investigations, monitoring wells, and site observations. Field observations of water disappearing into the head scarp and water seeping from the toe area indicate saturated conditions along the slide plane, and the back analysis was performed using saturated conditions. The back analysis indicates a failure surface strength of approximately 16°. The slide plane was assumed to have no cohesion as it is at the residual (or remolded) strength, which has the lowest strength for the material. The model report showing the back analysis is included in Attachment A. The stability model with FOS=1.03 is the back analysis used to determine the failure surface strength.

3.0 GEOTECHNICAL EVALUATION

The WMSA instability area is currently being graded following recommendations provided by Golder. Lehigh provided Stantec with Golder's design, which Stantec used as the "base case" for this geotechnical evaluation. Stantec modeled cross-section C to evaluate site conditions and ensure that an appropriate factor of safety against slope failure is achieved. This cross-section is the same one used for the slide plane back analysis discussed in Section 2. The slope stability analyses were modeled using the software Slope-W®.



The models were evaluated under static and pseudo-static conditions, with horizontal ground acceleration, for the closure configurations of the WMSA area using the Spencer method. The two types of analysis are summarized in Table 1. The target FOS for the analyses are 1.3 for static conditions, and 1.0 for pseudo-static conditions based on mining industry standards for lands to be reclaimed to open space end uses, consistent with prior geotechnical analyses. For the pseudo-static model conditions, a horizontal seismic coefficient of 0.15g was applied to the static condition models to be consistent with associated geotechnical studies (Stantec 2019) and to follow recommendations for earthquakes with magnitudes up to 8.25 (Seed 1982).

The Golder regrade plan achieved the target static FOS. To ensure that slope regrading also meets the target pseudo-static FOS, Stantec modified Golder's regrade plan by adding a buttress at the toe of the instability area and removing material from the crest in 20-foot increments until the pseudo-static FOS > 1.0. The addition of 110,000 cubic yards of material to create a buttress and removal of 1,380,000 cubic yards of greenstone overburden are the modifications to Golder's regrade plan which are necessary to bring the pseudo-static FOS > 1.0 are presented below.

Table 1 Stability Analyses

Analysis Type	Description	Target Factor of Safety
Static Analysis	A limit equilibrium method of analysis that satisfies moment and force equilibrium to solve a slope stability problem. The output is a single FoS for the potential failure surface with the lowest FOS.	1.3
Pseudo-static Analysis	A limit equilibrium method of analysis that represents the effects of earthquake shaking by accelerations that create inertial forces. This is the simplest way to analyze the dynamic effects of earthquake loading of a soil or slope. The output is a single FoS for the potential failure surface with the lowest FOS.	1.0

Strength parameters for the materials have been established in previous geotechnical analyses of the Lehigh property and are based on laboratory testing, back-calculation, and published values for material properties (Stantec 2019). These strength parameters are listed in Table 2.

Table 2 Geotechnical Strength Parameters

Material	Unit Weight (pcf)	Cohesion (psf)	Phi' (Degrees)
Slide Plane Material	165	0	16
Greenstone Overburden	155	0	35
Greenstone Bedrock	165	12,500	30

Cross-section C was modified and evaluated for stability until the target pseudo-static FOS was achieved. Stantec added a buttress at the toe of the slope and removed material from the crest of the slope until the reclamation configuration modeled met or exceeded the pseudo-static target FOS > 1.0. Results from the stability analyses are shown in Table 3. Attachment A contains printouts from the slope stability model.

To achieve a pseudo-static FOS > 1.0 a buttress must be added to the bottom of the WMSA instability from the current toe of the instability (above Permanente Creek) to the elevation of the top of the overburden in the area. The overburden needs to be removed from the instability area until the top of the overburden surface is 80 feet below Golder's current regrade plan (elevation 1,520 feet).



