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August 7, 2019

ELECTRONIC DELIVERY

Rob Eastwood
Chris Freitas
Department of Planning and Development
County of Santa Clara
70 W. Hedding Street, East Wing, 7th Floor
San Jose, California 95110

Re: *Response to February 14, 2019 County of Santa Clara, Department of Planning and Development, Grading Application Incomplete Letter*

Dear Mssrs. Eastwood and Freitas:

On March 5, 2018, the County of Santa Clara ("County") provided Lehigh Southwest Cement Company and Hanson Permanente Cement, Inc. (collectively, "Lehigh") with a letter response to its application for Grading Approval[1] related to Lehigh's proposed Permanente Creek Restoration Project ("PCRP"), which also included comments received to date by the County from other federal and state agencies. On August 23, 2018, Lehigh provided the County with a comprehensive response; however, Lehigh noted that for several items, additional technical work was necessary in order to appropriately respond. Further, Lehigh indicated that its creek restoration consultants were in the process of developing 90% design drawings that would assist the County with evaluating the proposed project. Lehigh committed to providing updated responses, the 90% design drawings, and the updated Design Memorandum by November 15, 2018, and on that date, the information promised was submitted ("Nov. 2018 Response Letter").

On February 14, 2019, the County issued a second letter response to Lehigh's Grading Approval application ("Feb 2019 Letter"), in which the County requested a second round of technical information; much of the letter is devoted to providing comments by the California Department of Fish & Wildlife ("Department"). While some comments are more typical of comments the Department would provide after a draft CEQA document is prepared and circulated for review, the purpose of this submittal is to provide the County and the Department with the requested responses. Lehigh looks forward to working with the County to produce a draft CEQA document so that the environmental review process for the PRCP can begin in earnest.

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[1] As noted in earlier correspondence, Lehigh is proceeding with an application for Grading Approval/Grading Permit for the areas of the Permanente Creek Restoration Project that fall outside the boundaries of the previously adopted Reclamation Plan. Those areas within the Reclamation Plan do not require such approvals. *See* County Ordinance Section C12-407.

Information requests from the County's February 14th letter are reproduced below in blue with numbers corresponding to those in the letter. Lehigh's responses follow in black.

The following references are used throughout this response to comments:

- **"90% design drawings"** refers to the Permanente Creek Restoration Plan – 90% Design Submittal drawings, dated November 15, 2018.
- **"Design Memorandum"** refers to the Permanente Creek Restoration Plan, 90% Level Submittal - Design Basis Technical Memorandum, dated November 15, 2018.

At the outset, Lehigh would like to note that information responsive to all of the County comments in the Feb 2019 Letter (Comments 1 – 7 below) was provided in the Nov. 2018 Response Letter. In the responses below, Lehigh refers the County to the comment/response number in the Nov. 2018 Response Letter where the responsive information can be located.

1. Please provide earthwork calculations of the earthwork quantities shown on the plans.

Please see the response to Comment 7 in the Nov. 2018 Response Letter.

2. Please provide the following Grading Ordinance required elements of a Preliminary Grading Plan:

    a. A statement explaining the purpose for the proposed grading and quantities.

Please see the response to Comment 8b in the Nov. 2018 Response Letter.

    b. The complete site boundaries and locations of any easements and rights-of-way traversing and adjacent to the property, appropriately labeled and dimensioned.

Please see the response to Comment 8d in the Nov. 2018 Response Letter.

    c. The locations of any existing and proposed roads, buildings, wells, pipelines, watercourses, private sewage disposal systems, and other structures, facilities, and features on the site and the locations of any improvements on adjacent land within twenty-five (25) feet of the proposed work (e.g. septic systems, pipelines, wells, retaining walls, etc.).

Please see the response to Comment 8e in the Nov. 2018 Response Letter.

    d. Location of known landslides, fault zones, liquefaction zones and other soil or geologic hazard areas.

Please see the response to Comment 8f in the Nov. 2018 Response Letter.

e. Location of cut, fill, and daylight and slope transition lines for all the proposed grading work and limits of the work.

Please see the response to Comment 8g in the Nov. 2018 Response Letter.

f. Boundaries of any floodplain or floodway areas within the Federal Emergency Management Agency's Flood Hazard Zones and any existing and/or proposed flood control facilities.

Please see the response to Comment 8i in the Nov. 2018 Response Letter.

3. Please clearly identify all roads maintained and not maintained by the County with right-of-way width and recording information.

Please see the response to Comment 9 in the Nov. 2018 Response Letter.

