ENVIRONMENTAL ASSESSMENT

TRINIDAD RANCHERIA ECONOMIC DEVELOPMENT CORPORATION

HOTEL DEVELOPMENT PROJECT

SEPTEMBER 2018

LEAD AGENCY:

Bureau of Indian Affairs
2800 Cottage Way
Sacramento, CA 95825
(916) 978-6000

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INTRODUCTION

1.1 INTRODUCTION

Programs administered by the U.S. Bureau of Indian Affairs (BIA) allow tribes to improve tribal government infrastructure, community infrastructure, education, job training, and employment opportunities, along with other components of long-term sustainable development that work to improve the quality of life for their members. To help Indian tribes and individuals establish and expand Indian-owned businesses, and to encourage self-sufficiency, Congress passed the Indian Financing Act of 1974 (Act). The Act was established to reduce the disparity between business capital available to Indian and non-Indian businesses. The Act is administered by the BIA, Office of Indian Energy and Economic Development (IEED): Division of Capital Investment (DCI) that oversees the various implementation programs such as the Indian Loan Guaranty, Insurance, and Interest Subsidy Program. BIA approvals under the program, including Indian Loan Guarantees which result in the physical disturbance of the environment (such as new construction), constitute a Federal Action requiring review under the National Environmental Policy Act (NEPA) of 1969. In addition to the DCI, the BIA Division of Real Estate Services assists tribes in improving the quality of life for its members. The Division of Real Estate Services reviews and approves leases on lands held in Trust by the Department of the Interior.

Accordingly, this Environmental Assessment (EA) has been prepared for the BIA to support the Trinidad Rancheria Economic Development Corporation (TREDC) requests, on behalf of the Cher-Ae Heights Indian Community of the Trinidad Rancheria (Tribe), for an Indian Loan Guarantee by DCI for capital to build a Hotel adjacent to the Tribe's Casino on the Reservation and the approval of a lease by the Division of Real Estate Services with Hyatt Place to operate the Hotel. Combined, these two approvals represent the Proposed Action. The construction and operation of the Hotel constitute the Proposed Project. The BIA will use this EA to determine if the Proposed Action and subsequent Proposed Project would result in adverse effects to the environment.

This document has been prepared in accordance with the requirements set out in NEPA (42 United States Code [USC] §4321 et seq.), the Council on Environmental Quality (CEQ) Guidelines for Implementing NEPA (40 CFR Parts 1500-1508), and the BIA's NEPA Guidebook (59 Indian Affairs Manual [IAM] 3-H). **Section 2.0** of this EA provides a detailed description of the Project Alternatives. **Section 3.0** provides a description of the existing environmental conditions on and in the vicinity of the project site, an analysis of the potential environmental consequences associated with the Project Alternatives, and impact mitigation measures. **Section 4.0** describes cumulative and growth-inducing effects, and **Section 5.0** presents a list of preparers.

Consistent with the requirements of NEPA, the BIA will review and analyze the environmental consequences associated with the Proposed Action and Project Alternatives and either determine that a Finding of No Significant Impact (FONSI) is appropriate, request additional analysis, or request that an Environmental Impact Statement (EIS) be prepared.

1.2 BACKGROUND

The Cher-Ae Heights Indian Community of the Trinidad Rancheria is a federally recognized Indian Tribe with ancestral ties to the Yurok, Wiyot, Tolowa, Chetco, Karuk, and Hupa peoples. The Tribe is located within the ancestral territories of the Yurok, with core land holdings located on a coastal bluff east of U.S. Highway 101 (HWY-101), just south of the town of Trinidad, CA. The Tribe's culture, including but not limited to traditional and customary fishing and gathering, is inextricably tied to the land and marine resources found within the traditional homeland, which is defined as a 20-mile area of interest and concern surrounding the Tribe's lands. The Tribe has made a significant investment to revitalize the local economy and preserve the Tribe's cultural heritage and has developed a model that advances economic development and stewardship.

1.3 LOCATION AND SETTING

The project site is located west of HWY-101, adjacent to the City of Trinidad (approximately 0.75 miles southeast of downtown Trinidad) in Humboldt County, within the existing Reservation on the south and west side adjacent to the existing Casino. The project site is located in Section 25 of the Trinidad, CA U.S. Geological Survey (USGS) quadrangle within the southwest quarter of the northeastern quadrant of Township 8 North and Range 1 West. **Figure 1-1** and **Figure 1-2** show the regional location and vicinity of the project site. **Figure 1-3** shows an aerial photograph of the project site. The project site includes approximately 0.40 acres located on the south and west sides of the existing Casino that is currently developed and paved.

Regional access is provided by HWY-101, which travels in a general north-south direction and is located approximately 0.2 miles east of the project site. Local access to the project site is provided by Scenic Drive and Cher-Ae Lane. Scenic Drive is a two-lane paved road that runs in a general north south direction along the coastline from Trinidad to Westhaven going through the existing Reservation. Cher-Ae Lane is a two lane paved road on the Reservation connecting the Tribal amenities and Casino to Scenic Drive. The project site is composed of developed/paved parking and roadway behind and beside the existing Casino.

1.4 PURPOSE AND NEED FOR THE PROPOSED ACTION

The existing Cher-Ae Heights Casino provides a consistent revenue stream that has improved the socioeconomic status of the Tribe, allowing for development of programs and services that have resulted in reduced poverty and unemployment. Implementation of the Proposed Action would assist the Tribe in meeting the following project objectives:

- Maintain the socioeconomic status of the Tribe by providing an augmented revenue source that could be used to strengthen the tribal government, fund a variety of social, governmental, administrative, educational, health, and welfare services to improve the quality of life of tribal members; and to provide capital for other economic development and investment opportunities.
- Create new jobs for both tribal and non-tribal members.
- Reduce visitor trips on local roadways by providing additional overnight accommodations.
- Provide additional amenities to existing patrons and allow the target market to expand to nonresidential clients.
- Allow tribal members to enhance their economic self-sufficiency.

SOURCE: ESRI, 2018; AES, 9/17/2018

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Figure 1-1
Regional Location

SOURCE: "Trinidad, CA" USGS 7.5 Minute Topographic Quadrangle,
T8N R1W, Section 25, Humboldt Baseline & Meridian;
ESRI, 2018; AES, 9/17/2018

Trinidad Rancheria EA / 216561 ■

Figure 1-2
Site and Vicinity

SOURCE: DigitalGlobe aerial photograph, 10/12/2017; AES, 9/17/2018

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Figure 1-3
Aerial Photograph

The Proposed Action and subsequent Proposed Project would ensure that the Tribe continues to maintain a long-term, viable, and sustainable revenue base and allow the Tribe to continue to compete with other gaming and tourist attraction venues in the region.

1.5 OVERVIEW OF THE ENVIRONMENTAL REVIEW PROCESS

This EA is intended to satisfy the environmental review process of 59 IAM 3-H, 40 CFR § 1501.3 and 40 CFR § 1508.9. The EA has been released for a 30-day comment period. Comments will be considered by the BIA, and either a FONSI will be prepared or additional environmental analysis will be conducted. After the NEPA process is complete, the DCI and Division of Real Estate may issue a determination on the request to approve the Indian Load Guarantee and lease agreement.

1.6 ENVIRONMENTAL ISSUES ADDRESSED

In accordance with NEPA and because the Proposed Project is located within a coastal zone, this EA evaluates the following environmental issue areas outlined within the BIA's NEPA Guidebook:

- Land Resources
- Water Resources
- Air Quality/Greenhouse Gasses
- Biological Resources
- Cultural Resources
- Socioeconomic Conditions / Environmental Justice
- Land Resources
- Land Use and Agriculture
- Public Services
- Noise
- Hazardous Materials
- Visual Resources
- Transportation and Circulation

1.7 REGULATORY REQUIREMENTS AND APPROVALS

The following direct and indirect federal approvals and actions may occur as a result of the Proposed Action:

- Consultation with the U.S. Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NMFS) under Section 7 of the Federal Endangered Species Act (ESA), if endangered species may be impacted by the Proposed Action.
- Consultation with the California Coastal Commissions concerning consistency of the Proposed Action with the Local Coastal Plan in accordance with 15 CFR, Section 930.35(a) of the National Oceanic and Atmospheric Administration, Federal Consistency Regulations.
- Consultation with the State Historic Preservation Office under Section 106 of the National Historic Preservation Act (NHPA).

SECTION 2.0

PROPOSED ACTION AND ALTERNATIVES

2.1 SELECTION OF ALTERNATIVES FOR DETAILED EVALUATION

As discussed in **Section 1.4**, the Purpose and Need of the Proposed Action relates to the Tribe's goals of economic self-sufficiency, self-governance, and self-determination. The only reasonable alternative is for the DCI and the Division of Real Estate Services to deny approval of the Indian Loan Guarantee and lease agreement, respectively. Furthermore, the selected location of the Proposed Project provides for a reduced-level of potential environmental impacts compared to alternative locations as the site is previously developed and supports the existing gaming operation. Other potential alternatives to the Proposed Action, such as a reduction in the size of the area for development or alternative locations, do not meet the definition of "reasonable" under the CEQ's Regulations for Implementing the NEPA because the purpose and need would not be met. Due to the proposed location of the Hotel, the Tribe has reduced the size to the minimum size that would provide the economic gains that would make the Hotel profitable and thereby viable. Accordingly, a smaller area for the Proposed Project is not evaluated within this Environmental Assessment (EA).

Being that all the parcels near the existing Casino are designated for parking, tribal facilities, or housing under Tribal land use planning, the surrounding locations owned by the Tribe are not suitable for a Hotel development. There are no other available comparable and affordable lands that would meet the purpose and need of the Proposed Project (in that the funds needed to purchase surrounding lands would result in lack of funding for Hotel development). Furthermore, the Tribe's purpose for the development of a 100-room Hotel is to support the existing Casino (Proposed Project). There is no alternative location that would allow the Tribe to have a Hotel near the existing Casino without disrupting future plans essential to the Tribe's growth and facilities. In addition, developing a Hotel separated from the existing Casino would prevent sharing of operational costs. This increase in operating costs associated with a separated Hotel facility would not be economically feasible for the Tribe. Therefore, alternative locations for the Proposed Project are not evaluated within this EA as none have been evaluated as being a reasonable alternative to the Proposed Project. The Proposed Project would allow the Tribe to better support their existing Casino and patrons visiting the area of Trinidad, thus providing economic benefit to the Tribe and its members. The Proposed Project is detailed below in **Section 2.2**.

2.2 PROPOSED ACTION AND PROPOSED PROJECT

The Proposed Action consists of the guarantee of a loan by DCI to the Tribe's lender in accordance with 25 Code of Federal Regulations (CFR) Part 162 Residential, Business, and Wind and Solar Resource Leases on Indian Lands and approval of a lease agreement between the Tribe and Hyatt hotels by the Division of Real Estate Services for the operation of the Hotel.

2.2.1 ALTERNATIVE A – PROPOSED PROJECT

The Tribe proposes to develop a six-story, 100-room Hotel, and accessory components on approximately 0.4 acres within existing developed/paved areas to the south and east of the existing Casino (**Figure 2-1**)

SOURCE: DigitalGlobe aerial photograph, 10/12/2017; AECOM, 1/13/2017; AES, 9/17/2018

Figure 2-1
Proposed Site Plan

south and east of the existing Casino (**Figure 2-2**). The Hotel would include a mix of room types, 1,552 square feet of meeting space divided into two separate areas, a business center, fitness room, café/bar, lounge, rooftop event space, and indoor pool. A porte-cochere along the eastern side of the existing Casino would provide a covered vehicle entrance for arriving guests. As part of the lease agreement, Hyatt would provide the design standards for the Hotel to ensure development is commensurate with Hyatt standards and the Tribe's culture.

WATER SUPPLY

Water would be supplied though the existing three-inch diameter metered Casino water line. Water demands for the Hotel and accessory components would be approximately 18,860 gallons per day (gpd). Except for connections from the Hotel to the system serving the existing Casino, no additional water infrastructure is required for Alternative A.

Hot and cold domestic water would be provided via a combination of three separate systems. A 750-gallon water heater and storage tank would provide water to guest rooms and common areas. A 100-gallon water heater would serve water to the laundry area. Lastly, the proposed system would include a second 100-gallon water heater with recirculating hot water for the kitchen. All piping materials would meet the California Plumbing Code standard.

WASTEWATER TREATMENT AND DISPOSAL

Wastewater generated by the existing Casino, averaging 7,200 gallons per day (gpd), is currently treated by the Tribe's wastewater treatment plant (WWTP) and leach fields. The existing WWTP utilizes a combination of biological treatment and membrane separation and has an existing capacity of 15,000 gpd. The existing WWTP was designed to double in size with the addition of three filters, without resizing or excessive retrofitting. Wastewater generated by the existing Casino is pumped to a 15,000-gallon holding tank before being transferred to a concrete bioreactor. After organic material is broken down in the bioreactor, the wastewater is filtered through membranes. Once filtered, the wastewater is disinfected with a UV system and chlorinated. Approximately 40 percent (4,000 gpd) of the treated wastewater is dispersed via pumps into a leach field with a capacity of 10,000 gpd located south of the Tribal office. The remaining 60 percent (6,000 gpd) of the treated wastewater is stored in storage tanks to be recycled back into the existing Casino toilets (**Appendix A**).

Construction of a 100-room Hotel would result in the need to treat and dispose of approximately 10,000 gallons of wastewater per day. The proposed Hotel would connect directly to the existing Casino wastewater treatment system, which would be expanded in order to accommodate the additional capacity generated by the Hotel. The Hotel sewer collection system would be drained by gravity and multiple exit pipes would be connected to the existing underground sanitary sewer. Sanitary drainage and vent piping materials would meet the California Plumbing Code standard. Recycled water would be utilized for toilet flushing within the Hotel, accounting for approximately 20 percent (2,000 gpd) of the proposed Hotel wastewater generation rate. Accordingly, the Hotel would be dual-plumbed and cross connections would be prohibited to prevent contaminating potable water with recycled water.

In order to accommodate the increase in wastewater treatment capacity, additional pumps, blowers, and piping and a parallel carbon polishing system would be installed. Upgrades to the electrical system would also be completed. The UV disinfection systems would also require a larger impeller on the existing pump; however, the UV disinfection systems themselves are sufficiently sized to handle the new flow.

SOURCE: AECOM, 1/13/2017; AES, 9/17/2018

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Figure x

Architectural Renditions

All of this equipment would be accommodated by the existing building. Some minor plumbing issues would be corrected at the time of upgrade. Currently, the floor drains and plumbing fixtures in the treatment building are plumbed to the effluent tank. This would be rerouted to the holding tank and processed prior to dispersal. Some upgrades would occur with plumbing in the pump tanks to replace corroded pipes and valves. An additional standalone recycled water tank that is not chlorinated would be installed for use in the backwashing process of the membranes. This tank may affect the space currently dedicated to maintenance staff and activities and additional building space may be required to make sure routine maintenance activities are not impacted.

Wastewater from the septic tanks from the nearby Tribal Office, the clinic complex, and two homes is discharged directly to a community dispersal field without treatment. The community dispersal field was designed with a capacity of 10,000 gallons per day. A comparison of water meter usage records for the existing Casino and the processed wastewater flows from the WWTP indicate that approximately 60 percent of the average daily flow is recycled back into the existing Casino for toilet flushing and does not require disposal at the dispersal field. Therefore, approximately 2,880 gpd of treated wastewater is discharged to the dispersal field. In addition, an estimated 960 gpd are discharged to the dispersal field from the Tribal Offices, the clinic complex and the two houses connected to the community dispersal field. Accordingly, the total estimated flow to the community dispersal field is approximately 4,000 gpd. According to design specifications, there is approximately 6,000 gpd of capacity remaining in the existing community dispersal field. With 8,000 gpd of wastewater generated at the proposed Hotel, the existing leach field would operate over capacity. In order to accommodate excess wastewater capacity from the proposed Hotel, a 2004 Wastewater Assessment identified two potential areas, shown in **Figure 1-3**, feasible for additional leach field dispersal: the mounded ridge to the south of Ter Ker Coo Lane and the hillside south of the Tribal office (**Appendix A**). Accordingly, both locations are assessed in this EA.

GRADING AND DRAINAGE

Minimal grading would be required, as the site is currently developed with asphalt for circulation for the back of house operations of the existing Casino and all cut and fill would be balanced on the site. The building would be constructed in a manner consistent with the 2016 California Building Code (CBC), including seismic design criteria related to the geologic setting of the area. The site is considered stable for hotel foundations, as it is located on undisturbed deposits and bedrock (**Appendix B**). Therefore, cast-in-drilled-hold (CIDH) pile foundations driven into the bedrock would be installed to achieve hotel support. A minimum of 24-inch diameter piles would be driven at least ten feet into the bedrock to counteract potential for groundwater and caving soils. The CIDH piles require smaller installation equipment and minimize noise/vibrations when compared to driven piles (**Appendix B**). Additionally, concrete cantilever retaining walls up to 10 feet in height would be constructed as soil support. All retaining walls would be drained with at least one-foot thick permeable filter fabric backing.

With the development of the Hotel over existing paved surfaces, development of the Hotel would not introduce additional impervious surfaces. To improve drainage conditions over existing conditions, a storm drainage inlet system would be connected to the existing Casino system to capture runoff from the building. Additionally, roof drains would be installed on all flat roofs of the proposed Hotel. Roof drains would collect water through a system of drains connected to leaders, which would route the water outside of the building into the storm drainage system.

UTILITIES

Natural Gas

Natural gas fuel would be provided for gas fired water heaters and kitchen equipment. Natural gas piping materials would meet the California Plumbing Code standards.

Electricity

The Hotel would obtain a normal power supply via a new utility service. The utility service would be terminated at a metered main electrical service switchboard (MSB). The MSB would be 208Y/120V, three phase, rated 2,500 amps and sized to accommodate all hotel features, including, but not limited to, the building guestroom loads, HVAC equipment, Hotel back of house loads, lighting, general-purpose power receptacles, and kitchen loads. Separate panelboards for lighting, receptacles, and HVAC loads are designed in compliance with California Energy Code, Part 6, Title 24 Section 130.5(a) Electrical Distribution Systems. Hotel electrical distributions would meet the California Energy Code, Part 6 Title 24, as they are enabled to receive and act upon demand response signals. Door and exit lighting would be provided with Integral 90-minute battery back up at guest rooms, public areas, and hotel back of house.

LIGHTING

Interior

All guestroom lighting would be locally switched or, if available, integrated with the Building Management/Guest Card Access Entry System. Interior lighting in all public spaces would be controlled via computerized dimming system and would have equivalency with California Energy Code Title 24 lighting control and power allowance requirements. Additionally, all back of house lighting shall meet California Energy Code Title 24 lighting control and power allowance requirements.

Exterior

Parking lot lighting would consist of pole-mounted, LED fixtures equipped with motion activated bi-level dimming. Exterior stairwells would be installed with motion sensors activated lights and an emergency battery. All exterior lights would be on a photocell controlled, centralized astronomical digital clock to ensure lights only turn on at night. Additionally, the Hotel would have 90-minute battery for backup lighting to power all emergency door lighting and LED-type illuminated exit signs. Emergency shunt relays would be provided for all areas with switched exit lights.

PROJECT CONSTRUCTION

The Hotel and accompanying components would be constructed over an eight- to twelve-month period, with an anticipated completion date in the spring to winter of 2020. All staging areas will be located on previously disturbed areas. Construction would involve minimal earthwork, placement of concrete foundations, steel and wood structural framing, masonry, electrical and mechanical work, building finishing, and paving, among other construction trades. Prior to finalization of the grading and development plans for the property, design-level geotechnical specifications addressing the specific grading and development plans would be developed to meet seismic requirements of the IBC.

To minimize the risk of fire, all equipment that normally includes a spark arrester would be equipped with an arrester in good working order; structural fire protection would be provided through compliance with California Fire Code and National Fire Alarm Code requirements for commercial structures similar in size to the proposed Hotel; the Tribe would cooperate with the fire district by allowing routine inspections and would ensure that appropriate water supply and pressure is available for emergency fire flows; and typical fire flow allowances would be confirmed with the local Fire Marshall prior to construction of any water storage tank.

2.3 ALTERNATIVE B – NO-ACTION ALTERNATIVE

Under the No-Action Alternative, DCI and the Division of Real Estate Services would not approve the requested actions. Accordingly, without the guaranteed loan, it is highly unlikely that the Tribe could secure the loan necessary to develop the Hotel. Additionally, without the lease agreement, the costs associated with having to independently design and operate the Hotel would render implementation infeasible for the Tribe. Accordingly, the Hotel and accessory components would not be developed as identified for the benefit of the Tribe under Alternative A. For the purposes of the environmental analysis in this EA, it is assumed that, due to the economic considerations for operating the existing Casino by the Tribe, the property would continue to be utilized in its current state for back of house access to the existing Casino with no additional facilities constructed under this alternative.

2.4 COMPARISON OF THE PROJECT ALTERNATIVES

ALTERNATIVE A

Alternative A would result in significant but mitigable environmental impacts in the following areas:

- Land Resources
- Biological Resources
- Cultural Resources
- Traffic
- Noise
- Visual Resources

Of the project alternatives evaluated, Alternative A would best meet the Tribe's objectives by providing the Tribe with a Hotel for the benefit of the Tribe and visiting patrons and community while minimizing or eliminating adverse environmental impacts.

ALTERNATIVE B

While the No-Action Alternative would not result in any of the environmental effects identified for Alternative A, this alternative would not meet the Tribe's objectives of exercising tribal sovereign self-reliance and enhance the well-being of tribal resources; further, this alternative would not meet the Tribe's goal to fulfill self-reliance and promote the future of economic stability and development for the Tribe.

SECTION 3.0

AFFECTED ENVIRONMENT, IMPACTS, AND MITIGATION FOR THE ALTERNATIVES CONSIDERED

This section presents relevant information concerning existing resources and other values that may be affected by the Project Alternatives. In accordance with the NEPA and the BIA's NEPA Guidebook (59 IAM 3-H), the existing conditions described herein provide the baseline for determining the environmental effects. As used here within, the term "project site" refers to the approximately 0.40 acres being considered for the Proposed Project. Accordingly, the term "proposed development" refers to the proposed Hotel and accessory components.

Following the existing conditions, environmental consequences and mitigation measures are provided for both direct and indirect impacts. Direct impacts are those that are caused by the Proposed Action and occur at the same time and place, while indirect impacts are caused by the Proposed Action and occur later in time or further in distance but are still reasonably foreseeable (Council on Environmental Quality, Regulation 1508.8). Cumulative effects and growth-inducing effects of the project alternatives are also assessed in this section for each of the resource areas. Note that, consistent with the CEQ's NEPA Regulations Section 1508.8, the term "effects" is used synonymously with the term "impacts." **Section 3.0** addresses the resource and issue areas identified in **Section 1.6**.

3.1 LAND RESOURCES

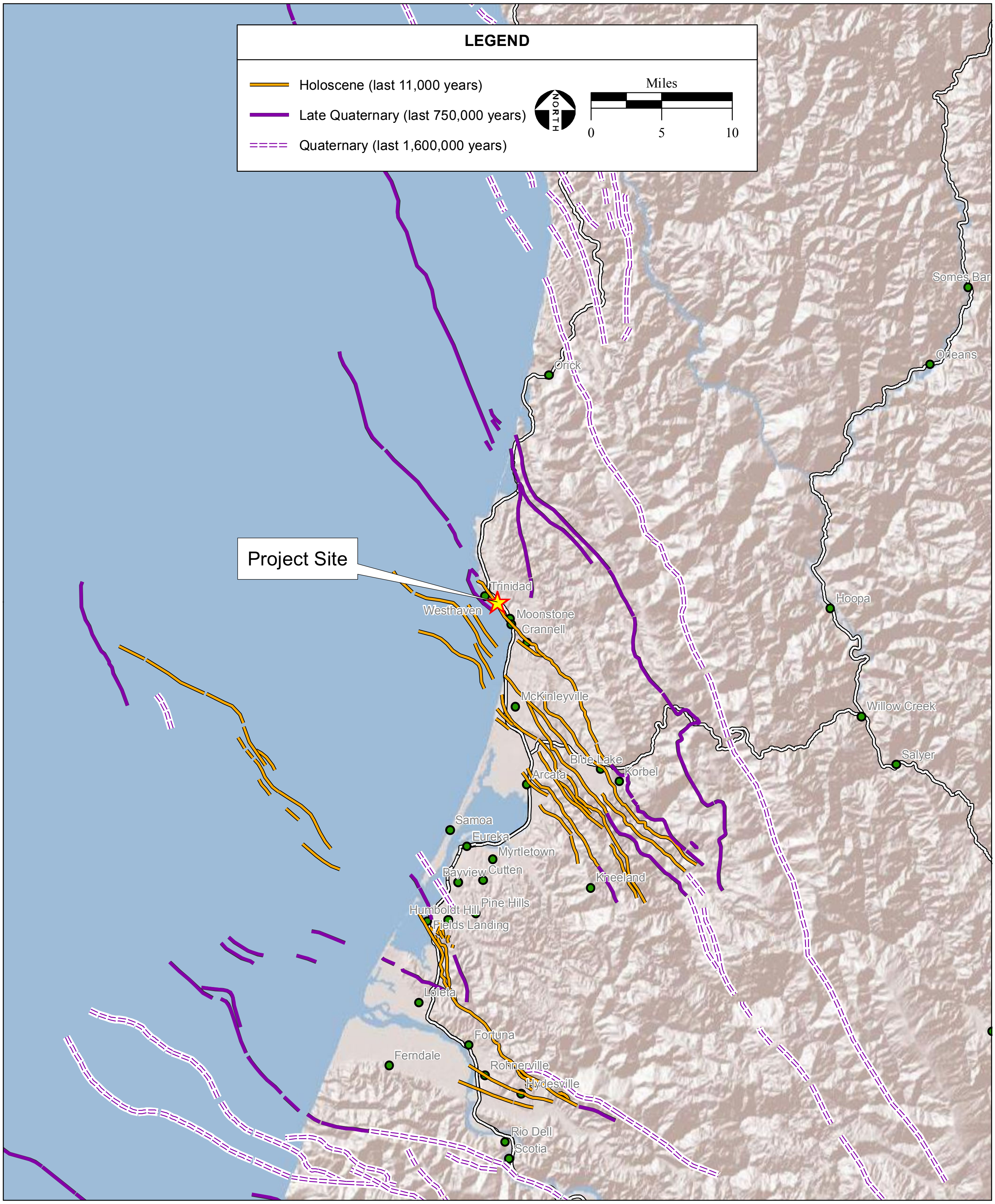
3.1.1 TOPOGRAPHY

Topography in the vicinity of the project site is typical of that of coastal bluffs and Pacific Northwest forests. The project site is located near the top of a coastal bluff, which is approximately 230 feet above mean seal level (amsl) and has an approximately 50 percent slope southwest towards the Pacific Ocean. The project site itself is relatively flat due to previous grading and development of the existing Casino.

3.1.2 GEOLOGIC SETTING AND SEISMICITY

The shale bedrock that underlies the project site is primarily composed of Mesozoic-Paleozoic-Precambrian Sedimentary and Metasedimentary Rocks, specifically that of the Jura-Cretaceous Franciscan Complex. Primary seismic concerns within the County include ground shaking and surface ruptures along existing fault traces. Secondary seismic concerns within the County include liquefaction, settlement, landslides, and tsunamis.

The County is located in a seismically active region. Three major fault traces meet offshore at the "triple junction": the San Andreas Fault, the Mendocino Fracture Zone, and the southern end of the Cascadia Subduction Zone. However, the project site is not located within a designated Alquist-Priolo zone, which is determined by the California Geological Survey (CGS) according to mandates of the Alquist-Priolo Earthquake Fault Zoning Act of 1972 (Alquist-Priolo). Alquist-Priolo zones are well-defined areas located within seismically active zones, typically along active fault zones susceptible to surface fault ruptures. As shown in **Figure 3-1**, several fault lines are located within the vicinity of the project site,



SOURCE: USGS Earthquake Hazards Program, 7/26/2010; California Geological Survey, 2005; AES, 9/17/2018

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Figure 3-1
Regional Faults

including the Trinidad Fault and McKinleyville Fault. The Trinidad Fault is located approximately 10 miles southeast of the project site and the McKinleyville Fault is located approximately 500 feet northeast of the project site. Both faults are less than 15,000 years old (USGS, 2016). The project site has as a maximum peak horizontal ground acceleration of 0.52g (or 5.10 meters per squared second (m/s^2) for a seismic event with a ten percent probability for exceedance in 50 years (**Appendix B**).

The project site is not currently mapped for landslides or liquefaction. However, landslides are common along the slopes located in the vicinity of the project site, specifically at and below Scenic Drive, located immediately adjacent to and southwest of the project site. Landslides are initiated by wave erosion that undercuts the toe of such slopes, preferentially undercutting the "weak rock" areas within the shale bedrock. Block failures within the shale bedrock are caused by such wave erosion, which affects upslope and results in landslides due to sandy soils that become unstable during earth-shaking events at horizontal ground accelerations noted above. Landslides in the vicinity of the project site, specifically at and below Scenic Drive, have resulted in soil investigations, which in turn have led Humboldt County (County) to implement stabilization measures such as retaining wall systems, slope reconstruction, and sub-drainage elements.