Table 3 Geotechnical Stability Analyses Results

Section	Analysis Type	Factor of Safety
Section C	Static	2.22
	Pseudo-static	1.01

Seismic displacements were calculated using an empirical equation developed by Bray and Travarasrou (Bray 2007). This method estimates the displacement of a rigid block on a slope and is consistent with previous displacement analyses. The peak ground acceleration (PGA) value of 0.6 times the force of gravity (g) was used for the calculations, which is also consistent with previous analyses. This PGA corresponds to an earthquake with a mean return time of 475 years (Petersen 2008). The yield acceleration (k_y) corresponds to the seismic coefficient that results in a $FoS = 1.0$. The ratio of k_y to PGA was used for the displacement calculation. The calculations suggest displacements of 3 to 5 inches. Literature on seismic slope displacements suggest that median displacements of less than 6-in (15 centimeters [cm]) are “minor” and displacements of greater than 3 ft (1 meter [m]) are “major” (Bray 2007). All displacements for WMSA are “minor” and unlikely to influence the reclaimed slope.

3.1 GRADING PLAN

The slope stability model result that achieves the target FOS was used to develop a grading plan for the WMSA instability area. The grading plan includes a buttress at the toe of the instability placed at a 2.5H:1V gradient with material excavated from the crest of the instability to an elevation of 1,520 feet. Approximately 110,000 cubic yards of material will be required to construct the buttress, and approximately 1,380,000 cubic yards of material will be excavated from the WMSA instability. The reclamation topography for the WMSA instability area is shown on Figures 3 and 4. Areas outside the WMSA instability will be graded to the slopes shown on the proposed RPA.

3.2 RECOMMENDATIONS

The mitigation plan provided in this memorandum demonstrates that the proposed Reclamation Plan for slope movements in WMSA instability area meets or exceeds SMARA requirements for factors of safety under static and pseudo-static conditions. Recommendations for on-going geotechnical monitoring and investigations during development of the mitigation plan may allow for reduced grading and include:

- Continued monitoring of slope movements.
- Continued management of surface water.
- Verifying groundwater levels in the area by installation of groundwater monitoring instruments (standpipes, vibrating wire piezometers) as part of any future borehole investigations.
- Additional laboratory testing of representative rock lithologies and slide plane surface.
- Additional characterization of slope movement depths, velocities, and orientations.
- Refined slope stability model to quantify benefits of three-dimensional movements and increased FOS.



4.0 CLOSURE

This report provides the analysis and supporting information needed to demonstrate that Lehigh Southwest Cement Company's plan for reclamation operations at the WMSA meets SMARA and associated design and performance requirements. The WMSA instability area will be graded so that stable slopes remain for the reclamation period. The geotechnical assessment provided in this report demonstrates that the proposed Reclamation Plan meets or exceeds the SMARA requirements for factors of safety under static and seismic conditions.

This report has been prepared for Lehigh Southwest Cement Company to provide them with geotechnical guidance in support of the development and reclamation of the WMSA area. As mutual protection to Lehigh, the public, and Stantec, this report and its figures are submitted for exclusive use by Lehigh Cement Company. Our report and recommendations should not be reproduced in whole or in part without our express written permission, other than as required in relation to agency review and submittals. The drawings included with the report are for regulatory review and are not intended as detailed construction drawings. All information and design results contained herein have been prepared by the authors who have signed below and attached drawings have been certified by Nelson Kawamura, California, PE and Jennifer Van Pelt, California, CEG. A draft of this report was reviewed by personnel from Lehigh Southwest Cement Company.

Stantec Consulting Ltd.



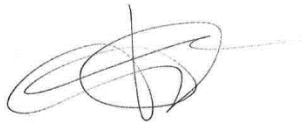
Paul Kos P.E.

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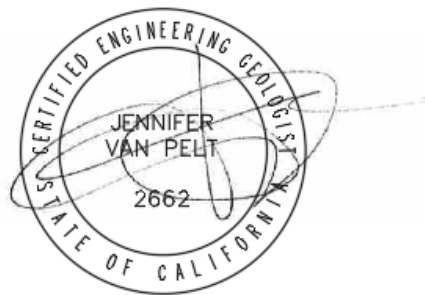
Jennifer Van Pelt C.E.G.

