5.7 Geology and Soils

5.7.1 Environmental Setting

Topography and Geology

The proposed project would be located at the northernmost portion of the Great Valley geomorphic province.[1] The Great Valley is an alluvial plain roughly 50 miles wide by 400 miles long in the central part of California. Within the proposed project area, the Klamath Mountains bound the western portion of the valley and the Cascade Ranges bound the eastern portion. Sediments derived from these mountains have been continuously deposited in this province since the Jurassic period (approximately 160 million years ago) (CGS 2002).

Shasta County is a seismically active region; however, the Shasta County General Plan states that earthquake activity in the county is not a serious hazard, nor is it likely to become a serious hazard in the future (Shasta County 2004). Active faults are those that have ruptured within the Holocene epoch (past 11,000 years). The nearest active fault zone, the Hat Creek Fault Zone, is approximately 50 miles northeast (CGS 1991). Shasta County identifies several short faults near the proposed project area that are older, with future movement considered unlikely (Shasta County 2004).

While an earthquake's magnitude describes the strength of the forces released at the epicenter, seismic shaking experienced at a specific location depends on many factors. The California Geological Survey's (CGS's) Ground Motion Interpolator provides estimates of peak ground acceleration that may be felt at different locations throughout the state. The terminus of the proposed project's eastern alignment has an estimated 10 percent chance of experiencing peak ground acceleration of 0.207g and an estimated 2 percent chance of experiencing peak ground acceleration of 0.407g over a 50-year period (CGS 2008). The proposed project's western terminus has an estimated 10 percent chance of 0.210g and an estimated 2 percent chance of 0.424g, each over 50 year periods. (CGS 2008). Therefore, the project has a 2 percent chance of experiencing strong ground shaking in a 50-year period (USGS n.d.).

A landslide is a mass of rock, soil, or debris that has been displaced downslope by sliding, flowing, or falling. Landslides are known to occur throughout Shasta County, although they are most prevalent in the eastern and northern portions of the county (Shasta County 2004). According to the Shasta County General Plan, seismically induced landsliding is not considered a significant hazard in Shasta County (Shasta County 2004). Furthermore, the relatively flat topography of the proposed project alignment and its distance from hills, mountains, or slopes make landslides unlikely.

Liquefaction susceptibility reflects the relative resistance of soils to loss of strength when subjected to ground shaking. The Shasta County Multi-Jurisdictional Hazard Mitigation Plan considered liquefaction risk to be a minor hazard owing to the types of soils present in the county (Shasta County and City of Anderson 2011). The majority of the proposed project area has a depth to water table greater than 80 inches (USDA NRCS 2017). Given its distance to the nearest tributary (Clear Creek), gravelly soils, and relatively deep water tables, the proposed project area is likely at a low risk for liquefaction during an event of intense ground shaking.

Subsidence, the gradual sinking or caving of landmass, can be associated with liquefaction, soil consolidation, and collapse of subsurface cavities. Subsidence is more common in soils that have high silt or clay contents. The City of Redding does not consider subsidence a significant hazard in its planning

[1] A geomorphic province is an area that displays a distinct landscape or landform.

area. Shasta County does not include subsidence in its analysis of seismic and geologic hazards, and the proposed project alignment would not be located in an area of recorded historical or current subsidence (USGS 2018).

Soils

The soils in the proposed project area reflect the rock types in the hills and mountains surrounding the valley, extent of weathering of the rock, degree of slope, and degree of modification by humans. Table 5.7-1 presents characteristics and descriptions of the major soil units underlying the proposed project area. Soils in the proposed project area have been mapped as primarily consisting of Newtown gravelly loams and Red Bluff loams, with some Anderson gravelly sandy loam, Churn gravelly loam, Clough gravelly loam, Moda loam, tailings, and placer diggings (USDA NRCS 2017). These soils are not expansive (i.e., they have low linear extensibility), and they compact well for construction. They are slightly corrosive to concrete and moderately corrosive to uncoated steel. They are not strongly susceptible to erosion from wind and water.