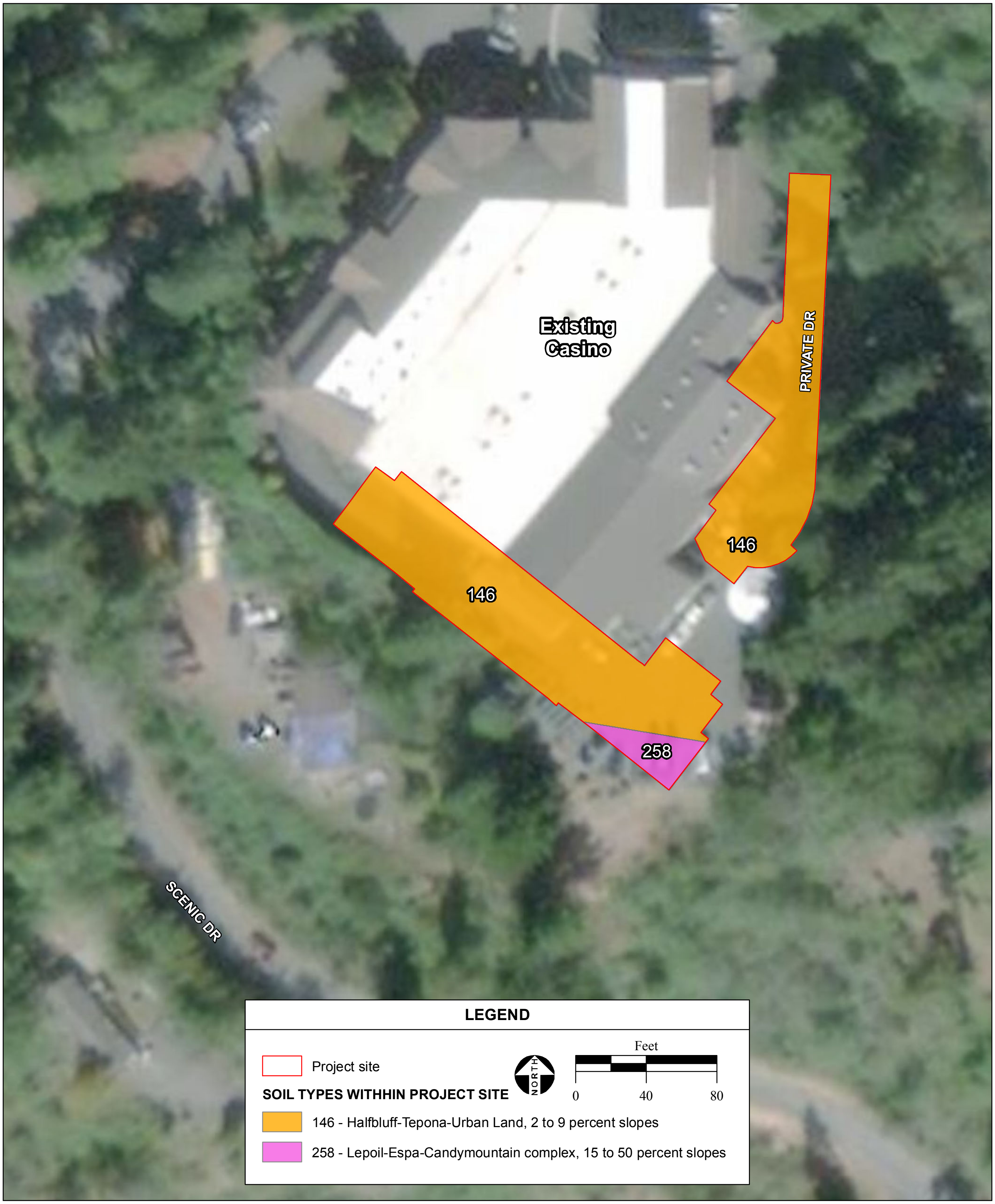
An active landslide currently extends from the southwest corner of the proposed Hotel southwest towards Scenic Drive. The active landslide is relatively shallow in nature and appears to involve the terrace deposits which overly the shale bedrock. Groundwater, a major contributor to the slope's instability, moves through the terrace deposits and emerges where the shale bedrock is exposed. Surface seepage, springs, and hydrophytic vegetation are present in the immediate vicinity of the slope. The active landslide has dropped approximately six vertical inches but has not damaged the existing Casino or surface parking lot.

The project site, being located near the top of a coastal bluff, is located outside of a tsunami inundation zone (DOC, 2009).

3.1.3 SOILS

As shown in **Figure 3-2**, soils within and in the vicinity of the project site are comprised of halfbluff-tepona-urban soils, lepoil-espa-candymountain complex soils, and atwell-ladydid complex soils. Soils within the project site have a low linear extensibility rate, which is related to the susceptibility of the soil to expand, and moderate to high soil erosion rates, which is related to the susceptibility of the soil to erode (NRCS, 2016a; NRCS, 2016b).

Construction fill material within and in the vicinity of the project site was used during the construction of the existing Casino and surface parking lot. The construction fill material, less than approximately five feet in depth, is comprised of stiff sandy clay and medium-dense silty gravel. Dense terrace deposits underlie the construction fill material to a depth of approximately 43 feet below ground surface (bgs). The weathered shale bedrock found below the project site is predominately decomposed to a lesser sandstone layer with mudstone and was drillable to the full depth of approximately 81.4 feet bgs for the test borings provided in **Appendix B**. **Appendix B** presents further analysis of the soil samples obtained during the onsite test borings.



SOURCE: USDA SSURGO Soil Survey of Humboldt County, updated 9/2015;
DigitalGlobe aerial photograph, 10/12/2017; AES, 9/17/2018

Figure 3-2
Soil Types

3.1.4 MINERAL RESOURCES

The County has more than 32 permitted and active hard rock quarries (County of Humboldt, 2007a) and more than 90 extraction sites that produce sand, gravel, metals, stone, and clay. The majority of extraction activities within the County involves sand and gravel extractions along the Mad River, Eel River-Van Duzen River complex, Willow Creek, and Trinity River. Trinidad Quarry, located approximately 2.1 miles northeast of the project site, is the closest extraction site to the project site (USGS, 2003). No known mineral resources exist within the project site.

3.1.5 IMPACTS TO LAND RESOURCES

Alternative A would result in significant effects to land resources if construction or operation causes significant alterations to the site topography, significant soil erosion, or limits access to mineral resources of regional significance. Alternative A would also result in significant effects to land resources if geological/soil hazards associated with the existing setting would pose limitations to the development of Alternative A or pose a significant health hazard to new habitable structures.

TOPOGRAPHY

Alternative A would not result in substantial changes to the topography of the project site. Development within the project site, which is relatively flat in nature due to previous grading and development of the existing Casino, would be limited to the existing surface parking lot (**Figure 2-1**).

GEOLOGIC SETTING AND SEISMICITY

The County is located in a seismically active region (**Figure 3-1**). Alquist-Priolo mandates that human occupancy be set back at a minimum of 50 feet from an active fault; the Proposed Project is located outside the 50-foot setback boundary and there is little chance of an active fault on the project site (**Appendix B)**.

The active landslide that currently extends from the southwest corner of the proposed Hotel southwest towards Scenic Drive has the potential to affect the foundation of the proposed Hotel. However, the active landslide is relatively shallow in nature and may be readily stabilized utilizing measures such as retaining wall systems, slope reconstruction, and sub-drainage elements (**Section 3.1.6**).

In order to reduce damage from tsunamis, the City's Draft General Plan designates all areas less than 20 feet above mean sea level (amsl) as Open Space or Special Environment (City of Trinidad, 2012). The project site, being located near the top of a coastal bluff at approximately 230 feet amsl, is located outside of a tsunami inundation zone and is therefore not designated as a Special Environment.

SOILS

Excavation activities for construction of the proposed Hotel within the project site have the potential to expose soils and increase the susceptibility of such soils to erode. However, construction fill material was used within and in the vicinity of the project site during the construction of the existing Casino and surface parking lot and therefore implementation of Alternative A would not result in significant effects due to soil erosion. Additionally, liquefaction is not anticipated to occur unless sustained high groundwater levels are identified within terrace deposits which overly the shale bedrock (**Appendix B**).

MINERAL RESOURCES

Excavation activities for construction of the proposed Hotel within the project site are not anticipated to result in a loss of economically-viable aggregate rock or to diminish the extraction of important ores or minerals. No known mineral resources exist within the project site and there are no abandoned mines, shafts, or tailings within or in the vicinity of the project site. Therefore development and use of the land would not affect extraction activities of known mineral resources of importance to the surrounding community.

Alternative B

Under the No Action Alternative, the project site would remain undeveloped. No mitigation required.

3.1.6 MITIGATION MEASURES

- Prior to construction of the Hotel foundation, the contractor shall implement one of the slope stabilization options recommended by the soil engineers in the Draft Geotechnical Feasibility and Preliminary Design Report (**Appendix B**). Options include soil nail walls, reconstructed embankment, solider pile, and welded wire walls.

3.2 WATER RESOURCES

The following section describes the existing surface water, drainage, flooding, water supply, groundwater, and water quality conditions at the project site.

3.2.1 SURFACE WATER, DRAINAGE, AND FLOODING

WATERSHEDS AND HYDROLOGY

The project site is located within the Luffenholtz Creek-Frontal Pacific Ocean sub-watershed of the Trinidad Hydrological Unit (HU). Mill Creek, McConnahas Mill Creek, and Luffenholtz Creek are located within the Trinidad HU, flow southwest, and eventually discharge into the Pacific Ocean. Mill Creek is located just north of the City and McConnahas Mill Creek is located immediately adjacent to the northern boundary of the Trinidad Rancheria. Luffenholtz Creek's headwaters are located northeast of the project site and discharge into the Trinidad Bay of the Pacific Ocean located approximately 1.4 miles south of the project site.

CITY WATER SUPPLY

Historically, homes within the City had individual wells or have been served from Mill Creek and Luffenholtz Creek. Currently, the City's water supply system serves approximately 315 connections, including connections to Tribal enterprises. The City has a permitted water use rate of 355,392 gallons per day (gpd), of which the City is using approximately 23 percent (Buckman, 2017).

DRAINAGE

The project site has slopes which range from approximately zero to five percent. Runoff within the surface parking lot occurs as sheet flow and follows the topography southwest towards on-site detention basins and swales constructed during the development of the existing Casino. The project site and surrounding lands do not directly contribute surface water to the Luffenholtz Creek-Frontal Pacific Ocean sub-watershed; rather, overland flow drains via stormwater outlets into the Pacific Ocean.

FLOODING

The Federal Emergency Management Agency (FEMA) is responsible for assessing the potential for flooding by updating and issuing Flood Insurance Rate Maps (FIRM), which depict various levels of predicted inundation. FEMA has not completed an analysis of flood hazards within the City and therefore a FEMA FIRM is not available (FEMA, 2016). However, FEMA is in agreement with the City that due to the City's steep slopes, the potential for flooding within the City is nonexistent and therefore flood mapping is unnecessary (City of Trinidad, 2012).

3.2.2 GROUNDWATER

The project site is located within the minor Mad-Redwood Big Lagoon Area Basin groundwater basin, which is comprised of the Mad River, Redwood Creek, Eureka Plain, and Trinidad planning watersheds totaling approximately 34,000 acres (County of Humboldt, 2002). These planning watersheds are located within the California Coast Ranges and are mainly comprised of highly unstable, easily erodible rocks which contribute to high levels of sediment in its water features (County of Humboldt, 2002). The average annual runoff that percolates into the combined basin is approximately 1,000,000-acre feet (AF).

No groundwater wells supply water within the project site; however, monitoring wells were installed as part of the geotechnical studies investigated in **Appendix B**. Groundwater was originally measured at approximately 16.5 feet bgs, but has since risen to approximately 12.0 feet bgs. On-site groundwater levels are measured weekly and results indicate that groundwater is seasonally present within the terrace deposits near the shale bedrock.

3.2.3 WATER QUALITY

Water is supplied to facilities within the project site by the City, and so water quality is assured by existing City systems.

3.2.4 IMPACTS TO WATER RESOURCES

ALTERNATIVE A

Alternative A would result in significant effects to water resources if construction or operation would result in off-site flooding, floodplain management, and/or cause an exceedance of applicable water quality criteria, result in a significant decline in groundwater levels, a significant decline in groundwater recharge rates, and/or cause an exceedance of applicable groundwater quality criteria.

Surface Water, Drainage, and Flooding

Development of the proposed Hotel within the existing surface parking lot would result in no net increase in impervious surfaces. Surface water would continue to follow the topography southwest towards on-site detention basins and swales constructed for the Casino. Roof drains installed on the proposed Hotel would route the water into the storm drainage system. FEMA has determined that the potential for flooding is nonexistent and therefore flood mapping is unnecessary (City of Trinidad, 2012).

Water and Groundwater Supplies

Water supply is described in **Section 2.2.1**; the City's water supply system would serve the proposed Hotel's water needs through existing connections.

Wastewater Treatment and Disposal

As described in **Section 2.2.1**, primary treatment of wastewater would be provided by the Tribe's existing WWTF and expanded leach fields.

Water Quality

Construction activities may include excavation, which has the potential to result in the erosion of topsoil, potentially increasing sediment discharge into nearby waterbodies and degrading water quality. Construction activities may also include the routine use of potentially hazardous materials such as concrete washings, oil, and grease, which could spill onto the ground and runoff with stormwater. These effects would be reduced to less than significant with the incorporation of Best Management Practices (BMPs) provided in **Appendix C**.

3.2.5 MITIGATION MEASURES

ALTERNATIVE A

With the incorporation of the BMPs provided in **Appendix C**, construction materials would not reach surface waters and effects to water quality as a result of construction activities would be less than significant. No mitigation required.

ALTERNATIVE B

Under the No Action Alternative, the project site would remain undeveloped. No mitigation required.

3.3 AIR QUALITY AND GREENHOUSE GASSES

The Regulatory Context for Air Quality and Greenhouse Gasses is included in **Appendix D.**

3.3.1 EXISTING AIR QUALITY CONDITIONS

The project site is located in the North Coast Air Basin (NCAB), which extends for approximately 250 miles from Sonoma County in the south to the Oregon border in the north and east through Trinity County. The climate of the NCAB is influenced by the Klamath Mountains and the Coast Range provinces. The coastal plains, which are part of the Coast Range province, constitute less than 10 percent of the area of the NCAB but contain the major industrial and population centers. The project site is located on the edge of the coastal plain in the foothills of the Klamath Mountains.

3.3.2 REGIONAL AIR QUALITY

NATIONAL AMBIENT AIR QUALITY STANDARDS (NAAQS) DESIGNATIONS

The NCAB is in attainment or is unclassified for all criteria air pollutants (CAPs) under the current NAAQS designation (USEPA, 2016). Pollutants of concern are CAPs, or CAP precursors (NOx and ROG), that are present in quantities exceeding the NAAQS in the applicable air basin or region. No CAPs exceed the NAAQS in NCAB (USEPA, 2016), and therefore, pollutants of concern are not present in the NCAB. Major hazardous sources are defined as stationary sources with potential to emit more than 10 tons per year (tpy) of any hazardous air pollutants (HAP) or more than 25 tpy of any combination of HAPs. The current operations at the project site do not meet this threshold.

CLIMATE CHANGE

The impacts of climate change could be both global and regional (IPCC, 2013). Development projects typically result in an increase in GHG emissions due to increases in mobile sources (trips generated), area sources (facility components or operations that directly emit GHGs), and indirect sources related to electrical power consumption. To provide a comparative analysis between sources of GHGs, the carbon dioxide equivalent (CO_2e) of each GHG is assessed. To calculate total GHG emissions for a source, estimated emissions for each GHG are multiplied by the corresponding CO_2e value and the converted values are then summed for a total CO_2e emissions rate.

3.3.3 SENSITIVE RECEPTORS

Sensitive receptors are facilities that house or attract children, the elderly, and people with illnesses or others who are especially sensitive to the effects of air pollutants. Hospitals, schools, convalescent facilities, and residential areas are examples of sensitive receptors. The project site is surrounded by rural residential areas to the south, east and west, with Tribal buildings and the Casino directly adjacent to the northwest. A single-family rural residence, located on-Reservation approximately 75 feet south of the project site, is the nearest sensitive receptor. The nearest off-Reservation sensitive receptor is a single-family rural residence approximately 165 feet east of the project site. The nearest school, Trinidad Elementary School, is located approximately 0.9 miles north of the project site.

3.3.4 IMPACTS TO AIR QUALITY

ALTERNATIVE A

Criteria and Hazardous Air Pollutants

Adverse effects to ambient air quality would result if either construction or operation of the Proposed Project would result in non-conformance to an applicable State Implementation Plan (SIP) for NAAQS compliance or result in emissions of significant levels that would adversely affect the air quality of a federal Class I area. However, the project site is located within an air basin that is classified as attainment/unclassified for all the CAPs and the least stringent *de minimis* thresholds from the General Conformity rule have been selected as impact criteria for project evaluation.

Project-related air quality impacts fall into two categories: short-term impacts due to construction and long-term impacts due to project operation. Short-term construction activities would result in the generation of particulate matter ($\leq$ 10 microns and $\leq$ 2.5 microns in diameter PM_{10} and $PM_{2.5}$) from grading and demolition activities and ROG, NOx, and CO from diesel-fired construction equipment. Long-term operation of the Proposed Project would result in motor vehicle use. Motor vehicle use would contribute to ozone, the significance of which is determined through the generation of ROG, NOx, and CO pollution.

Construction emissions for the Proposed Project were estimated using California Emissions Estimator Model (CalEEMod), which is the latest version of the air quality model approved by the USEPA for use in California. CalEEMod provides default values when site-specific inputs are not available. Construction is assumed to begin in 2019 and continue for eight to 12 months. The following site-specific traffic inputs and assumptions were used for the purposes of air quality modeling:

- Construction will occur an average of 22 days per month.
- Construction will result in a maximum disturbance of 0.40 acres.
- CalEEMod default construction equipment list was used.
- The Proposed Project includes construction of a 100-room Hotel.

Default input values for the model included CalEEMod defaults and site-specific data are provided in **Appendix E**.

Climate Change and Greenhouse Gas Emissions

The County has identified goals and policies in its 2012 Draft CAP that support the State's GHG reduction goals. The USEPA has developed a GHG Reporting Program, which provides a GHG reporting threshold of 25,000 metric tons (MT) per year. In the absence of a federal significance threshold, the 25,000 MT reporting threshold was used to determine if project-related GHG emissions would exacerbate climate change effects.

Federal Class I Area

If any alternative exceeds the Prevention of Significant Deterioration (PSD) threshold of 250 tpy for any one CAP from stationary sources during construction or operation, then further analysis must be conducted, however there are no stationary sources of CAPs included in the Proposed Project with the potential to emit 250 tpy of CAPs.

Climate Change and Greenhouse Gas Emissions

CEQ guidance directs lead agencies to quantify GHG emissions and consider alternatives and mitigation measures to reduce action-related GHG emissions or increase carbon sequestration in a similar fashion. GHG Emissions were estimated using CalEEMod (**Appendix E**). Regional impacts from climate change were determined by comparing the features of Alternative A to the California Energy Commission's Cal-Adapt data projections for climate change impacts (CEC, 2017).

Construction Emissions

Construction of the Proposed Project would generate CAPs through the utilization of construction machinery (primarily diesel operated), construction worker automobiles (primarily gasoline operated), physical land disturbance, and construction of buildings. Construction typically proceeds in distinct phases: construction is initiated with demolition, site preparation, and paving, which is then followed by erection of structures, and finally the finishing of those structures and infrastructure. Of these phases, demolition can generate fugitive dust and diesel equipment emissions of PM_{10} and $PM_{2.5}$. Construction and finishing of structures typically results in greater ROG and NOx emissions associated with diesel and gasoline combustion stationary equipment, mobile equipment, and employee vehicle trips. The Proposed Project annual construction emissions for each CAP are provided in **Table 3.3-1**.

TABLE 3.3-1
UNMITIGATED CONSTRUCTION EMISSIONS

CONSTRUCTION YEARS	ROG	NO_X	CO	SO_2	PM_{10}	$PM_{2.5}$
	TONS PER YEAR					
2019	0.29	0.84	0.55	0.00	0.10	0.06
De Minimis Levels	100	100	100	100	100	100
Exceeds De Minimis	No	No	No	No	No	No
Source: CalEEMod, 2016						

Project emissions are below the General Conformity *de minimis* levels and therefore construction of the Proposed Project would not cause an exceedance of NAAQS or conflict with the implementation of California's SIP. Construction of the Proposed Project would not produce greater than 250 tpy of a regulated pollutant and therefore the Proposed Project is not classified as a major source under the Prevention of Significant Deterioration (PSD) program and no pre-construction review is required.

Operational Emissions

Operational emissions would primarily be comprised of mobile emissions associated with hotel patron's motor vehicle use, though area and energy source emissions associated with maintenance equipment, space heaters, and water heaters would also contribute to operational emissions. Default assumptions for trip generation rate, trip lengths, average trip speeds, and vehicle fleet for residential land uses in CalEEMod were used to estimate project-related criteria emissions for the build-out year of 2020.

Table 3.3-2 summarizes project-related area, energy, and mobile source emissions. Project emissions are below the General Conformity *de minimis* levels and therefore operation of the Proposed Project would not cause an exceedance of NAAQS or conflict with the implementation of California's SIP. As with construction, operation of the Proposed Project would not be classified as a major source under the PSD program and no further review is required.

TABLE 3.3-2

UNMITIGATED OPERATIONAL EMISSIONS

SOURCES	ROG	NO_X	CO	SO_2	PM_{10}	$PM_{2.5}$
	TONS PER YEAR					
Area	0.09	0.00	0.00	0.00	0.00	0.00
Energy	0.00	0.02	0.02	0.00	0.00	0.00
Mobile	0.59	3.89	8.78	0.02	1.23	0.36
Total Operational Emissions	*0.68*	*3.91*	*8.79*	*0.02*	*1.23*	*0.36*
De Minimis Level	*100*	*100*	*100*	*100*	*100*	*100*
Exceeds De Minimis	**No**	**No**	**No**	**No**	**No**	**No**
Source: CalEEMod, 2016						

Climate Change and Greenhouse Gas Emissions

As shown in **Table 3.3-3**, construction and operation of the Proposed Project will result in GHG emission of approximately 1,656 metric tons (MT) annually. These emissions equate to less than approximately 0.13 percent of total county-wide emissions in the most recent inventory (County of Humboldt, 2012a). As a result, no significant impacts concerning global climate change would occur as a result of implementation of Alternative A.

The 2016 CEQ guidance states that projects subject to NEPA should also analyze the effect of climate change on the project. Average temperature in the City could increase by approximately 2.8° F to 5.1° F by the 2080s, resulting in an increase in projected extreme heat days. Sea level rise is likely to increase by approximately 18 percent in the County and could lead to increased coastal erosion on the cliffs south of the Proposed Project. Additionally, the wildfire risk in the mixed conifer forest adjacent to the

TABLE 3.3-3
PROPOSED PROJECT GHG EMISSIONS

SOURCES	GHG EMISSIONS IN CO_2E (MT/YEAR)
Direct	
Construction	8.58
Area	--
Indirect	
Mobile	1,554.04
Energy	58.40
Water	7.75
Waste	27.53
Total HG Emissions	**1,656.30**
Source: CaEEMod, 2016	

Proposed Project is projected to increase. The intensity of these effects is uncertain and depends on future GHG emissions world-wide (CEC, 2017).

No characteristics of the Proposed Project are unique or especially vulnerable to the impacts from climate change. The effects of increasing temperatures and frequency of extreme heat days will be damped by the use of on-site air conditioning. The project site is located on a coastal bluff approximately 230 feet amsl and set back approximately 150 feet from the cliff edge; therefore, the project site is not vulnerable to direct inundation or coastal erosion from sea level rise. The project site is located on an existing paved and developed area which is adequately served by emergency services (refer to **Section 3.10**) and therefore is not uniquely sensitive to increased risk from wildfires as a result of climate change.

3.3.5 MITIGATION MEASURES

No adverse air quality effects would result from the Proposed Project with the incorporation of the BMPs listed in **Appendix C**. No mitigation required.

Alternative B

Under the No-Action Alternative, the site would continue to be undisturbed. No mitigation required.

3.4 BIOLOGICAL RESOURCES

The following describes existing biological resource conditions, including habitat conditions, waters of the U.S., and listed species that occur within the project site and general vicinity. Existing biological resources were evaluated through a review of pertinent literature, consultation of relevant databases, and biological field surveys to document habitat types and the potential occurrence for federally listed species.

3.4.1 VEGETATIVE COMMUNITIES

Vegetative communities are assemblages of plant species that occur together in the same area that are defined by species composition and relative abundance. Vegetation communities were classified using the California Department of Fish and Wildlife (CDFW) Terrestrial Natural Communities of California system, or "Holland type." The project site habitat type is considered ruderal/developed with no vegetation within the areas to be disturbed. A habitat map of the project site is presented as **Figure 3-3**. Native vegetation surrounds the project site and borders the project site's impervious surfaces. There are no other habitat types located on the project site.

Habitat

Most of the undeveloped areas surrounding the project site are characterized by northern coastal scrub, consisting of low shrubs in dense patches that usually occur on windy, exposed sites with shallow and rocky soils. No wildlife occurs on or within the project site due to the high level of foot and vehicle traffic associated with the operation of the existing Casino back of the house. Surrounding the project site and on the adjacent properties, the following wildlife have been observed: turkey vulture (*Cathartes aura*), mourning dove (*Zenaida macroura*), California gull (*Larus californicus*), and American robin (*Turdus migratorius*).

Although the project site does not contain suitable habitat for nesting birds, there is potential for migratory birds that are accustomed to high levels of human activity to nest adjacent to the project site within the mature trees. The trees are located adjacent to the edge of the asphalt surface.

Potential Waters of the U.S.

There are no surface water features that are present within the boundaries of the project site that have the potential to be classified as waters of the U.S. or wetlands.

3.4.3 SPECIAL-STATUS SPECIES

For the purposes of this assessment, "special status" is defined to be species that are of management concern to federal resource agencies and include those species that are:

- Listed as endangered, threatened, or candidate for listing under the FESA; or
- Designated as species of concern or species of local concern by USFWS.

A list of special-status plant and animal species that have potential to be affected by the Proposed Project was compiled based on a review of pertinent literature, a reconnaissance-level site assessment, informal consultation with the USFWS, and the results of a California Natural Diversity Data Base (CNDDB) query. Both the search results and a summary table of special-status species that have the potential to occur may be found in **Appendix F**. No habitat delineated by the USFWS as being critical to the survival of a protected species occurs within or immediately adjacent to the project site. The seven species listed in **Appendix F** have the potential to be present in the project region. These species were then examined by examining specific site conditions, and it was found that habitat needs for two of the seven species, the marbled murrelet and the northern spotted owl, are met by the immediate project site.

Marbled Murrelet

The marbled murrelet is a small, robin-sized diving seabird that spends the majority of its time on the ocean, resting and feeding, but flies inland to nest in old growth forest stands. Although no suitable habitat is located on the project site, potentially suitable habitat is located adjacent to the project site.

SOURCE: DigitalGlobe aerial photograph, 10/12/2017; AES, 9/17/2018

Figure 3-3
Habitat Types

Northern Spotted Owl

The northern spotted owl is a medium-sized owl of slight varying shades of chocolate brown with dark eyes and a round face. Northern spotted owls live primarily in old 150 to 200-year old growth forests characterized by dense canopy closure typical of old forests. Although no suitable habitat is located on the project site, potentially suitable habitat is located adjacent to the project site.

3.4.4 IMPACTS TO BIOLOGICAL RESOURCES

ALTERNATIVE A

Significant effects to biological resources would result if Alternative A would:

- Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites;
- Conflict with local policies or ordinances protecting biological resources;
- Have a substantial significant effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (CWA) through direct removal, filling, hydrological interruption, or other means;
- Have a substantial significant effect on species with special status under the federal Endangered Species Act (FESA);
- Have a substantial significant effect on habitat necessary for the future survival of such species, including areas designated as critical habitat by the U.S. Fish and Wildlife Service (USFWS); or
- Result in take of migratory bird species as defined by the Migratory Bird Treaty Act (MBTA) (16 USC §703-712).

Special-Status Species

Alternative A would not result in a loss of habitat for a protected species, as the project site has been previously disturbed and paved. Although no species have the potential to occur on the project site, the surrounding trees provide potential habitat for marbled murrelet and northern spotted owl.

Foraging habitat for marbled murrelet exists within approximately 500 feet of the project site on the shoreline west of the development footprint and potential nesting habitat exists within approximately 25 feet of the project site to the west, south, and east. Potential foraging and nesting habitat for the northern spotted owl exists directly adjacent to the project site. There could be a potential effect if construction activities occur within the nesting period for these species, however effects would be temporary and would not result in take of these species. With the incorporation of the mitigation measures provided below, neither of these species would be adversely affected by the Proposed Project.

Waters of the United States

No Waters of the U.S. occur on the project site. No discharge of dredged or fill material, or other disturbance to wetlands or other waters of the U.S. would occur as a result of Alternative A.

Migratory Birds

Although the project site does not contain suitable habitat for nesting birds, there is a potential for migratory birds to nest directly adjacent to the project site within the mature trees. However, the birds would have to be accustomed to areas of intense human activity. Construction activities could result in disturbance of nearby nest sites for migratory birds and other birds of prey through temporary increases in ambient noise levels and increased human activity within the Proposed Project area. Such disruptions could result in the abandonment of active nests. This would be a temporary effect and would not result in take of nesting migratory bird species.

