

Lehigh Southwest Inc. 24001 Stevens Creek Blvd. Cupertino, CA 95014

November 15, 2018

### VIA OVERNIGHT DELIVERY

Chris Hoem, AICP Senior Planner Department of Planning and Development County of Santa Clara 70 W. Hedding Street, East Wing, 7th Floor San Jose, California 95110

# Re: Updated Response to March 5, 2018 County of Santa Clara, Department of Planning and Development, Grading Application Incomplete Letter

Dear Mr. Hoem:

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<sup>1</sup> related to Lehigh's proposed Permanente Creek Restoration Project ("PCRP") ("Letter"). 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 and the 90% design drawings by November 15, 2018. The purpose of this submittal is to provide the updated response, and Lehigh appreciates the opportunity to do so.

Please note that because of the proposed project development reflected in the 90% design drawings and associated Design Basis Technical Memorandum, many of the sheets have changed from the version submitted on August 23, 2018, and additional detail set forth in the Design Basis Technical Memorandum has modified earlier references. For this reason, Lehigh is resubmitting its August 23, 2018 response in its entirety, so that substantive information and numbering references are to the November 15, 2018 version of the 90% design. To avoid any confusion, we request that the County disregard the earlier response, and refer to this response going forward.

The submittal is comprised of the following:

<sup>&</sup>lt;sup>1</sup> 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.

- This updated response to the March 5, 2018 County Letter, which includes the following enclosed Figures:
  - Figure 1 Existing Utilities and Infrastructure Near Permanente Creek
  - Figure 2 Partial Geologic Features Map
  - Figure 3 Concrete Channel FEMA Flood Hazard Area and Floodway Plan
  - Figure 4 and Figure 5 Material Removal Area Concept Design Alternative: To maintain Pond 1250, the associated water treatment facilities, and access road to Pond 4A<sup>2</sup>
- Permanente Creek Restoration Plan 90% Level Submittal, Design Basis Technical Memorandum
- Permanente Creek Restoration Plan Preliminary Grading Plan 90% Design Santa Clara County Grading Permit Submittal (*i.e.*, the design drawings)

Information requests from the County's March 5<sup>th</sup> letter are reproduced below in <u>blue</u> with numbers corresponding to those in the letter. Lehigh's responses follow in <u>black</u>.

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.
- 1. Provide a narrative of the performance standards used in evaluating when a tree is to be removed, retained, or planted. Provide a list and a map (or set of maps) showing the number, size, and species of trees to be removed, retained, or planted within the project area.

The drawings currently include all trees within and adjacent to the proposed work areas that have a diameter at breast height (DBH) that is 12" or larger. Oaks trees with a DBH of 5" or larger, and all multi-stem trees with a combined DBH of 24" or larger are also included (individual trunks are shown on the drawings for multi-stem trees). Trees are designated for removal when the tree's trunk is located within an area where grading is proposed, as shown on the drawings. Grading limits were adjusted to save trees where practicable (*e.g.*, reducing floodplain bench width at the Channel Widening Area) while still accomplishing project goals. Field adjustments will be made (*e.g.*, leaving higher ground around the base of a tree) to limit impacts to tree roots where grading is proposed in close proximity to trees to be retained. The majority of the mapped trees proposed for removal are located within the Channel Widening Area (See Sheet C2 for the limits of the Channel Widening Area). Most of the trees that are proposed to remain and are in

<sup>&</sup>lt;sup>2</sup> These figures are being included as alternative plans should the regulatory agencies and Lehigh conclude that the Final Treatment System – Upper ("FTS-Upper") should stay in place to treat water generated from the site. See Sheets C23 and C24 for additional technical details.

close proximity to the grading limits are either willows or alders. These species have evolved to grow within high disturbance areas along channels and floodplains and can tolerate significant ground disturbances below the canopy and impact to some roots near the base of the tree.

Smaller diameter trees that were not mapped will be removed or retained following the same guidelines described above. Willows within the grading limits will be salvaged and transplanted onto the proposed floodplain areas in accordance with the Willow Transplant Detail shown on Sheet C35.

There is no grading proposed along the concrete channel. All native trees will be retained at this location, and supplemental planting will occur along the southern bank of the concrete channel in accordance with the "Supplemental Planting Notes" shown on Sheet L1 of the 90% design drawings.

Tree removal summaries are included in the drawing set on each of the relevant plan views for the various proposed project areas. The summary includes the DBH, species, and number of trees proposed for removal.