Engineering Geologist, Waterpower & Dams
Phone: 925-627-4565
jennifer.vanpelt@stantec.com

Attachments: Attachment A – Slope Stability Reports



September 27, 2019



September 27, 2019



REFERENCES

- Bray, J. D., and Travasarou, T., 2007. "Simplified Procedure for Estimating Earthquake-Induced Deviatoric Slope Displacements", *Journal of the Geotechnical and Geoenvironmental Engineering*, ASCE, Vol. 133, No. 4, pp. 381-392.
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Figures



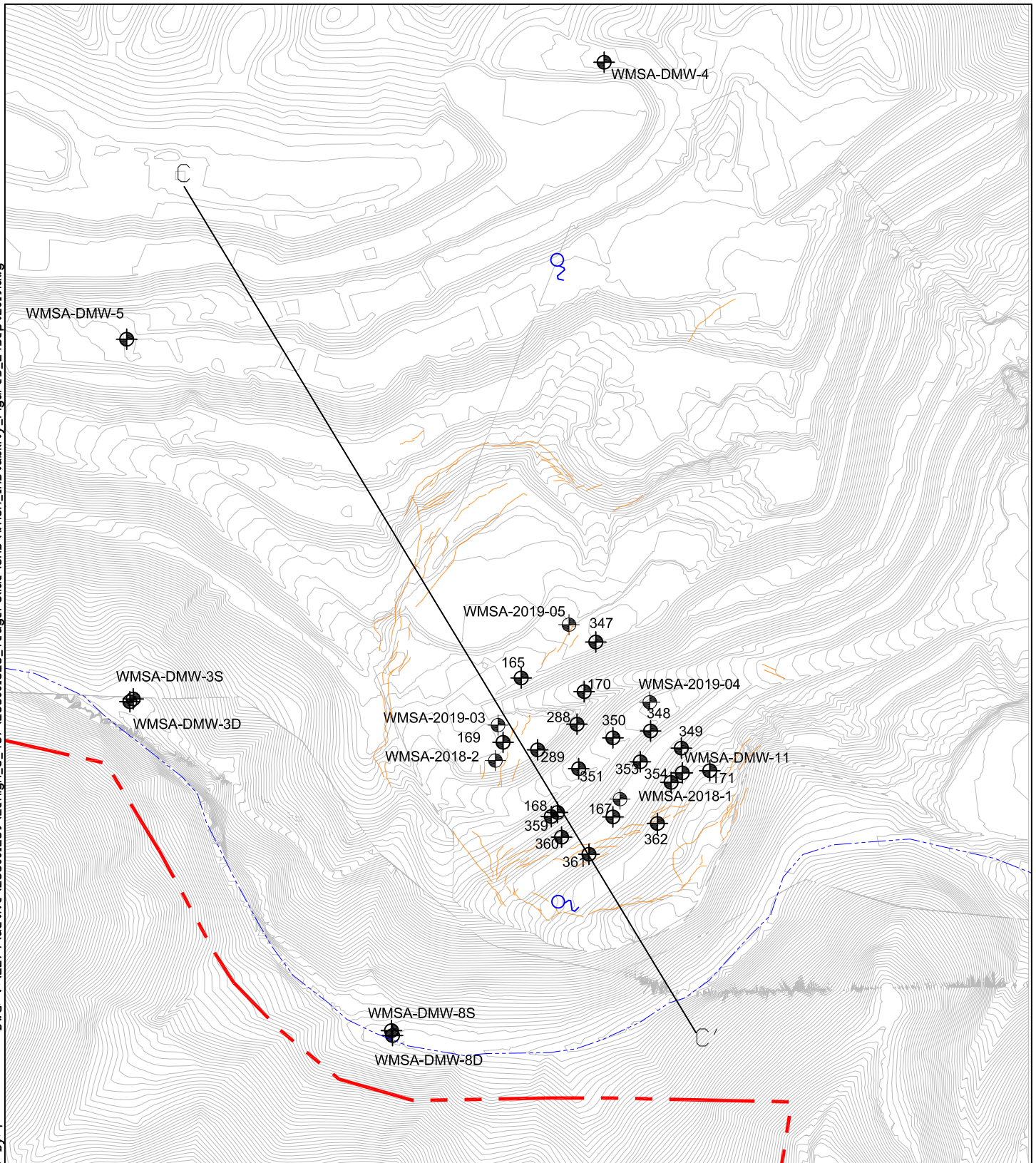
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Client/Project
Lehigh Southwest Cement Company
Permanente Quarry