Alternative B

Under the No Action Alternative, the project site would remain undeveloped. No mitigation required.

3.4.5 MITIGATION MEASURES

- A qualified biologist shall conduct a preconstruction nesting bird survey within 100 feet of the project site during marbled murrelet, northern spotted owl, bird-of-prey, and migratory bird nesting seasons. If any active nests are located within the vicinity of the project site, a no-disturbance buffer zone shall be established to avoid disturbance or destruction of the nest(s). The distance around the no-disturbance buffer shall be determined by the biologist in coordination with USFWS and will depend on the level of noise or construction activity, the level of ambient noise in the vicinity of the nest, and the line-of-sight between the nest and disturbance. The biologist shall delineate the buffer zone with construction tape or pin flags. The no-disturbance buffer will remain in place until after the nesting season or until the biologist determines that the young birds have fledged. A report shall be prepared and submitted to the Tribe and the USFWS following the fledging of the nestlings to document the results.

3.5 CULTURAL RESOURCES

Archaeological studies of the Trinidad Rancheria, including the Proposed Project footprint, were completed by Benson (1977) and Verwayen and Rohde (2011); neither resulted in the identification of any cultural resources on the Proposed Project site.

3.5.1 AREA OF POTENTIAL EFFECTS

The Area of Potential Effects (APE) for the Proposed Project includes the footprint of the proposed Hotel and any support structures, staging areas, etc.; however, all of these improvement and staging areas lie within already-developed locations. There is no vertical APE, as it has been demonstrated that the Proposed Project will be built on bedrock topped with fill (**Appendix B**).

3.5.2 METHODOLOGY

A record search was conducted at the Northwest Information Center (NWIC) of the California Historical Resources Information System by AES staff on January 26, 2017 (NWIC File No. 16-1090). Sources reviewed included: the National Register of Historic Places; the California Register of Historical Resources; California Points of Historical Interest; California Inventory of Historic Resources; California Historical Landmarks; Directory of Properties in the Historic Property Data Files for Trinidad County; and Archaeological Determinations of Eligibility. No resources have been noted within 0.25 -miles of the Proposed Project in spite of the fact that six cultural resource studies have included the APE and 0.25-mile buffer.

Historic maps and land patent records were also examined, and it was determined that Alfred D. Dannes purchased approximately 126.9 acres in 1870 that would have included the northern portion of what would become the Trinidad Rancheria, however no land patent records could be found that include the project APE (BLM, 2017).

Geotechnical studies have shown that the Proposed Project site is located on Pleistocene marine terrace sediments deposited on a wave-cut bench in rock of the Jura-Cretaceous Franciscan Complex (**Appendix B**). Mollusks found in this formation, like those found near Trinidad Head approximately 2.5 miles to the west of the APE, are among the most common Pleistocene fossils, and frequently belong to species now living (Shimek, 1913). The presence of fossils nearby indicates the potential for fossils to be encountered during construction.

Native American Consultation

It is presumed that the BIA, as Federal Lead Agency, will conduct any necessary consultation.

3.5.4 IMPACTS TO HISTORIC PROPERTIES / PALEONTOLOGICAL RESOURCES

In accordance with Section 106 of the National Historic Preservation Act (NHPA), an adverse effect would result if the Proposed Project causes the physical destruction or alteration to all or part of, removal or change in the character to, or any deterioration or loss of integrity of an existing historic property (i.e. a resource eligible for listing on the National Register of Historic Places.

ALTERNATIVE A

No historic properties are known exist within the project site and there is no potential for historic properties to occur within the APE as it was previously cleared down to bedrock. Paleontological resources may occur within the APE, as Pleistocene fossil deposits have been identified within similar rock formations nearby. However, with implementation of appropriate mitigation measures, adverse effects to paleontological resources would be reduced to less-than-significant.

ALTERNATIVE B

Under the No-Action Alternative the site would remain undeveloped. No mitigation required.

3.5.5 MITIGATION MEASURES

- Halt work within 50 feet of the find, retain a qualified paleontologist to assess significance. If the find is determined to be significant, determine the appropriate course of action, including recovery, analysis, curation, and reporting according to current professional standards.

3.6 SOCIOECONOMIC CONDITIONS / ENVIRONMENTAL JUSTICE

3.6.1 TRINIDAD, HUMBOLDT COUNTY

The City’s population is approximately 0.0026 percent of the population of the County and approximately 0.000009 percent of California’s population. Over the next 20 years, the County is expected to grow from approximately 135,727 to approximately 140,513 individuals (Caltrans, 2015). The Trinidad unemployment rate is 2.5 percent, as compared to the County and State unemployment rate of 5.3 percent (U.S. Census, 2015; EDD, 2016a; EDD, 2016b; EDD, 2015.

Statistics for the Tribe were obtained from the BIA’s American Indian Population and Labor Force Estimate Report (2014). Approximately 68 of the 102 enrolled Tribal members, ages 16 through 64, are classified as the labor work force.

3.6.2 ENVIRONMENTAL JUSTICE FOR MINORITY AND LOW INCOME POPULATIONS

The City is located within the census block group 060230102002 with a population of approximately 650 people. The total population that is reported as "low income" is approximately 30 percent (approximately 195 people), which is approximately 5 percent lower than the State estimation of low-income population (USEPA, 2016).

Approximately 18.4 percent of Humboldt County is classified as minority, including Hispanic, Asian, Black, Pacific Islander and American Indian, who make up approximately 5.74 percent of the population (including members of the Tribe) (California Department of Finance, 2016).

3.6.3 IMPACTS TO SOCIOECONOMICS/ENVIRONMENTAL JUSTICE

Implementation of the Proposed Project would result in significant effects to the socioeconomic and environmental justice settings of the region if it would reduce the ability of the local populace to obtain basic public health and safety services through loss of economic revenues or result in disproportionate and significant effects to an identified minority or low-income community.

ALTERNATIVE A

The Proposed Project would provide important socioeconomic benefits to the Tribe, including an augmented revenue source, new jobs, and would provide the Tribe with additional amenities within its Reservation. The project site is currently held in trust for the Tribe and therefore there would be no loss in property taxes that could affect public services. In addition, the area currently has a shortage of lodging; therefore, the addition of the proposed Hotel would bring additional tax revenue, assuming patrons would also visit nearby amenities. No mitigation required.

No adverse health or environmental impacts to low-income and minority populations would occur as a result of the Proposed Project; instead, the effect on low-income and minority populations would be beneficial. Alternative A would have no adverse effect with regards to environmental justice. No mitigation required.

ALTERNATIVE B

Under the No-Action Alternative the 0.4 acres would remain undeveloped. No mitigation required

3.6.4 MITIGATION MEASURES

No mitigation required.

3.7 TRANSPORTATION AND CIRCULATION

3.7.1 EXISTING TRAFFIC CONDITIONS

Hotel access and internal circulation would be provided by the existing Casino's access and internal roadways. Omni-Means Engineers Planers prepared the 2014 Trinidad Area Freeway Master Plan Study Report (**Appendix G**), which provides a master plan traffic impact analysis (TIA) that includes build out of a hotel, general office, shopping center, recreational vehicle park, recreational community center, gas station with convenience market, and expansion of the existing Casino. Baseline intersection and roadway operating conditions were evaluated in the TIA by determining the AM and PM peak hour Level of Service (LOS).

3.7.2 IMPACTS TO TRANSPORTATION AND CIRCULATION

ALTERNATIVE A

Implementation of the Proposed Project would result in significant effects to the transportation and circulation network if daily traffic generated by the Proposed Project would result in an exceedance of LOS C, in accordance with the significance criteria provided in the County General Plan, or result in a substantial increase in the use of public transportation requiring additional infrastructure or vehicles.

The 2010 Highway Capacity Manual provides LOS based on the volume of vehicles traveling on certain types of roadways. **Appendix G** demonstrates that, with the additional trips generated by the Hotel and ancillary facilities, intersections on the Main Street corridor and the project entrance on Scenic Drive are forecasted to operate at unacceptable LOS. Construction of a new intersection off of HWY 101 would reduce adverse effects on transportation and circulation generated by construction of the Hotel. The BIA understands that the Tribe is currently undergoing consultation with Caltrans to complete this interchange. This new interchange may be located approximately 0.7 miles south of the Main Street interchange. For the purposes of the analysis a tight diamond interchange is assumed at the new interchange, which is referred to as the Cher-Ae Lane interchange. A two lane overcrossing is assumed with all-way stops at the two ramp locations. Easterly extension of Cher-Ae Lane past the interchange to intersect at a “T” intersection with Westhaven Drive is also assumed.

Currently, no public transit systems serve the project site. Due to the lack of nearby bus or train stops, public transportation would not be utilized as a source of transportation for the Proposed Project. Therefore, implementation of Alternative A would not result in a significant effect to public transportation and no new facilities or vehicles would be required to meet the needs of Alternative A.

ALTERNATIVE B

Under the No-Action Alternative, there would be no increase in vehicular traffic from construction or operation on area roadways. No mitigation required.

3.7.3 MITIGATION MEASURES

- Construct the Cher-Ae Lane interchange off of HWY 101 to provide direct access to the Rancheria and Westhaven Drive.

3.8 LAND USE

The project site and property is characterized by developed paved areas adjacent to the existing Casino and within the existing Reservation. Surrounding land uses vary from recreational trails to the west to residential on the north and southeast/east. HWY-101 is to the north/northeast. Surrounding land use designations are typical of a rural coastal community. The Reservation is not under the jurisdiction of the City’s, County’s, or State’s land use designations.

3.8.1 IMPACTS TO LAND USE

ALTERNATIVE A

Significant effects to land use would occur if Alternative A would be incompatible with land uses of adjacent properties in such a manner that would impede local and regional planning efforts or result in land use conflicts that would impede neighboring land use. However, Alternative A would be compatible with the mixed land use surrounding the project site, including the adjacent Casino. As the property lacks a zoning classification by local jurisdictions but is designated as commercial land use by the Tribe, effects to land use would be less than significant.

While the project site is located within a Coastal Zone, the Proposed Project is excluded from the Coastal Zone Management Plan (CZMA) as it would be developed on land held in trust by the federal government. Therefore, the Proposed Project is not required to be developed in accordance with the Local Coastal Plan or the CZMA. Furthermore, the development of the proposed Hotel is consistent with the adjacent land use of the existing Casino.

ALTERNATIVE B

Under the No-Action Alternative, there would be no change in land use. No mitigation required.

3.8.3 LAND USE MITIGATION MEASURES

No changes to land use would occur as a result of the Proposed Project. No mitigation required.

3.9 AGRICULTURE

The project site is not used for agricultural operations and does not provide adequate acreage for crop development or cattle grazing. The project site is not under an active Williamson Act Contract (CDOC, 2017b), and the Proposed Project will not convert any farmland.

3.8.3 IMPACTS TO AGRICULTURE

ALTERNATIVE A

Significant effects to agriculture would occur if the Proposed Project would result in the conversion of agricultural lands designated as prime farmland, farmland of statewide importance, or farmland of local importance or impede local and regional planning efforts to protect agricultural lands, however no agricultural land conversion will result from implementation of Alternative A.

ALTERNATIVE B

Under the No-Action Alternative, the Hotel would not be built. No mitigation required.

3.9.4 MITIGATION MEASURES

No agriculture occurs on or within the immediate vicinity of the project site. No mitigation required.

3.10 PUBLIC SERVICES

3.10.1 WATER SUPPLY

The City operates the water treatment facility, which serves the City and surrounding unincorporated areas, including the Proposed Project site. This facility is located at 1313 Westhaven Drive North, Trinidad, CA. The City has permits to use approximately 355,392 gpd of water. However, they are currently only using approximately 82,191 gpd (Buckman, 2017).

3.10.2 WASTEWATER SERVICE

As described in **Section 2.2.1**, the Tribe currently utilizes City sewer connections as well as its own WWTF and associated leach fields. The existing Casino is served by the Tribe's WWTF.

3.10.3 SOLID WASTE

Humboldt Sanitation, a private contractor based in McKinleyville, provides solid waste disposal services to the Rancheria and associated properties. Humboldt Sanitation also operates Humboldt Recycling, which serves the City's recycling needs. Waste is collected and stored at the Humboldt Sanitation Company transfer station in McKinleyville and then transferred to the Anderson Landfill in Redding, California. The transfer station has a permitted capacity of 100 tons per day (tpd) and there are no enforcement actions against the facility operation. Anderson Landfill has a maximum permitted capacity of 1,850 tpd and with a remaining capacity of over 11 million cubic yards (as of March 2008) with an expected closure date of 2055 (CalRecycle, 2016). Unsuccessful attempts were made to contact both the McKinleyville transfer station and Anderson Landfill to determine daily capacities. However, there is no indication that capacities have been exceeded.

3.10.4 ELECTRICITY, NATURAL GAS, AND TELECOMMUNICATIONS

PG&E supplies electricity to existing homes and businesses in the project site. American Telephone and Telegraph (AT&T) provides telephone service and would be responsible for any underground or overhead extensions necessary to serve the project site. Internet and cable TV is available to the project site from Suddenlink Communications and through various satellite television services. There are no known issues with the electricity, natural gas, and telecommunication services that would Hotel construction.

3.10.5 LAW ENFORCEMENT

In 2010, the City transferred law enforcement responsibilities to the County Sheriff. The County Sheriff's Department provides law enforcement services throughout the County and includes Administrative, Operations, and Corrections divisions. The Sheriff's Office also includes a Special Enforcement Team, boating unit, SWAT, and a drug enforcement unit. The County Sheriff's Department provides primary law enforcement, while the California Highway Patrol (CHP) provides traffic and supplemental law enforcement services to the project site. The County Correctional Facility is the detention facility for persons arrested in unincorporated areas, including the project site. The expected response times for this portion of the County are estimated at approximately 1 to 15 minutes. The Sheriff's Office is staffed by 61 sworn deputies, 45 of which are assigned to patrol, and approximately 217 total staff (Cavinta, 2015). There are approximately 38 patrol vehicles, plus specialized vehicles such as 4x4s and other off-road vehicles used in drug enforcement activities.

The County Sheriff's Office has stations in Eureka, Garberville, McKinleyville, and Hoopa. The Main Station is located in Eureka and serves the project site; that station is comprised of two Lieutenants, four Sergeants, six Corporals, and 21 Deputy Sheriffs. Per an agreement between the County Sheriff's Office and the Tribe, the Tribe provides funding for a deputy to patrol and provide law enforcement services in the vicinity of the Rancheria (Cavinta, 2015).

3.10.6 FIRE PROTECTION AND EMERGENCY MEDICAL

The Trinidad Volunteer Fire Department provides fire suppression and emergency medical services to the areas within the City limits with two fire stations located within approximately 9.9 square miles of the Trinidad Planning Area (City of Trinidad, 2012). The closest station is located at 409 Trinity Street in Trinidad, California, which is staffed by 29 volunteers, and therefore is not staffed on a regular basis. The second station is located to south of the project site in Westhaven, at 446 6th Avenue. All staff are trained as first responders or emergency medical technicians and the Trinidad Volunteer Fire Department regularly responds to medical emergency calls. Typically, the Trinidad Volunteer Fire Department responds to approximately 50 calls per year (City of Trinidad, 2015).

The Trinidad Volunteer Fire Department also has mutual aid agreements with the California Department of Forestry and Fire Protection (CalFire). Although CalFire aids local fire departments in wildfire situations, the project site is not located within a State Responsibility Area, as mapped by CalFire (CalFire, 2013). The project site is located in high fire hazard area within a Local Responsibility Area (CalFire, 2013), where CalFire does not have responsibility to provide wildland fire protection services.

Emergency medical services are overseen and authorized by the North Coast Emergency Medical Services Authority (North Coast EMS). North Coast EMS is a Joint Powers Authority created to coordinate the regional EMS system and to reduce the occurrence of death and disability on the north coast (North Coast EMS, 2016). Ambulance and emergency medical services are dispatched through 911 and are provided by several companies on a rotating basis. The nearest hospital emergency room is Mad River Community Hospital located at 3800 Janes Road in Arcata, California. Emergency calls are routed through the Sheriff's Office and CHP to the respective fire departments. Response times to the project site are approximately 3 to 4.5 minutes, although this depends on available resources.

3.10.7 IMPACTS TO PUBLIC SERVICES

ALTERNATIVE A

Water Supply

Alternative A would obtain water through existing on-site sources as described in **Section 2.2.1**. The Proposed Project would use approximately seven percent of the City's available water supply, increasing the City's total water usage to approximately 30 percent of available capacity. With approximately 70 percent of the City's water supply still available after project development, there would be no adverse effect on municipal water supplies or operation (Buckman, 2017). Minimal new infrastructure would be required.

Wastewater Service

As discussed in **Section 2.2.1**, Alternative A would utilize the Tribes existing WWTP, requiring upgrades and an additional leach field. This upgrade would be solely on Tribal lands and would allow for the system to handle a total of approximately 50,000 gpd, enough capacity to accommodate operation of the new Hotel. Alternative A would have no impact on municipal wastewater systems.

Solid Waste

Potential solid waste streams from construction would include paper, wood, glass, aluminum, plastics from packing material, waste lumber, insulation, empty non-hazardous chemical containers, concrete, metal, and electrical wiring. Solid waste and recycling from construction and operation of the proposed Hotel would be collected by Humboldt Sanitation and would be transferred to the Anderson Landfill. Utilizing the most conservative daily solid waste generation rate published by CalRecycle (2016b), each hotel room is anticipated to generate approximately 0.002 tons per day (tpd) of solid waste, resulting in a total daily solid waste generation rate of approximately 0.2 tpd. Based on the maximum capacity at the Anderson Landfill, this small addition of solid waste and would not impact solid waste services or facilities.

Electricity, Natural Gas, and Telecommunications

Electrical and telephone infrastructure is already on the project site, and would not require new facilities or upgrades for the Hotel. If available, natural gas will be provided for gas-fired water heaters and kitchen equipment.

Law Enforcement

In accordance with Public Law (PL) 280, 18 USC §1162, the State of California and other local law enforcement agencies have criminal enforcement authority on tribal lands. The County Sheriff's Department would continue to provide law enforcement services to the project site. The incremental increase in patrons may result in a proportionate increase in crime, potentially requiring response by off-Reservation law enforcement agencies, however due to the relatively small size of the proposed Hotel, calls for service would not be disproportionate to the current number of calls for service at the Casino.

Fire Protection and Emergency Medical Services

Construction-related impacts include potential fire threats associated with equipment and vehicles coming into contact with wildland areas. Construction vehicles and equipment such as welders, torches, and grinders may accidentally spark and ignite vegetation or building materials. The increased risk of fire during the construction of the proposed facilities would be similar to that found at other construction sites. Standard construction and operational measures have been incorporated into the project description to prevent fire caused by construction (**Appendix C**). With these measures, effects would be less than significant.

Increased emergency calls to 911 as a result of the Proposed Project would not result in delays to response times or the need for ambulances to be dispatched from more distant locations. Several ambulance companies provide services in the vicinity of the City; therefore it is not expected that increased demand for emergency medical services would create a significant effect. No new off-trust facilities or major renovation to any facilities would be required.

Alternative B

Under the No Action Alternative, the Hotel would not be developed. No mitigation required.

3.10.8 MITIGATION MEASURES

No adverse impacts to public services would occur as a result of the Proposed Project. No mitigation is required for the Proposed Project.

3.11 NOISE

3.11.1 SENSITIVE RECEPTORS

The project site is surrounded by rural residential areas to the south and west, with Tribal buildings and the Casino directly adjacent. A single-family rural residence, located on-Reservation approximately 75 feet south of the project site, is the nearest sensitive noise receptor. The nearest off-Reservation sensitive receptor is a single-family rural residence approximately 165 feet east of the project site. The nearest school, Trinidad Elementary School, is located approximately 0.9 miles north of the project site. With the exception of special status species, discussed in **Section 3.4**, there are no other noise sensitive receptors in the vicinity of the project site.

3.11.2 EXISTING NOISE SOURCES

The noise environment surrounding the project site is influenced primarily by vehicle, highway, and tide-generated noise. Noise levels are increased during parts of the year when local fishery seasons open (e.g. salmon, Dungeness crab, etc.) and during popular tourist months.

3.11.3 IMPACTS TO AMBIENT NOISE

A significant effect would occur if project-related noise sources would cause an exceedance of the U.S. Department of Housing and Urban Development's day-night equivalent (Leq) threshold of 65 decibels A-weighted (dBA) at the nearest sensitive receptor during construction or operation (HUD, 2016).

ALTERNATIVE A

Construction Noise

Site preparation and grading associated with Alternative A would temporarily generate noise above background noise levels. The closest sensitive receptor that would be exposed to noise during project construction is a single family rural residence approximately 75 feet south of the project site. Impacts to the residence are not considered in this analysis because it is on-Reservation and the Tribe would handle the noise issues internally. The nearest off-Reservation sensitive receptor is a residence located approximately 165 feet east of the project site. Construction noise levels at and near the project site would fluctuate depending on the particular type, number, and duration of uses of various pieces of construction equipment. Construction-related material haul trips would raise ambient noise levels along truck routes, depending on the number of haul trips made and types of vehicles used. **Table 3.11-1** shows typical noise levels produced by various types of construction equipment.

TABLE 3.11-1

TYPICAL NOISE LEVELS FROM CONSTRUCTION EQUIPMENT

CONSTRUCTION EQUIPMENT	NOISE LEVEL (DBA, L_{EQ} AT 50 FEET)
Truck	88
Portable Air Compressor	81
Concrete Mixer (Truck)	85
Dozer	85
Paver	89
Generator	76
Backhoe	80
Source: FTA, 2006	

Sources of construction noise attenuate (lessen) at a rate of 6 dBA to 9 dBA per doubling of distance from the source, depending upon environmental conditions (i.e. atmospheric conditions and noise barriers, either vegetative or manufactured, etc.) (FTA, 2006). An attenuation factor of 8.0 dBA per doubling of distance is appropriate given the undulating topography and obstructing vegetation in the vicinity of the project site. Based on **Table 3.11-1**, the maximum projected construction noise level on the project site would be approximately 89 dBA. This is a conservative maximum noise level based on the assumption that louder equipment (pavers) could potentially be used daily. However, not all equipment would be used simultaneously and not all equipment would be used on a daily basis. Thus, the actual noise level would be lower than calculated.

Using an attenuation factor of 8.0 dBA Leq per doubling of distance, maximum average sound levels at nearby sensitive receptors (approximately 165 feet east of construction activity) would be approximately 77 dBA Leq, which is less than the FHWA threshold of 78 DBA Leq. This level is higher than the County threshold of 50 dBA Leq for commercial land use noise, however construction noise is exempt from County noise requirements (County of Humboldt, 2012b).

Operational Noise

The level of traffic noise depends on three factors: (1) the volume of the traffic, (2) the speed of the traffic, and (3) the number of trucks in the flow of the traffic. It is not anticipated that traffic speed or the mix of trucks in project-area traffic would change during the operational phase; however, implementation of Alternative A would increase traffic volumes. In accordance with the City's General Plan Draft Noise and Safety Element, the primary source of noise in the project area is traffic on U.S. Highway 101 (HWY-101). The ambient noise level in the vicinity of the Subject Property is approximately 65 dBA Leq, as stated in the 2013 Caltrans Technical Noise Supplement for typical commercial area noise levels (Caltrans, 2013).

The existing traffic volume on HWY-101 is approximately 10,600 vehicles per day (vpd) and Alternative A would add approximately 669 additional vpd to the existing traffic volume, which would result in an ambient noise level increase of approximately 0.27 dBA Leq (**Appendix G**). The increase in traffic on HWY-101 under Alternative A would increase the ambient noise level in the vicinity of the project to approximately 65.27 dBA, Leq, which is below the federal noise abatement criterion of 67 dBA Leq. Therefore, Alternative A would not result in significant adverse impacts associated with traffic noise levels for sensitive receptors located in the vicinity of HWY-101.

Parking lot noise due to vehicles is limited by low vehicle speeds and as a result is not expected to represent a significant source of noise. Human activity in parking lots can also produce noise, including talking, yelling, and opening and closing of car doors and trunk lids. Such activities can occur any time and frequently occur in the evening. It is typical for a passing car in a parking lot to produce a maximum noise level of 60– 65 dBA at a distance of 50 feet, which is comparable to the level of a raised voice. This would not result in significant adverse impacts as maximum parking lot noise levels would be below the federal abatement criterion.

ALTERNATIVE B

Under the No-Action Alternative, the project site would remain undeveloped. No mitigation required.

3.11.4 MITIGATION MEASURES

The following mitigation measures shall be implemented to further reduce impacts from noise during construction:

- Construction activities shall only occur between the hours of 7:00 AM to 6:00 PM Monday through Friday and 9:00 AM to 5:00 PM on Saturday. No construction activities shall occur on any Sunday.
- Where feasible, stationary construction equipment shall be located on the northern portion of the project site.

- All construction equipment over 50 horsepower shall be equipped with noise-reducing mufflers.

3.12 HAZARDOUS MATERIALS

3.12.1 HAZARDOUS MATERIALS MANAGEMENT

Operation of the existing Casino involves a minimal amount of hazardous materials and the Hotel is expected to use similar products. Potentially hazardous materials that may be used and stored at the Hotel include paints, polishes, cleaning products, oils, and detergents. Even when hazardous materials are properly stored and disposed of, there is potential for an accidental spill to occur.

3.12.2 PHASE I ENVIRONMENTAL SITE ASSESSMENT

In December 2015, AES conducted a records search of hazardous material incidents for a nearby Phase I Environmental Site Assessment (Phase I ESA) at Trinidad Harbor (AES, 2015). The proposed Hotel is located within the area analyzed during that Phase I ESA, which identified several listings within a 1.0-mile radius of the Proposed Project site.

- **888 Galindo Street**: two 500-gallon storage tanks containing diesel fuel
- **Private Residence**: heating fuel tank leak
- **807 Edwards Street**: active storage tank
- **806 Edwards Street**: two incidents with storage tank installation
- **570 Ewing Street**: hazardous materials generator
- **470 Oceans Avenue**: Citizens Mortuary
- **409 Trinity Street**: current NPDES permit
- **408 Wagner Street**: storage fuel tank
- **Trinidad Union School**: storage fuel tanks

No listings within the project site were identified. Additionally, a search of the SWRCB Geo Tracker website found three sites approximately 0.5 miles north of the project site (SWRCB, 2017):

- **Chevron Station #9-1728**: Case closed
- **Humboldt State University (Marine Lab)**: Case closed
- **Pacific Bell**: Case Closed

3.12.3 IMPACTS FROM HAZARDOUS MATERIALS

ALTERNATIVE A

During grading and construction, it is possible that hazardous materials, such as gasoline, diesel fuel, and hydraulic fluid, may be brought on site. Temporary aboveground storage tanks, as well as storage sheds/trailers, would likely be used by contractors for fueling and maintenance purposes. During handling and transfer from one container to another, the potential for an accidental release exists. Depending on the relative hazard of the material, if a spill of significant quantity were to occur, the accidental release could pose as a hazard to construction employees, as well as the environment.

No environmental concerns were identified on or in the immediate vicinity of the project site that would likely pose an adverse effect to the environmental integrity of the project site. Development of the Proposed Project would not result in exposing employees or the public to existing hazardous materials conditions.

Alternative B

Under the No-Action Alternative, the Hotel would not be developed. No mitigation required.

3.12.4 MITIGATION MEASURES

No adverse effects from hazardous materials would result from the Proposed Project with the incorporation of the BMPs listed in **Appendix C**. No mitigation required.

3.13 VISUAL RESOURCES

3.13.1 EXISTING ENVIRONMENT

The development footprint is located on a paved parking lot adjacent to the existing Casino. Standing at six stories, the height of the proposed Hotel will be significantly taller than the existing Casino (**Figure 2-2**). Visual characteristics of the project site are typical of coastal rural-residential forested areas in the County. The Proposed Project vicinity is relatively undeveloped and features redwood trees and a variety of coastal vegetation. Views of the as-yet undeveloped site are blocked by trees to the south and west and by the existing Casino to the north and east. The project site is not visible from HWY-101 due to the tall forest lining the highway, but the site is visible from Trinidad Head, a California Historical Landmark.

3.13.2 IMPACTS TO VISUAL RESOURCES

ALTERNATIVE A

The proposed Hotel would impact the overall coastal aesthetics of the project site. Mitigation measures would require features to soften the visual impact and allow the proposed Hotel to blend into the scenery and adjacent existing Casino so that the Proposed Project would not result in any adverse effects to scenic resources. Residences to the east, west, and south may have views of the Proposed Project, but the Proposed Project would be adjacent to the existing Casino. Incorporation of mitigation measures in Section 3.13.1 would reduce effects to visual resources to less than significant.

Lighting from the proposed Hotel would be minimal. The Tribe would use downcast, bi-level dimming motion sensor external lighting, which would not alter the visual aesthetics of the area. Given the relatively small area proposed for development, the additional facilities would fill a small portion of the viewshed when compared to the expansive scenic resources in all directions (Camel Rock, Trinidad Head, Trinidad Bay, beaches, and associated costal bluffs). Incorporation of mitigation measures in Section 3.13.1 would reduce effects to visual resources to less than significant.

Alternative B

Under the No-Action Alternative, the project site would not be developed. No mitigation required.

3.13.3 MITIGATION

- Design elements shall be incorporated into the Proposed Project to minimize visual impacts of buildings and associated structures, including landscaping that compliments buildings and parking areas, with setbacks and vegetation consistent with existing landscaping. Earth-toned paints and coatings shall be used, all exterior glass shall be non-reflective and low-glare, and signs and facades shall be designed with a non-reflective backing to decrease reflectivity.