The typical revegetation sections and planting tables shown on Sheets L1-L3 of the 70% design drawings have been replaced with the information shown on Sheets L1-L6 of the 90% design drawings. Sheets L1-L6 include detailed revegetation plans and planting tables for each component proposed project area. The revegetation plans divide each proposed project area into floodplain, riparian and upland planting zones. Planting tables are provided that include species, container size, on-center spacing and number of plants, along with a seed mix table that includes pounds per acre of seed. Sheet L6 includes typical planting layouts for the Channel Widening Area and the Rock Pile and Material Removal Areas.

2. Depict the estimated contours of the natural slope that will be exposed after the removal of the rock pile. These contour lines should be depicted with a dashed line.

The estimated contours of the slope that will be exposed after removal of the rock pile are shown as grey-scale dashed lines on Sheet C19.

3. Label the different units on Typical Sections C and D on Sheet C17. There is an intermediate dashed line that does not have a label.

Sheet C17 is now Sheet C21 in the 90% design drawings. The different ground surfaces shown on typical sections C and D are labeled appropriately and a legend has also been added to the sheet.

4. On Sheet C15, add the following note pointing to the dashed contours mentioned above for the rock pile removal area: "Project Geotechnical Engineer must inspect this slope following the removal of the rock pile to evaluate the nature and stability of the exposed materials."

Sheet C15 is now Sheet C19 in the 90% design drawings. The following note has been added via Key Note 3 pointing to the estimated contours of the slope that will be exposed after removal of the rock pile: "The Project Geotechnical Engineer or Project Geologist must inspect the slope exposed below the rock pile following the removal of the rock pile to evaluate the nature and stability of the exposed material and prepare recommendations for stabilizing the slope. Final slope geometry will be adjusted, as necessary, per the Geotechnical Engineer's or Project Geologist's recommendations once the rock pile is removed. Benching of the slope may be required."

5. On Sheet C17, add a note pointing to the dashed line labeled "(E) Ground Below Rock Pile (Estimated)" as follows: "Project Geotechnical Engineer must inspect this slope following the removal of the rock pile to evaluate the nature and stability of the exposed materials."

Sheet C17 is now C21 in the 90% designs drawings. The following note has been added pointing to the dashed line labeled "(E) Ground Below Rock Pile (Estimated): "The Project Geotechnical Engineer or Project Geologist must inspect the slope exposed below the rock pile following the removal of the rock pile to evaluate the nature and stability of the exposed material."

6. On Sheet C10, why is the triangular area located east of the tributary, between elevations 640 and 695, not proposed to be cut to 2:1? See area outlined in red with "?" on Figure 1 below.

Sheet C10 is now C14 in the 90% designs drawings. The proposed design conforms to existing grade and limits impacts to trees on the vegetated slope. It is not necessary to grade within the triangular area to construct the proposed channel geometry.

#### 7. Please provide earthwork calculations of the earthwork quantities shown on the plans.

Earthwork quantities were determined using the AutoCAD Civil 3D volume surface function. This function computes cut and fill quantities between the digital models developed for the existing ground and finished grade contours shown on the drawings. Volume surfaces were developed for the following four component proposed project areas:

- Overburden Removal Area
- Rock Pile Area
- Channel Widening Area
- Sediment Fan/Sediment Removal Area

The Channel Widening Area was divided into:

- The area within the Reclamation Plan Area Boundary
- The area outside the Reclamation Plan Area Boundary

The following tables provide a breakdown of the quantities shown on the drawings by component proposed project area, both within, and outside the reclamation area plan boundary. This information is also included on Sheet C38.

Table 1. Grading Volume Summary (Within Reclamation Area Plan Boundary)			
Location	Cut (CY)	Fill (CY)	
Overburden Removal Area	141,000	1,000	
Rock Pile Area	420,000	1,600	
Channel Widening Area	14,000	1,400	
Sediment Fan	5,000	0	
Total	580,000	4,000	

Table 2. Grading Volume Summary (Outside Reclamation Area Plan Boundary)			
Location	Cut (CY)	Fill (CY)	
Channel Widening Area	8,300	200	
(Total)			

- 8. Please provide the following Grading Ordinance required elements of a Preliminary Grading Plan:
- a) The preliminary plans shall be clearly and legibly drawn and entitled "Preliminary Grading Plan."

See drawing set: "Permanente Creek Restoration Plan, Preliminary Grading Plan – 90% Design, Santa Clara County Grading Permit Submittal", dated November 15, 2018. These plans are clear and legible and include the title: "Preliminary Grading Plan." Please note that the plans also address areas outside the area for which the Grading Permit is being sought, for purposes of supplementing the environmental review for the PCRP.

b) A statement explaining the purpose for the proposed grading and quantities.