Table 5.7-1 Soil Types and Characteristics in the Project Area

Soil Series or Association	Description	K Factor	Wind Erodibility Index (tons per acre)	Linear Extensibility (Percent)	Shrink-Swell Class
Ad	Anderson gravelly sandy loam	0.10	56	1.5	Low
NeD	Newtown gravelly loam, 15 to 30 percent slope	0.20	38	1.5	Low
NeE2	Newtown gravelly loam, 15 to 30 percent slope, eroded	0.20	38	1.5	Low
RbA	Red Bluff Loam, 0 to 3 percent slopes, MLRA 17, moist	0.24	48	2.2	Low
RbB	Red Bluff loam, 3 to 8 percent slopes	0.32	48	1.5	Low
RcA	Red Bluff gravelly loam, moderately deep, 0 to 3 percent slopes	0.15	38	1.5	Low
RcB	Red Bluff gravelly loam, moderately deep, 3 to 8 percent slopes	0.15	38	1.5	Low
TaD	Tailings and placer diggings	na	na	na	na

Source: USDA NRCS 2017
Notes:
Erosion K Factor indicates the susceptibility of a soil to sheet and rill erosion by water.
The Wind Erodibility Index is a numerical value indicating the susceptibility of soil to wind erosion, or the tons per acre per year that can be expected to be lost to wind erosion.
Linear Extensibility refers to the change in length of an unconfined clod as moisture content is decreased from a moist to a dry state and determines shrink-swell class.
Soils with shrink-swell class that are rated moderate to high can damage buildings, roads, and other structures.
Key:
MLRA major land resource area
Na not applicable

Paleontological Setting

Paleontological resources and unique geological features are not defined under CEQA, although Appendix G of the CEQA Guidelines requires their consideration. For the purposes of this environmental analysis, paleontological resources are defined as fossils, fossil collecting localities, and the geologic formations that contain those fossils, and unique geological features are defined as locations or objects that are associated with various landscapes, represent unique physical environments, or represent geological processes. They are valued for the information they yield about the history of the earth and prehistoric life on earth and its past ecological settings and represent a limited, non-renewable, and impact-sensitive scientific and educational resource.

Information presented in this section was compiled from the TDS Telecom's (TDS's, or the applicant's) Proponent's Environmental Assessment (Tierra Right of Way Services, Ltd. 2015) and subsequent submittals for the proposed project, including information on the Paleontology Setting (Tierra Right of Way Services, Ltd. 2017).

Portions of Shasta County are underlain by sedimentary rocks that are known to produce valuable, scientifically significant vertebrate and invertebrate fossils. Therefore, portions of western and north central Shasta County have been rated as highly sensitive for producing valuable, scientifically significant vertebrate and invertebrate fossils, and a number of locations of paleontologically sensitive areas are scattered throughout the county (Shasta County 2004).

No known or previously identified paleontological resources have been identified within areas of proposed ground disturbance. However, paleontological resources are known to exist within Shasta County (University of California Museum of Paleontology 2018). For this reason, the general proposed project area has high sensitively for uncovering paleontological resources.

Unique Geological Features

Unique geological features, in general, may include locations or objects (such as rock outcroppings, rock formations, sinkholes, etc.) that are associated with various landscapes, such as mountain peaks, coastal cliffs, headlands, beaches and dunes, and desert surfaces and canyons, or that represent unique physical environments, such as caves, lava fields, tar pits, or tufa structures. They may also represent, at a macro or micro scale, geological processes such as fault activity, earthquakes, landsides, erosion and mass wasting, subsidence, or volcanic eruptions (State of California 2017d).

No known or previously identified unique geological features have been identified within areas of proposed ground disturbance. One concealed geological fold (buried beneath the Great Valley geomorphic alluvium) was identified south of Redding. While this fold does not appear to overlap the proposed project alignment, its spatial relation is unclear, but suggests that the general proposed project area has high sensitively for underlain unique geological features (Gutierrez et al. 2010).