3.14 BIBLIOGRAPHY

Bibliographic references may be found in **Appendix H**.

SECTION 4.0

CUMULATIVE AND GROWTH-INDUCING EFFECTS

Cumulative impacts are defined by CEQ as effects "on the environment which result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions" (40 CFR Section 1508.7). No major development projects are proposed and/or are currently being constructed in the region surrounding the Tribe's lands (OPR, 2017). However, buildout of the City's Draft General Plan would result in commercial buildout along the west side of HWY-101 (City of Trinidad, 2009). Additionally, buildout of the Tribe's Comprehensive Economic Development Strategy (Master Plan) would result in development of tribal enterprises and supporting infrastructure on the Tribal lands near the existing Casino and proposed Hotel (Tribe, 2013).

The cumulative impact analysis within this EA considered the construction of the projects described above and conservatively assumes an approximately 1.3 percent annual growth rate (**Appendix G**), along with the full implementation of the Tribe's Master Plan. Cumulative impacts for each environmental issue area are discussed below. The time frame for the cumulative effects analysis generally extends to 2032; the County of Humboldt's planning horizon year (County of Humboldt, 2012b).

Some actions, which result in individually insignificant impacts, may have significant impacts when cumulative, synergistic, or additive effects are considered. The significance of these effects is particularly evident when impacts pass a threshold, such as causing a jeopardy opinion with regard to endangered species or a nonconformity determination under the CAA.

Growth itself is very perceptible and is sometimes regarded by the public as both adverse and an impact. Generally, growth is simply a part of the cumulative environment, rather than an effect or result. However, a shift to unplanned and unregulated growth could be a significant impact. The effects of potential cumulative projects, analyzed in conjunction with the Proposed Project, are presented below.

4.1 CUMULATIVE EFFECTS

4.1.1 LAND RESOURCES

The principal effects to land resources associated with any future development in the vicinity of the project site would include localized topographical changes and soil attrition, but as the site has already been graded and paved, this effect is minimal. The Proposed Project and other projects in the area would be required to implement measures consistent with local permitting requirements for construction to address any regional geotechnical, seismic, or mining hazards. Therefore, there are no cumulatively considerable land resources impacts associated with the Proposed Project.

No development or changes in land use are proposed under Alternative B, the No-Action Alternative. Accordingly, no land resources would be affected and no cumulatively considerable adverse effects would result from the implementation of Alternative B.

4.1.2 WATER RESOURCES

As discussed in **Section 3.2.1**, there is adequate supply of surface water from Luffenholtz Creek to serve additional projects in the region; therefore, there is no cumulative impact associated with groundwater availability. Cumulative impacts to water quality could occur if individual projects degrade water quality as a result of stormwater and point-source discharges. However, projects that may be constructed in the vicinity of the Proposed Project are required to comply with the CWA as it relates to stormwater and point-source discharges. Therefore, there are no cumulatively considerable water resource impacts associated with the Proposed Project.

No development or changes in land use are proposed under Alternative B, the No-Action Alternative. Accordingly, no water resources would be affected and no cumulatively considerable adverse effects would result from the implementation of Alternative B.

4.1.3 AIR QUALITY

AIR QUALITY

The NCAB is either currently designated as attainment or maintenance for all CAPs, and therefore is currently meeting the attainment standards for all criteria pollutants established by the USEPA. Any future development in the vicinity of the Proposed Project would be subject to state and federal regulations. Furthermore, mobile sources such as passenger cars would become the main source of CAP emissions from foreseeable development as a result of increased trips to the hotel. Although vehicle miles traveled (VMT) may increase, technology advancements resulting in an increase in fuel efficiency will, on average, result in a decrease of mobile source emissions. Therefore, no cumulatively considerable adverse impacts to air quality are anticipated.

CLIMATE CHANGE AND GREENHOUSE GAS EMISSIONS

Worldwide GHG emissions are likely to increase as a result of increased global development. However, annual emissions from the Proposed Project are estimated to be approximately four percent less in 2040 than in 2020 as a result of increased fuel efficiency and therefore would not result in a cumulatively considerable additions to GHG emissions.

No development or changes in land use are proposed under Alternative B, the No-Action Alternative. Accordingly, there would be no air quality changes and no greenhouse gasses would be generated. Therefore, no cumulatively considerable adverse effects would result from the implementation of Alternative B.

4.1.4 BIOLOGICAL RESOURCES

Potential cumulative effects to biological resources on the project site will be reduced to a less-than-significant level through incorporation of the mitigation measures discussed in **Section 3.4.5**. Similarly, all other development in the area affecting these resources is limited in scope by land use restrictions within the local coastal plan for the coastal zone and City zoning ordinance. Therefore, there are no cumulatively considerable biological resources impacts associated with the Proposed Project.

No development or changes in land use are proposed under Alternative B, the No-Action Alternative. Accordingly, no biological resources would be affected and no cumulatively considerable adverse effects would result from the implementation of Alternative B.

4.1.5 CULTURAL RESOURCES

Grading and development have eliminated the potential for cultural resources on site, however paleontological resources may be encountered. Protection measures for impacts to paleontological resources have been included in **Section 3.5.5**. Similarly, all other development in the area affecting these resources must adhere to similar protections for paleontological resources. Therefore, there are no cumulatively considerable cultural resources impacts associated with the Proposed Project.

No development or changes in land use are proposed under Alternative B, the No-Action Alternative. Accordingly, no cultural or paleontological resources would be affected and no cumulatively considerable adverse effects would result from the implementation of Alternative B.

4.1.6 SOCIOECONOMIC CONDITIONS / ENVIRONMENTAL JUSTICE

Cumulative socioeconomic effects could occur in the project area as the result of developments that affect the lifestyle and economic well-being of residents. The Proposed Project would introduce new economic activity in the County and in the City. This would be a beneficial effect to the region and the Tribe on several different socioeconomic levels. These effects would occur as the region's economic and demographic characteristics change. However, these cumulative effects would not be significant in comparison with existing economic conditions in the region. Planning documents for the County and the City will continue to designate land uses for businesses, industry, and housing, as well as plan public services for anticipated growth in the region. Specific potential cumulative effects include increases to regional and tribal employment, as well as the local economy.

The Proposed Project is not anticipated to result in an adverse environmental justice impacts. As Alternative A would benefit a minority group (the Tribe), the environmental justice impacts would be positive rather than adverse.

No development or changes in land use are proposed under Alternative B, the No-Action Alternative. Accordingly, there would be no changes in local socioeconomic conditions and no cumulatively considerable adverse effects would result from the implementation of Alternative B.

4.1.7 TRANSPORTATION AND CIRCULATION

A background growth rate of approximately 1.3 percent per year was utilized to obtain the traffic projections for 2040. As shown in **Appendix G**, with the addition of traffic generated by Alternative A in the cumulative 2040 projection, several intersections within the project site vicinity are projected to operate at an unacceptable LOS F. In order to maintain an LOS of acceptable levels, a new interchange located approximately 0.7 mile south of the Main Street interchange is proposed as part of the Master Plan to provide direct access to the Rancheria and Westhaven Drive.

With the proposed Cher-Ae Lane Interchange incorporated into the Master Plan, the study intersections and interchanges would not exceed the target threshold of LOS C with the addition of traffic generated by Alternative A in the cumulative 2040 projection. Therefore, Alternative A in the cumulative 2040 projection would not have a significant adverse impact on the transportation network in the vicinity of the project site. The Proposed Project would not noticeably increase ridership on County bus and transit service; therefore, an adverse cumulative effect to public transit would not occur.

No development or changes in land use are proposed under Alternative B, the No-Action Alternative. Accordingly, no increased demands would be placed on the transportation system and no cumulatively considerable adverse effects would result from the implementation of Alternative B.

4.1.8 LAND USE

The project site is held in federal trust by the BIA, therefore, the project site would not be subject to state or local land use jurisdiction. The Tribe's Master Plan governs growth and the proposed Hotel is included as a component of the Master Plan. Therefore, there are no cumulatively considerable land use impacts associated with the Proposed Project.

No development or changes in land use are proposed under Alternative B, the No-Action Alternative. Accordingly, no cumulatively considerable adverse effects would result from the implementation of Alternative B.

4.1.9 AGRICULTURE

The Proposed Project would not remove any agricultural lands or resources, as none exist on the project site or adjacent to the project site. The project site is not under the Williamson Act contracts, nor does the site provide adequate acreage for crop development or cattle grazing or have history of agricultural uses. None of the features of the Tribe's Master Plan would result in loss of agricultural lands. Therefore, there are no cumulatively considerable agricultural impacts associated with the Proposed Project.

No development or changes in land use are proposed under Alternative B, the No-Action Alternative. Accordingly, no agricultural lands would be affected and no cumulatively considerable adverse effects would result from the implementation of Alternative B.

4.1.10 PUBLIC SERVICES

The Proposed Project would utilize the existing on-site wastewater systems, thus there would be no cumulatively considerable impacts to this municipal service. All other public services would be accommodated by existing and planned public services. As development of the surrounding area continues, the combined need for public services may create a cumulative impact. However, all future land uses in the region will be subject to approval by local governments or the Tribe under the Master Plan. Should future infrastructure improvements be required, the Tribe and associated agencies would be responsible for mitigating all identified impacts. Therefore, there are no cumulatively considerable public services impacts associated with the Proposed Project.

No development or changes in land use are proposed under Alternative B, the No-Action Alternative. Accordingly, no new public services demands would be created and no cumulatively considerable adverse effects would result from the implementation of Alternative B.

4.1.11 NOISE

Generally, noise increases as areas are developed. Therefore, the cumulative conditions under Alternative A would increase noise levels through increased traffic and operational activities. Using the growth rate of approximately 1.3 percent per year from the TIA, traffic volumes on HWY-101 would be approximately 13,356 vehicles per day. With the addition of project traffic to HWY-101, traffic volumes on HWY-101 would increase to approximately 14,025 vehicles per day. Therefore, in the cumulative 2040 year, the ambient noise level would increase by approximately 0.21 dBA, Leq. With the addition of cumulative traffic volume, the ambient noise level would be approximately 65.48 dBA, Leq, which is less than the federal noise abatement criterion of 67 dBA Leq. Therefore, the Proposed Project would not result in a cumulatively significant adverse impacts associated with traffic noise levels for sensitive receptors located in the vicinity of HWY-101. It is not anticipated that parking lot noise due to vehicles or human activity would change over the buildout year conditions. This would not result in cumulatively significant adverse noise impact, as maximum parking lot noise levels would be below the federal abatement criterion of 67 dBA, Leq. Therefore, there are no cumulatively considerable noise impacts associated with the Proposed Project.

No development or changes in land use are proposed under Alternative B, the No-Action Alternative. Accordingly, no new noise sources would be generated and no cumulatively considerable adverse effects would result from the implementation of Alternative B.

4.1.12 HAZARDOUS MATERIALS

Any new development in the area would be required to adhere to State and municipal regulations in the delivery, handling, and storage of hazardous materials, thereby reducing the risk of accidental exposure to the public's health and welfare. Under the Master Plan, the Tribal Council is responsible for ensuring development does not result in the release of hazardous materials and would be required to follow all associated Federal and Tribal requirements for use, storage, and handling. Therefore, there are no cumulatively considerable hazardous materials impacts associated with the Proposed Project.

No development or changes in land use are proposed under Alternative B, the No-Action Alternative. Accordingly, no new hazardous materials sources would be generated and no cumulatively considerable adverse effects would result from the implementation of Alternative B.

4.1.13 VISUAL RESOURCES

Cumulative development that takes place would be consistent with local land use regulations, including associated design guidelines and the Tribe's Master Plan. Cumulative effects would include a shift from undeveloped lots to views of developed areas, as well as an increase in the density of urban uses within the City and the Reservation. However, the development of the Proposed Project would be generally consistent with the visual goals of County and City land use regulations and implements the Tribe's Master Plan. Substantial development is located directly to the north of the project site, and the Proposed Project would be consistent with that development. Therefore, there are no cumulatively considerable visual resources impacts associated with the Proposed Project.

No development or changes in land use are proposed under Alternative B, the No-Action Alternative. Accordingly, no new structures would be built and no cumulatively considerable adverse effects would result from the implementation of Alternative B.

4.2 INDIRECT AND GROWTH-INDUCING EFFECTS

Under NEPA, indirect and growth-inducing effects of a proposed project must be analyzed [40 CFR 1508.8(b)]. The CEQ Regulations define indirect effects as effects that are caused by the Proposed Action and are later in time or further removed in distance, but still reasonably foreseeable. Growth-inducing effects are defined as effects that foster economic or population growth, either directly or indirectly. Direct growth inducement could result, for example, if a project includes the construction of a new residential development. Indirect growth inducement could result if a project establishes substantial new permanent employment opportunities (e.g. new commercial, industrial, or governmental enterprises) or if it removes obstacles to population growth (e.g. expansion of a wastewater treatment plant to increase the service availability). This section focuses on the indirect and growth-inducing effects of Alternative A, the Proposed Project. With no change compared to existing conditions, Alternative B would not result in indirect or growth-inducing effects and is therefore not discussed further.

4.2.1 INDIRECT EFFECTS

Analyses of the adequacy of local resources, infrastructure, and services are included in the discussion of environmental consequences for each Project Alternative. No significant, unmitigatible impacts to resources have been identified that would result from the implementation of Alternative A.

Any utility upgrades would occur on infrastructure already located on Tribal lands, and would be limited to modifications of the WWTP. The remaining utilities are already located on site and local utility providers have existing capacity to serve the project site. A significant number of new employees would not move to the community from out of the area; as such, no new housing, schools, or other facilities would be constructed as a result of development on the project site. There would be no change in off-site land use and no significant change in population density in the vicinity of the project site. No significant adverse indirect effects relevant to any environmental issue area would occur.

4.4.2 GROWTH-INDUCING EFFECTS

Growth inducement may constitute a significant effect if the increased growth is not consistent with or accommodated by the land use and growth management plans and policies for the area affected. Local land use plans provide for development patterns and growth policies allow for orderly development supported by adequate public services and utilities such as water supply, roadway infrastructure, sewer services, and solid waste disposal services. A project that would induce “disorderly” growth (i.e. would conflict with local land use plans) could indirectly cause adverse environmental or public service impacts.

The Proposed Project is projected to employ approximately 50 full-time and part-time employees currently living in the City or nearby cities. Although it is anticipated that the majority of the permanent employees would already reside locally, there is room for accommodation if relocation must occur. Therefore, the Proposed Project would not directly induce substantial population growth in the region of the project site.

Analyses of the adequacy of local infrastructure and services are included in the discussion of environmental consequences for each proposed Alternative. No significant, unmitigated impacts have been identified that would result from the Proposed Project. Utility infrastructure would not be improved or expanded to increase service availability to any areas surrounding the project site. Wastewater treatment would only serve Tribal development on the proposed trust property and there is adequate domestic water supply available. Therefore, growth-inducing impacts would be less than significant for the Proposed Project.

SECTION 5.0

CONSULTATION, COORDINATION, AND LIST OF PREPARERS

5.1 FEDERAL AGENCIES

Bureau of Indian Affairs (Lead Federal Agency)
Chad Broussard
Harold Hall

United States Department of Agriculture-Natural Resources Conservation Service

5.2 LOCAL GOVERNMENT

City of Trinidad Water District
Bryan Buckman

Humboldt County Sheriff's Department
George Cavinta

5.3 PREPARERS OF ENVIRONMENTAL ASSESSMENT

Analytical Environmental Services

Project Director:	David Zweig, P.E.
Project Manager:	Trent Wilson
Technical Staff	Charlane Gross
	Sam Schoevaars
	Glenn Mayfield
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APPENDICES

APPENDIX A

PRELIMINARY WASTEWATER FEASIBILITY REPORT

NORTHSTAR
...Designing Solutions

Civil Engineering
Architecture
Environmental
Planning
Surveying
Water Resources

September 29, 2016

Russ Wenham, P.E.
Omni Means
330 Hartnell Avenue
Suite B
Redding, CA 96002

RE: Preliminary Feasibility Report for Trinidad Rancheria Cher-Ae Heights Facility

Dear Russ,

Here is our Preliminary Feasibility Report for the Trinidad Rancheria Cher-Ae Heights Facility, one mile south of Trinidad in Humboldt County California.

This report is based on a site visit with Kenneth Smith, the current plant operator on Monday September 26, 2016 and a review of available documentation. Of particular value to the review was the document prepared by Winzler & Kelly *Trinidad Rancheria Phase 2 Community Wastewater Investigation – Wastewater Treatment, Disposal and Reuse Assessment, March 2004* (Assessment.) This document is an excellent tool for the Rancheria to use in their planning efforts going forward and was used as the basis of this current analysis. A copy of the document is attached for reference. The assumptions in the assessment are sound and have been updated as necessary to reflect current data and our professional opinion.

Facility Description

The Cher-Ae Heights area includes a residential area, the Cher-Ae Heights Casino (Casino), a former clinic complex (currently vacant) and the Tribal Office. In 2002, the Rancheria expanded the Cher-Ae Heights Casino, which includes the 200-seat restaurant and event center. A wastewater treatment plant serves the Casino and approximately 60% of the treated wastewater is recycled back into the Casino and used for toilet flushing. The remaining treated wastewater is dispersed back into the environment by means of a dispersal field (leachfield) located just south of the Tribal Office. The homes at Cher-Ae Heights, with two exceptions, are served by individual septic tanks and dispersal fields. The remaining two homes, the Tribal Office and the former clinic complex are served by septic tanks that flow by gravity or are pumped to the same dispersal field that services the Casino's tertiary treatment system. No secondary or tertiary treatment is provided to flows from these auxiliary facilities.

The Rancheria is proposing to add a 100 room hotel to the facility.

Wastewater Flow Analysis

In Table ES.1 of the Assessment, a prediction of facility wastewater flows was provided. This table projected potential future wastewater flows from the Casino, the Cher-Ae Heights community flows, and a potential new 200-room hotel and gas station/mini-mart. Given the marginal soil conditions in the area, the Assessment assumed capacity for homes not connected to the wastewater system would be held in the design to address any failures of these systems in the future. Chapter 2 of the Assessment outlines an extensive evaluation of the individual septic systems. Given the conclusions from the evaluation and limited options for repair, we feel it is prudent to provide capacity for these systems in the community dispersal field evaluation and design.

Table 1 of this report shows the updated prediction of wastewater flows used in the analysis of the treatment and dispersal system assuming a 100 room hotel.

Area	Existing Average Flow (gal/day)	Potential Additional Future Average Flow (gal/day)	Total Average Flow (gal/day)
Existing Community Wastewater Flows	0	4,560[1]	4,560
Casino[2]	7,200	7,800	15,000
100 Room Hotel	0	10,000	10,000
Staff Expansion[3]	0	500	500
Total Estimated Treatment Flow	**7,200**	**22,860**	**30,060**

Table 1- Predicted Wastewater Flows for Cher-Ae Heights Wastewater Treatment System

Treatment System Capacity

The existing treatment system is a Zenon, ZenoGem system which is a combination of biological treatment and membrane separation. In the existing system, the wastewater from the Casino is pumped to a 15,000 gallon holding tank. It is then pumped into a concrete bioreactor where it is aerated and bacteria breaks down the organics in the wastewater. The wastewater is then filtered through the ZeeWeed membranes. It is then polished with paper cartridge filters and disinfected with a UV system and chlorine injection system and stored in storage tanks to be recycled back to the Casino toilets. Excess flows are disposed of in the existing dispersal field via 15hp and 25hp pumps housed in the effluent tank.

There are currently three ZeeWeed membrane "cartridges" in the bioreactor. The bioreactor basin was designed to allow for the addition of three more cartridges without having to resize the basin. This would effectively double the size of the treatment system, giving it a capacity to handle 30,000 gpd.

Additional pumps, blowers, and piping would have to be added to handle 30,000 gpd and a parallel carbon polishing system would have to be added. Upgrades of the electrical system would also be required. The UV disinfection systems would also require a larger impeller on the existing pump, but the system itself is sufficiently sized to handle the new flow.

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[1] Assumes 20 single family homes at 180 gpd/ home average daily flow each, 500 gpd in Tribal Office, 100 gpd for the Clinic complex and 2 single family homes at 180 gpd/ home average daily flow each.

[2] 15,000 gallons assumed future growth of casino per 1999 Master Planning Document referenced in Assessment.

[3] Assumes 50 additional employees at 10 gpd/person/day.

All of this equipment can be accommodated by the existing building. The existing treatment system has also experienced flows close to the peak flow capacity of the treatment plant, and additional tankage may be required at the head works to allow the peak flows to be equalized if additional flows are added in the future. For treatment capacity beyond 30,000gpd average flow, (60,000gpd peak flow) extensive modifications would be required to potentially create a parallel treatment train to provide the needed capacity.

The capacity of the existing treatment plant is 15,000gpd average daily flow, but was designed to be expanded to 30,000gpd average daily flow without requiring extensive retrofitting. With the future hotel flows and capacity held in reserve for the existing 20 single family homes the flows from the proposed hotel are within the window of expansion at the 30,060gpd average daily flow ceiling without extensive retrofitting.

Any expansion should incorporate an additional standalone recycled water tank that is not chlorinated for use in the backwashing process of the membranes. This tank may impact the space currently dedicated to maintenance staff and activities. Additional building space may be required to make sure routine maintenance activities are not impacted.

There are some minor plumbing issues that should be corrected at the time of upgrade. Currently the floor drains and plumbing fixtures in the treatment building are plumbed to the effluent tank. This should be rerouted to the holding tank and processed prior to dispersal.

There are some upgrades that should occur with plumbing in the pump tanks to replace corroded pipes and valves.

Dispersal System Capacity

According to the Assessment, Cher-Ae Heights currently disposes of wastewater in dispersal trenches. The wastewater from the Casino is treated in the treatment plant and discharged to the community dispersal field. Wastewater from the septic tanks from the Tribal Office, the clinic complex, and two homes is discharged directly to the community dispersal field without further treatment in the treatment plant. The community dispersal field was designed with a capacity of 10,000 gallons per day. However, with plugging believed to have been caused by the discharge of Casino wastewater to the field before the treatment plant was completed, the actual long-term capacity of the dispersal field at this time is not known. The existing dispersal field should be cleaned and then the capacity should be evaluated through field investigations and hydraulic stress testing to determine the actual operational capacity.

A visual inspection of the community dispersal area during our site visit showed no obvious signs of surfacing or clear breakout downslope from the dispersal fields.

The 1998 “Sanitary Sewer Leachfield” plans prepared by Winzler & Kelly show trench monitoring piezometers in the two zones. These were not found during our site investigation and Mr. Kenneth Smith was unsure of their existence. These piezometers are a good tool for assessing the condition of the dispersal fields and would be of great value in a hydraulic load test of the dispersal trenches to determine the actual capacity of the dispersal system.

The Assessment also recommended, "…that the leach lines be cleaned and flushed, and that a number of backhoe test pits be excavated into the leach trenches to inspect the pressure distribution lines, the gravels, and groundwater elevations. Through this type of investigation, the actual operating capacity of the leachfield can be better assessed."

For this analysis, it is assumed that the Rancheria completed the cleaning and evaluation of the existing dispersal field still has the ability to disperse 10,000gpd as designed. With non-secondary treated effluent entering the system from: past practices prior to the treatment system installation; treatment system issues during startup leading to non-treated or partially treated effluent entering the dispersal trenches; and the existing facilities currently discharging septic tank effluent; it is critical that this capacity is verified. Additional dispersal trenches beyond this estimate may be required to compensate for the loss in dispersal capacity in the community dispersal field from the practices listed above.

According to the Assessment, comparison of water meter usage records for the Casino and the process wastewater flows from the treatment plant show that approximately 60% of the average daily flow is recycled back into the Casino and used for toilet flushing, and does not require dispersal field. Therefore approximately 2,880gpd goes from the treatment plant to the dispersal field. In addition, an estimated 960 gpd are discharged to the dispersal field from the Tribal Offices, the clinic complex and the two houses connected to the community dispersal field. The total estimated flow to the community dispersal field is therefore approximately 4,000gpd. If the community dispersal field has an actual long term operating capacity of 10,000gpd, then there is approximately 6,000gpd of capacity remaining in the existing community dispersal field.

The Assessment accurately points out a concern regarding dispersal field reserve capacity. It states, "An important issue to consider in planning leachfields is potential reserve capacity. Typical leachfield plumbing includes siting 100% reserve capacity so that there is a new leachfield location designated if the initial leachfield fails. This planning is done because leachfields are expected to eventually fail, which means their ability to receive wastewater diminishes. The effluent from the Zenon plant is much cleaner than septic tank effluent, but all leachfields are expected to diminish in performance over time. Figure 5.1 does not account for any reserve capacity. Someday the Rancheria may need replacement disposal capacity which may have to be provided by replacement leachfields or other disposal means."

Table 2 shows the predicted dispersal capacity required to support the existing community facilities and the hotel expansion. Using the Predicted Total Average Daily Flow of approximately 20,000gpd and using the same assumptions for site constraints in the Assessment ranging from 50% to 150% of land area for conflicts, and a long-term soil dispersal capacity of 5 gpd/lineal foot of trench, an additional 40,000 to 60,000 square feet of land would be required to install additional dispersal fields. This does not include full replacement area for dispersal field replacement.

Although not recommended, if the Rancheria chose to remove the expansion capacity for the existing community facility built in to the flow calculations (3,600gpd), an additional 10,000sf to 15,000sf would be required for the hotel expansion. Note: The dispersal fields for the individual homes would need to be found on an individual basis, and may not be locally available due to soil conditions, site constraints and setbacks.

The Assessment identified two potential areas on the facility that may be feasible for dispersal. These were the mounded ridge to the South of Ter Ker Coo Lane and the hillside south of the Tribal Office where the existing dispersal field was installed.

As illustrated here, the availability of acceptable soils for the dispersal field capacity is the critical item to support the hotel expansion. A site survey to locate usable soils that have adequate structure to disperse 5 gallons per lineal foot of trench per day, free of seasonal groundwater, and not constrained by setbacks from creeks and streams, bluffs, unstable landforms, or cuts. A site survey should be the first order of work to confirm the Cher-Ae facility has the capacity to support the proposed hotel wastewater flows.

Area	Existing Average Flow (gal/day)	Potential Additional Future Average Flow (gal/day)	Total Average Flow (gal/day)
Existing Community Wastewater Flows	960	3,600	4,560
Casino[4]	2,880	3,120	6,000
100 Room Hotel[5]	0	8,000	8,000
Staff Expansion	0	500	500
Total Estimated Flow	**3,840**	**15,220**	**19,060**

Table 2 - Predicted Wastewater Flows for Cher-Ae Heights Wastewater Dispersal System

Preliminary Opinion of Costs for the Wastewater System to Support a 100 Room Hotel

A preliminary opinion of cost for the conveyance of the hotel flows to the treatment plant, treatment plant expansion, dispersal field expansion, and delivery of treated effluent to the hotel for toilet flushing, is $620,000. This number is to be used for planning purposes based on the following assumptions:

a. Treatment system will be upgraded assuming a design capacity of 30,000gpd average daily flow, using existing infrastructure and expanding the treatment capacity within the existing footprint and expansion design.
b. Inclusion of UV treatment and additional storage tank for additional toilet flush capacity and backwash water.
c. Inclusion of minor plumbing upgrades discussed above.
d. Dispersal capacity is assumed at 20,000gpd and 40,000 to 60,000 square feet can be found for dispersal.
e. Gravity collection lines from the hotel will parallel the existing gravity collection lines from the casino.

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[4] Assumes 60% of treatment flow recycled for toilet flushing in casino
[5] Assumes 20% of treatment flow recycled for toilet flushing in hotel

Description	Quantity	Unit	Unit Cost	Total Cost
Gravity Collection From Hotel To Treatment w/ Pavement Replacement	500	LF	$ 90.00	$45,000
MBR Upgrade, Equipment, Pumps, Tanks Etc.	1	Lump Sum	$80,000	$80,000
Electrical Upgrade	1	Lump Sum	$20,000	$20,000
Misc Plumbing, Tanks	1	Lump Sum	$20,000	$20,000
Reuse Pressure Line to Hotel	500	LF	$90.00	$20,000
Subtotal				$185,000
15% Contingency				$27,750
25% Engineering				$46,250
TOTAL				$ 259,000
Treatment Costs Used in Estimate				**$ 260,000**

Table 3 - Preliminary Opinion of Cost for Treatment System Expansion

Description	Quantity	Unit	Unit Cost	Total Cost
Dispersal Field Pump Station	1	Lump Sum	$50,000	$50,000
Force Main w/ Pavement Replacement (length assumed)	1000	LF	$80.00	$80,000
Dispersal Trenches	2000	LF	$50.00	$100,000
Land Preparation and Cleanup	1	Lump Sum	$25,000	$25,000
Subtotal				$255,000
15% Contingency				$38,250
25% Engineering				$63,750
TOTAL				$357,000
Dispersal Costs Used in Estimate				**$360,000**

Table 4 - Preliminary Opinion of Cost Dispersal System

Recommended Next Steps and Additional Data Needs

The above opinion of cost is based on many conservative assumptions with regard to reserve capacity designed into the system for existing septic system failures not currently on the community system, casino expansion reserve capacity, and dispersal system capabilities. The following are a list of recommended next steps and information needs to refine this opinion of cost and further refine the concept.