Sheet C1 of the drawings set includes a "Project Description" that provides a statement describing the proposed project. Sheet C38, "Earthwork Notes" #1 describes how the grading quantities were calculated and Earthwork Notes #2 describes how the excess soil will be disposed of on-site.

# c) An estimate of the quantities of cut and fill, and import and export of materials in cubic yards.

Cut and fill estimates are included on Sheet C38 under the "Earthwork Notes." All excess material generated from proposed project construction will be used on-site, as appropriate, for reclamation purposes. No export is expected to be required.

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

Sheet C6 includes the parcels that comprise the site. The Southern Pacific right-of-way along the railroad tracks near the site entrance is also shown. There are no easements at the property.

e) 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.).

The locations of existing utilities and infrastructure within 25 feet of the proposed work are shown on Figure 1 (attached).

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

The location of known landslides, fault zones, and liquefaction zones are shown on Figure 2 (attached).

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

The drawings include existing and finish grade contours at locations of the proposed work. Typical cross sections and channel profiles (where relevant) include existing ground and finished grade lines. The sections and profiles also include the proposed gradients at channel, floodplain, and channel bank work areas. Daylight and slope transition stationing and elevations are shown for all proposed work along channel profiles. Locations of cut, fill, and daylight and slope transition lines are clear on all sections, but not specifically labeled.

Please clarify if additional information is needed on the drawings.

h) Location, width, direction of flow of swales, creeks, drainage channels, ponds or other bodies of water, and location of high banks of any watercourses.

Locations and dimensions of channels are depicted by existing conditions contours and existing ground profiles on channel sections. Flow direction arrows have been added to all design sheets. Please clarify if additional information is needed on the drawings.

i) 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.

The upstream limits of the FEMA, Special Flood Hazard Area Zone AE are along the concretelined channel and are shown on Figure 3 (attached).. A floodway is mapped within the Zone AE and is also shown on Figure 3. The only work proposed along the existing concrete-lined channel (Sheet L1), which is not a flood control facility, is the planting of native riparian vegetation along the southern bank. There is not any channel or floodplain grading or other modifications proposed within the FEMA Zone AE and floodway mapping limits.

j) Proposed provisions for storm drainage control and storm water quality control measures required by the current National Pollutant Discharge Elimination System permit issued by the State of California.

A Construction SWPPP will be prepared for the proposed project. The SWPPP will be prepared by a Qualified SWPPP Developer (QSD) and uploaded to the Storm Water Multiple Application and Report Tracking System (SMARTS) prior to the start of construction.

k) Planting and/or seeding for the area affected by the proposed grading.

Detailed revegetation plans are included on Sheets L1-L6. Revegetation zones are delineated for each proposed project area. Planting and seeding tables are provided for each zone and include proposed species, container sizes, on-center spacings, and seed quantities.

 Location, type, size and drip line of all trees with a trunk diameter of twelve (12) inches or more, measured at a point four and five-tenths (4.5) feet above average ground level, within the development area or where the drip line of the tree is disturbed or affected by the proposed grading. If the site or a portion of the site is located within a Historic Preservation Combining District, all trees with a trunk diameter of six (6) inches or more shall be included. The plans shall indicate which trees are proposed to be removed and those that are proposed to remain.

The proposed project area is not within a Historic Preservation Combining District. The location, species and size of trees with a DBH of 12" or greater are shown on the drawings. Driplines are included around each tree. Where driplines overlap they are combined into a single, contiguous dripline. Trees proposed for removal are shown with an "X" through them as shown in the legend of each relevant sheet. A tree removal summary is also included on each sheet, as relevant.

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

Access to the site is gained from Permanente Road via Stevens Creek Blvd. There are not any County maintained roads within the proposed project area.

- 10. 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,

The proposed project involves grading, installation of engineered streambed material (ESM)/floodplain armor and revegetation work to restore and enhance Permanente Creek and associated tributary reaches. Much of the runoff to the restored channel reaches is from undeveloped areas. There will also be runoff from existing roads that will be modified as part of the proposed project. Drainage design along the roads includes removal of any paved sections and outsloping of the road cross section to restore a more natural drainage pattern. The runoff from roads would then sheet flow onto the adjacent slopes where it can infiltrate.

The site plans for the component proposed project areas and the typical sections include drainage details for road runoff. The sections show a road cross slope of 5%-8%. The blue arrows on the drawings show the locations of reverse grade rolling dips, designed to ensure that runoff from above roads or from the road surface does not become concentrated. The detail for the rolling dips is shown on Sheet C36. The rolling dips are included in addition to outsloping of the roads.