4. Based on the topography provided, the proposed grading may impair drainage flows. Please provide a Drainage Plan that demonstrates the following items:

a. The site can be adequately drained,

Please see the response to Comment 10a in the Nov. 2018 Response Letter.

b. The proposed development will not cause problems to the nearby properties,

Please see the response to Comment 10b in the Nov. 2018 Response Letter.

c. The proposed development is not subject to significant damage from the one percent flood,

Please see the response to Comment 10c in the Nov. 2018 Response Letter.

5. Please include all applicable easements affecting the parcel(s) with benefactors and recording information on the site plan.

Please see the response to Comment 11 in the Nov. 2018 Response Letter.

6. Please show the location of floodplain, floodway, with all known Base Flood Elevations on plan in the project area. Please provide a Federal Emergency Management Agency (FEMA) approved Conditional Letter of Map Revision for the work in the floodplain and floodway.

Please see the response to Comment 12 in the Nov. 2018 Response Letter.

7. This project is located within the San Francisco Bay Watershed, and may include ten thousand square feet or more of new or replacement impervious area. The preliminary grading plan shall include storm water treatment complying with the 2001 NPDES Permit Standards, Section C3, in its design. Please provide the North County Stormwater Questionnaire linked below:

   https://www.sccgov.org/sites/dpd/DocsForms/Documents/Stormwater_CWP_Questionnaire_NC.pdf

Please see the response to Comment 13 in the Nov. 2018 Response Letter.

For the remaining comments from the California Department of Fish and Wildlife, Lehigh notes that the numbering referred to by the Department is the numbering in the original March 2018 information request and the Nov. 2018 Response Letter.

CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE
Contact Kristin Garrison – 707-944-5534 / Kristin.Garrison@wildlife.ca.gov for information regarding the following item(s).

8. Comments in response to Updated Response to March 5, 2018 County of Santa Clara, Department of Planning and Development, Grading Application Incomplete Letter, letter prepared by Erika Guerra, Lehigh Hanson Heidelberg Cement Group, November 15, 2018.

Comment 16
Section 2.3.1.2 summarizes the hydraulic modeling effort, and Appendix F presents some of the modelling results. The write up and appendix lack a discussion of model calibration. Please describe the model calibration and any assumptions and issues with the model that may have consequences for the results.

A discussion regarding model calibration, modeling assumptions and any issues with the model will be included in an updated Design Memorandum, which Lehigh estimates will be submitted by October 31, 2019, along with updated 90% design drawings described herein.

Comment 18
Appendix G provides sizing calculations for Engineered Streambed Material (ESM) and Rock Slope Protection (RSP) in response to Comment 18. The following comments seek clarifications regarding these calculations.

- Calculations on the worksheets for the RSP design at culverts #7 and #9 do not utilize the HEC RAS average channel velocities given in Table T-1. The calculation sheet for culvert #7 uses an average velocity of 8.6 feet per second (fps), whereas Table T-1 gives a value of 10.88 fps. Additionally, the calculation sheet for the design at culvert #9 uses an average velocity of 14.7 fps, whereas Table T-1 lists a value of 17.75 fps. Calculations should be verified for these higher velocities.

Rock sizing calculations were originally completed using the cross-sectional average velocity, a side slope of 1.5H:1V and the assumption of impinging flow. Lehigh has recalculated rock size using the higher average channel velocities reported in Table T1 of the Design Memorandum. Lehigh has assumed a maximum steepness of 1H:1V. Lehigh has also adjusted the velocity factor (Vf) to reflect parallel flow since the channel segment at Culvert 7 is along a straight reach and the bank receiving RSP at Culvert 9 is along the inside of a bend. Resulting rock size is the same as previously shown. The results of the updated analysis will be included in the updated Design Memorandum.

- There is no worksheet that provides sizing calculations for the RSP design at culvert #6. Table T-1 indicates that the average velocity for the 100-yr flow are lower than at nearby Culvert #7. However, Table T-1 reports a velocity of 16.25 fps for the 10-yr flow (Station 116+20.75). Please review design considering this higher velocity.

RSP sizing calculations for Culvert 6 were not included in the design report since this area will be backwatered during the design event and velocities will be lower than at Culvert 7. Half-ton, vegetated RSP was specified at this location to match the rock size at Culvert 7 for construction efficiency. RSP sizing calculations at Culvert 6 will be included in the updated Design Memorandum.

The high 10-year velocity shown in the hydraulic model results for that location erroneously demonstrated a supercritical zone within an area that is, in fact, backwatered due to overtopping of the downstream culvert. The proposed 10-yr velocity will be similar to the existing 10-yr velocity. We will add more detail to the geometry of the model to better reflect the proposed conditions for the 10-yr event and report the velocity in the updated Design Memorandum.