5.7.2 Regulatory Setting

Federal

Alquist-Priolo Earthquake Fault Zoning Act

The Alquist-Priolo Earthquake Fault Zoning Act was passed in 1972 to mitigate the hazard of surface faulting to structures for human occupancy. The law requires establishment of regulatory zones—known as Earthquake Fault Zones—around the surface traces of active faults and issuance of appropriate maps for use in planning and controlling new or renewed construction. While the proposed project would not be used for occupancy, the maps help define areas where fault rupture is most likely to occur by grouping

faults as active, potentially active, or inactive. There are no Alquist-Priolo Earthquake Fault Zones in the proposed project area.

State

Seismic Hazards Mapping Act of 1990

The Seismic Hazards Mapping Act of 1990 directs the CGS to delineate Seismic Hazard Zones and requires site-specific geotechnical investigations prior to permitting most urban development projects within seismic hazard zones. The act addresses the effects of strong ground shaking, liquefaction, landslides, and other ground failure and seismic hazards caused by earthquakes, as well as tsunamis and seiches. City, county, and state agencies are directed to use seismic hazard zone maps developed by the CGS in its land use planning and permitting processes.

California Building Code

The 2016 California Building Code (CBC) was adopted by the California Building Standards Commission and became effective January 1, 2017, and is contained in Title 24 of the California Code of Regulations. The CBC is contained in Title 24 of the California Code of Regulations, and Appendix J of the 2013 CBC regulates grading activities, including drainage and erosion control and construction on unstable soils, such as expansive soils and areas subject to liquefaction.

Local

The Shasta County General Plan Seismic and Geologic Hazards Element contains several policies related to meeting its objectives of protecting development from seismic hazards, unstable slopes, volcanoes, erosion, and expansive soils, and of protecting waterways from erosion. The Seismic and Geologic Hazards Element states the following objectives regarding geology and soils:

- *Objective SG-3: Protection of development from other geologic hazards, such as volcanoes, erosion, and expansive soils.*
- *Objective SG-4: Protection of waterways from adverse water quality impacts caused by development on highly erodible soils.*

5.7.3 Environmental Impacts and Mitigation Measures

The impact analysis below identifies and describes the proposed project's potential impacts to geology and soils within the proposed project area. Potential impacts were evaluated according to significance criteria based on the checklist items presented in Appendix G of the CEQA Guidelines and listed at the start of each impact analysis section below. Both the construction and maintenance/operations phases were considered; however, because the construction phase could result in physical changes to the environment, analysis of construction phase effects warranted a more detailed evaluation. The proposed project would not involve the construction of septic tanks or the use of existing septic tanks during construction or operation. There would be no impact under criterion (e), and a detailed discussion is therefore not provided.

Applicant Proposed Measures

The applicant would implement the following APMs to minimize or avoid potential impacts on geologic and soil resources. Mitigation Measure (MM) GEN-1 requires implementation of these APMs to mitigate impacts on geology and soils resources and the impact analysis in this section applies these APMs to reduce impacts. A list of all project APMs is included in Table 4-2 in Chapter 4.

APM GEO-1: TDS will require the contractor to manage construction-induced sediment and excavated spoils in accordance with the requirements of the SWRCB and EPA NPDES permits for stormwater runoff associated with construction activities.

APM GEO-2: Prior to the onset of construction, TDS or its authorized contractor will complete a SWPPP that outlines BMPs to control discharges from construction areas.

APM GEO-3: No construction-related materials, wastes, spills, or residues will be discharged from the project.

APM GEO-4: The staging of construction materials, equipment, and excavation spoils will be performed outside of drainages.

APM GEO-5: Excavated or disturbed soil will be kept within a controlled area surrounded by a perimeter barrier that may entail silt fence, hay bales, straw wattles, or a similarly effective erosion-control technique that prevents the transport of sediment from a given stockpile.

APM GEO-6: All stockpiled material will be covered or contained in such a way that eliminates off-site runoff from occurring.