The vehicle barrier details (Sheet C35) show that the barriers will either be constructed of 4"-8" diameter angular rock or of k-rails (Type 1 and 2 vehicle barriers, respectively). For the Type 1 barrier, void spaces within the rock will allow road drainage to pass through the barrier. For the Type 2 barrier, drainage scuppers will be incorporated into each k-rail segment. Four to five foot wide openings will be incorporated into each barrier type every 50-60 feet to allow for unobstructed drainage from the roadway.

The dirt road segments, on the south side of the creek, currently draining toward the Culvert #8 removal site (Sheet C14) will be decommissioned. Decommissioning of the roads will reduce the potential for concentrated runoff being directed toward the channel bank that will be constructed once the culvert is removed. The roadways will be ripped and revegetated according to the "Road Decommissioning Notes" on Sheet C14.

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

The component proposed project areas do not directly drain to neighboring properties. Runoff from the project will infiltrate or be conveyed offsite via Permanente Creek, as noted. The rate and volume of runoff to Permanente Creek is not expected to increase by the proposed PCRP. The project proposes to outslope roads that are currently insloped. Insloped roads concentrate runoff and increase the rate at which runoff reaches Permanente Creek. The project also proposes to remove paved sections of roadway along the Channel Widening and Rock Pile Area and reduce the road width at these locations. This work will reduce the extent of impervious surface coverage and greatly expand the area of vegetated floodplain that is accessible to peak flows, thereby reducing the rate of runoff from the proposed project area.

The proposed grading will not destabilize slopes or cause other off site impacts that could affect other properties.

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

The proposed project has been designed to convey the one percent flood without significant erosion. Engineered streambed material (ESM) and rock slope protection (RSP) have been designed to remain stable during the 100-year recurrence interval flow (i.e., 1% flood), as discussed in the Design Memorandum. *See* Section 2.3.1.2 and Section 2.4 of the Design Memorandum for additional details regarding 100-year flood hydraulics, water surface elevations and ESM/RSP design calculations.

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

There are no easements within the PCRP area.

12. 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.

The upstream limits of the FEMA, Special Flood Hazard Area Zone AE within the proposed project area are shown on Figure 3 (attached). Base Flood Elevations and the floodway boundary are included. The only work proposed along the concrete-lined channel (Sheet L1) is the planting of native riparian vegetation along the southern bank. There are no channel or floodplain modifications proposed in this area. There is no grading proposed in a FEMA mapped floodplain or floodway. Therefore, a Conditional Letter of Map Revision is not required for the proposed project.

13. 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:

The proposed project is a stream restoration project and does not include construction of new impervious surfaces. Rather, the proposed project will greatly increase infiltration and floodplain storage of runoff. Existing paved sections of roadway along the Channel Widening and Rock Pile areas would be removed and replaced with dirt roads that are narrower than existing roads. See Section A on Sheet C17 for a typical section showing the existing road width and the proposed road width.

The North County Stormwater Questionnaire is not included since the proposed project does not add any new impervious surfaces.

14. Submit a plan showing the location of onsite septic/sewage systems within 100 feet of Permanente Creek.

The locations of onsite septic/sewage systems within 100 feet of Permanente Creek are included on Figure 1 (attached).

15. Submit information as requested in the attached August 2017 letter "Information Request for the Permanente Creek Restoration Project near the City of Cupertino, Santa Clara County, California (U.S. Army Corps of Engineers file number 2008-00356)."

Lehigh will be submitting a separate response to the referenced August 2017 letter and will provide the County a copy.

16. No hydraulic study was provided for technical review, and the Design Basis Memorandum does not describe the project hydraulic conditions in detail. This documentation should be provided along with the designs. Hydraulic model (e.g. HECRAS) files including boundary conditions and other model parameters should be provided along with water surface profiles, channel velocities and depths through the various reaches of the restoration. The results should include input/output tables water surface profiles, depths, and average channel velocities for the design level flow (e.g. 100-yr & others) to inform the design of Engineered Streambed Material (ESM) and Rock Slope Protection (RSP). Analyses should include pre- and post-project.

Section 2.3.1.2 of the Design Memorandum describes the modeling effort completed using HEC-RAS. Detailed modeling results for both existing and proposed conditions for the 1.5-year, 10-year and 100-year flood are included in Appendix F. Water surface profiles are included along with tables that document input parameters and resulting flow depths, velocities, and water surface elevations.

Detailed design calculations for engineered streambed material, floodplain armor and vegetated rock slope protection are included in Appendix G of the Design Memorandum.