- The calculation sheets for RSP at culverts #7 and #9 utilize an input value of 1.5:1 (horizontal to vertical) for the proposed inclination of the RSP surface. The proposed design at all three culverts indicate that the final design may be as steep as 1:1. Please verify calculations to ensure the design adequately considers the steeper inclination of 1:1.

Lehigh directs the County and Department to Lehigh's response above, to the first and second bullet points under Comment 18. A 1H:1V slope will be necessary to conform to existing grades at discreet areas at the three culverts, although the majority of rock placement at each site will be

constructed at 1.5H:1V or shallower. The rocks will be individually placed to ensure 3-point bearing, with the long axis normal to flow. Rock sizing calculations have been verified using a maximum slope inclination of 1:1. The results will be included in the updated Design Memorandum. Rock size remains unchanged.

- Please clarify the source of the velocities used in the rock sizing for the angular rock vehicle barrier (Table T3, Appendix F). The values used in the overtopping evaluation do not match the HEC RAS average flow velocities listed in Table T-1, although it is acknowledged that the use of average flow velocities likely would be overly conservative given the vehicle barrier's location along on the bank of the channel. The source of the velocities used in the sizing analysis should be given.

The source of the velocities are from a detailed analysis and query in HEC-RAS using the cross section velocity distribution module. Additional information regarding the velocity source and model outputs will be included in the updated Design Memorandum.

Comment 19

The comment was intended to solicit consideration of other channel morphologies that may be more appropriate for the steep stream gradients along some reaches. The proposed channel gradients are excessive along the Rock Pile and Material Removal areas where the channel will be restored using ESM. Page 9 of the Design Basis Technical Memorandum acknowledges this by stating that it will be impossible to avoid post-construction channel adjustments. It suggests that the steepened channel in some reaches might develop steps, pools, and chutes with a geometry that cannot be predicted. In other words, the channel as designed likely will reorient (i.e., fail) during large flows. The design documents and supporting reports describe uncertainty in subsurface conditions, and they provide an envelope of gradients that may be constructed. All of the gradients within the envelops for these areas are steep to very steep. As an example, the Rock Pile Area Plan (Sheet C19) shows the lowest gradient of the proposed ESM-lined channel to be 7.7%, which is very steep and likely prone to considerable reorientation from high stream flows. The plan sheet indicates that constructed gradient could actually be up to 12.0%. The proposed ESM-lined channel design most certainly will be unstable at 12%. The following discussion provides more detail related to the comment.

The proposed architecture of the channel as depicted in the design (i.e., detail views on Sheet C34) resembles a pool-riffle channel morphology, except that the design does include rock weirs at the upstream end of pools. Montgomery and Buffington (1997) and the California Salmonid Stream Habitat Restoration Manual (2009) report that channel gradients between 3% and 6.5% likely will have a step-pool morphology, and steeper channels will have a cascade morphology. The discussion of analogue sites in Appendix B of the Design Basis Memorandum mentions that step-pool morphology likely is more stable in steeper gradient (i.e., >8%) sections and that pool-riffle morphology appears to

> dominate less steep sections (i.e., 4-8%). However, the design does not specifically include step-pool and cascade morphologies for situations where stream gradients are very steep.
>
> For steeper gradient reaches, the design details and specifications for step-pool and cascade/pool-chute morphologies should be included in the design drawings and addressed in the Design Basis Technical Memorandum. Step-pools typically are spaced between 0.5 and 2 channel widths with the closer spacing being where the channel is steeper. The applicant may want to consider a step-pool channel sequence where larger pools are spaced every 2 to 4 channel widths that are separated by a series of steps spaced at 0.4 to 0.8 channel widths. Likely, additional steps/rock weirs should be added to the current design between pools to better control the channel profile. The design of a cascade and pool morphology should be included for the situations where the channel gradient is found to be very steep. The step-pool and cascade and pool designs, if installed correctly, should be more stable than the proposed pool-riffle morphologies. See the California Salmonid Stream Habitat Restoration Manual (2009) for a discussion of these designs.

Lehigh's previous response focused on pool spacing and cross sectional geometry; we will now address how the reaches between pools would be constructed. It is not planned to construct pool/riffle morphology within steeper reaches. The drawings will be amended with additional details to show the intended channel geometry between pools over the full range of anticipated profile gradients. This geometry will include several steps between larger pools as well as pocket pools between larger pools currently shown on the drawings.