APM GEO-7: Upon completion of construction activities, excavated soil will be replaced and graded to that post-construction topography and drainage matches pre-construction conditions.

APM GEO-8: Surplus soil will be transported from the site and disposed of appropriately.

APM CR-5: In the event that fossil remains are encountered by construction personnel, qualified paleontological specialists will be contacted. Construction within 30.5 m (100.0 feet) of the find in non-urban areas and 15.2 m (50.0 feet) in urban areas will be temporarily halted or diverted until a qualified vertebrate paleontologist examines the discovery.

Significance Criteria

Table 5.7-2 describes the significance criteria from Appendix G of the CEQA Guidelines' geology and soils section which the CPUC used to evaluate the environmental impacts of the proposed project.

Table 5.7-2 Geology and Soils Checklist

Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
a. Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving: i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	☐	☐	☐	☒
ii) Strong seismic ground shaking?	☐	☐	☐	☒
iii) Seismic-related ground failure, including liquefaction?	☐	☐	☐	☒
iv) Landslides?	☐	☐	☐	☒
b. Result in substantial soil erosion or the loss of topsoil?	☐	☒	☐	☐
c. Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	☐	☐	☒	☐
d. Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?	☐	☐	☐	☒
e. Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	☐	☐	☐	☒
f. Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☒	☐	☐

a. Would the project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:

i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.

The proposed project would not cause potential substantial adverse effects to people or structures, including the risk of loss, injury, or death because the majority of the proposed facilities to be installed would be buried underground. The proposed project alignment does not intersect with any known Alquist-Priolo Earthquake Fault Zone. Hat Creek fault is the nearest Alquist Priolo fault zone, approximately 50 miles northeast of the proposed project alignment. Furthermore, the proposed project would involve minimal ground disturbance that is not anticipated to exacerbate fault rupture conditions; therefore, there would be no impact under this criterion.

Significance: No impact.

ii) Strong seismic ground shaking?

The proposed project would not be located on or near any known active faults. The CGS's Ground Motion Interpolator suggests that the probability for strong seismic shaking in the proposed project area is low (CGS 2008). The proposed project area is susceptible to moderate or lesser ground shaking as a result of a strong earthquake on one of the nearest active faults. In the event that strong seismic shaking were to occur, the proposed project would not cause potential significant impacts to people or structures, including the risk of loss, injury, or death because the majority of the proposed facilities to be installed would be buried underground. Furthermore, the proposed project would not exacerbate conditions related to strong seismic ground shaking; therefore, there would be no impact during under this criterion.

Significance: No impact.

iii) Seismic-related ground failure, including liquefaction?

Liquefaction occurs when loose, water saturated sediments lose strength and fail during strong ground shaking. It is defined as the transformation of granular material from a solid state into a liquefied state as a consequence of increased pore-water pressure. Areas of potential liquefaction are located around Clear Creek, approximately 1 mile north of the proposed project area; however, the proposed project alignment would not be located in any known areas of liquefaction. The proposed project is located approximately 50 miles from known active faults. As a result, lack of expansive soils, and relatively deep water tables mean the proposed project is not likely to be considered susceptible to liquefaction or other seismically induced ground failures. Furthermore, the proposed project would not exacerbate existing conditions related to seismic-related ground failure; therefore, there would be no impact under this criterion.

Significance: No impact.

iv) Landslides?

The majority of the proposed project would be sited along roadsides with relatively flat topography on either side of the proposed fiber-optic telecommunications cable (telecom line). The construction of the proposed project would not alter topography or create slopes that would make the area prone to landslides. The proposed project would not exacerbate existing landslide conditions or expose people or structures to potential substantial effects due to landslides; therefore, there would be no impact under this criterion.

Significance: No impact.

b. Would the project result in substantial soil erosion or the loss of topsoil?