17. Improving fish passage is a primary project goal, although it is understood that designing for optimal passage is no longer a requirement of the Decree. Conceptually, the proposed

restoration includes elements that should help improve fish passage; however, the hydraulic study is lacking information such as water surface profiles, velocities, depths, slopes, and lengths that would demonstrate improved fish passage conditions or that would inform the reviewer that fish passage has been improved to an extent that's reasonable. The study should provide calculation of lower and upper fish passage stream flows for each life stage, water surface profiles at existing conditions for upper and lower fish passage stream flow, water surface profiles for proposed channel conditions for upper and lower fish passage stream flows, calculations of depths, velocities, and slope at fish passage flows along length of project reaches where channel modifications are proposed.

Section 2.1.2 of the Design Memorandum includes an overview of fish passage hydrology for the proposed project area and calculated low and high fish passage design flows for adult and juvenile non-anadromous salmonids. Section 2.3.1 includes a discussion regarding the approach to evaluating fish passage at the proposed project site. Sections 2.3.1.1 and 2.3.1.3 provide an overview and results of the fish passage assessment. Appendix E of the Design Memorandum includes the results of evaluating fish passage using Manning's equation at a station. Appendix F includes the results of evaluating fish passage using HEC-RAS under both existing and proposed conditions. Water surface and velocity profiles are included.

18. The project documents lack a description and back up calculation of how the ESM and RSP gradations are calculated. The project should provide rock and engineered streambed material sizing calculations for bed, banks, and armored floodplains.

An overview of the surface treatments (*e.g.*, engineered streambed material) proposed to provide erosion protection at the proposed project area are included in Section 2.4 of the Design Memorandum. Detailed design calculations for the surface treatments are included in Appendix G.

19. Details of the final channel design are not included. The proposed steep longitudinal profiles of the various project reaches are such that step-pool and cascade morphologies likely will be the most stable. Use of the regional study of hydraulic geometry to inform the restoration design does not seem suitable when compared with observed conditions in less disturbed parts of Permanente Creek above the project reaches. Appropriate channel types and design specifications should be given in the 90% design drawings and made available for CDFW review.

We agree that developing channel geometries in the steeper reaches of Permanente Creek is challenging, with limited opportunities to do so within the general project area. Given the limitations, our updated Hydraulic Geometry and Analog Channel Assessment Technical Memorandum (Assessment), included in Appendix B of the Design Memorandum, provides background on the likely pre-mining channel morphology within the various proposed project reaches and utilizes several approaches to constrain channel geometries in the reaches identified for restoration. We use a combination of traditional methods of calculating regional curves based on readily available data from stream gauging sites in the Santa Cruz Mountains along with surveys of reference sites that were originally identified in earlier creek restoration documents that exhibit similar characteristics to Permanente Creek. Two additional reference sites in Reach 20 of Permanente Creek were also surveyed and added to the data set to compare

to the results of the regional curves and reference reaches in adjacent watersheds and to support the determination of appropriate channel geometries and profile conditions. Ultimately, our exploration of the available data confirms previous findings that suggest the primary driver of channel dimensions is drainage area. This finding is understood within the context of the natural variability that occurs at any given cross-section.

The Assessment has been included in Appendix B of the Design Memorandum. Table 5 of the Assessment includes proposed bankfull channel dimensions for each proposed project location where the channel bed will be reconstructed. Dimensions are provided for varying design channel slopes at the Rock Pile and Material Removal Areas where the design profile may vary to conform to bedrock that is uncovered during channel reconstruction.

20. The project does not completely tie in many of the adjacent cultural and natural features that ultimately may jeopardize the success of the project. For example, the project does not address how runoff from paved and unpaved roads that intersect the stream will be transitioned into the stream corridor. Another example includes the large, unstable slopes of mining waste and other material that are not being addressed by the project, including the unstable, oversteepened slopes that previously contributed a debris flow to the upstream end of Pond 13. Other areas are potential sources of debris flows that could impact the stream. Although project personnel indicated at the meeting that some of the slopes were pre-SMARA (i.e., created before the Surface Mining and Reclamation Act and not subsequently disturbed), it is unlawful for debris to enter a stream without obtaining a Streambed Alteration Agreement and there is a responsibility for successfully completing the restoration project in a way that ensures long-term goals of the Decree are met. Unstable slopes could adversely affect the long-term success of the restoration project and in meeting the objectives of the Decree. The engineering designs should address the hydraulic link to the roads and mining waste, as described above.

The unpaved roads on the south side of the creek that drain toward the Culvert #8 removal site will be decommissioned to revegetate these areas, promote infiltration, and eliminate concentrated runoff. The 90% design drawings include decommissioning details on Sheet C14. The roadways will be ripped and revegetated according to the "Road Decommissioning Notes" on Sheet C14. Fiber rolls will be installed across the decommissioned roads, as shown on Sheet C30, to break up drainage paths during the first rainy season while the native seed becomes established. Drainage dips will be constructed to provide additional drainage relief while vegetation matures.