1. Investigate the long-term capacity of the existing community dispersal field to confirm its long-term acceptance rate. Confirmation of this area's actual capacity will have a significant impact on the additional dispersal area needed to support the hotel project. This may include:
    a. Long-term hydraulic load test to determine the maximum dispersal system captivity
    b. Install trench piezometers in selected dispersal trenches to monitor trench performance during dosing events and through the winter.
    c. Selected trench excavations with a backhoe to physically inspect the trench conditions.
    d. Conduct and document routine maintenance on the pressure dosed dispersal fields, particularly those areas where the septic tank effluent from the auxiliary uses are introduced.
2. Explore additional areas that are suitable for treated wastewater dispersal. This may include:
    a. A catalog of potential areas known to long time staff and residents of areas on the Rancheria that have deeper soils not subject to seasonal high groundwater or unstable geological formations.
    b. Field verify any areas identified as having potential for wastewater dispersal. This would include geotechnical analysis for any area's suitability to disperse treated wastewater long-term. This could include but not limited to:
        i. Percolation testing
        ii. Ring Infiltration Testing
        iii. Long-term Infiltration Testing
        iv. Seasonal Groundwater Monitoring
3. Conduct routine influent and effluent sampling and testing at the treatment system to inform the treatment expansion design process.
4. Consider the pros and cons of "holding" reserve capacity in the treatment and dispersal system design for existing system not currently connected to the community system. It may be beneficial to identify smaller areas elsewhere on the Rancheria that can accommodate individual or smaller clusters of systems.
5. Consider replacement of the existing MBR cassettes along with the installation of the expansion capacity.
6. Consider reviewing options for the complete replacement of the treatment system with an updated skid mounted MBR. This option could take advantage of treatment process technology, may make operations more streamline and alleviate some of the issues associated with retrieving operational data, troubleshooting and alarm responses.
7. An upgrade of the UV system that allows for redundancy should be explored. Currently, the existing UV system is a single unit that does not have redundancy in case of failure of the unit.
8. Explore the use of ozone as part of the disinfection train. Ozone is a very strong oxidant with known disinfection capabilities and has been proven successful in removing color from treated effluent. Ozone would help reduce chlorine consumption in the disinfection process, and may help with public perception of 'less than perfect" water in toilets and urinals.
9. With toilets in the hotels being flushed with reclaimed water, a review of toilet colors such as off white or biscuit colors reduces the contrast between any residual color in the toilet water. This could also assist with lowering water demand and chlorine consumption.

I cannot stress enough the need to determine if there is additional dispersal capacity on the site and where this resource is on the Rancheria. The size and location of these areas will have a significant impact on the design and associated cost with the dispersal component of the system.

I hope this information proves informative for our client and aids in the conceptual planning process for what looks to be a spectacular hotel facility. As always, I am available to answer any questions you may have.

Sincerely,
NORTHSTAR

Nick Weigel P.E.
Senior Engineer

Encl: *Trinidad Rancheria Phase 2 Community Wastewater Investigation – Wastewater Treatment, Disposal and Reuse Assessment, March 2004,* Winzler & Kelly

03-1290-02001

FINAL

TRINIDAD RANCHERIA
PHASE 2 COMMUNITY WASTEWATER INVESTIGATION

WASTEWATER TREATMENT, DISPOSAL AND REUSE ASSESSMENT

MARCH 2004

Prepared for:

Trinidad Rancheria
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CHAPTER 5 - TREATED WATER DISCHARGE OPTIONS

CHAPTER 6 - WASTEWATER TREATMENT ALTERNATIVES

CHAPTER 7 – SUMMARY OF POTENTIAL DEVELOPMENT CONDITIONS

CHAPTER 8 – CAPITAL COST ANALYSIS

CHAPTER 9 – ALTERNATIVE SUMMARY AND RECOMMENDATIONS

FIGURES

TABLES

APPENDICES

EXECUTIVE SUMMARY

This report assesses various wastewater treatment, disposal, and reuse options for the Trinidad Rancheria's Cher-Ae Heights property to assist in considering future potential options for development. The further development of this land will result in the generation of additional wastewater that must be appropriately managed. This report assesses several wastewater treatment and disposal options for the Trinidad Rancheria and provides tools to assist the Rancheria in evaluating future development options. The goal is to develop reliable treatment and disposal alternatives that meet regulatory standards, while minimizing required capital, personnel, and maintenance costs.

This report includes an analysis of the capacity and performance of the existing wastewater management systems as well as an analysis of options to accommodate a potential future hotel facility (assumed to be up to 200 rooms for planning purposes) and a new gas station/mini-mart.

This report assesses current conditions, issues, and specific goals and potential growth areas of the Rancheria. It then develops anticipated wastewater flows for the existing and future conditions. The wastewater treatment requirements are then outlined and wastewater treatment, reuse, and disposal alternatives assessed. The alternative summary includes a conceptual level analysis for each alternative, our opinion of the conceptual level costs for construction, and other issues.

Cher-Ae Heights Site Description

The Cher-Ae Heights area includes a residential area, the Cher-Ae Heights Casino (Casino), a former clinic complex (a portion of which currently houses the Youth Program), and the Tribal Office. In 2002, the Rancheria expanded the Cher-Ae Heights Casino to its current 50,000 square-foot configuration, which includes the 200-seat Sunset Restaurant. A wastewater treatment plant services the Casino, and approximately 60% of the treated wastewater is recycled back into the Casino and used for toilet flushing. The remaining treated wastewater is disposed of in a leachfield located just south of the Tribal Office.

The homes at Cher-Ae Heights, with two exceptions, are served by individual leachfields. The remaining two homes, the Tribal Office and the former clinic complex are served by septic tanks that drain or are pumped to the same leachfield that services the Casino's tertiary treatment system.

EXISTING AND PROJECTED POTENTIAL WASTEWATER FLOWS

The projected potential future wastewater flows from the Casino, the Cher-Ae Heights community area, and a potential new 200-room hotel and gas station/mini-mart are presented in Table ES.1.

Table: ES.1: Projected Potential Cher-Ae Heights Community Wastewater Flows Trinidad Rancheria

Area	Existing Average Flow (gal/day)	Potential Additional Future Average Flow (gal/day)	Total Average Flow (gal/day)
Existing Community Wastewater flows	7,200	0	7,200
Casino	7,200	7,800	15,000
200 Room Hotel	0	20,000	20,000
Gas station/mini mart	0	1,000	1,000
Total Estimated Flow	**14,400**	**28,800**	**43,200**

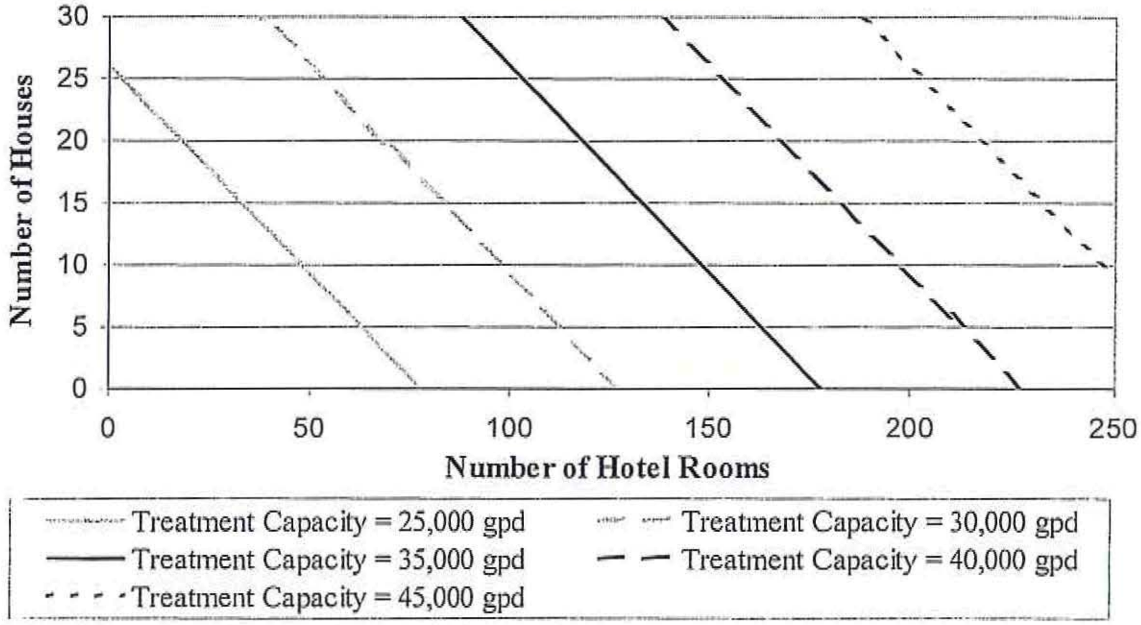
From Table ES.1, the Existing Community Wastewater Flows are defined to be those wastewater flows that are generated by homes, the Tribal Office, and the former clinic complex at Cher-Ae Heights. No future addition to these flows was projected. The total flows from the Casino were based on the Master Planning for the sizing of the treatment plant which was completed in the spring of 1999, and which estimated a projected maximum daily flow of 30,000 gallons per day (gpd) (15,000 gpd average flow). Table ES.1 assumes that the Hotel will have up to 200 rooms, although the exact size of the hotel has not yet been determined. Any new wastewater facilities must be able to potentially handle the existing flows, but also include capacity for planned expansion to help ensure that the facilities are adequately sized to be able to grow with the Rancheria.

WASTEWATER FLOW CAPACITY

As part of the development planning, the Rancheria may choose to combine some existing homes on individual septic systems along with a potential new hotel of some size and treat all the wastewater together. Different combinations of the number of homes and the size of the treatment plant result in different flows, which also include the projected future Casino/restaurant flows, the flows from the Tribal Office and the clinic complex, and flows from the gas station/ mini-mart. This relationship is graphically presented in Figure ES.1.

Figure ES.1 is based on potential future Casino wastewater flows (15,000 gpd average) plus the Tribal Office, clinic complex, two homes that are currently connected to the community leachfield, and gas station/mini-mart, in addition to a combination of homes served and hotel rooms developed. Figure ES.2 is a very valuable planning tool the Rancheria can use to evaluate the required wastewater treatment capacity from any combination of hotel size and number of homes served.

Figure ES.1: Treatment Capacity Relationship Between Number of Cher-Ae Heights Houses Served and Proposed New Hotel Rooms
Trinidad Rancheria



Note: Assumes flows from the future Casino (15,000 gpd average) plus the Tribal Office, clinic complex, two homes currently connected to the community leachfield, and gas station/mini-mart are served (for a total required treatment capacity of 17,200) in addition to the combination of homes served and hotel rooms developed.

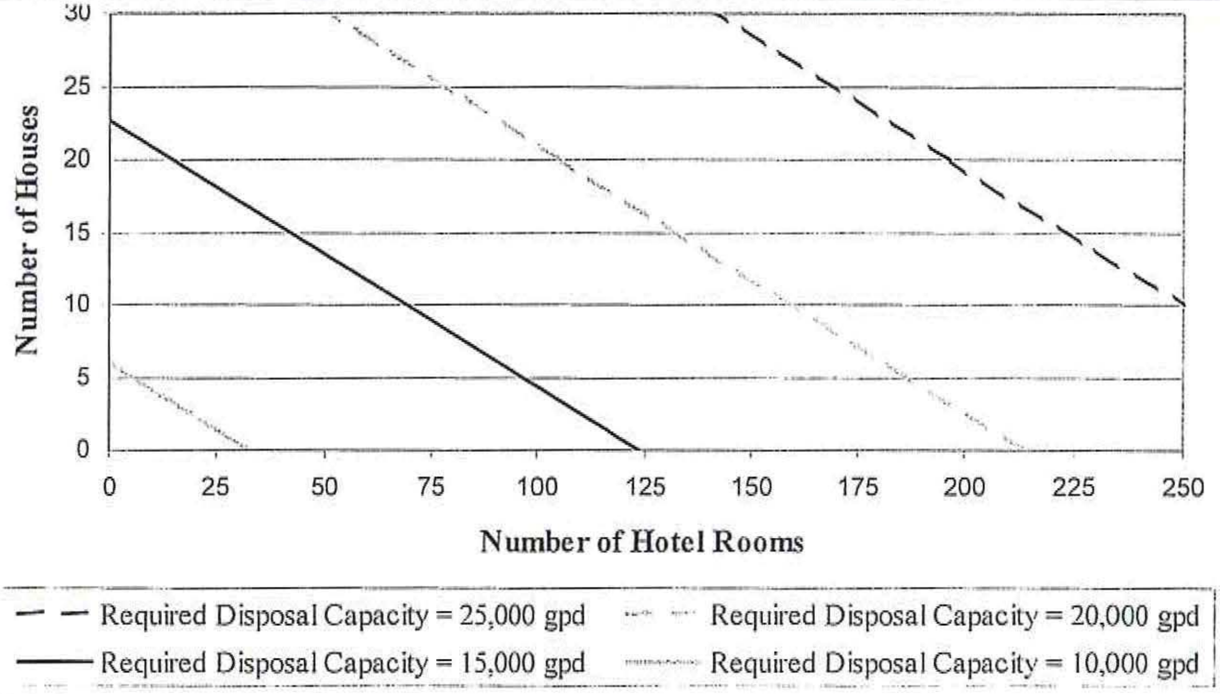
WASTEWATER TREATMENT CAPACITY SUMMARY AND ANALYSIS

Figure ES.1 is used to determine projected future flows that will require treatment at the Zenon plant. Different combinations of development can lead to different projected flows. The expansion requirements of the treatment plant were examined relative to different combinations of development. The capacity of the existing treatment plant is 15,000 gpd average daily flow, but was designed to be expanded to 30,000 gpd average daily flow without requiring extensive retrofitting.

Figure ES.2 shows a relationship between the stages in treatment plant capacity and what combinations of development may be served at the various stages. For example, if the existing treatment plant was expanded to its maximum size of 30,000 gpd, it could serve existing development plus the gas station/mini-mart and either a 128-room hotel and no homes or a 68 room hotel and all 20 Cher-Ae Heights homes not currently connected to the community leachfield. The projected flow for Cher-Ae Heights including the Casino/Restaurant, Tribal Office, former clinic building, existing homes, a 200 room hotel, and a gas station/mini-mart is approximately 43,200 gpd. Thus, to treat all wastewater, significant expansion of the existing treatment plant would be needed.

The figure shows that a disposal capacity of just over 25,000 gpd is needed to serve the 20 existing houses and a 200 room hotel in addition to the Casino/Restaurant (under future master planned capacity), Tribal Offices, former clinic complex, the two homes currently connected to the community leachfield, and a new gas station/ mini-mart. Like Figure ES.1, Figure ES.3 serves as a valuable planning tool for the Rancheria to consider future development scenarios and how disposal capacity can be achieved.

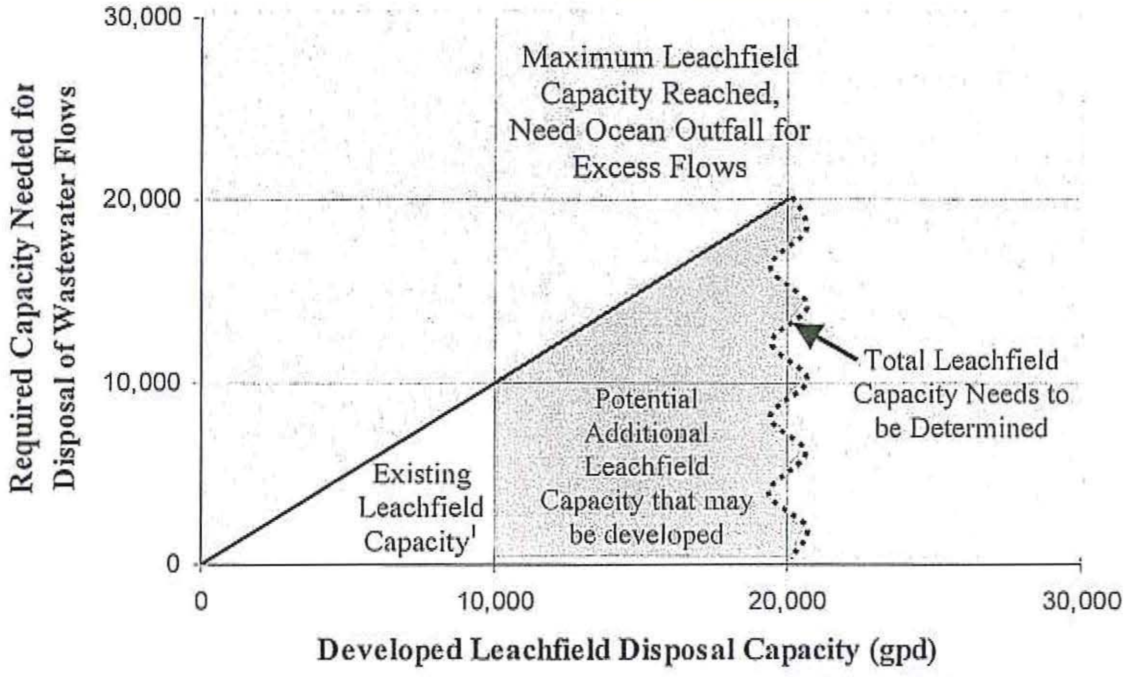
Figure ES.3: Disposal Capacity Relationship Between Number of Cher-Ae Heights Houses Served and Proposed New Hotel Rooms
Trinidad Rancheria



Notes:
This graph assumes that 6,000 gpd of disposal capacity is reserved for the Casino at Master Plan build out flows (15,000 gpd with 60% of the water recycled). This graph also assumes that the Tribal Office, clinic complex, and two homes currently connected to the community leachfield, and the gas station/mini-mart are served with a combined disposal flow of 2,200 gpd (assumes no water recycling). This equates to a base disposal flow of 8,200 gpd. The remaining flow is distributed between homes served and hotel rooms developed. To serve the remaining 20 homes and a 200 room hotel, a disposal capacity of 25,200 gpd would be needed.

Use and expansion of the community leachfield system and ocean outfall disposal were the two viable disposal options developed. As presented in the next section on costs, development of leachfield capacity is less expensive than an ocean outfall. However, leachfield capacity can be a limiting factor in Rancheria development and ocean outfall capacity may be needed. Ocean outfall capacity is needed when available leachfield capacity is exceeded and this relationship is shown in Figure ES.4

**Figure ES.4: Relationship Between Required Disposal Capacity, Developed Leachfield Capacity, and the Need for Additional Disposal through an Ocean Outfall
Trinidad Rancheria**



[1] Assumed to be 10,000 gallons per day. Actual capacity must be verified.

Expansion of the Community Leachfield

Cher-Ae Heights currently disposes of wastewater in leachfields. This is the primary means of treatment and disposal for wastewater from the existing homes. The wastewater from the Casino is treated in the Zenon plant and discharged to the community leachfield. Wastewater from the septic tanks from the Tribal Office, the clinic complex, and two homes is discharged directly to the community leachfield without further treatment in the Zenon plant.

The community leachfield was designed with a capacity of 10,000 gallons per day. However with plugging believed to have been caused by the discharge of Casino wastewater to the field before the Zenon plant was completed, the capacity of the leachfield at this time is not known. The existing leachfield should be cleaned and then the capacity should be evaluated through field investigations and hydraulic stress testing to determine the actual operational capacity.

Depending on what the Rancheria wishes to develop in the future, how the flows at the Casino increase, and if more houses are connected to the Zenon system, additional leachfield capacity could be required. Several undeveloped sites have been investigated in the past. However, the Rancheria should think broadly in terms of overall land use when planning potential developments. The best land for leachfields may currently be taken up by housing assignments, which were not previously evaluated for leachfield potential.

For the Rancheria to create some of the potential developments that have been envisioned, it may be necessary to re-evaluate land use to determine the highest and best use of land for the community. At this time it is not possible to accurately determine additional potential leachfield capacity because it depends on land use decisions and site characteristics. However, it may be possible for the Rancheria to develop an additional 5-10,000 gpd or more of capacity. Additional planning, field studies, and engineering analysis will be needed to determine what capacity can be developed.

Ocean Outfall

The other viable disposal option considered is to discharge the treated wastewater through an ocean outfall some distance off shore. The North Coast Regional Water Quality Control Board often requires that outfalls be extended from the shore to a point where the ocean depth is 60 feet below mean sea level or more. Near Cher-Ae Heights the pipeline would have to be approximately 7,600 feet long to reach an ocean depth of 60 feet. The cost for the pipe alone for this option would exceed $2 million. To make this a more viable option, approval would have to be obtained to terminate the outfall at a shallower depth, which would require demonstration that the required mixing and dilution was met.

An ocean outfall option would have relatively high annual maintenance costs because the Rancheria would need to ensure that the outfall pipe is kept clear of debris and growths. Large storms can also damage the outfall pipe and lead to large repair costs.

A significant advantage to this option is that it would probably allow for much more disposal capacity than onsite leachfields, which are limited by the availability of acceptable land. With an ocean outfall, the Rancheria could likely have the capacity to accommodate wastewater flows from many types of future development projects.

CAPITAL COST ANALYSIS

Probable costs for the following treatment and disposal options were developed.

Treatment Options
- Utilize Existing Treatment Plant
- Expand Treatment Plant
- Construct a Parallel Treatment Train

Disposal Options
- Construction of a Community Leachfield
- Construction of an Ocean Outfall

**Table ES.5: Summary of Alternative Costs and Issues
Trinidad Rancheria**

Alt#	Development Served	Treatment Option	Disposal Option	Capital Cost for Treatment and Disposal	Degree of Permitting	Comments
1	Casino, Tribal Office, clinic complex, two houses	Existing treatment capacity at 15,000 gpd	Discharge to existing Casino Leachfield	$0	None (no change)	The master planned future average flow for the Casino plus the other existing developments use existing capacity.
2	Casino, Tribal Office, clinic complex, two houses, plus gas station/m-m, and a 44 room hotel (or 8 Cher-Ae Heights homes)	Upgrade existing treatment capacity to 30,000 gpd	Discharge to existing Casino Leachfield	$110,000	None (Assumes no Federal Oversight required)	For this alternative the number of hotel rooms or homes served is limited by the Casino leachfield disposal capacity.
3	Casino, Tribal Office, clinic complex, two houses, plus gas station/m-m, and a 134 room hotel (or 74 room hotel and 20 Cher-Ae Heights homes)	Upgrade existing treatment capacity to 30,000 gpd	Increase Discharge Capacity by adding new leachfield for 5,000 gpd	$460,000	None (Assumes no Federal Oversight required)	This alternative is limited by treatment capacity. In addition, it may be difficult to find sufficient leachfield area. If not enough area can be found, development needs to be reduced or an ocean outfall considered.
4	Casino, Tribal Office, clinic complex, two houses, plus gas station/m-m, and a 200 room and 5 Cher-Ae Heights homes (or 116 room hotel and 20 Cher-Ae Heights homes)	Upgrade existing treatment capacity to 30,000 gpd, and build a new treatment train	Increase Discharge Capacity by adding new leachfield for 10,000 gpd	$460,000 + cost of additional treatment facilities	None (Assumes no Federal Oversight required)	It may be difficult to find sufficient leachfield area. If not enough area can be found, development needs to be reduced or an ocean outfall considered.
5	Casino, Tribal Office, clinic complex, two houses, plus gas station/m-m, and a 200 room and 20 Cher-Ae Heights homes	Upgrade existing treatment capacity to 30,000 gpd, and build a new treatment train	Ocean outfall Discharge	$1,460,000 to $3,460,000 + cost of additional treatment facilities	Difficult (Assumes state and local involvement)	This option has ample disposal capacity for currently proposed development. However, the cost is much higher than the other alternatives, and treatment plant expansion would be required to treat the higher flows.

INTRODUCTION

The Trinidad Rancheria would like to consider potential options for development of the land at the Cher-Ae Heights community in Trinidad. The further development of this land will result in the generation of additional wastewater that must be appropriately managed. This report assesses several wastewater treatment and disposal options for the Trinidad Rancheria to provide tools to assist the Rancheria in evaluating future development options. The goal is to develop reliable treatment and disposal alternatives that meet regulatory standards, while minimizing required capital, personnel, and maintenance costs.

This report includes consideration of capacity and performance of existing wastewater management systems as well as analysis of options to accommodate a potential future hotel facility (assumed to be up to 200 rooms for planning purposes) and a new gas station/mini-mart.

The current system performance issues as well as the potential for future system growth are mainly at the Cher-Ae Heights community, which is the focus of this report. The wastewater system for the Westhaven subdivision is relatively new and is working well and there are no plans for major developments at that site. The characteristics of the Westhaven subdivision system are considered under a separate brief analysis.

SITE AND WASTEWATER SYSTEMS DESCRIPTION

The Rancheria is located one mile south of the town of Trinidad, California in Humboldt County on the Northern Coast of California. The Rancheria has several property holdings including Cher-Ae Heights, the Westhaven subdivision, the Archer Road subdivision, the North Coast Inn, and the Trinidad Harbor. This study focuses on the Cher-Ae Heights property, which is entirely Trust land.

The Cher-Ae Heights area is the original Rancheria, with homes and wastewater management systems that date back to the 1950's. This 44-acre area has been developed over the years and currently includes a residential area, the Cher-Ae Heights Casino, a former clinic complex, a portion of which currently houses the Youth Program, and the Tribal Office. The residential area consists of approximately 20 homes housing about 60 people. The Tribal Office houses approximately 30 employees as well as visitors to the library and offices. The Youth Program, at the former clinic complex, houses 3 employees and an afternoon youth program for 5 to 10 children. The remainder of the clinic complex is currently unoccupied, and consists of approximately 9,000 square feet of office and utility space.

In 2002, the Rancheria expanded the Cher-Ae Heights Casino to its current 50,000 square-foot configuration, which includes the 200-seat Sunset Restaurant. The Casino and restaurant presently employs approximately 220 people. The Casino is serviced by a wastewater treatment plant with a current capacity of 15,000 gallons per day (gpd) average daily flow and 30,000 gpd peak daily flow. Currently, flows into the treatment plant average 7,100 gpd. Approximately 60% of the treated wastewater is recycled back into the Casino and used for toilet flushing. The remaining treated wastewater is disposed of in a leachfield with a design capacity of 10,000-gpd, located just south of the Tribal Office.

The homes at Cher-Ae Heights, with two exceptions, are served by individual leachfields. The remaining two homes, the Tribal Office and the former clinic complex are served by septic tanks that drain or are pumped to the same leachfield that services the Casino.

Cher-Ae Heights is situated on gentle to steeply sloping ground with elevations ranging from 80 feet at the eastern edge adjacent to Highway 101, down to sea level with a steep bluff on the western edge of the property down to the Pacific Ocean. The depth to groundwater is relatively shallow in many areas of Cher-Ae Heights, and there are also areas where the groundwater daylights at the surface, particularly during the rainy season. The soils consist mainly of sandy loams with shallow bedrock and bedrock outcroppings in several areas. The undeveloped areas of Cher-Ae Heights are typically forested and steep. McConnahas/Mill Creek runs along the northern property boundary of Cher-Ae Heights. It is a small stream that drains approximately two square miles of relatively undeveloped watershed. The Rancheria has been replacing about one residential leachfield system at the Cher-Ae location each year for the past five years, mainly due to age or problems relating to high groundwater.

PURPOSE

The purpose of this report is to provide an assessment of several wastewater collection, treatment and disposal scenarios in order to address current issues with individual leachfields and the community leach filed system, and to address wastewater capacity issues associated with potential development options for the Cher-Ae Heights area. This analysis provides a planning tool for the Rancheria to help in making future land use and development decisions through identifying options, range in costs, and further study, system design, and other implementation steps.

This analysis begins with a description of current conditions, issues, and specific goals for potential growth options of the Rancheria. Anticipated wastewater flows for existing and potential future conditions are developed based on a range of different options. Wastewater treatment requirements are outlined and wastewater disposal alternatives assessed based on the regulatory framework and known physical site conditions.

This alternatives analysis includes a conceptual level design for each feasible alternative as well as an assessment of the ability of the alternative to meet treatment and disposal requirements. A conceptual cost estimate was developed for feasible alternatives, and potential requirements associated with alternative implementation are also presented.

INTRODUCTION

The current conditions serve as the basis for evaluating existing issues that need to be addressed and potential approaches for addressing them, which are considered further in subsequent chapters. The homes at the Cher-Ae Heights development receives wastewater service predominately through individual septic tank and leachfield systems. The Casino is connected into the Zenon treatment plant which recycles highly treated effluent for toilet flushing in the Casino and the rest is discharged into a community leachfield. Two of the homes, the Tribal Office, and the old Health Clinic are connected to septic tanks and then to the community leachfield.

A summary of the conditions of the existing individual septic and leachfield systems, and the community system are discussed in the following sections. Subsequent chapters evaluate existing and potential future flows and options for alternative wastewater management strategies to address the issues identified in this chapter.

EVALUATION OF EXISTING INDIVIDUAL LEACHFIELD AND SEPTIC SYSTEM PROBLEMS

The individual septic tank and leachfield systems at the Cher-Ae Heights community have been developed over many years with various designs and little documentation. This has resulted in some system performance problems and in 2000 Winzler & Kelly performed a survey of the systems at Cher-Ae Heights (and Westhaven). The findings were presented in the *Trinidad Rancheria Septic System Survey, Final Report*, Winzler & Kelly, August 2000. The on-site systems were evaluated using a series of techniques including research of Indian Health Services records, interviews with residents, and field inspections.