Soils in the proposed project area have a low susceptibility to erosion by water and a moderate susceptibility to wind erosion. The proposed project would involve trenching along approximately 10.3 miles of the proposed telecom line, as well as excavation of bore pits and Digital Loop Carrier (DLC) cabinet vaults. Bare soils would be exposed immediately following construction and would become more susceptible to erosion, especially during rain events. Excavated soil piles would also be prone to erosion, which could result in a potential impact.

During trenching activities, in accordance with the requirements of the State Water Resources Control Board (SWRCB) National Pollutant Discharge Elimination System (NPDES) permits for stormwater runoff associated with construction activities, the applicant would implement **APM GEO-1** and **APM**

GEO-2. As a result, the contractor would be required to manage construction-induced sediment and excavated spoils. The applicant would prepare a Storm Water Pollution Prevention Plan (SWPPP) outlining best management practices (BMPs) to control discharge from construction areas. **APM GEO-3** would ensure that no construction-related materials, wastes, spills, or residues would be discharged from the project. **APM GEO-4** would require that all construction materials, equipment, and excavation spoils be staged outside drainages. Implementation of **APM GEO-5** and **APM GEO-6** would also further ensure that all excavated or disturbed soil is kept within a controlled area surrounded by silt fencing, hay bales, straw wattles, or a similarly effective erosion-control technique. A compaction machine would follow directly behind the plow equipment, restoring the ground surface to its original contour and burying the conduit, per **APM GEO-7**, which would help prevent runoff and erosion. All work areas disturbed by construction would be revegetated with an approved seed mix to prevent erosion. **MM GEN-1** would ensure that the applicant would implement all proposed APMs. With implementation of such measures, the impact would be less than significant.

Significance: Less than significant with mitigation.

c. Would the project be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?

The proposed project would involve excavation of telecom line trenches, bore pits, and DLC cabinet vaults. As discussed under significance criteria (a)(iii) and (a)(iv), the proposed project area is relatively flat with little topographic relief, and is not conducive to landslides, on- or offsite, nor is it in an area of known liquefaction danger. Excavations would be relatively shallow (approximately 40 inches) and, for the most part, would be filled within 24 hours. They would be backfilled with the same substrate as that which was removed, after installation of the project components, ensuring that existing conditions are maintained after construction. For these reasons, the impact would be less than significant. However, upon completion of construction activities, **APM GEO-7** would ensure that excavated soil would be replaced and graded to post-construction topography, and that drainage matches pre-construction conditions, reducing any potential for the proposed project to contribute to or create unstable soil conditions. The impact would be less than significant under this criterion.

Significance: Less than significant.

d. Would the project be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?

The soils in the proposed project area consist of loams, gravelly loams, and sandy gravelly loams. The soils have a low shrink-swell class and a low linear extensibility. These factors indicate that site soils are not expansive. Trenches would be backfilled with the excavated soil, and soils would be compacted and re-contoured following construction. The proposed project would therefore not alter the soil makeup or exacerbate expansive soil conditions. There would be no impact under this criterion.

Significance: No impact.

f. Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

As described, the general proposed project alignment and areas where ground disturbance may occur have a high sensitively for uncovering paleontological resources. Portions of the proposed project would be located in areas that are underlain by two geologic units known to produce valuable, scientifically significant paleontological resources such as vertebrate and invertebrate fossils. The surficial Red Bluff

Formation and the sedimentary Tehama Formation can be expected to be encountered in the ADI at the ground surface or below road fills, which vary in depth from approximately 2 to 40 feet.

Because installation of the proposed project could occur anywhere between approximately 4 feet (for the fiber-optic communications cable) and 10 feet (at new Digital Loop Carrier [DLC] sites or at existing DLC sites where the underground vault would require replacement), there may be some locations where construction-related subsurface disturbance would occur in highly sensitive paleontological areas. Therefore, implementation of the proposed project has high potential to uncover unknown paleontological resources, which is a potentially significant impact. In the event that paleontological resources are encountered during construction, **APM CR-5** would require that all construction activities be halted and a qualified paleontologist contacted. **MM GEO-1 and MM GEO-2** supplements **APM CR-5** by educating workers and by requiring paleontological monitoring in places where there is a high potential for encountering paleontological resources (fossils) during construction of the proposed project. **MM GEO-3** supplements **APM CR-5** by providing further details outlining the procedures that TDS would follow in the event of the discovery of a paleontological resource. Implementation of **APM CR-5** would reduce the potential impact for uncovering paleontological resources during construction to less than significant with the implementation of additional mitigation measures. Impacts on paleontological resource would be less than significant with the implementation of the mitigation measures.