The 90% design drawings have been reviewed by the project geotechnical engineer to evaluate the proposed channel bank geometry and whether the proposed project has the potential to result in unstable conditions within or upslope of graded areas. A 90% design review letter has been prepared and is included in Appendix I of the Design Memorandum. The project as proposed supports the mutually shared long-term goals of a stable creek channel. Regarding the debris slide that occurred in December 2014 at Pond 13, the material is being addressed via the proposed PCRP, and Lehigh previously addressed the cause of that event, with no recurrence. (*See* Section 2.7.7. of the Design Memorandum). Broader facility modifications are outside the scope of this proposed project.

21. For Pond 13, it was stated that the pond would fill in naturally with sediment over time. However, the designs state that fine sediment would be removed from the pond. Please clarify this discrepancy.

We are uncertain whether the "upper limit of potential design channel invert", "lower limit of potential design channel invert," or something in between the two will be constructed, as shown on the channel profile on Sheet C19. The constructed profile will ultimately be dependent on subsurface conditions, namely the location of bedrock. If the lower limit is constructed, Pond 13 will be eliminated and all associated fine sediment removed. If the upper limit is constructed, the dam infrastructure will be removed, but the pond will be left in place. The "Field Engineering Notes" located on Sheet C38 will guide a field-directed construction approach at this site. With the upper limit approach, the pond will need to be dewatered to remove the dam, and we are proposing removal of accumulated fine sediments. The pond would then be allowed to fill with sediment over time.

22. The project proposes to remove concrete rip rap from several reaches of the channel. However, project documents indicate that some concrete rip rap will remain, ostensibly to save some trees. The preferable option is requiring that all concrete rip rap/rubble to be removed so that the hydrologically correct channel alignment can be achieved. Revegetation to replace removed trees can be included as part of the compensatory mitigation within the Streambed Alteration Agreement. The project plans should be updated to indicate where these remaining locations of concrete rip rap will be removed and the species and Diameter at Breast Height of trees to be removed.

The proposed project has been modified to focus concrete rubble/rip rap removal to Reaches 11 and 12 (concludes at the outlet of Culvert #10), consistent with the Amended Consent Decree and the proposed work in this area (Sheets C9, C18 and C19). Concrete rubble/rip rap removal will be focused in the vicinity of the Culvert #10 outlet to provide a smooth transition from the reconstructed channel at the Rock Pile Area to the existing channel at the Channel Widening Area. Concrete rubble/rip rap will be removed along the left bank (looking downstream) where the material is present above the proposed floodplain elevation. *See* Sections B and C on Sheet C18. As for remaining rip rap in the proposed project area, removing trees and their soil reinforcing roots downstream of this location is not warranted to remove material that is stable, inert, and performing similarly to native boulders.

23. Reaches 14-16 have a gradient that looks to be 8-9%. Installation of large wood structures should not be used on steep slopes, anchored or unanchored, unless they are part of some forced pool-riffle channel geometry due to likelihood of failure. The approach to not secure them even on reaches with shallower gradients should only be acceptable if it can be shown that they are in a headwaters area where flows are insufficient to carry them away or otherwise dislodge them into undesirable positions. The designs should show proper securing of large woody structures to ensure that they provide habitat for an adequate period of time, or the project should demonstrate that they are secure by virtue of the fact that flows could not dislodge them and substantially affect their functionality for improving in-channel habitat. Using hardwood for the structures is not recommended.

Section 2.5 of the Design Memorandum includes a description of the materials that will be used for Habitat Logs, how they will be secured and the expected evolution of pools associated with these features. Additional details and information regarding Habitat Log selection and placement are included on Sheet C37.

Since there is no vehicular access to the Habitat Log installation areas, this work is expected to occur using hand tools and manual labor. Existing native trees at each Habitat Log installation site will be harvested and/or salvaged for use as Habitat Logs. Conifers will be used if available, but it is expected that most logs will consist of native hard woods readily available adjacent to the creek. The import of logs (*e.g.*, redwood), which do not decay as rapidly as the local hardwoods, would result in significant impacts from road building to import the logs to the installation sites.

24. Geotechnical information may be necessary to ensure project design is structurally appropriate. The uncertainty in the depth to bedrock for several project reaches is understandable in such a disturbed system. The project compensates along some reaches with a design envelope that addresses uncertainties in subsurface conditions. The project should strive to include more geotechnical inputs into better understanding bed, bank, and adjacent slopes in 90% design drawings.