Lehigh agrees that reaches over 3% typically begin to transition into step/pool geometries. We also agree that channels over 6.5% gradients begin to transition into cascade forms. The analog reaches surveyed within Permanente Creek typically did not conform to these standard relationships, largely due to the fact that vegetation and debris flow processes were found to control much of the geometry. Since mature vegetation cannot be relied upon to stabilize the channel immediately following construction, larger rock and channel forms will need to be relied upon (*i.e.,* steps, chutes, cascades, pocket pools) to dissipate energy during the vegetation establishment period.
The comment recommends consideration of spacing larger pools at 2 to 4 bankfull widths, with steps at 0.4 to 0.8 channel widths in steeper reaches. The larger pools currently specified in Table 1 on Sheet C34 of the drawings are spaced at 2.4 to 10 channel widths in reaches of 4% to 8% grade, and at 1.4 to 5.7 channel widths in reaches of 8% to 12% channel grade, which generally meets the recommended 2 to 4 criteria.

The comment further suggests consideration of steps spaced at 0.4 to 0.8 channel widths. This would correlate to a spacing of 6.4 to 12.8 feet in the reaches of 8 to 12%. This suggestion will be incorporated into the updated 90% design drawings, which are expected to be submitted in October 2019. The details currently shown on the 90% design drawings do not show these elements over all potential channel slopes. Rather, the ESM was sized to allow for their creation as directed by the Engineer in the field, to suit local conditions. Lehigh understands the Department's desire for

more detail and Lehigh will present additional channel profile geometries within the updated drawings to provide clarity about how the reaches between pools will be constructed to accommodate varying profile gradients.

Lehigh disagrees with the statement that adjustment equates to failure. Lehigh does not intend to construct a channel that is unable to make slight adjustments, since that would not be a restored channel and would not be geomorphically appropriate to the natural setting. Many of the desired ecological functions of a natural channel are dependent on channel adjustment. Lehigh's creek restoration experts accommodate and control adjustment by ensuring that the reach-scale channel stability is never dependent on any one structure, such as a weir. Rather, the entire mix used to create the channel and floodplains will be stable. Weirs that are shown on the drawings are typically provided to force pools, rather than being solely relied upon for profile control. Sills are provided to train the channel back to the intended low flow alignment when adjustment do occur. Lehigh expects any adjustments to be constrained to localized settings.

Comment 20

The comment focuses on the transitioning of adjacent cultural and natural features into the restoration and how these features may affect the long-term success of the restoration project. The comments specifically mentions the debris slide at the upper end of Pond 13, which is just one example of adjacent features/conditions that may affect the success of the project. There is no attempt to identify areas such as the debris slide to mitigate their potential to substantively alter the long-term success of the project. Comment 8g requested that the applicant provide a map of existing landslides and other geologic hazards. The response, i.e., Figure 2.0, does not show the debris slide or unstable material perched above the Pond 13 area or other landslides that may exist along the project area. The landslides that are shown on the figure are based on 2007 geologic mapping and a verbal communication. The mapping in Figure 2.0 does not appear to focus on existing conditions specific to the project and may not reflect the actual landslide hazard that could threaten the success of it. Such landslide mapping should be part of a geologic and geotechnical evaluation for the project and for the assessment of project risk. See discussion of geologic and geotechnical evaluation in Comment 24 response.

Lehigh's consultant, Golder Associates, is preparing a project-specific geologic and geomorphic map that will identify existing landslides and provide an assessment of risk to the long-term success of the restoration project. Lehigh expects this work to be complete and included in the October 2019 updated submittal.

Comment 21

Comment 21 addresses the final disposition of Pond 13. The response indicates that a pond may or may not remain depending on the actual position of bedrock at depth. In- channel ponds, like Pond 13, are not typical landforms found along streams in the Santa Cruz Mountains. None were mentioned in the evaluation of regional hydraulic geometry and

> analogue channels (Document 3, Appendix B). The pond, if left in place, will be a wide spot that will interrupt sediment transport, encourage predators, and may lead to failure of the restored channel. The pond and associated sediment should be removed and the channel restored through the pond reach.

As discussed in the Nov. 2018 Response Letter, under any of the presented scenarios (the "upper limit of potential design channel invert," "lower limit of potential design channel invert," or something in between the two), the current dam will be removed, and the sediment associated therewith will be removed. Thus, Lehigh has addressed the Department's concern that sediment be removed.

At this point, the issue appears to be if the "upper limit of potential design channel invert" is selected, whether the channel may remain wider, and more pond-like in this area because of bedrock conditions. Lehigh confirms here that it will construct the channel in this area in accordance with the "Typical Channel Treatment Detail" on Sheet C20. The detail presents typical cross section geometry for the restored channel through the Rock Pile Area and includes an associated table for bankfull dimensions by profile design slope. The updated 90% design drawings and updated Design Memorandum to be submitted in October 2019 will include notes regarding removal of the pond and the restoration of an open channel if the Upper Limit of Potential Design Channel Invert is constructed.