Figure No.
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LEGEND

- RPA Boundary
- Stream
- Seep
- Borehole
- Crack



0 400 800 Feet
1:4,800 (At original document size of 8.5x11)

Client/Project

Lehigh Southwest Cement Company
Permanente Quarry

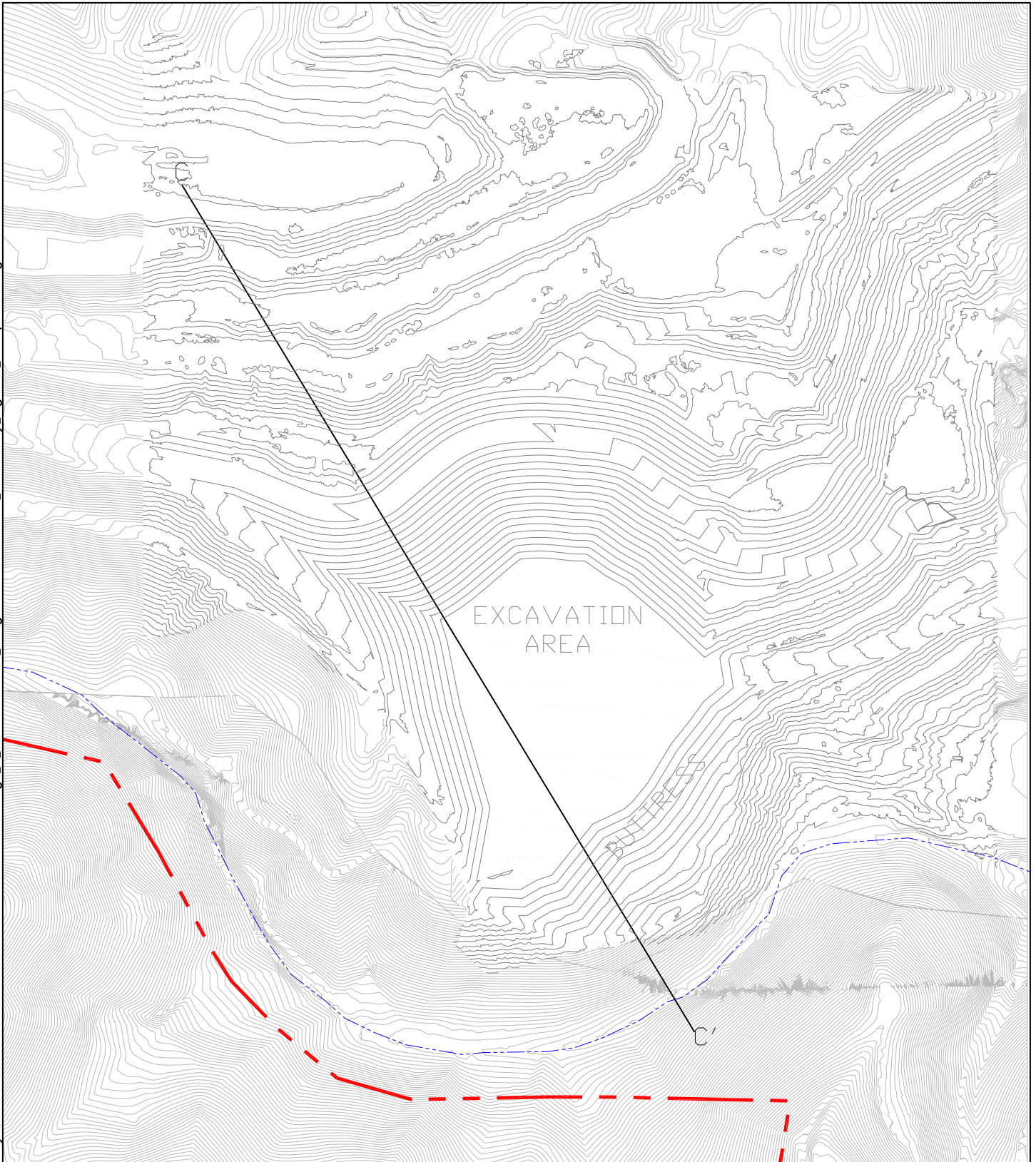
Figure No.