The 90% design drawings have been reviewed by the project geotechnical engineer. A 90% Design review letter has been prepared and is attached.

25. This Report should clearly document a recurrence flow comparison between the reference sites and Permanente Creek. Results of the comparison should be extrapolated and included in the designs regarding the construction of the channel through the Material Removal and Rockpile reaches. The Report on Hydraulic Geometry and Analogue channel indicated reference sites had channel geometry that plotted below regional curve, and that channel processes at these sites likely were more affected by 1.5 year recurrence flow versus 2 year recurrence flow. Please explain if reference sites in the less disturbed areas of Permanente Creek trend similarly to other analogue channels in channel geometry.

One of the limitations of the hydraulic geometry curves that were developed using a subset of the regional data for sites in the Santa Cruz Mountains was that the low end of the curve (smaller drainage areas) were poorly defined due to the lack of headwater sites in the database, limiting extrapolation of the curve to the proposed project areas on Permanente Creek. To allow for integration of the reference sites located in nearby watersheds and reference sites on less disturbed portions of Permanente Creek, we updated the hydraulic geometry analysis from the gage sites (using the 1.5 year recurrence interval discharge) to provide more accurate representation of bankfull width and depth at each of the sites. The updated information was used to develop regional curves for bankfull width and depth that include a more comprehensive range of drainage areas. A more thorough discussion of this analysis has been included in the updated Assessment.

Table 5 of the Assessment includes proposed bankfull channel dimensions for each proposed project location where the channel bed will be reconstructed. Dimensions are provided for

varying design channel slopes at the Rock Pile and Material Removal Areas where the design profile may vary to conform to bedrock that is uncovered during channel reconstruction.

26. Given the proposed very steep reaches that will be restored and expressed uncertainty in longterm stability and success of the project, CDFW recommends that a risk assessment be completed for the project so that weaker elements of the design can be reviewed.

Lehigh requests that the County and/or CDFW provide an example(s) of a "risk assessment" from a similar type of project that can be reviewed so that the PCRP team can understand what is being requested.

- 27. Some general comments on the grading plans:
- a) Transitions from ESM to more natural channels are not clearly depicted on project documents. Some connections appear to show potentially adverse conditions (e.g., change in longitudinal gradient). These transitions are important for ensuring a relatively stable channel and the designs should clearly depict these transitions.

Existing average channel slopes at ESM to natural channel transitions have been added to the 90% Designs to assist with proposed project review. To the extent feasible, proposed channel slopes where ESM transitions to the existing channel have attempted to match the existing channel gradient (*see* Culvert #7 Profile, Sheet C11; Culvert #8 Profile, Sheet C15; Rock Pile Area Channel Profile, Sheet C19; Material Removal Area Channel Profile, Sheet C23).

b) It is unclear if materials adjacent to the banks are suitable to ensure that the constructed channel will not be flanked by higher flows. Geotechnical information should be provided.

The proposed floodplain armor extends to approximately the 10-year flood water surface elevation along the restored channels at the Rock Pile and Overburden Removal Areas and along the proposed floodplain benches at the Channel Widening Area. Erosional forces above these water surface elevations are not significant and don't require rock armor. Vegetation will be sufficient to protect these areas. *See* Section 2.4.4 of the Design Memorandum for a discussion of erosion protection above the 10-year water surface elevation. An evaluation of flow velocities and erosional forces is included.

28. Sheet C18 states "Modify the "old crusher foundation" to conform to the adjacent banks, as directed by the engineer...". Designs for this project should be stand-alone. Sheets referenced for this work (R17-R18 from the Permanente Creek Long-term Restoration Plan (URS 2011)) should be incorporated into the designs and provided to CDFW for further review.

A stand-alone design for modifications to the "old crusher foundation" is included on Sheet C22 of the 90% Designs.

29. Sheet C25 depicts the vehicle barrier to be placed along the road and above the creek bank along about a half mile of the creek reaches, indicated on Sheet C7, C8, C9, C10, C13, and C14. It is stated that 4 to 8 inch angular rock will be piled 1 foot high and 4.5 feet wide to create the

barrier. This feature seems to be potentially unstable. Please specify how this material will be secured so that the rock debris does not enter the creek bank, bed, or channel. Please clarify the necessity of this structure. Sheet C20 indicates a vehicle barrier for creek reaches as indicated on Sheet C18 and C19. The material and dimensions of this barrier is not indicated within the designs. Please include this information.