> **Comment 23**
> The recent response to comments letter issued November 15, 2018 for the county grading permit application, and the 90% design submittals do not adequately address comment #23 from Santa Clara County's original grading application incomplete letter issued March 5, 2018. It is not recommended that any Large Woody Debris (LWD) structures are installed in Reaches 14-16. Based on stream gradient it is inappropriate to install LWD in a reach of this gradient since they will fail. LWD in reaches 19-21 are appropriate as long as they are anchored adequately (see California Stream Habitat Restoration Manual 2009 for examples of appropriate anchoring methods). Proposed LWD structures from Reaches 14-16, could be moved to the culvert 7, 8 or 9 replacement areas. While on site trees may be appropriate for constructing floodplain roughness elements, in stream structures should be fir or redwood to improve structure stability and longevity. Also, the design memo describes LWD instillations will be built to withstand flood flows. Please specify the design flow for these structures and how long you intend structures to last.

The installation of LWD structures in Reaches 14-16 and 19-21 is a provision of the Amended Consent Decree with the Sierra Club. If the Department is requesting that LWD in Reaches 14-16 be removed from the project description in order to secure relevant permits and authorizations, then Lehigh will omit that element from the project description, and consistent with the Amended Consent Decree, Lehigh will implement the permitted project.

While Lehigh agrees that structures made from fir or redwood improve structure stability and longevity, the Department should be aware that no roads or easy helicopter access in Reaches 19-21 exists by which to install such LWD. As such, it may be appropriate to remove the LWD installation at Reaches 19-21 as well, and instead, include the installation of an LWD structure, using fir and/or redwood, at both the Culvert 7 and 8 removal sites. The structures would be ballasted as required to ensure stability during the 100-yr event. Lehigh will include details for these structures, including anchoring details consistent with the California Stream Habitat Restoration Manual 2009, in the updated 90% design drawings. Ballasting calculations will be included in the updated Design Memorandum.

Comment 24

The geologic and geotechnical effort, so far, has been very minimal given the substantial challenges to this restoration effort. None of the geotechnical memoranda by Golder Associates (2014, 2017, 2018) are what can be considered detailed geologic or geotechnical reports that presents a complete complement of data in a manner that would help address the uncertainties in the final grade or that would define engineering geologic or geotechnical conditions throughout the entire restoration project on a reach basis. Seismic study results have been made available as a standalone document; however, there is no attempt to incorporate their results with other geologic and geotechnical data. The full usefulness of the geophysical data may not be utilized by the project. The geotechnical borings referred to in Document 3 are absent from the submittals that have been made available for my review. So, the project's approach to geologic and geotechnical studies is cursory and has resulted in almost sole reliance on "field engineering" to design and construct the project.

Comment 24 is meant to solicit additional geologic and geotechnical data to reduce the uncertainties in the channel gradient design envelope and provide and understanding of geological and geotechnical conditions throughout the project. The response that the 90% construction drawings have been review by Golder Associates (i.e., without additional studies) does not address the intent of the comment, because no new data were collected. The uncertainty remains the same, and there are numerous uncertainties that may affect the long-term success and viability of the restoration project. Please consider the following comments regarding the geologic and engineering efforts:

- The Golder Associates (2014) technical memorandum notes that five of their previous reports for the mine (i.e., 2007, 2008, 2009, 2011, and 2013) support their primary investigations of geotechnical parameters and recommendations for the restoration project. These studies were not described or provided for review of geotechnical conditions. The description of site conditions in the 2017 technical memorandum are identical to those in the 2014 study, indicating the importance of these earlier studies to the conclusions and geotechnical recommendations that helped formed the basis of the design. The data and analyses from these studies, as

they specifically apply to the Permanente Creek restoration project, should be described in a thorough engineering geologic and geotechnical report.

- The Golder Associates 2014 technical memorandum describes the importance of completing site-specific geotechnical explorations to support the final design concepts. The seismic studies are a good step, but they are inadequate to characterize geotechnical conditions to the level necessary to address project uncertainties and challenges. The project should implement a geologic and geotechnical exploration plan to reduce uncertainties in channel design and final slope design.