2

Title

WMSA Instability Area
Current Topography

Plotted: Sep 27, 2019 - 4:51pm By: pkos DWG: V:\2274\active\233001289\Lehigh_S_437\233001328_YeagerSlide\CAD\WMSA_Instability_Figures_24sept2019.dwg



LEGEND

- RPA Boundary
- Stream



0 400 800 Feet
1:4,800 (At original document size of 8.5x11)

Client/Project

Lehigh Southwest Cement Company
Permanente Quarry

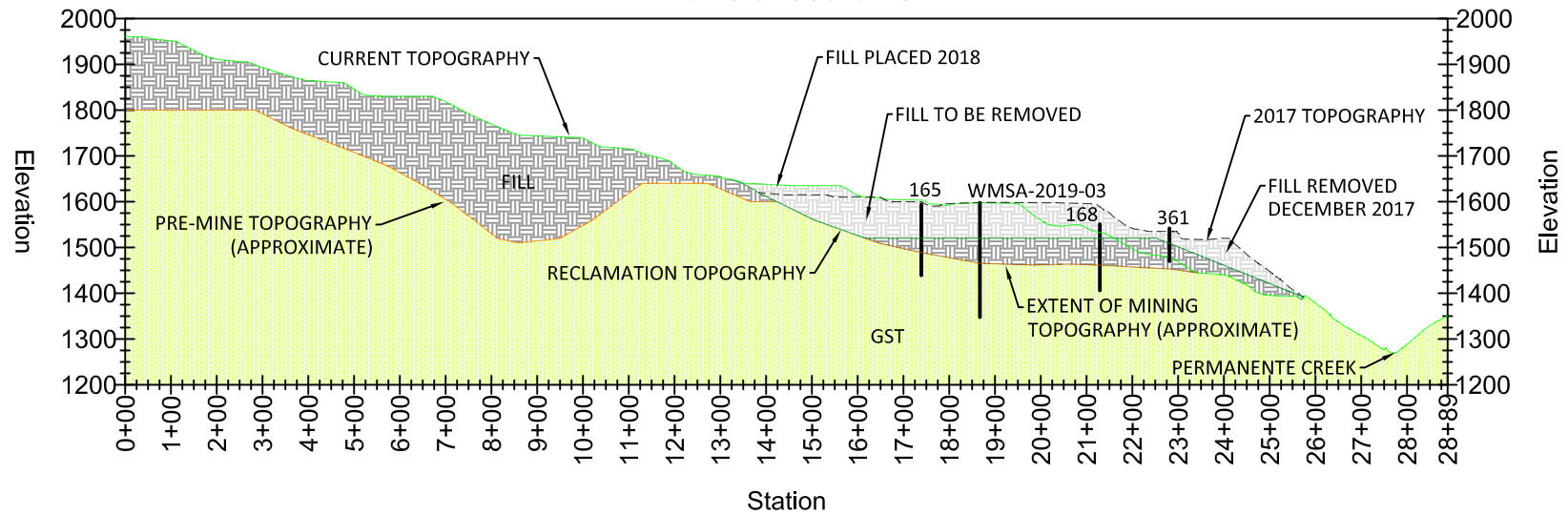
Figure No.

3

Title

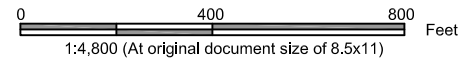
WMSA Instability Area
Regraded Topography

Profile of Section C



LEGEND

- PRE-MINE TOPOGRAPHY
- - - EXTENT OF MINING TOPOGRAPHY
- - - 2017 TOPOGRAPHY
- CURRENT TOPOGRAPHY
- RECLAMATION TOPOGRAPHY
- 165 — BOREHOLE
- [Cross-hatch pattern] FILL TO REMAIN
- [Diagonal line pattern] FILL TO BE REMOVED
- [Light green fill] GREENSTONE



Client/Project	Lehigh Southwest Cement Company Permanente Quarry
Figure No.	4
Title	WMSA Instability Cross-Section C