Two types of vehicle barriers are specified on the 90% design drawings and are shown on Sheet C35. The Type 1 barrier consists of angular rock and will be installed along the access road at the Channel Widening Area and the proposed road to Pond 4A at the Material Removal Area. The Type 2 barrier will consist of k-rails which will be installed along the proposed access road at the Rock Pile Area where extensive excavation is required and the overall road width is narrower than the other sites. The vehicle barriers are necessary to comply with MSHA (Mine Safety and Health Administration) regulations to protect against a vehicle driving off the road. The minimum barrier height is required to be equal to the axle height of the largest vehicle using the road. The angular rock barrier has been sized for large pickup trucks/small heavy equipment that may be needed for maintenance/adaptive management after project implementation.

Locations where overbank flow is predicted to occur onto the access road have been evaluated to ensure stability of the vehicle barrier. Flow onto the road only occurs at the Channel Widening Area. *See* Section 2.3.1.2 of the Design Memorandum under the "100-Year Flood Model" heading for a discussion regarding overbank flow along the rock vehicle barrier. Appendix F of the Design Memorandum includes HEC-RAS model outputs for flow velocities, depths and shear stresses. Material in the rock barrier has been sized to resist forces from flood flows.

30. The cover page indicates that Surveyed Trees Include oaks 5 or greater inches Diameter at Breast Height (DBH), all other trees 12 inches or greater DBH, and all multi-stem trees with a combined 24 or greater inch DBH. Note that, for purposes of assessing compensatory mitigation needed through the Streambed Alteration Agreement, a list of tree species removed will be required for the following: oaks equal to or greater than 2 inch DBH, willows equal to or greater than3 inch DBH, and all other trees equal to or greater than 3 inch DBH. The designs may be changed to show this information. Numbers of species of shrubs removed and area of understory removed will also be required.

The Streambed Alteration Notification that will be submitted for the proposed restoration project will include information on vegetation removal, as required in the Notification Instructions. The type and amount of vegetation that will be temporarily and permanently affected will be quantified (linear feet and total acres). The number and species of mature shrubs and trees greater than 2 inches in diameter at breast height (dbh) will be estimated; trees will be grouped by dbh class (*i.e.*, 10 to 20 inches).

### 31. Please indicate scale as a ratio on all sheets so that a sheet printed on any size of paper is applicable.

All drawing sheets include a 1-inch scale bar in the border and the scale for each plan view, cross section, profile, etc. The reviewer can use the scale bar to determine distances/lengths when the drawings are printed on any size of paper.

Please clarify if additional information is needed.

Sincerely,

Trika Guerra

Erika Guerra Director, Environmental and Land Resource Development

Enclosures

Figure 1 – Existing Utilities and Infrastructure near Permanente Creek Figure 2 – Partial Geologic Features Map Figure 3 – Concrete Channel – FEMA Flood Hazard Area and Floodway Plan Figures 4 and 5 – Material Removal Area Concept Design Alternative

 Cc: Keith Krugh, Plant Manager, Lehigh Hanson, Inc. Sean Hungerford, Harrison, Temblador Hungerford & Johnson Nicole Granquist, Downey Brand LLP Rob Eastwood, County of Santa Clara Kirk Girard, Planning Director, County of Santa Clara Elizabeth Pianca, Lead Deputy County Counsel, County of Santa Clara Kristina Loquist, Office of Supervisor Simitian, County of Santa Clara





MAP 3 - UTILITIES AND INFRASTRUCTURE NEAR CREEK



MAP 1 - UTILITIES AND INFRASTRUCTURE NEAR CREEK

BAR IS ONE INCH ON ORIGINAL DRAWING, ADJUST SCALES FOR REDUCED PLOTS

FIGURE 1.0











TYPICAL SECTION

	WATERWAYS CONSULTING INC. Santa Cruz, CA watways com Portland, OR
1270 1260 1250 1240 1230	PERMANENTE CREEK RESTORATION PLAN MATERIAL REMOVAL AREA
1220         1210         1200         1190         1180         1170         1160    NOTES:          NOTES:         1. THE FINISHED GRADE GEOMETRY SHOWN TO RETAIN THE WATER TREATMENT FACILITIES IS CONCEPTUAL.         2. A GEOTECHNICAL INVESTIGATION WILL BE REQUIRED TO DETERMINE THE FINAL GEOMETRY AND DETAILS FOR MSE EMBANKMENT CONSTRUCTION.	CONCEPT DESIGN ALTERNATIVE: TO MAINTAIN POND 1250, THE ASSOCIATED WATER TREATMENT FACILITIES AND ACCESS ROAD TO POND 4A
LEGEND (E) NORTH SLOPE TOE PROPOSED NORTH SLOPE TOE	BAR IS ONE INCH ON ORIGINAL DRAWING, ADIUST SCALES FOR REDUCED PLOTS 0
	figure 5.0