- One very important aspect of the restoration effort is the location and final longitudinal gradient of the stream channel through several challenging reaches, including the Rock Pile and Sediment Removal Area. There is considerable uncertainty in the depth to bedrock, which may act as a control point for the longitudinal channel gradient if present at shallow depths. The uncertainty has compelled the designers to propose an envelope of gradients that range from steep to excessively steep as described in a previous comment. Much of the uncertainty is driven by the lack of geologic and geotechnical information, especially subsurface data, for key areas of the restoration plans. The available geologic and geotechnical reports lack a thorough analysis of background data that may have very important implications for the design of the channel and final slopes. For example, the georeferenced, historical U.S. Geological Survey 7.5-minute quadrangle shows that the stream took a more northerly course in the past and once flowed under the present location of the Rock Pile. The former channel is now buried beneath the pile of mining waste. The seismic lines (i.e., Lines 7 and 8) show lower velocity materials above bedrock that likely are mining waste burying the former valley of Permanente Creek. Project mapping does not show this area to be part of the Rock Pile and does not seem to acknowledge that it is mining waste. If these deposits are not part of mining waste associated with the Rock Pile or earlier waste-disposal effort, then the project should explain the geologic genesis of these lower velocity materials. In any event, the seismic lines indicate the morphology of a buried valley/channel geometry that is coincident with the blue line stream shown on the georeferenced 7.5-minute map. The project design more or less follows the shortened stream path imposed on it by the dumped mining waste and human-made modifications to channelize and straighten the stream and fix its present location. A longer flow path, such as the one indicated by readily available data, likely would result in lower more stable stream gradients that are less likely to constrain the channel to bedrock. The design at the Rock Pile, Material Removal Area, and any other critical reaches must be informed by surface and subsurface studies and analysis documented in a report.

- The geotechnical approach to final slope design relies on "field engineering" based on an inspection during construction. However, the final slope design is too important in some areas, such as the Rock Pile area, to rely on field engineering. A failure of the final slope from the Rock Pile area could threaten the success of the restoration effort. As described above, the project mapping appears to grossly underestimate the extent of the Rock Pile and the amount of mining waste comprising it. No data describing subsurface condition (i.e., seismic or boreholes) are presented for the Rock Pile as mapped. Therefore, the removal plan shown on Sheets C19 to C21 is completely unconstrained by subsurface investigations, and a field engineering approach has a high likelihood to result in unstable slopes, especially if any mining waste remains on the final slope. The design of final Rock Pile slope(s) and other important slopes (e.g., the Material Removal Area) must be based on thorough engineering geologic and geotechnical engineering studies that includes collection of subsurface data and slope stability analyses.

  As concluded from the comment above, CDFW highly recommends against the field engineering approach to slope stability. However, if the field engineering approach is implemented for final slope design as a replacement for site-specific engineering-geologic and geotechnical studies, the engineer or engineering geologist in responsible charge should complete and submit a professionally prepared, signed/stamped memorandum for each slope. The memorandum for each slope should describe the site-specific data collected, the analyses used to determine final slope design, the basis of the design, and surveyed as-built drawings, among other items. These reports should be provided for review before providing the final slope design for review.

Given the considerable project uncertainties and challenges, a thorough engineering geologic and geotechnical report based on detailed engineering-geologic mapping, subsurface investigations, and analyses should be completed for the project. The report should present a synthesis of the data collected, detailed geologic mapping, geologic cross sections tied to the geophysical data and boreholes, engineering geologic descriptions of soils and rock, and other standard of practice type evaluations that would facilitate independent technical review.

Golder Associates is preparing a project-specific geologic and geomorphic map with accompanying cross sections and supporting technical memo that will characterize the nature and extent of surficial earth materials (*i.e.*, alluvium, colluvium, landslide debris, etc.) and bedrock outcrops, and identify potential geologic hazards and associated risks that could impact the project. The mapping and accompanying narrative will incorporate and summarize existing pertinent geologic and geotechnical data from previous studies at the Site. The seismic data from Permanente Creek will be incorporated into the analyses of subsurface conditions. Lehigh expects this work will be submitted to the County by October 31, 2019.

Comment 26

The CDFW comment was meant to encourage evaluation of engineering-geologic risks to the project and to look for ways to minimize or mitigate those risks. A risk assessment involves identification of risks, evaluating their probability of occurrence, judging the risk's impact to the project, and developing strategies or countermeasures to minimize or mitigate the risks, as appropriate. The most concerning engineering-geologic risks that threaten the project stability and success relate to the excessive steepness of the restored stream gradients and the potential for slope instabilities from the mining-altered parts of the landscape (e.g., unstable mining waste). Adequate thorough engineering-geologic and geotechnical studies should inform the design in such a way that would minimize these risks. However, the studies provided did not include such analysis. Either adequate studies including risk analysis should be provided or a through monitoring and adaptive management plan should be written, and reviewed by CDFW, to ensure project success. See discussion below.

An evaluation of risk related to identified geologic hazards will be provided as noted in the original Response to Comment 24. The project will include a monitoring and adaptive management plan to identify and address channel adjustments that may warrant mitigation to ensure the long-term success of the proposed project.