The evaluation was based on the regulatory requirements of leachfield construction contained within Chapter 4 of the *Water Quality Control Plan for the North Coast Region*, North Coast Regional Water Quality Control Board, May 23, 1996 (Basin Plan), as well as Humboldt County Environmental Health Department standards. Although the sovereign status of the land means that the Rancheria is under no legal requirements to conform to State and local regulations, it is in the best interest of the Rancheria, and has been the past practice, to provide the highest level of standards practicable. Thus, in the Septic System Survey, the characteristics of the sites were evaluated based on typical regulatory requirements.

The results of the Rancheria Septic System Survey are reproduced in Appendix A of this report. Areas of potential problems or conflicts with regulations are labeled "Red". Problems found with treatment and disposal systems include the following (each of which is further discussed in subsequent paragraphs):

- Overly full with sludge or scum
- Lack of baffles and sanitary "T"s
- Access to tanks / Placement of structures above tanks
- Malfunction of leachfield
- Other problems

The Rancheria has corrected many of the more pressing problems identified in 2000 and has been replacing about one leachfield system each year for the past five years. Even so, there is reason to consider connecting all individual systems up to a central treatment and disposal system, which is discussed under a subsequent chapter.

Overly Full with Sludge or Scum

Septic tanks are the point of primary treatment in the septic system. It is in the septic tank where heavy solids and lighter scum are allowed to separate from the wastewater. Five of the twenty-one septic tanks examined in 2000 had sludge depths of 24-inches or more, and scum levels in excess of eight inches and were in need of being pumped. This condition of excessive sludge and scum can lead to carry over of solids or grease to the leachfield and premature degradation of capacity. The Rancheria has subsequently addressed this issue, but it points to the need of regular inspection and maintenance of individual septic systems.

Lack of Baffles and Sanitary "T"s

Baffles and sanitary tees help to separate sludge and scum from the wastewater, thus preventing it from entering into the disposal field and possibly clogging the leach pipes, gravels, or trench sidewalls. Sanitary tees and baffles are standard on new septic systems, but older systems may lack them. Three sites at Cher-Ae Heights lacked these features.

Access to Tanks / Placement of Structures Above Tanks

The placement of structures or driveways over tanks makes access for maintenance and pumping difficult or impossible, and may result in greater structural loads being placed upon a tank than it was designed for. Wooden decks have been built above the septic tank at one site at Cher-Ae Heights, thus making regular maintenance much more difficult. Other tanks at the Trinidad Rancheria are located underneath a driveway and a large above ground pool.

Tank-lid risers are recommended, which allow easy access to inspection ports above ground. This makes locating the septic tank and making regular maintenance easier and less expensive. Of the twenty-five septic systems surveyed at Cher-Ae Heights, only seven tanks had these access ports.

Malfunction of Leachfield

Common problems found with leachfield design that may cause malfunction were:

- High groundwater levels
- Inadequate setbacks from steep slopes and natural bluffs
- Inadequate setbacks from ephemeral streams
- Sharp changes in slope
- Unstable landforms
- Shallow depth to bedrock

The design and construction of a septic system and leachfield along with appropriate maintenance are the most important factors in system performance. Typical failure of a leachfield due to inadequate design or maintenance is effluent surfacing from a leachfield and causing odors and possible health or environmental impacts.

Although a significant number of the sites had either inadequate separation to groundwater or inadequate setbacks, only a small number of sites had either surfacing effluent or noticeable odor. However, the field investigations were conducted in the summer so surfacing wastewater problems would be at a minimum. It is expected that some sites that did not exhibit surfacing effluent in the summer would have problems in the winter when groundwater was at a maximum.

Of the 47 sites examined in the Septic System Survey, 26 had a depth to groundwater that was shallower than that recommended by the North Coast Regional Water Quality Control Board (NCRWQCB) in the Basin Plan. The Basin Plan requires a minimum of five feet of clearance from the bottom of the leaching trench to the seasonally high groundwater level. The majority of the sites with shallow depth to groundwater are located at Cher-Ae Heights.

Many of the sites at Cher-Ae Heights failed to meet the Basin Plan's required setbacks from breaks in slope, unstable landforms, and ephemeral streams. Fourteen of the 25 leachfield systems surveyed at Cher-Ae Heights were located within 25 feet of natural bluffs or sharp changes in slope. Two sites at Cher-Ae Heights have leachfields located within 50 feet of ephemeral springs or streams. There are four sites at Cher-Ae Heights where the leachfield is located on or within 50 feet of unstable landforms, such as hills, where visible slumping has occurred. One site at Cher-Ae Heights has a leachfield placed where the depth to bedrock is only four feet.

There was one site at Cher-Ae Heights where it appears that the leachfield is old and probably clogged. There were six sites at Cher-Ae Heights where effluent was surfacing either on the leachfield itself or down slope from it.

Although there was a multitude of design related issues, not every site with a design issue had an immediately obvious problem when surveyed. However, the design related issues suggest that long term performance is questionable and that problems may occur during wet periods and in the future sooner than if the systems were properly designed.

Other Problems

One plastic septic tank, which appeared to have been malformed by slope movement, was observed at Cher-Ae Heights. Continued movement of that slope seems likely, and may eventually cause either the inlet or outlet lines from the tank to separate, thus resulting in a release of untreated effluent and failure of the system.

Recommended Improvements

The Septic System Survey offered a series of recommendations and the original report should be referenced for details.

Overall, the analysis suggests there is a wide array of systems in place that appear to be of many designs, and there is little documentation available. A significant number of the systems currently have performance problems, and many of them have known design problems (but perhaps no performance problems yet). The lack of available information and the types of problems found suggests that the design related problems are likely more widespread than can be currently determined. This combination of factors suggests that the Rancheria should consider replacing the individual systems with a community system. The extent and type of system will depend in large measure on the Rancheria's development plans for the entire area. The potential wastewater flows from homes, treatment options, and disposal options are considered in the following chapters along with other development options.

EVALUATION OF EXISTING ZENON TREATMENT PLANT AND COMMUNITY LEACHFIELD

The Rancheria's plans to expand the Casino lead to the development of a new wastewater treatment and disposal system to replace a failed mound system. Due to the known difficulty in locating land on site for a leachfield and a shortage of potable water from the City of Trinidad, a water recycling treatment plant manufactured by Zenon was chosen. The Casino was designed to include dual plumbing so the highly treated effluent from the Zenon plant could be used for toiled flushing.

A study was conducted in the spring of 1998 of four potential leachfield sites at Cher-Ae Heights and found the following:

Site	Findings
South of Casino Parking Lot	Disturbed soils, blue clay, expected high groundwater, infeasible.
Between Casino Lower Lot and Ter Ker Coo Lane	Disturbed soils, high water table, infeasible.
Mounded Ridge South of Ter Ker Coo Lane	Well drained soils, potentially feasible.
Hillside South of Tribal Office (Leachfield developed at this site in fall of 1998)	Well drained soils, ample area, feasible.

The hillside south of the Tribal Office was developed into a leachfield with a design capacity of 10,000 gallons per day. After the leachfield was constructed the Casino expansion project was undertaken. The implementation strategy was based on using the old mound system until the new treatment plant was on line so that only clean water would be discharged to the new leachfield. However, the old mound system was decommissioned before the new treatment plant was completed and relatively untreated effluent, including greasy water from the snack bar, was discharged directly to the new leachfield for several months.

After the Casino and the new treatment plant were completed and connected to the new leachfield there were a number of startup issues that were addressed. After working through a series of details with the manufacturer and the operator regarding both how the system was to work, and a number of mechanical performance issues, the treatment plant was operated to consistently produce high quality effluent.

The leachfield began experiencing some operational problems several months after the new treatment plant was on line in the spring of 2002. The operator found he could not pump water to the leachfield at the needed capacity. After solving a valving problem, the leachfield still appeared to be operating under the design capacity. The operator located the ends of some of the leachlines and flushed them out and found a significant amount of grease and black slime in the pipes. Flushing of the pipes improved the performance for several months, but the same problem appeared to recur. The lines were flushed of grease and slime again in the fall of 2003. The grease and slime is most likely the result of discharging of effluent to the leachfield prior to the completion of the treatment plant and cleaning the system of this residue is essential to maintaining both near and long term capacity.

For the purposes of this study, it is assumed that the leachfield still has its original design capacity of 10,000 gpd. However, it is recommended that the leach lines be cleaned and flushed, and that a number of backhoe test pits be excavated into the leach trenches to inspect the pressure distribution lines, the gravels, and groundwater elevations. Through this type of investigation, the actual operating capacity of the leachfield can be better assessed.

INTRODUCTION

Current wastewater flows are not metered at most of the Rancheria's facilities except for the Casino. However, typical design flows can be estimated for facilities based on the type of facility, its use, and its occupancy. These design flows along with the data from the Casino/ Restaurant were utilized to estimate current and projected wastewater flows for Cher-Ae Heights.

Wastewater flows generated from the Casino are evaluated first based on actual measurement data. Flows from the remaining Cher-Ae community, which includes homes, the Tribal Office, and the clinic complex are then considered. The potential reduction in wastewater flows due to installation of water conserving fixtures is considered. Finally, disposal capacity is considered based on a reduction in disposal requirements due to recycling for toilet flushing in the Casino and any potential future hotel.

CURRENT METERED CASINO WASTEWATER FLOWS

Actual wastewater flows from the Casino's Zenon Wastewater Treatment Plant were obtained from Ron Sundberg, the plant operator, and are summarized in Table 3.1. The raw data tables are provided in Appendix B along with water quality data for the treatment plant.

Table 3.1: Casino Wastewater Treatment Plant 2002-2003
Summary of Total Monthly Metered Flows
Trinidad Rancheria

Date	Avg. Daily Flow (gallon/day)	Peak Daily Flow (gallon/day)
June 2002	8,875	14,850
July 2002	9,112	26,870
August 2002	8,896	28,150
September 2002	7,047	13,490
October 2002	6,539	11,200
November 2002	6,749	16,540
December 2002	6,831	14,250
January 2003	5,924	16,280
February 2003	6,261	23,140
March 2003	6,241	12,510
April 2003	6,442	20,510
Overall Avg. Daily Flow	**7,174**	
Peak Daily Flow		**28,150**
Avg. of Peak Daily Flows		**17,981**

The figures shown in Table 3.1 represent the actual measured influent wastewater flows and are not a function of how much water is recycled for toilet flushing. Water recycled for toilet flushing affects disposal capacity, not treatment capacity. Required disposal capacity accounting for water recycling is discussed in a subsequent section in this chapter.

CURRENT ESTIMATED COMMUNITY WASTEWATER FLOWS

For the purposes of this study, Existing Community Wastewater Flows are defined to be those wastewater flows that are generated by homes, the Tribal Office, and the former clinic complex at Cher-Ae Heights.

The estimated current wastewater flows for the Cher-Ae Heights community area are provided in Table 3.2.

Table 3.2: Current Estimated Cher-Ae Heights Community Wastewater Flows Trinidad Rancheria

Description	Units	Average Unit Flow [1] (gal/unit/day)	Estimated Avg. Flows (gal/day)
Estimated Current Average Wastewater Flow Rates			
Tribal Offices	50 Employees	10	500
Clinic Complex	10 People	10	100
Single Family Homes on Community Leachfield	2 Houses	2	600
Single Family Homes	20 Houses	300	6,000
			7,200

[1] Adapted from Metcalf & Eddy, Wastewater Engineering, Treatment, Disposal, Reuse, 3rd ed., pg 17,McGraw-Hill, Inc., New York, NY, 1991.

The flows presented in Table 3.2 are estimates, because there is no metering of these flows. These estimates are based on industry standard references of typical wastewater flows for these types of developments

PROJECTED CASINO WASTEWATER FLOWS

Master planning for the sizing of the treatment plant was completed in the spring of 1999 based on a projected maximum daily flow of 30,000 gallons per day from the Casino (15,000 gpd average flow). This master planned capacity should be reserved for potential future growth in the patronage of the Casino.

PROJECTED POTENTIAL COMMUNITY WASTEWATER FLOWS

Based on conversations with Rancheria staff, development plans for Cher-Ae Heights could include a new hotel facility and a new gas station/mini-mart. The analysis presented in this section assumes that the Hotel will have up to 200 rooms, although the exact size of the hotel has not yet been determined. Any new wastewater facilities must be able to potentially handle the existing flows, but also include capacity for planned expansion to help ensure that the facilities are adequately sized to be able to grow with the Rancheria.

The projected potential future wastewater flows from Cher-Ae Heights projected growth, including a new 200-room hotel and gas station/mini-mart, are presented in Table 3.3.

Table 3.3: Projected Potential Hotel and Gas Station/Mini-Mart Wastewater Flows
Trinidad Rancheria

Description	Units	Average Unit Flow(1) (gal/unit/day)	Estimated Avg. Flows (gal/day)
Hotel	200 rooms	100	20,000
Gas Station/Mini Mart	100 users	10	1,000
Total Estimated Projected Wastewater Flow			**21,000**

(1) Adapted from Metcalf & Eddy, Wastewater Engineering, Treatment, Disposal, Reuse, 3rd ed., pg 17,McGraw-Hill, Inc., New York, NY, 1991.

The total wastewater flows from the Casino and the community facilities are summarized in the next section.

SUMMARY OF EXISTING AND PROJECTED POTENTIAL WASTEWATER FLOWS

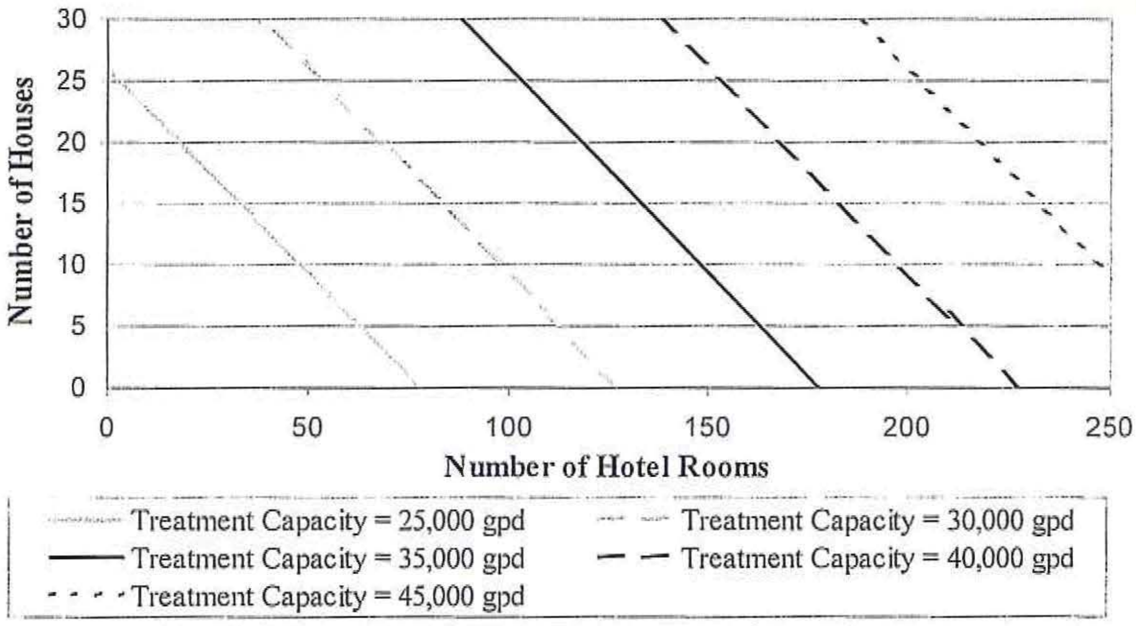
The projected future wastewater flows from the Casino, the Cher-Ae Heights community area, and a potential 200-room hotel and gas station/mini-mart are presented in Table 3.4.

Table: 3.4: Projected Cher-Ae Heights Community Wastewater Flows
Trinidad Rancheria

Area	Existing Average Flow (gal/day)	Potential Additional Future Average Flow (gal/day)	Total Average Flow (gal/day)
Community Area (homes, Tribal Offices, clinic complex)	7,200	0	7,200
Casino	7,200	7,800	15,000
200 Room Hotel	0	20,000	20,000
Gas station/mini mart	0	1,000	1,000
Total Estimated Flow	**14,400**	**28,800**	**43,200**

As part of the development planning, the Rancheria may choose to combine some existing homes on individual septic systems along with a potential new hotel of some size and treat all the wastewater together. This scenario is discussed further in this report in the chapter on the development of alternatives. Different combinations of the number of homes and the size of the treatment plant result in different flows, which also include the projected future Casino/restaurant flows, the flows from the Tribal Office and the clinic complex, and flows from the gas station/ mini-mart. This relationship is graphically presented in Figure 3.1. Figure 3.1 assumes that the Casino and restaurant will require the 15,000 gpd master planned average flow and that there is no growth in the flows from the Tribal Office and the clinic complex. Figure 3.1 is a very valuable planning tool the Rancheria can use to evaluate the required wastewater treatment capacity from any combination of hotel size and number of homes served. This is used further in subsequent chapters of this report.

Figure 3.1: Treatment Capacity Relationship Between Number of Cher-Ae Heights Houses Served and Proposed New Hotel Rooms Developed
Trinidad Rancheria



Note: Assumes flows from the future Casino (15,000 gpd average) plus the Tribal Office, clinic complex, two homes currently connected to the community leachfield, and gas station/mini-mart are served (for a total required treatment capacity of 17,200) in addition to the combination of homes served and hotel rooms developed.

AFFECT OF LOW FLOW TECHNOLOGIES

The total estimated wastewater flow presented in Table 3.3 does not take into account any additional measures to reduce wastewater flows through conservation using low-flow technologies.

Low-flow water efficient toilets, fixtures, and other appliances could be installed in existing homes and other facilities. The American Water Works Association (AWWA) has conducted studies that show that household flows can be reduced by about 30% through the use of low-flow fixtures. This would reduce the estimated flow per household from 300 gpd to 200 gpd, which is an achievable usage rate. However, this would require that the Rancheria retrofit existing facilities at a substantial cost.

As a result of existing federal regulations, all toilets, showerheads, and kitchen and lavatory faucets newly installed are required to be low flow, and those are the only models legally sold. Thus, the existing Casino/restaurant and any new development would already have low flow devices installed.

Table 3.5 presents the potential reduction in wastewater flows if low-flow technologies are installed in homes. It was assumed that the Tribal Office and former clinic complex could achieve the same reduction in water use as a household. Because the existing federal regulations require low-flow devices in new construction, no flow reduction from the installation of these devices was assumed at the proposed hotel or gas station/mini-mart.

Table 3.5: Potential Reduction in Wastewater Flows From Installation of Low Flow Technologies
Trinidad Rancheria

Description	Projected Average Flows (gal/day)	Percent Reduction Resulting from Low-Flow Technologies	Projected Reduction in Flows (gal/day)
Single Family Homes	6,000	30%	1,800
Homes on Leachfield	600	30%	180
Clinic Complex	100	30%	30
Tribal Offices	500	30%	150
Casino/Restaurant	15,000	0%	0
Hotel	20,000	0%	0
Gas Station/Mini Mart	1000	0%	0
TOTALS	**43,200**	---	**2,610**

As can be seen in Table 3.5 the use of all available water recycling and low flow technologies reduces the total amount of wastewater to be treated and disposed by less than 5% of the projected future flow. For the purposes of this study, it was assumed that existing facilities are not retrofitted with low flow fixtures. However, the Rancheria may wish to undertake this as a separate project.

WATER RECYCLING FOR TOILET FLUSHING

Water recycling for toilet flushing does not affect treatment capacity requirements, but it does affect disposal capacity requirements. If there is no water recycling, then the treatment capacity equals the disposal capacity. However, the Casino was developed with a water recycling system for toilet flushing to reduce the need for potable water and reduce the need for disposal capacity. Recycling for irrigation had also been previously investigated, however it is infeasible for reducing wastewater disposal capacity since there is no demand for irrigation in the winter when wastewater disposal is most critical.

Based on the comparison of water meter usage records for the Casino and the process wastewater flows from the treatment plant, approximately 60% of the average daily flow is recycled back into the Casino and used for toilet flushing, and does not require disposal.

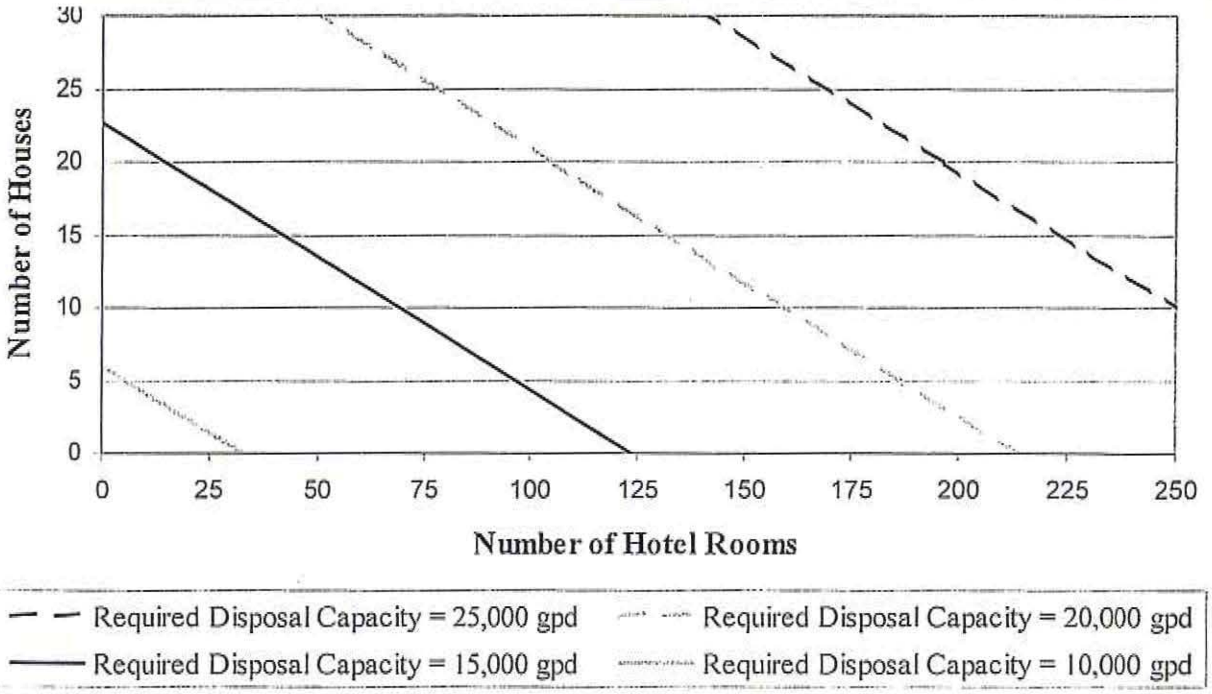
Given the wastewater treatment and disposal limitations and constraints, it is recommended that the hotel, and all new major construction at the Rancheria be constructed with dual plumbing systems and the ability to recycle treated wastewater for toilet flushing. For the remainder of this report it is assumed that the hotel will install water recycling facilities for toilet flushing to reduce needed disposal capacity and potable water supplies.

RELATIONSHIP BETWEEN DISPOSAL CAPACITY AND DEVELOPMENT OPTIONS

Like wastewater flow, there is a relationship between the number of houses served and the number of hotel rooms that can be developed and the resulting disposal capacity required. This relationship was developed based on the assumption that the Casino and the potential hotel will recycle water for toilet flushing. Figure 3.2 shows the relationship between the number of houses served and the number of hotel rooms developed for 15,000 gpd, 20,000 gpd, and 25,000 gpd disposal capacity.

The figure shows that a disposal capacity of almost 25,000 gpd is needed to serve all 20 existing houses and a 200 room hotel in addition to the Casino/Restaurant (under future master planned capacity), Tribal Offices, former clinic complex, and a new gas station/ mini-mart. Like Figure 3.1, Figure 3.2 serves as a valuable planning tool for the Rancheria to consider future development scenarios and how disposal capacity can be achieved, which is also discussed further in subsequent chapters of this report.

Figure 3.2: Disposal Capacity Relationship Between Number of Cher-Ae Heights Houses Served and Proposed New Hotel Rooms
Trinidad Rancheria



Notes:
This graph assumes that 6,000 gpd of disposal capacity is reserved for the Casino at Master Plan build out flows (15,000 gpd with 60% of the water recycled). This graph also assumes that the Tribal Office, clinic complex, and two homes currently connected to the community leachfield, and the gas station/mini-mart are served with a combined disposal flow of 2,200 gpd (assumes no water recycling). This equates to a base disposal flow of 8,200 gpd. The remaining flow is distributed between homes served and hotel rooms developed. To serve the remaining 20 homes and a 200 room hotel, a disposal capacity of 25,200 gpd would be needed.

INTRODUCTION

The type of wastewater treatment required for disposal alternatives can vary depending on the final disposal or use of the effluent. This has both a regulatory basis and an operational basis. For example, from a regulatory standpoint, a higher level of treatment is required for wastewater to be recycled for toilet flushing than is required for discharge to a leachfield. However, from an operational basis, it is to the owner's advantage to put the cleanest water possible into a leachfield, because it is much more likely to perform better at higher capacity and have a longer operating life. This is especially important when leachfield capacity is very scarce, such as is the case at the Cher-Ae Heights community.

Trust land at Cher-Ae Heights, falls under the regulatory oversight of the Federal government and is not subjected to State or Local regulations. However, non-Trust land and wastewater that flows off of Trust lands falls under State and Local jurisdiction. Leachfields and treatment of wastewater for recycling for toilet flushing on Trust land technically do not fall under the regulations established by State or Local agencies to protect public health and the environment. However, it has been the practice of the Rancheria, and is the basis of this analysis, to create systems that would comply with the intent of these requirements. Discharges to creeks, and ocean outfalls, however, would flow off of Trust land and would need to comply with all standards associated with non-Trust land.

OVERVIEW OF GOVERNING REGULATIONS

Congress passed the Clean Water Act (CWA) in 1972 with the goal of reducing the impacts of the discharge of pollutants to surface waters of the United States. The Act was amended in 1977 and again in 1987 and regulations were established for toxic pollution control and effluent limitations. The CWA governs discharge from "point sources" into "navigable waters of the United States" and provides guidelines for effluent limitations and permitting of these discharges. This is handled under the National Pollution Discharge Elimination System (NPDES). The State of California is fully authorized to administer the NPDES program and the discharge of wastewater from the Rancheria would fall under the NPDES requirements as overseen by the North Coast Regional Water Quality Control Board (NCRWQCB). An NPDES permit would have to be obtained from the NCRWQCB for discharge of wastewater to a surface water body that flowed off of Trust land.

There are no specific Federal regulations governing discharge through leachfields or through recycled water use. However, as stated earlier, State or Local regulations were established to protect public health and the environment, it has been the practice of the Rancheria to voluntarily conform to the intent of the requirements. Individual septic systems and leachfields would fall under the permitting and regulatory oversight of Humboldt County Division of Environmental Health. However, community leachfields on non-trust land fall under the regulation of North Coast Regional Water Quality Control Board. The regulatory requirements of leachfield construction on non-Trust land are contained within Chapter 4 of the Basin Plan. The Basin Plan establishes site evaluation criteria including ground slope and stability, soil depth, depth to groundwater, percolation rates, setback requirements, and other requirements.

Title 22, Chapter 3 of the California Code of Regulations covers treatment requirements for water recycling in California for non-Trust lands (see Appendix C). The North Coast Regional Water Quality Control Board (Regional Board) governs treatment requirements for other disposal options that involve treated effluent on non-Trust lands. Requirements are set to meet water quality objective set out in the "Water Quality Control Plan for the North Coast" (Basin Plan).

Three types of water treatment levels are discussed, which would apply to different disposal options. They are as follows:

- Undisinfected Wastewater
- Disinfected Secondary Wastewater
- Disinfected Tertiary Wastewater

A discussion of each of these treatment options in regards to potential disposal options for Cher-Ae Heights is presented in this section.

Undisinfected Wastewater

Undisinfected wastewater is currently being discharged through the individual residential leachfields and through the Tribal Office and former clinic complex septic systems. The typical design loading rates are much lower for leachfield systems using undisinfected wastewater that has only received low level septic tank treatment. This is because solids and grease from septic tanks can carry over into leachfields and can build up and block the soils pores reducing infiltration. From a technical standpoint, higher levels of treatment can allow an increase in typical loading rates and probable lifespan of the system. However, State and Local regulatory agencies do not allow for the consider of treatment level when designing leachfields.

Secondary Treatment Requirements

If wastewater were to be discharged directly to a surface waterbody such as a nearby stream or the ocean it would need to be treated to secondary standards or higher. The minimum standards for secondary treatment are included in Table 4.1.

Table 4.1: Minimum Standards for Secondary Treatment
Trinidad Rancheria

Component	Average 30 day Concentration	Average 7 day Concentration
BOD_5	30 mg/L	45 mg/L
Total Suspended Solids	30 mg/L	45 mg/L
PH	6.0 to 9.0 at all times	
$CBOD_5$(1)	25 mg/L	40 mg/L
Total Coliform	23 MPN/100 ml	230 MPN/100 ml

(1) Five day carbonaceous biological oxygen demand may be substituted for BOD5 at discretion of permitting authority.

The levels in Table 4.1 are the minimum discharge requirements, or level that the wastewater would have to be treated to prior to discharge from a treatment system. However, the discharge would also have to conform to the Basin Plan. The North Coast Regional Water Quality Control Board, would likely impose other discharge requirements including standards for temperature, phosphate and nitrate levels, turbidity, dissolved oxygen, receiving water minimum flows, and sampling and reporting requirements. The Basin Plan generally prohibits the degradation of the quality of receiving waters and the established discharge requirements would likely be determined based on that limitation. Discharge to a surface water would also need to comply with the California Toxic Rule, which covers priority pollutants.