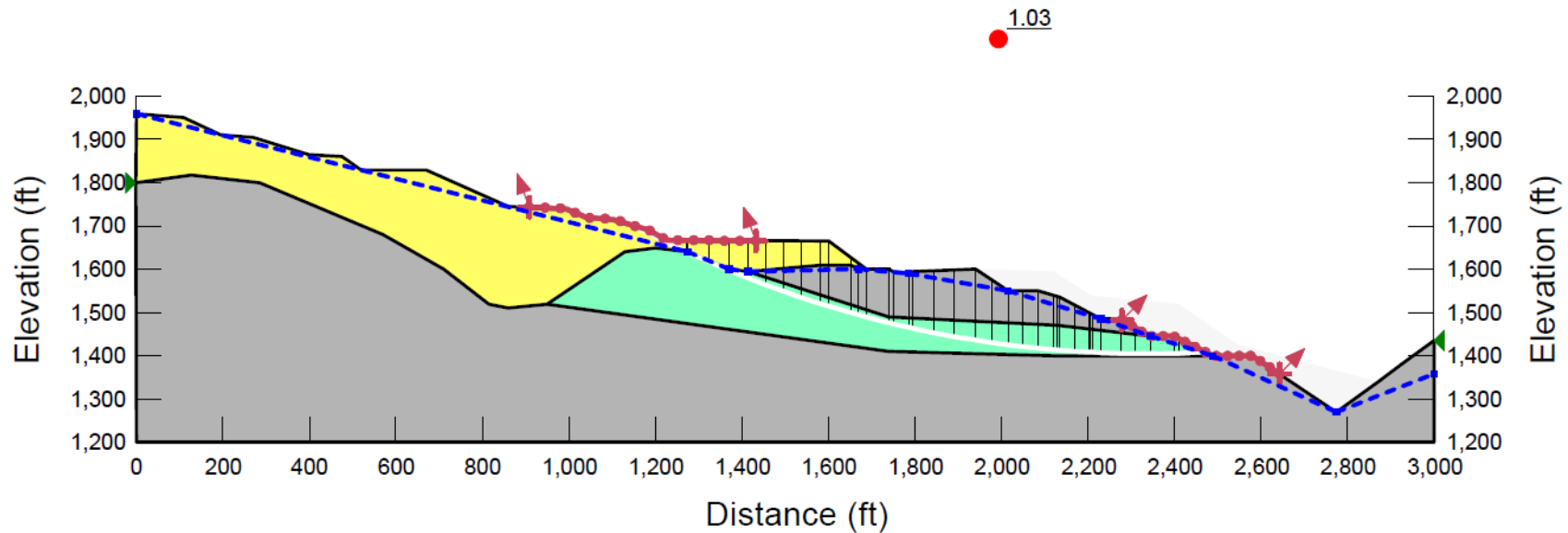
Attachment A

Slope Stability Analysis

Back Analysis of Failure Surface to Determine Slide Plane Strength

Title: Yeager Yard Slide - Section C
Parent: 01. Saturated Conditions
Name: 01c. Placement of Material at Crest
Method: Spencer
Factor of Safety: 1.03