Comment 27 b)

The CDFW comment was regarding uncertainty in the suitability of materials that the typical section at a weir on Sheet C34 is given for the situation where the weir coincides with a floodplain boulder sill. The plans should also include a typical section and specifications for situations where the weir will not coincide with a boulder sill. The detail should include exactly how the weir will be tied into the banks in such a way that it is stable and flows do not flank it. Rationale for this should be provided in the updated Design Basis Technical Memorandum.

Where boulder sills are absent, weirs will conform to the floodplain armor placed on adjacent floodplain areas. The boulder weirs will be keyed into the banks and will abut the floodplain armor to ensure that the weirs are not flanked. A typical weir section, where the weir will not coincide with a boulder sill, will be added to the drawings to demonstrate this and rationale will be provided in the updated Design Memorandum.

Comment 29

Although the Type 2 vehicle barrier rock has been sized to resist forces from flood flows, the rock could be displaced if it were hit by a vehicle. This could result in debris entering the banks or bed of the creek. Alternative and more stable vehicle barriers should be evaluated. If alternative barriers are not available, monitoring the stability of the Type 2

vehicle barriers, and potential remediation, should be included in the adaptive management plan.

Lehigh notes that Type 2 vehicle barriers are concrete k-rails and Type 1 barriers are composed of rock, so we assume the Department's comment pertains to Type 1 vehicle barriers. Type 1 vehicle barrier monitoring will be included the monitoring and adaptive management plan that will be prepared for the proposed project.

Comment 30

The response states that number and species of mature shrubs and trees greater than 2 inches in diameter at breast height (dbh) will be estimated and trees will be grouped by dbh class (i.e. 10 to 20 inches). Note that, for purposes of assessing appropriate compensatory mitigation needed through the Streambed Alteration Agreement (SAA), the diameter of trees to be removed should be ungrouped (i.e. the diameter of each tree to be removed should be stated). Alternatively, grouping should be based upon tree replacement ratios, shown below.

- Willows equal to or greater than 3 inches dbh shall be replanted at 3:1 ratio.
- There should be replacement of oak trees that are equal to or greater than 2 inches dbh. Individual oak trees that will be removed should be replanted at native tree ratios below, excepting that trees greater than 24 inches dbh should be replaced at a 10:1 ratio.
- Individual native trees that will be removed shall be replanted at i) 3:1 for trees 3 - 6 inches dbh; ii) 6:1 for trees greater than 6 inches.
- Non-native trees greater than 3 inches in diameter shall be replaced at a 1:1 ratio with a native tree species.
- Native shrubs shall be replaced at a 3:1 ratio.

The proposed grouping of tree classes is consistent with Section 11 of the Department's guidance for Notifications of Lake or Streambed Alteration (allowing grouping of tree classes). With regard to compensatory mitigation, Lehigh notes that the proposed project is a restoration project expected to achieve an overall environmental benefit and increased function and value for the stream corridor, and the proposed project will include a revegetation plan to address trees and shrubs removed to allow for channel widening or other beneficial streambed work. Compensatory mitigation (if any) should be viewed through this lens.

Further, neither the California Fish & Game Code nor CEQA mandate the specific mitigation ratios enunciated by the Department; instead, the Fish & Game Code requires those "reasonable

measures" necessary to protect the fish and wildlife resources within the stream. (Fish & Game Code § 1602(a)(4)(B); *see also Environmental Council of Sacramento v. City of Sacramento* (2006) 142 Cal.App.4th 1018, 1038 (upheld Sacramento's mitigation ratio of 0.5:1 despite claim that "a 1:1 ratio is more generally accepted"); *Preserve Wild Santee v. City of Santee* (2012) 210 Cal.App.4th 260, 278 (loss of habitat mitigated at 1:1 ratio).) Finally, the specific conditions and mitigation ratios that may be included and negotiated as part of a Streambed Alteration Agreement under the Fish & Game Code will be addressed at the permitting stage of the project, and need not be resolved at this stage of the CEQA process. Lehigh looks forward to working with the Department on this item.

Figure 4.0, Concept Design Alternative to Maintain Pond 1250 and the Associated Water Treatment Facilities and Access Road to Pond 4a

Please analyze and clarify the advantages and disadvantages between keeping the treatment facilities in place vs removal of the facilities. The analysis should include outfall of the water treatment facility and benefits and detriments to the riparian habitat and wildlife (e.g. trout and California Red-legged Frog, CRLF) for both alternatives. Please explain the alternate location and outfall for water treatment, should the facilities at Pond 1250 be removed.