The Basin Plan makes some special distinctions for coastal streams, stating, "On all coastal streams and natural drainage ways that flow directly to the ocean, all new discharges will be prohibited." The Regional Board has upheld this position on wastewater discharge applications in other areas and it is very unlikely the Rancheria's situation would be viewed any differently. The only other option is to try to change the Basin Plan to allow a discharge to a coastal stream that would also be essentially impossible.

In the following chapter on wastewater disposal options, ocean outfall discharge will be considered potentially feasible and discharge to a coastal stream will be considered infeasible.

Reclaimed/Recycled Water Treatment Requirements

Recycled water intended to be reused for toilet flushing like in the Casino, would need to be treated to tertiary standards, such as is achieved with the Zenon membrane treatment plant. Water recycling regulations are contained in Chapter 3 of Title 22 of the California Code of Regulations (CCR) (See Appendix C). Other types of water recycling, such as irrigation, can have a different level of treatment depending on how the water is to be used. As discussed in a previous chapter, however, recycling water for irrigation does not reduce the wastewater disposal capacity requirement because there is no demand for irrigation in the winter when the disposal of wastewater can be most critical. Therefore, recycling of effluent for toilet flushing in the existing Casino and in a potential new hotel will be the only type of recycling considered in this study. Retrofitting existing homes or the Tribal Office or clinic complex is not considered because of the high costs of dual pluming retrofits and the relatively low use for these other facilities.

SUMMARY OF WASTEWATER TREATMENT APPROACH

The overall objective is to develop cost effective, long term, wastewater management solutions to allow the Rancheria the potential to create additional future developments. Since land for leachfields is scarce, the available land should be managed as best as possible. Continued treatment of water for toilet flushing requires a high level of treatment as provided by the Zenon plant. As will be discussed further in this report, the Zenon plant has expansion capacity in the existing treatment train, and an additional train could be developed in the future if needed.

Given the logic of developing a system to provide good long term performance, continued use and expansion of the Zenon plant to produce high quality effluent makes the most practical sense for Cher-Ae Heights. This system will provide effluent for an expanded community leachfield, and ocean outfall discharge options which are discussed further in the next chapter.

INTRODUCTION

Disposal of the treated wastewater typically drives system design and operation because there are few methods available for disposal from a technical and regulatory standpoint. Basically the treated effluent needs to be put back into the hydrologic cycle. It can be viewed that there are the following three mechanisms to accomplishing this:

- Discharge to the ground and groundwater
- Discharge to a surface water body
- Evaporate it into the air

Different disposal methods employ different mechanisms and sometimes one method can use several mechanisms. Discharge to the ground and groundwater is typically achieved through a leachfield. Irrigation is typically a combination of discharge to the ground and groundwater and evaporation into the air. Discharge to McConnahas Mill Creek and an ocean outfall are examples of discharge to a surface water body. Each of these alternatives is discussed in the following sections.

Depending on which discharge option is selected, the required treatment level can then be determined, (e.g., secondary treatment for discharge to surface water, or tertiary treatment for recycling the wastewater in the hotel). The discussion of disposal options assumed water recycling for toilet flushing is practiced at the proposed hotel, as discussed in Chapter 3. Treatment options are discussed in Chapter 6.

DISCHARGE TO LEACHFIELDS

Cher-Ae Heights currently disposes of wastewater in leachfields. As discussed in Chapter 2, this is the primary means of treatment and disposal for wastewater from the existing homes, and each home generally has their own septic tank and leachfield. The wastewater from the Casino is treated in the Zenon plant and discharged to the community leachfield. Wastewater from the septic tanks from the Tribal Office, the clinic complex, and two homes is discharged directly to the community leachfield without further treatment in the Zenon plant.

The existing Casino leachfield has experienced some operating problems as was discussed in Chapter 2. The community leachfield was designed with a capacity of 10,000 gallons per day. However, with plugging believed to have been caused by the discharge of Casino wastewater to the field before the Zenon plant was completed, the capacity of the leachfield at this time is not known. The existing leachfield should be cleaned and then the capacity should be evaluated through field investigations and hydraulic stress testing to determine the actual operational capacity.

Potential Excess Capacity in Existing Community Leachfield

For this analysis it is assumed that the Rancheria completes the cleaning and evaluation of the existing leachfield and that its capacity is 10,000 gpd as designed. The results of this analysis can be adjusted based on the results of the investigation of the leachfield.

Based on the comparison of water meter usage records for the Casino and the process wastewater flows from the treatment plant, approximately 60% of the current 7,200 gpd average daily flow is recycled back into the Casino and used for toilet flushing, and does not require leachfield disposal. Therefore approximately 2,900 gpd goes from the treatment plant to the leachfield. In addition, an estimated 500 gallons per day are discharged to the leachfield from the Tribal Offices, and an additional 100 gpd from the clinic complex. Two houses are also connected to the community leachfield with an estimated flow of up to 600 gpd. The total estimated flow to the community leachfield is therefore approximately 4,000 gpd. If the community leachfield has an actual long term operating capacity of 10,000 gpd, then there is approximately 6,000 gpd of capacity remaining in the existing community leachfield.

Depending on what the Rancheria wishes to develop in the future, how the flows at the Casino increase, and if more houses are connected to the system, additional leachfield capacity could be required.

The relationship between disposal capacity and the additional required land area needed for leachfield disposal is shown in Figure 5.1. The disposal capacity is based on the existing leachfield, which is 25,000 ft^2 and has a design capacity of 10,000 gpd. Additional land area would be needed when the disposal capacity exceeds the existing community leachfield capacity. Figure 5.1 provides general guidance on overall sizing and assumes that new leachfield disposal sites may need additional land area to account for setbacks, topography, and other site constraints.

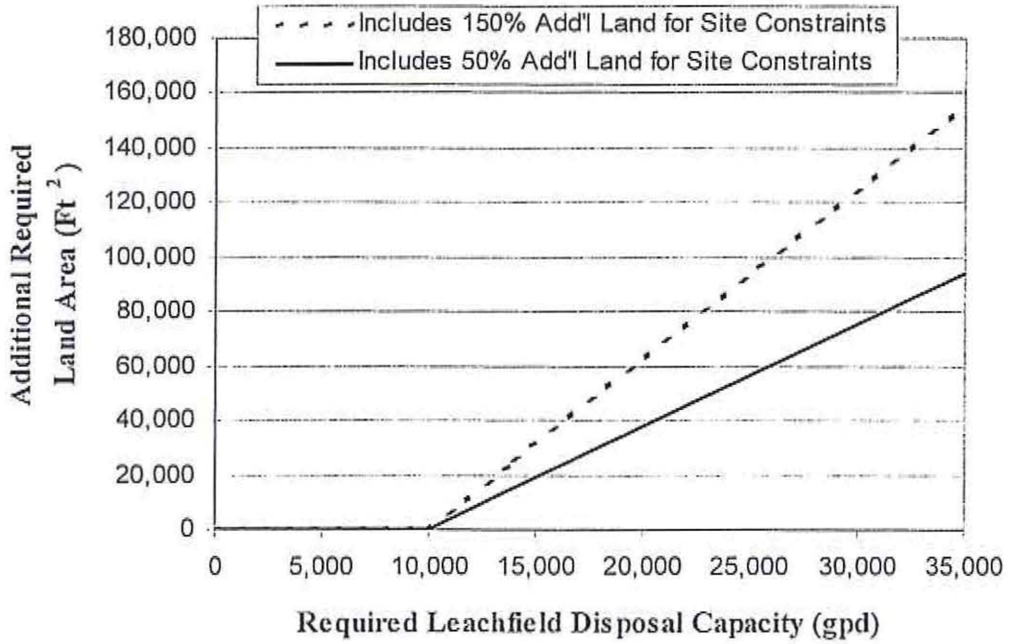
An important issue to consider in planning leachfields is potential reserve capacity. Typical leachfield planning includes siting 100% reserve capacity so that there is a new leachfield location designated if the initial leachfield fails. This planning is done because leachfields are expected to eventually fail, which means their ability to receive wastewater diminishes. The effluent from the Zenon plant is much cleaner than septic tank effluent, but all leachfields are expected to diminish in performance over time. Figure 5.1 does not account for any reserve capacity. Some day the Rancheria may need replacement disposal capacity, which may have to be provided by replacement leachfields or other disposal means.

Several undeveloped sites have been investigated in the past as was discussed under Chapter 2. However, the Rancheria should think broadly in terms of overall land use when planning potential developments. The best land for leachfields may currently be taken up by housing assignments, which were not previously evaluated for leachfield potential. For the Rancheria to create some of the potential developments that have been envisioned, it may be necessary to re-evaluate land use to determine the highest and best use of land for the community. At this time it is not possible to accurately determine additional potential leachfield capacity available at Cher-

Ae Heights because it depends on land use decisions and site characteristics. However, it may be possible for the Rancheria to develop an additional 5-10,000 gpd or more of capacity. Additional planning, field studies, and engineering analysis will be needed to determine what capacity can be developed.

The potential to develop additional leachfield capacity to serve various development levels is considered under the alternatives analysis in the following chapter.

Figure 5.1: Relationship Between Disposal Capacity and Required Leachfield Area Trinidad Rancheria



DISCHARGE BY IRRIGATION

Properly treated wastewater can be used for irrigation of some types of plants. Irrigation, however, is only useful during dry periods when plants need water, unless large and expensive seasonal storage reservoirs are provided. Irrigation with treated wastewater could not be practiced during the wet season because the ground cannot accept additional water and the treated wastewater applied would runoff. The Trinidad area receives a significant amount of rainfall and little irrigation is needed in the area except for during a short period of the summer. It is unlikely that even if wastewater were stored for irrigation in the summer, the demand would be high enough to dispose of all wastewater. Irrigation also takes large areas of land, which is very limited at the Rancheria, and could alternatively be used for other types of development. Irrigation with treated wastewater is often a good option in warmer climates with less rain where irrigation water is needed in greater amounts for longer periods of the year.

Irrigation even just for the summer months would require an extensive piping system and large areas of land. Due to cost prohibitions and limited need for irrigation water, disposal through irrigation would not be a viable option for year-round disposal, and this option is not considered further in this report.

DISCHARGE TO McCONNAHAS/MILL CREEK

A third alternative is the discharge of the treated effluent to McConnahas/Mill Creek. As discussed in more detail in Chapter 4, the Basin Plan prohibits discharges to coastal streams. The consideration of discharge to McConnahas/Mill Creek is impractical and will not be considered further in this report.

DISCHARGE TO AN OCEAN OUTFALL

The last option considered is to discharge the treated wastewater through an ocean outfall some distance off shore. This type of discharge would not fall under the Basin Plan's no new discharge policy. However, the NCRWQCB often requires that outfalls be extended from the shore to a point where the ocean depth is 60 feet below mean sea level or more. Near Cher-Ae Heights the pipeline would have to be approximately 7,600 feet long to reach an ocean depth of 60 feet, The cost for the pipe alone for this option would be approximately $3 million. To make this a more viable option, approval would have to be obtained to terminate the outfall at a shallower depth, which would require demonstration that the required mixing and dilution was met.

An ocean outfall option would have relatively high annual maintenance costs because the Rancheria would need to ensure that the outfall pipe is kept clear of debris and growths. Large storms can also damage the outfall pipe and lead to large repair costs.

A significant advantage to this option is that it would probably allow for much more disposal capacity than on site leachfields, which are limited by the availability of acceptable land. With an ocean outfall, the Rancheria could likely have the capacity to accommodate wastewater flows from many types of future development projects.

The use of an ocean outfall is discussed further under the alternative development chapter of this report.

INTRODUCTION

The Rancheria uses several wastewater treatment methods. At the Cher-Ae Heights property there are two types of systems. Septic tanks are used for treating wastewater prior to discharge to individual leachfields for homes. However, a number of these individual systems have problems and should be replaced. A Zenon membrane treatment plant is used to treat wastewater from the Casino/Restaurant, where the treated wastewater is reused for toiled flushing, and excess treated effluent is discharged to a large community leachfield.

SELECTION OF MOST APPROPRIATE TYPE OF TREATMENT

As was discussed under the previous section, expansion of centralized leachfield systems for disposal of treated effluent from additional developments is one of the most viable options from a permitting perspective. Although, leachfields can be operated with effluent from simple septic tanks, operating a leachfield with highly treated effluent from the Zenon plant greatly increases the potential life of the leachfield, reduces the necessary size of the disposal area, and enhances groundwater quality protection. With so little land available at Cher-Ae Heights it is logical to maximize the value of the land and the potential operating life of a leachfield system through high level treatment of wastewater prior to discharge. Discharge to an ocean outfall is also technically possible and would require a high level of treatment to secondary or tertiary such as provided through the existing Zenon plant.

Given the logic of developing a system to provide good long term performance, continued use and expansion of the Zenon plant to produce high quality effluent makes the most practical sense for Cher-Ae Heights. This system will provide effluent for an expanded community leachfield or ocean outfall discharge. Thus, it is recommended that all development connected to a community wide system be treated prior to discharge.

The needed capacity of the wastewater treatment system depends on the amount of development the Rancheria decides to proceed with and the number of homes they would like to connect to a community system. The tradeoffs between treatment plant expansion options and development served are discussed below.

TREATMENT PLANT CAPACITY AND EXPANSION OPTIONS

The capacity of the existing treatment plant is 15,000 gpd average daily flow, but was designed to be expanded to 30,000 gpd average daily flow without requiring extensive retrofitting or building a parallel treatment train. The Zenon, ZenoGem system is a combination of biological treatment and membrane separation. In the existing system, the wastewater from the Casino is pumped to a 15,000 gallon holding tank. It is then pumped into a concrete bioreactor where it is aerated and bacteria breaks down the wastewater. The wastewater is then filtered through the ZeeWeed membranes. It is then polished with activated carbon and disinfected with a UV system and recycled back to the Casino toilets, with excess flow disposed of in the existing leachfield. There are currently three ZeeWeed membrane "cartridges" in the bioreactor. The bioreactor basin was designed to allow for the addition of three more cartridges without having to resize the basin. This would effectively double the size of the treatment system, giving it a capacity to handle 30,000 gpd.

Additional pumps, blowers, and piping would have to be added to handle 30,000 gpd and a parallel carbon polishing system would have to be added. Upgrades of the electrical system would also be required. The UV disinfection systems would also required a larger impeller on the existing pump, but the system itself is sufficiently sized to handle the new flow. This can all be accommodated in the existing building. The existing treatment system has also been experiencing flows close to the peak flow capacity of the treatment plant, and additional tankage may be required at the headworks to allow the peak flows to be equalized if additional flows are added in the future. For treatment capacity beyond 30,000 gpd average flow (60,000 gpd peak flow), extensive modifications would be required to potentially create a parallel treatment train to provide the needed capacity. How the treatment plant would be expanded should be assessed further when a final design of the proposed facilities is performed based on the Rancheria's specific development plan.

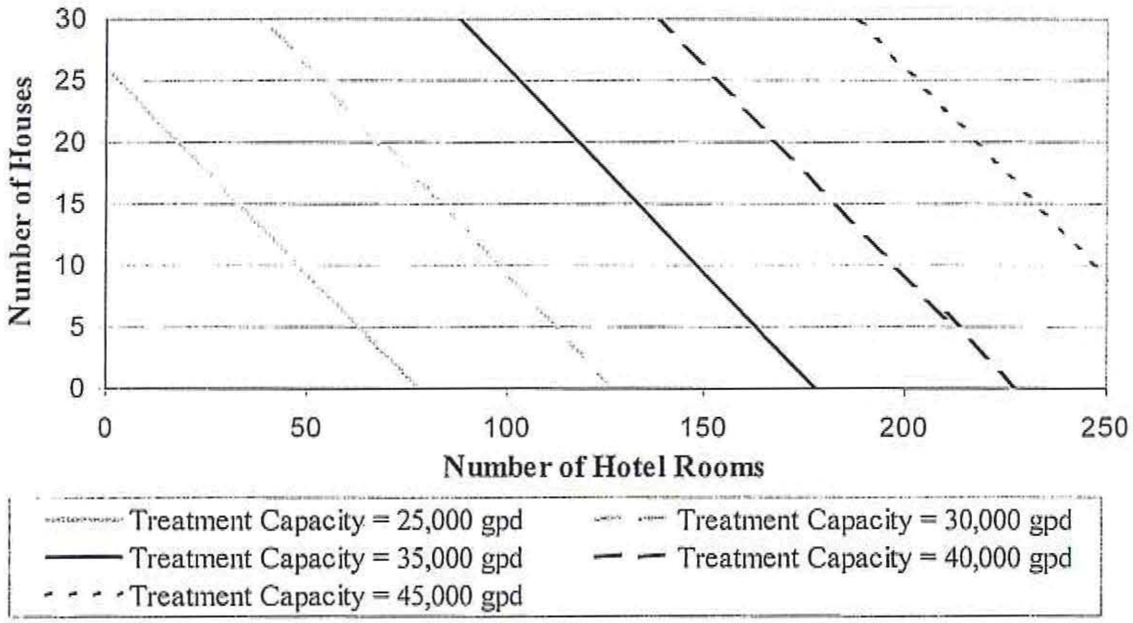
INTRODUCTION

Previous chapters developed the potential wastewater treatment flow, and disposal flow based on the relationship between how many homes may be connected to a centralized treatment system, and how many hotel rooms may be developed. Treatment regulations were also considered along with potential disposal options, and it was concluded that use and expansion of existing leachfields, or an ocean outfall are potentially feasible disposal options. Treatment options were considered as well and it was concluded that use and expansion of the existing Zenon plant could meet potential flow requirements as well as treatment requirements for the potential disposal options. In this chapter, the overall development conditions are summarized in one place to lead into the development of costs in the following chapter and the comparison of alternatives in the final chapter.

WASTEWATER FLOW CAPACITY SUMMARY

The projected wastewater flows were developed in Chapter 3 and a summary of the relationships is presented in Figure 7.1.

**Figure 7.1: Treatment Capacity Relationship Between Number of Cher-Ae Heights Houses Served and Proposed New Hotel Rooms
Trinidad Rancheria**

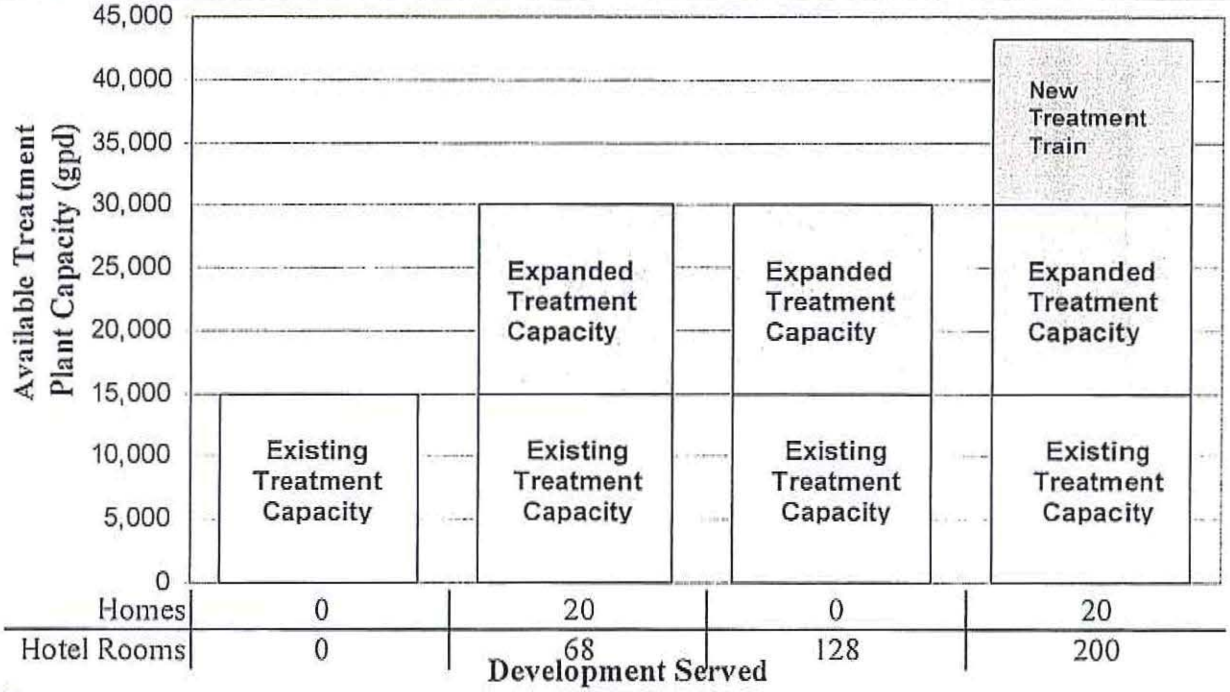


Note: Assumes flows from the future Casino (15,000 gpd average) plus the Tribal Office, clinic complex, two homes currently connected to the community leachfield, and gas station/mini-mart are served (for a total required treatment capacity of 17,200) in addition to the combination of homes served and hotel rooms developed.

WASTEWATER TREATMENT CAPACITY SUMMARY AND ANALYSIS

Figure 7.1 is used to determine projected future flows that will requirement treatment at the Zenon plant. Different combinations of development can lead to different projected flows. The expansion requirements of the treatment plant were also examined relative to different combinations of development. Figure 7.2 shows a relationship between the stages in treatment plant capacity and what combinations of developments may be served at the various stages. For example, if the existing treatment plant was expanded to its maximum size of 30,000 gpd, it could serve existing development plus the gas station/mini-mart and either a 134-room hotel and no homes, or a 74 room hotel and all 20 Cher-Ae Heights homes. The projected flow for Cher-Ae Heights including the Casino/Restaurant, Tribal Office, former clinic building, existing homes, a 200 room hotel, and a gas station/mini-mart is approximately 42,600 gpd. Thus to treat all wastewater, significant expansion of the existing treatment plant would be needed.

Figure 7.2: Developed Treatment Capacity Versus Development Served
Trinidad Rancheria



Notes:

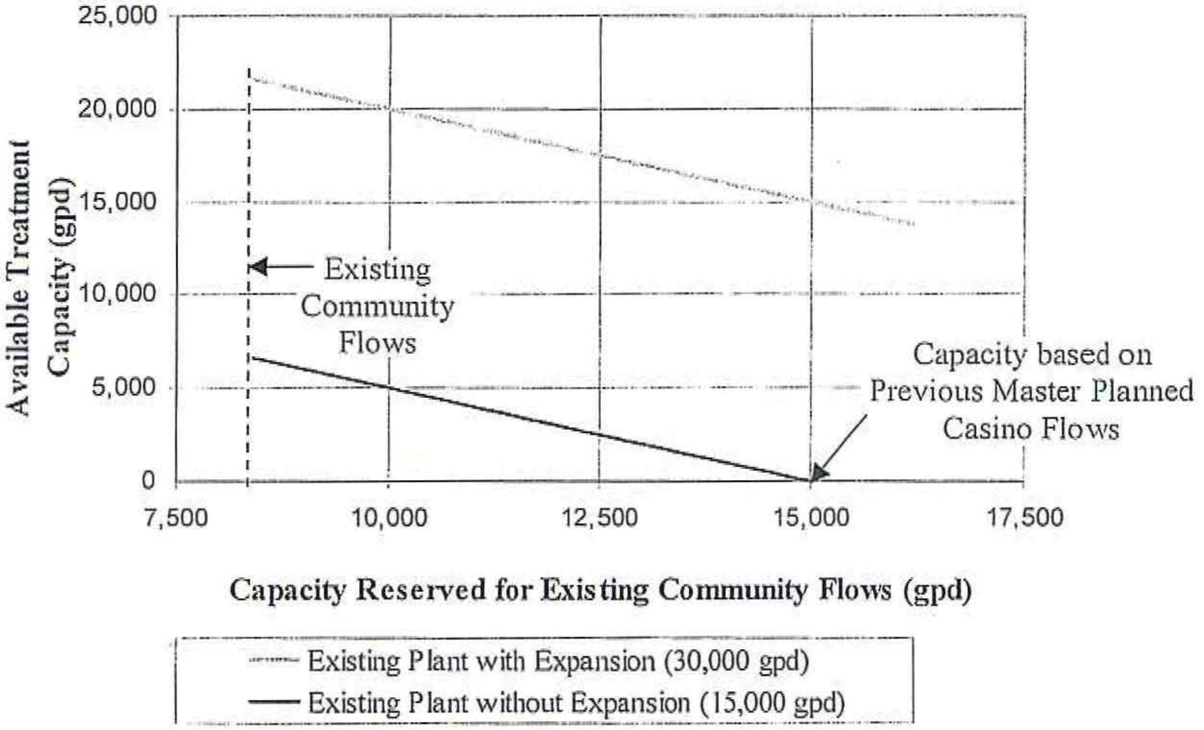
The capacity of the existing treatment plant is 15,000 gpd, which is all reserved for the Casino at Master Plan build out flows. At an expanded capacity of 30,000 gpd, assuming the Tribal Office, clinic complex, and two homes currently connected to the community leachfield, the Casino at build out flows, and a gas station/mini-mart are served, there are many different possible combinations of number of Cher-Ae Heights homes served or hotel room developed. To serve all 20 homes and a 200 room hotel, as well as the other development mentioned above, a treatment capacity of 43,200 gpd would be needed, which would require the construction of a new treatment train.

DEVELOPMENT WITHIN EXISTING WASTEWATER TREATMENT CAPACITY

This section evaluates what types of new and existing development could be served with the existing treatment plant or the plant at it maximum expanded capacity without the assumption that capacity must be reserved for the Casino master plan build out flows. This is in contrast to the previous section where it was assume that capacity must be reserved for Casino master plan build out flows.

Figure 7.3 shows the available treatment capacity with increasing amounts of capacity reserved for existing community flows, which include the Casino, Tribal Office, clinic complex, and two homes currently connected to the community leachfield. Figure 7.3 shows the available capacity for the existing plant and for the plant expanded to its maximum capacity of 30,000 gpd.

Figure 7.3: Treatment Capacity Relationship Between Reserved Capacity and Available Capacity
Trinidad Rancheria



Note: Existing community flows include the Casino, Tribal Office, clinic complex, and two homes currently connected to the community leachfield. The increase in reserve capacity is attributable to the master planned Casino flows. No growth is assumed for the other community flows.

Figure 7.3 shows that both as reserve capacity is reduced and as the treatment plant are expanded, the available treatment capacity increases. The options for using the available treatment capacity include serving either the 20 existing homes not currently on the community leachfield or devoting capacity to new development for a hotel and gas station/mini-mart, or both. Table 7.1 presents the potential treatment options under four scenarios that are part of Figure 7.3. Two options are presented for the existing treatment plant at minimum reserve capacity and maximum reserve capacity. The same two options are presented for an expanded treatment plant.

**Table 7.1: Potential Treatment Options for Proposed and Existing Development
Trinidad Rancheria**

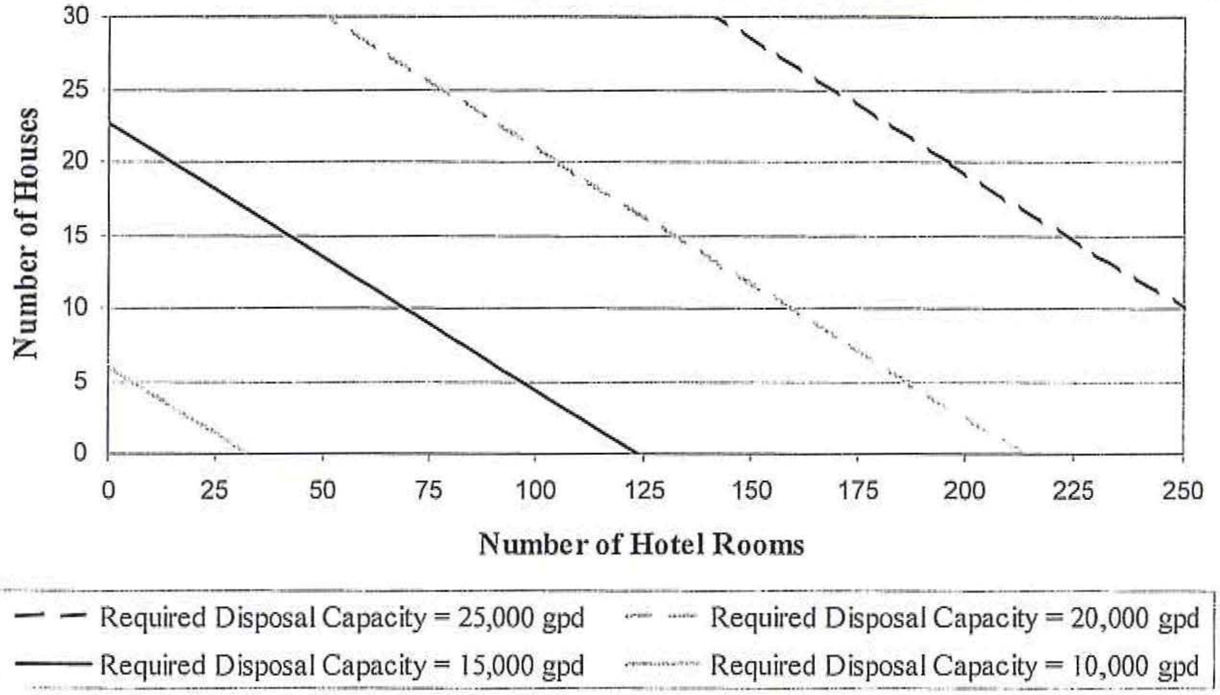
	Existing Treatment Plant Capacity (15,000 gpd)		Expanded Treatment Capacity (30,000 gpd)	
	Focus on Existing Homes Served	**Focus on Development**	**Focus on Existing Homes Served**	**Focus on Development**
Maximum Reserve Capacity (Casino at master planned flows)	Casino only, no other existing development	No new development	20 Homes and 68 Hotel Rooms plus a Gas Station/ Mini-mart	128 Hotel Rooms plus a Gas Station/ Mini-mart
Minimum Reserve Capacity (Reserve Capacity for Existing Community Flows only)	20 homes and no Hotel or Gas Station/ Mini-mart	56 Hotel Rooms plus Gas Station/ Mini-mart	20 Homes and 146 Hotel Rooms plus a Gas Station/ Mini-mart	200 Hotel Rooms plus a Gas Station/ Mini-mart and 2 Homes

Note: Existing community flows are assumed to be served in all scenarios and include the Casino, Tribal Office, clinic complex, and two homes currently connected to the community leachfield (8,400 gpd).