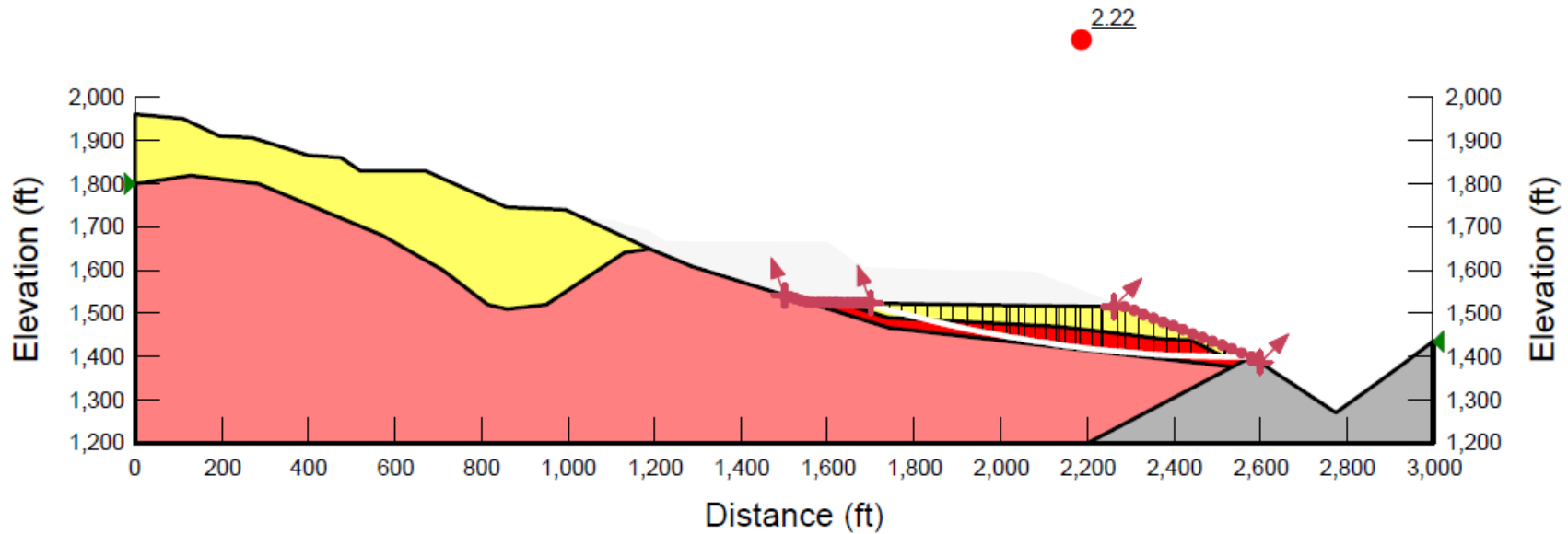
Color	Name	Model	Unit Weight (pcf)	Cohesion' (psf)	Phi' (°)	Piezometric Line
Green	Greenstone (Weakened for Saturated Conditions)	Mohr-Coulomb	165	0	16	1
Gray	Limestone (or competent Greenstone)	Mohr-Coulomb	165	12,500	30	1
Yellow	Waste Rock	Mohr-Coulomb	155	0	35	1



Static Analysis of Proposed Reclamation Plan Grading

Title: Yeager Yard Slide - Section C
 Parent: 01. Ru = 0.1 with Defined Failure Plane
 Name: 01k. Static with 2.5:1 Buttrass, -80 feet Bench
 Method: Spencer
 Factor of Safety: 2.22
 Horz Seismic Coef.:

Color	Name	Model	Unit Weight (pcf)	C-Horizontal (pcf)	C-Vertical (pcf)	Phi-Horizontal (°)	Phi-Vertical (°)	Cohesion (pcf)	Phi (°)	Ru
■	Greenstone (Artificial 15 Degrees)	Mohr-Coulomb	155					0	15	0.1
■	Greenstone (Artificial Anisotropic)	Anisotropic Strength	155	0	0	15	30		0	
■	Limestone (or competent Greenstone)	Mohr-Coulomb	155					12,500	30	0
■	Waste Rock	Mohr-Coulomb	155					0	35	0



Static Analysis of Proposed Reclamation Plan Grading

Title: Yeager Yard Slide - Section C
 Parent: 01. Ru = 0.1 with Defined Failure Plane
 Name: 01I. Pseudostatic with 2.5:1 Butress, -80 feet bench
 Method: Spencer
 Factor of Safety: 1.01
 Horz Seismic Coef.: 0.15

Color	Name	Model	Unit Weight (pcf)	C-Horizontal (pcf)	C-Vertical (pcf)	Phi-Horizontal (°)	Phi-Vertical (°)	Cohesion (pcf)	Phi (°)	Ru
Red	Greenstone (Artificial 16 Degrees)	Mohr-Coulomb	165					0	16	0.1
Light Red	Greenstone (Artificial Anisotropic)	Anisotropic Strength	165	0	0	16	30			0
Grey	Limestone (or competent Greenstone)	Mohr-Coulomb	165					12,500	30	0
Yellow	Waste Rock	Mohr-Coulomb	155					0	35	0