Lehigh's NPDES Permit requires the treatment and discharge of water stored in the Quarry at this location so long as Quarry water must be discharged. The cessation of discharge from this location is as yet undetermined and speculative. The removal of this infrastructure will be associated with the Quarry reclamation and closure, not related to the proposed creek restoration project. Given the legal and regulatory constraints, Lehigh will forego this analysis.

9. Comments on Permanente Creek Restoration Plan, 90% Level Submittal, Design Basis Technical Memorandum, prepared by Waterways Consulting, Inc., 26 pages, 1 attachment, 9 appendixes, November 15, 2018.

Monitoring and Adaptive Management

a. As described above, the Design Basis Technical Memorandum acknowledges that post-construction channel adjustments are likely, especially along the steeper sections of the project. The project should include a post-construction monitoring and adaptive management strategy that addresses the areas of high likelihood of undesirable post-project channel adjustments (e.g., Rock Pile, Material Removal Area, culvert removals) and where fish passage may be impaired. The plan should include evaluation of fish passage and an assessment of the likely trajectory of channel evolution where channel adjustments occur. Given the lack of engineering- geologic studies, the monitoring and adaptive management program should continue for a number of years (e.g., 10 years) and include

monitoring during wetter than average winters to support and confirm the success of the project.

b. Page 12, Section 2.3.2.1 Angular Rock Vehicle Barrier Assessment: See Comment 29 in relation to Type 2 vehicle barrier monitoring.

A monitoring and adaptive management plan will be prepared, with analysis of fish passage for endemic species.

10. Comments on Permanente Creek Restoration Plan, Preliminary Grading Plan – 90% Design, Santa Clara County Grading Permit Submittal, prepared by Waterways Consulting, Inc., 45 sheets, November 15, 2018.

a. For culvert 7 consider laying back south bank versus rock slope protection.

The south bank is steep and would require a significant amount of grading and mature native riparian vegetation removal to eliminate the need for rock slope protection. Lehigh will present this information in the updated Design Memorandum.

b. For culvert 9, please clarify why the channel is stable enough that it does not need to be armored with ESM like at culverts 7 & 8. This should also be addressed in the design memo.

Stream flow does not pass through Culvert 9. The pipe is perched above the channel in the south bank. There is exposed RSP along the channel margins, as shown on Sheet C18 of the drawings, and cobbles and boulders are present along the channel bed. Mature riparian vegetation is also present along the channel banks. The culvert will be removed and the void will be filled with vegetated RSP (see Section B, Sheet C18). There will be limited impacts to the channel bed and existing vegetation during this work, and therefore the channel does not need to be armored. A discussion regarding this will be included in the updated Design Memorandum.

c. For culvert 9 consider laying back south bank versus rock slope protection.

The south bank is steep and would require a significant amount of grading and removal of mature native riparian vegetation to eliminate the need for rock slope protection. Lehigh will present this information in the updated Design Memorandum.

d. Sheet C33: The pump should be screened and monitored to insure CRLF and other native amphibian and fish species larvae are not entrapped in the pump. The following link provides guidance: http://www.westcoast.fisheries.noaa.gov/publications/hydropower/fish_screen_criteri a_for_pumped_water_intakes.pdf. If there is a conflict between this guidance and recommendations or requirements of the US Fish and

Wildlife Service for CRLF, please defer to the US Fish and Wildlife Service recommendations or requirements.

Notes will be added to the updated 90% design drawings regarding diversion pump screening and monitoring.

e. Sheet L1-L5: Note that, for purposes of assessing appropriate compensatory mitigation needed through the (SAA), tree and shrub replacement ratios should conform to the replacement ratios as in Comment 30 above. If these ratios are not met by the current design, then additional plantings may be required through the SAA.

Lehigh refers the Department to its response to Comment 30.

f. The designs do not address the infiltration of water from the creek into the quarry pit. Please analyze project designs that will limit loss of water from the creek into the quarry pit (e.g. bentonite cutoff walls).

Mitigation measures implemented to minimize subsurface infiltration of water to/from the Quarry, such as bentonite cutoff walls, would be detrimental to the long-term success of the proposed project. Perennial flow in Permanente Creek, referred to as "baseflow," is currently fed by groundwater recharge from the adjacent valley side slopes. The approved Reclamation Plan for the Quarry requires backfill of the Quarry, to improve the natural groundwater recharge connection in the area of the Creek affected by Quarry operations. An engineered subsurface barrier would impede this process and be detrimental to the restoration of the natural creek system.

Sincerely,

Erika Guerra

Erika Guerra
Environmental and Land Resources Director
Lehigh Southwest Cement Company

cc:
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