Significance: Less than significant with mitigation.

Mitigation Measures

See Section 5.3, "Air Quality" for **MM GEN-1**.

MM GEO-1: Worker Education Program. TDS shall design and implement a Worker Education Program that requires training for all project personnel, including construction supervisors and field personnel, who may encounter and/or alter previously identified and as yet unidentified paleontological resources, including any that may be determined to be a unique paleontological resource or site or unique geologic feature. All construction workers shall receive this Worker Education Program training before engaging in field operations.

The Worker Education Program shall include training that covers, at a minimum, the following topics:

- A review of the types of paleontological resources that could be identified in the proposed project area;
- A review of applicable local and state ordinances, laws, and regulations pertaining to paleontological resources; and
- A discussion of procedures to be followed in the event that paleontological resources are discovered during implementation of the proposed project.

This program shall be coordinated with the cultural resources training provided as part of Section 5.5 Cultural Resources, **MM CUL-1**.

MM GEO-2: Paleontological Monitoring. TDS shall ensure that a CPUC-approved paleontologist conducts paleontological monitoring for the proposed project. The qualified paleontologist shall be approved prior to the start of construction by the CPUC.

The CPUC-approved paleontologist shall prepare a Paleontological Monitoring Plan. Prior to commencement of construction, TDS shall submit the Paleontological Monitoring Plan to the CPUC for

review and approval. The CPUC will approve or request changes to the Paleontological Monitoring Plan within seven days of submittal by TDS. Once the CPUC approves the Paleontological Monitoring Plan, TDS shall ensure that the CPUC-approved paleontologist implements the approved plan.

The Paleontological Monitoring Plan shall include the significance criteria for the fossils likely to be yielded by the Red Band and Tehama Formations, subject to CPUC-approval and outline how such criteria shall be applied to determine whether or not the paleontological resource is significant. In the absence of other agreed-upon criteria, a paleontological resource shall be considered unique if it meets the definition of a significant paleontological resource under the 2010 Society of Vertebrate Paleontology *Standard Procedures for the Assessment of Adverse Impacts to Paleontological Resources* definition:

> Significant paleontological resources are fossils and fossiliferous deposits, here defined as consisting of identifiable vertebrate fossils, large or small, uncommon invertebrate, plant, and trace fossils, and other data that provide taphonomic, taxonomic, phylogenetic, paleoecologic, stratigraphic, and/or biochronologic information. Paleontological resources are considered to be older than recorded human history and/or older than middle Holocene (i.e., older than about 5,000 radiocarbon years). (Society for Vertebrate Paleontology 2010)

The CPUC-approved paleontologist shall monitor the effects of all construction-related work conducted in these areas according to a Paleontological Monitoring Plan that is prepared for the proposed project by the CPUC-approved paleontologist and approved by the CPUC prior to the start of construction.

TDS, in consultation with the CPUC-approved paleontologist, shall implement the following procedures as part of paleontological monitoring:

- A CPUC-approved paleontologist conducts paleontological monitoring during construction in the locations with the potential to contain paleontological resources.
- TDS, in consultation with the CPUC-approved paleontologist, shall identify the locations within the proposed project area with the potential to contain paleontological resources.
- TDS shall erect protective barriers with signage identifying each exclusion area as an "environmentally sensitive area."

The CPUC-approved paleontologist shall have the authority to implement the procedures set forth in MM GEO-2 if a paleontological resource is discovered at any time and in any location during construction of the proposed project, including within, and outside of, the locations that have been identified as having potential to contain paleontological resources.

At the conclusion of paleontological monitoring, TDS shall submit a report documenting the results of paleontological monitoring to the CPUC for review and approval. The monitoring report shall be prepared by the CPUC-approved paleontologist. The CPUC will approve or request changes to this monitoring report within seven days of submittal by TDS.

MM GEO-3: Treatment for Paleontological Resources. TDS shall immediately halt and exclude construction work within 100 feet of the discovery of a paleontological resource, and the CPUC-approved paleontologist shall inspect the paleontological resource. At the request of the CPUC-approved paleontologist, TDS shall install protective barriers with signage identifying the exclusion area as an "environmentally sensitive area." TDS shall notify the CPUC of the paleontological resource discovery within 24 hours of its discovery.

The CPUC-approved paleontologist shall examine the find and evaluate it to determine whether it is likely to be considered unique under Part V of CEQA Guidelines Appendix G based on the criteria set forth in the Paleontological Monitoring Plan.

The CPUC-approved paleontologist shall prepare a report documenting the results of the evaluation of each discovered paleontological resource, or group of paleontological resources if located within the same exclusion area. TDS shall submit an evaluation report(s) to the CPUC for review and approval. The CPUC will approve or request changes to the evaluation report(s) within seven days of submittal by TDS. Once the CPUC has approved the evaluation report(s), the CPUC shall determine whether or not the paleontological resource is unique.

If the CPUC, in consultation with the CPUC-approved paleontologist, determines that the paleontological resource is not unique, TDS may commence work in the area upon approval by the CPUC. If the CPUC, in consultation with the CPUC-approved paleontologist, determines that the resource is unique, preservation in place, i.e., avoidance, is the preferred method of mitigation for impacts to unique paleontological resources. If TDS, in consultation with the CPUC-approved paleontologist, determines that the unique paleontological resource can be avoided and thus not impacted, TDS shall ensure that the CPUC-approved paleontologist documents the resource(s) in accordance with professional standards, such as those in the 2010 Society of Vertebrate Paleontology *Standard Procedures for the Assessment of Adverse Impacts to Paleontological Resources*. TDS shall continue to flag the area for avoidance during construction, and no further treatment shall be required as long as the unique paleontological resource is avoided during construction of the proposed project.

However, if the resource is found to be unique and TDS, in consultation with the CPUC-approved paleontologist, determines that it cannot feasibly be avoided, TDS shall consult with the CPUC to determine appropriate mitigation measures for the treatment of impacts on a unique paleontological resource as follows:

- Mitigation methods may include ensuring that fossils are recovered, prepared, identified, catalogued, and analyzed according to current professional standards under the direction of the CPUC-approved paleontologist.
- Methods of recovery, testing, and evaluation shall adhere to current professional standards for recovery, preparation, identification, analysis, and curation, such as the 2010 Society of Vertebrate Paleontology *Standard Procedures for the Assessment of Adverse Impacts to Paleontological Resources*.
- The CPUC-approved paleontologist shall present the mitigation measures that are agreed upon by the CPUC and TDS, in consultation with the CPUC-approved paleontologist, in a Paleontological Treatment Plan.

TDS shall ensure that the CPUC-approved paleontologist implements the approved Paleontological Treatment Plan, and TDS may commence work in the area with the CPUC's approval after the identified paleontological resource(s) have been recovered from the field (if recovery is implemented as part of mitigation) and upon approval by the CPUC.

TDS shall ensure that the CPUC-approved paleontologist prepares a report documenting the results of the treatment within 90 days of the CPUC's approval of the Paleontological Treatment Plan. TDS shall ensure that the report presents a thorough discussion of the data recovery efforts, presents the conclusions drawn from the data recovery work, and indicates where the recovered unique paleontological resources will be curated. TDS shall submit the report documenting the treatment to the CPUC for review and

approval. Once the CPUC approves this report, TDS shall curate the materials and shall provide a copy of the approved report documenting the treatment to CPUC for its records.