WASTEWATER DISPOSAL CAPACITY SUMMARY

The previous section addressed how required treatment capacity would be provided. This section addresses how disposal capacity is to be provided. The projected wastewater disposal flows were developed in Chapter 3 and a summary of the relationships is presented in Figure 7.4. Figure 7.4 is based on disposal of flows from the Casino at build out conditions plus the Tribal Office, clinic complex, two homes that are currently connected to the community leachfield, and gas station/mini-mart.

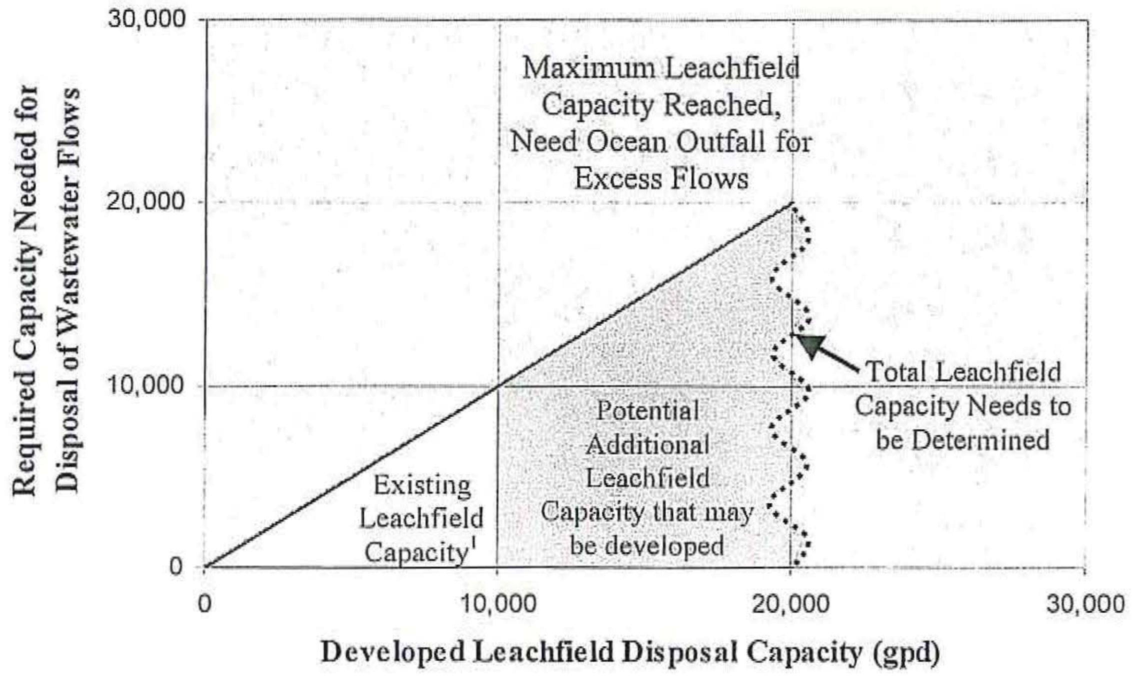
Figure 7.4: Disposal Capacity Relationship Between Number of Cher-Ae Heights Houses Served and Proposed New Hotel Rooms
Trinidad Rancheria



Notes:
This graph assumes that 6,000 gpd of disposal capacity is reserved for the Casino at Master Plan build out flows (15,000 gpd with 60% of the water recycled). This graph also assumes that the Tribal Office, clinic complex, and two homes currently connected to the community leachfield, and the gas station/mini-mart are served with a combined disposal flow of 2,200 gpd (assumes no water recycling). This equates to a base disposal flow of 8,200 gpd. The remaining flow is distributed between homes served and hotel rooms developed. To serve the remaining 20 homes and a 200 room hotel, a disposal capacity of 25,200 gpd would be needed.

Use and expansion of the community leachfield system and ocean outfall disposal were the two viable options developed. As will be seen in the following chapter, development of leachfield capacity is less expensive than an ocean outfall. However, leachfield capacity can be a limiting factor in Rancheria development and ocean outfall capacity may be needed. Ocean outfall capacity is needed when leachfield capacity is exceeded and this relationship is shown in Figure 7.5

Figure 7.5: Relationship Between Required Disposal Capacity, Developed Leachfield Capacity, and the Need for Additional Disposal through an Ocean Outfall
Trinidad Rancheria



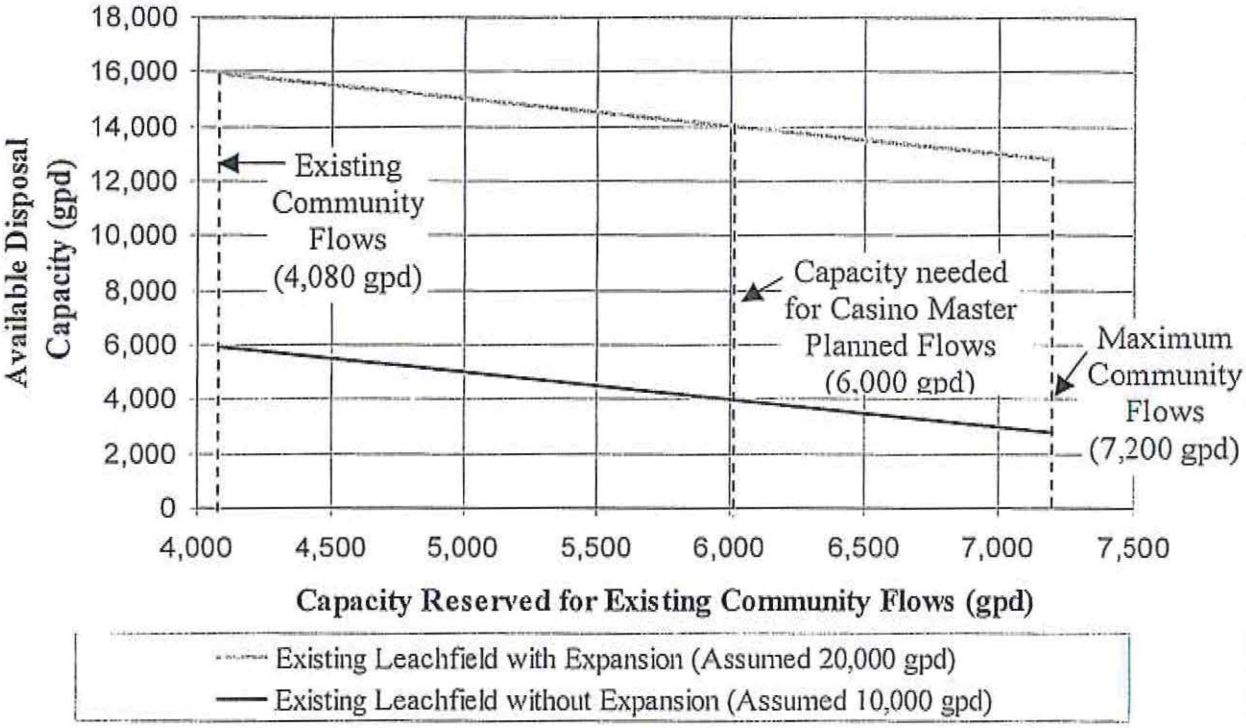
[1] Assumed to be 10,000 gallons per day. Actual capacity must be verified.

DEVELOPMENT WITHIN EXISTING AND POTENTIALLY EXPANDED LEACHFIELD DISPOSAL CAPACITY

The previous section looked at what combinations of new and existing development could be served within existing and expanded leachfield disposal capacities. The analysis assumed that capacity was always reserved for Casino at master plan build out flows. This section evaluates what types of new and existing development could be served with the existing leachfield with an assumed disposal capacity of 10,000 gpd and a potentially expanded leachfield system with an assumed capacity of 20,000 gpd without the assumption that capacity is reserved for the Casino master plan build out flows.

Figure 7.6 shows the available disposal capacity with increasing amounts of capacity reserved for existing community flows, which include the Casino, Tribal Office, clinic complex, and two homes currently connected to the community leachfield.

Figure 7.6: Disposal Capacity Relationship Between Reserved Capacity and Available Capacity
Trinidad Rancheria



Note: Existing community flows include the Casino, Tribal Office, clinic complex, and two homes currently connected to the community leachfield. The increase in reserve capacity is attributable to the master planned Casino flows. At the maximum community flows, the Casino is assumed to be at its master planned design flow. No growth is assumed for the other community flows.

Figure 7.6 shows that both as reserve capacity is reduced and as the potential leachfield capacity is expanded the additional disposal capacity increases. The options for using the available disposal capacity include serving either the 20 existing homes not currently on the community leachfield or devoting capacity to new development for a hotel and gas station/mini-mart, or both. Table 7.2 presents the potential treatment options under four scenarios that are part of Figure 7.6. Two capacity options are presented for disposal, the existing capacity assumed to be 10,000 gpd and a potential assumed capacity of 20,000 gpd. The development potential for both these options for minimum and maximum Casino reserve disposal capacity is also included.

Table 7.2: Potential Disposal Options for Proposed and Existing Development Trinidad Rancheria

	Assumed Existing Disposal Capacity (10,000 gpd)		Potential Assumed Disposal (20,000 gpd)	
	Focus on Existing Homes Served	Focus on Development	Focus on Existing Homes Served	Focus on Development
Maximum Reserve Capacity (Casino at master planned flows)	9 homes and no Hotel or Gas Station Mini-mart	33 Hotel Rooms plus a Gas Station/ Mini-mart	20 Homes and 105 Hotel Rooms plus a Gas Station/ Mini-mart	200 Hotel Rooms plus a Gas Station/ Mini-mart and 3 Homes
Minimum Reserve Capacity (Reserve Capacity for Existing Community Flows only)	20 homes and no Hotel or Gas Station/ Mini-mart	89 Hotel Rooms plus a Gas Station/ Mini-mart	20 Homes and 162 Hotel Rooms plus a Gas Station/ Mini-mart	200 Hotel Rooms plus a Gas Station/ Mini-mart and 13 Homes

Note: Existing community flows are assumed to be served in all scenarios and include the Casino, Tribal Office, clinic complex, and two homes currently connected to the community leachfield (4,080 gpd).

STAGED DEVELOPMENT WITHIN EXISTING TREATMENT PLANT AND LEACHFIELD CAPACITIES

The Trinidad Rancheria has several options for connecting new and existing development to their community treatment and disposal systems, depending on how much capacity is reserved for the Casino at master planned flows and which parts of their system are expanded. Figures 7.3 and 7.6 showed the variations in available treatment and disposal capacity depending on the amount of capacity that was reserved for the Casino. Tables 7.1 and 7.2 took that information and added figures on the types of existing and new development that could be served with the available capacities, with a focus on either connecting existing homes or developing a new hotel and gas station/mini-mart.

The information from the previous tables was combined in Table 7.3. Table 7.3 shows 3 different scenarios for the use of existing and expanded treatment and disposal facilities at the Casino. The first scenario assumes that the treatment plant and leachfield are not expanded. In this case the amount of new and existing development that can be served is limited by the treatment capacity. The second scenario assumes that the treatment plant is expanded, but the leachfield is not. In this case the amount of new and existing development that can be served is limited by the disposal capacity of the existing leachfield. In the final scenario, it is assumed that the treatment plant and leachfield are expanded. Assuming that leachfield disposal capacity could eventually be expanded to handle a total flow of 20,000 gpd, it is the expanded treatment plant of capacity of 30,000 gpd that limits the new and existing development served. For more specific information on the development options under these scenarios, see Table 7.3.

Table 7.3: Potential Treatment and Disposal Options for Proposed and Existing Development
Trinidad Rancheria

	TREATMENT PLANT LIMITING Existing Treatment Plant (15,000 gpd) Assumed Existing Disposal Capacity (10,000 gpd)		LEACHFIELD LIMITING Expanded Treatment Plant (30,000 gpd) Assumed Existing Disposal Capacity (10,000 gpd)		TREATMENT PLANT LIMITING Expanded Treatment Plant (30,000 gpd) Expanded Disposal Capacity (15,000 gpd to 19,000 gpd)	
	Focus on Existing Homes Served	**Focus on Development**	**Focus on Existing Homes Served**	**Focus on Development**	**Focus on Existing Homes Served**	**Focus on Development**
Maximum Reserve Capacity (Casino at master planned flows)	Casino only, no other existing development	No new development	9 homes and no Hotel or Gas Station Mini-mart	33 Hotel Rooms plus a Gas Station/ Mini-mart	20 Homes and 68 Hotel Rooms plus a Gas Station/ Mini-mart	128 Hotel Rooms plus a Gas Station/ Mini-mart
Minimum Reserve Capacity (Reserve Capacity for Existing Community Flows only)	20 homes and no Hotel or Gas Station/ Mini-mart	56 Hotel Rooms plus Gas Station/ Mini-mart	20 homes and no Hotel or Gas Station Mini-mart	89 Hotel Rooms plus a Gas Station/ Mini-mart	20 Homes and 146 Hotel Rooms plus a Gas Station/ Mini-mart	200 Hotel Rooms plus a Gas Station/ Mini-mart and 2 Homes

Note: Existing community flows are assumed to be served in all scenarios and include the Casino, Tribal Office, clinic complex, and two homes currently connected to the community leachfield (4,080 gpd).

INTRODUCTION

Potential development conditions were summarized in the previous chapter. Costs for various levels of expansion are considered in this chapter and alternative scenarios are considered in the following chapter.

Probable costs for the following treatment and disposal options are develop in this chapter.

Treatment Options

- Utilize Existing Treatment Plant
- Expand Treatment Plant
- Construct a Parallel Treatment Train

Disposal Options

- Construction of a Community Leachfield
- Construction of an Ocean Outfall

In addition to treatment and disposal costs, an estimate of the collection system costs for conveying wastewater from a new hotel and gas station/mini-mart and from the Cher-Ae Heights homes is presented. In addition to collection system costs, there would be a cost associated with the installation of a dual plumbing system in the hotel to recycle wastewater flows, which should be considered when evaluating potential hotel costs. In addition, if the existing homes are not connected to a new treatment system, there would be costs associated with repair and replacement of the existing septic and leachfield systems over time as they fail.

Each of these major cost areas is considered in the following sections.

TREATMENT OPTIONS

The treatment options are relatively straightforward. The first is just to utilize the existing capacity at the Zenon treatment plant. The second would be to expand the plant to double its capacity using the built-infrastructure that was included in the original design.

Utilize Existing Treatment Plant

The existing treatment system should be able to accommodate 15,000 gpd for the proposed facilities without any additional costs. Thus, there are no additional capital costs for utilizing the full capacity of the existing treatment plant. There would be minor increases in operations and maintenance costs, which are not included here.

Expand Existing Treatment Plant

The expansion to a 30,000 gpd plant would require relatively minor capital costs when compared to the construction of a new plant. Our estimate of probable costs for expansion of the existing treatment plant is presented in Table 8.1. Additional operating costs would be associated with additional electrical consumption, sludge disposal, and carbon usage, however these costs would be incremental, and are not included here.

Table 8.1: Estimated Capital Costs for Treatment Plant Expansion Trinidad Rancheria

Description	Quantity	Unit	Unit Cost	Total Cost
ZeeWeed Cartridges	3	Each	$10,000	$30,000
Blower	1	Each	$32,000	$32,000
UV Pump Impeller Replace	1	Lump Sum	$2,000	$2,000
Recirculation Pump	1	Each	$5,000	$5,000
Carbon System	1	Lump Sum	$5,000	$5,000
			Subtotal	**$74,000**
			15% Contingency	$11,100
			25% Engineering	$18,500
			TOTAL	**$103,600**
			Rounded to	**$110,000**

Construct a Parallel Treatment Train

If the Rancheria wanted to treat the wastewater from all 20 existing homes and from a 200 room hotel, they would need a treatment capacity of 42,600 gpd. This would, exceed the capacity of the existing treatment plant, even with the incremental expansion capabilities. A parallel treatment train would need to be constructed, which would require new tankage, pumps, treatment units, and support facilities. The cost of such an expansion would depend on how large the Rancheria would like to expand the plant. There would be some shared facilities with the existing plant so there would be some economies of scale relative to the cost for the existing plant. The potential need to expand the treatment plant and associated costs should be determined after the Rancheria has considered development scenarios further.

DISPOSAL COSTS

Two disposal methods were investigated in this assessment. The costs for construction of a community leachfield and the construction of an ocean outfall are presented in this section.

Costs for Construction of a Community Leachfield

The costs for developing a community leachfield were estimated based on doubling the existing capacity. As previously discussed, the amount of capacity that can be developed depends on the areas that are available for development and their characteristics. The areas available for development depend on land use decisions. For this cost analysis it is assumed that an additional 10,000 gallons per day of leachfield capacity is developed. Based on the design of the original community leachfield, it is assumed that a new leachfield can percolate approximately 5 gpd per linear foot. This means that 2,000 feet of leach trench will be required. It is estimated that this will require 25,000 square feet plus additional areas for setbacks or other site constraints. Our opinion of the probable capital costs for constructing expanded community leachfields and piping to them is provided in Table 8.2. The actual cost of leachfield construction will depend on where the leachfields are located with respect to the new facilities, actual soil and groundwater conditions, and other site development issues.

The existing Casino leachfield has also experienced some performance problems from plugging, due to untreated effluent and grease that were discharged to the new leachfield for several months before the treatment plant was completed. The existing leachfield should be cleaned and then the capacity should be evaluated to determine the actual operational capacity. The costs for cleaning and evaluating the existing leachfield are not included in the cost estimate in Table 8.2.

Table 8.2: Estimated Capital Costs for the Construction of Community Leachfields (Capable of Handling Flows from 200-room Hotel & Gas Station)
Trinidad Rancheria

Description	Quantity	Unit	Unit Cost	Total Cost
Force Mains	1,000	LF	$40	$40,000
Leachfield Lines	2,000	LF	$20	$40,000
Land Preparation and Cleanup	1	LS	$25,000	$25,000
			Subtotal	**$105,000**
			15% Contingency	$16,000
			25% Soil Sciences, Field Research, Engineering	$26,000
			TOTAL	**$147,000**
			Rounded to	**$150,000**

Costs do not include additional pump station and control systems at the treatment plant.
Costs do not include demolition or relocation of existing improvements.

Costs for Construction of an Ocean Outfall

An ocean outfall disposal option is not constrained by capacity like the community leachfield system would be. The costs developed for an ocean outfall could handle flows from all existing and proposed development including all homes at Cher-Ae Heights and a 200 room hotel or potentially even more if the Rancheria wished. The major cost involved with the construction of an ocean outfall is the development of a pipeline from Cher-Ae Heights to the ocean discharge point and then a pump station.

The NCRWQCB often requires that outfalls be extended from the shore to a point where the ocean depth is 60 feet below mean sea level or more. Near Cher-Ae Heights the pipeline would have to be approximately 7,600 feet long to reach an ocean depth of 60 feet. It is possible that the Rancheria could reduce the cost of this option by obtaining approval to terminate the outfall at a shallower depth. This would require a study to demonstrate that the rate of mixing and dilution required by the NCRWQCB was met.

Our opinion of probable costs for an ocean outfall are presented in Tables 8.3 and 8.4. Table 8.3 assumes a discharge pipe 2,000 feet long could be permitted. Table 8.4 assumes that the discharge pipe would have to be 7,600 feet long. As can be seen from these two tables, the cost dramatically increases for the longer pipe length.

Table 8.3: Estimated Capital Costs for the Construction of Ocean Outfall with 2,000 Ft Discharge Pipe
Trinidad Rancheria

Description	Quantity	Unit	Unit Cost	Total Cost
Pump Stations	1	Each	$150,000	$150,000
Force Mains	1,000	LF	$35	$35,000
Outfall Piping	2,000	LF	$40	$80,000
Directional Drilling	2,000	LF	$200	$400,000
			Subtotal	**$665,000**
			15% Contingency	$100,000
			25% Engineering	$165,000
			25% Permitting	$165,000
			15% Special Oceanographic Studies	$100,000
			TOTAL	**$1,195,000**
			Rounded to	**$1,200,000**

Table 8.4: Estimated Capital Costs for the Construction of Ocean Outfall with 7,600 Ft Discharge Pipe
Trinidad Rancheria

Description	Quantity	Unit	Unit Cost	Total Cost
Pump Stations	1	Each	$150,000	$150,000
Force Mains	1,000	LF	$35	$35,000
Outfall Piping	7,600	LF	$40	$304,000
Directional Drilling	7,600	LF	$200	$1,520,000
			Subtotal	**$2,009,000**
			15% Contingency	$301,000
			15% Engineering	$301,000
			10% Permitting	$200,000
			5% Special Oceanographic Studies	$100,000
			TOTAL	**$2,911,000**
			Rounded to	**$3,000,000**

The cost of an ocean outfall with a 2,000 ft pipe is considerably higher than the cost of a community leachfield. The gap between the leachfield cost and the outfall cost for a 7,600 ft pipe is even greater. Although an outfall could provide ample disposal capacity, it is potentially very costly, could be difficult to permit, and may generate public controversy and opposition.

COLLECTION SYSTEM COSTS

The cost for transporting the wastewater from the gas station and hotel or from Cher-Ae Heights residences to a central treatment system would depend on their location and whether the flow can be conveyed by gravity or whether it would have to be pumped. There are some low areas at the Rancheria and for the purposes of this conceptual analysis it is assumed that the two pump stations would be needed. Our opinion of the probable cost for collection and transport of wastewater from the hotel and gas station/mini-mart to the treatment plant are present in Table 8.5. These costs assume that the flows would have to be pumped to the treatment plant.

Table 8.5: Estimated Capital Costs for Hotel and Gas Station Collection System Trinidad Rancheria

Description	Quantity	Unit	Unit Cost	Total Cost
Pump Station at Hotel & Gas Station	2	Each	$75,000	$150,000
Forcemain	2,000	LF	$40	$80,000
			Subtotal	**$230,000**
			15% Contingency	$35,000
			15% Engineering	$35,000
			TOTAL	**$300,000**
			Rounded to	**$300,000**

Our opinion of the probable cost for collection and transport of wastewater from the Cher-Ae Heights homes to the treatment plant are present in Table 8.6. These costs assume that the flows would have to be pumped to the treatment plant from two new pump stations.

Table 8.6: Estimated Capital Costs for Residential Collection System
Trinidad Rancheria

Description	Quantity	Unit	Unit Cost	Total Cost
Pump Station	2	Each	$75,000	$150,000
Forcemains	1,000	LF	$40	$40,000
Gravity Mains	2,000	LF	$50	$100,000
			Subtotal	**$290,000**
			15% Contingency	$43,500
			15% Engineering	$43,500
			TOTAL	**$377,000**
			Rounded to	**$400,000**

The following chapter provides a summary of alternatives and overall recommendations.

INTRODUCTION

This report is intended as a planning study to provide the Rancheria with information and planning tools to make informed decisions concerning wastewater treatment and disposal options for existing and potential future facilities. As a planning document, this work includes conceptual level analysis of the relationships that affect the decision making process. The Rancheria should utilize the findings of this report to focus their efforts on the preferred development strategy and the steps necessary to further the implementation process. Site and project specific configuration and cost information along with potential permitting requirements should be evaluated based on the Rancheria's specific development plan.

ALTERNATIVE SUMMARY AND RECOMMENDATIONS

The Trinidad Rancheria is considering the addition of a new hotel as well as a new gas station/min-mart. Existing homes on septic systems could also be served from an alternative system. The addition of these facilities requires that the Rancheria plan for the treatment and disposal of the wastewater generated at these facilities. The Rancheria has a number of options available to treat and dispose of their wastewater. For planning purposes, we have created a number of alternatives for comparison purposes that are summarized in Table 9.1.

IMPLEMENTATION STRATEGY

The construction of a hotel or other development, will require advanced planning to deal with the wastewater infrastructure requirements. To further the implementation process, we recommend the following steps in this order of priority:

- Clean existing leach lines at the Casino leachfield
- Perform a study to evaluate the capacity of the existing Casino leachfield
- Evaluate all property at Cher-Ae Heights for leachfield potential
- Complete strategic development planning in part based on the findings of this study and the result of evaluation of leachfield potential
- Create Development strategy that may include phasing of connections to the wastewater system and expansion of treatment and disposal capacity
- Design, and permit as needed, infrastructure improvements
- Construct infrastructure improvements prior to completion of the new developments

Table 9.1: Summary of Alternative Costs and Issues
Trinidad Rancheria

Alt#	Development Served	Treatment Option	Disposal Option	Capital Cost for Treatment and Disposal	Degree of Permitting	Comments
1	Casino, Tribal Office, clinic complex, two houses	Existing treatment capacity at 15,000 gpd	Discharge to existing Casino Leachfield	$0	None (no change)	The master planned future average flow for the Casino plus the other existing developments use existing capacity.
2	Casino, Tribal Office, clinic complex, two houses, plus gas station/m-m, and a 44 room hotel (or 8 Cher-Ae Heights homes)	Upgrade existing treatment capacity to 30,000 gpd	Discharge to existing Casino Leachfield	$110,000	None (Assumes no Federal Oversight required)	For this alternative the number of hotel rooms or homes served is limited by the Casino leachfield disposal capacity.
3	Casino, Tribal Office, clinic complex, two houses, plus gas station/m-m, and a 134 room (or 74 room hotel and 20 Cher-Ae Heights homes)	Upgrade existing treatment capacity to 30,000 gpd	Increase Discharge Capacity by adding new leachfield for 5,000 gpd	$460,000	None (Assumes no Federal Oversight required)	This alternative is limited by treatment capacity. In addition, it may be difficult to find sufficient leachfield area. If not enough area can be found, development needs to be reduced or an ocean outfall considered.
4	Casino, Tribal Office, clinic complex, two houses, plus gas station/m-m, and a 200 room and 5 Cher-Ae Heights homes (or 116 room hotel and 20 Cher-Ae Heights homes)	Upgrade existing treatment capacity to 30,000 gpd, and build a new treatment train	Increase Discharge Capacity by adding new leachfield for 10,000 gpd	$460,000 + cost of additional treatment facilities	None (Assumes no Federal Oversight required)	It may be difficult to find sufficient leachfield area. If not enough area can be found, development needs to be reduced or an ocean outfall considered.
5	Casino, Tribal Office, clinic complex, two houses, plus gas station/m-m, and a 200 room and 20 Cher-Ae Heights homes	Upgrade existing treatment capacity to 30,000 gpd, and build a new treatment train	Ocean outfall Discharge	$1,460,000 to $3,460,000 + cost of additional treatment facilities	Difficult (Assumes state and local involvement)	This option has ample disposal capacity for currently proposed development. However, the cost is much higher than the other alternatives, and treatment plant expansion would be required to treat the higher flows.

Appendix A

Septic System Survey Summary Table

				SITE DESC	NFORMATION						
#	Address	Street	Area	Assig	of ch d ft.)	Leach Field Map?	Slope of Leach Field (%)	Reserve Area Available?	Soil Class	Depth to Limiting Condition (feet)	Type of Limiting Condition
1	1901	Pishka Ct	A	David Wea	0	yes	3	yes	2	4	groundwater
2	1902	Pishka Ct	A	Carleen Br	x 2	yes	3	yes	2	5	groundwater
3	1903	Pishka Ct	A	Tracy Cady	0	yes	0-1	yes	2	4	groundwater
4	1904	Pishka Ct	A	Dwayne Du	0	yes	1	yes	2	5	groundwater
5	1905	Pishka Ct	A	Andrew La	0	yes	8	yes	2	6	groundwater
6	1906	Pishka Ct	A	Deborah He	0	yes	0-1	yes	2	6	groundwater
7	1907	Pishka Ct	A	Vivian Lewi	0	yes	3	yes	2	6	groundwater
8	109	Twe-Goh Ct	A	David Silva	0	yes	2	yes	2	8.5	groundwater
9	112	Twe-Goh Ct	A	Vacant (Trib		n/a	n/a	n/a	2	9	groundwater
10	115	Twe-Goh Ct	A	Michael Be	000	yes	0-2	yes	2	8.5	groundwater
11	116	Twe-Goh Ct	A	Jessie Quin	000	yes	3	yes	2	>9	groundwater
12	119	Twe-Goh Ct	A	Deanna Ch	000	yes	5	yes	2	8.5	groundwater
13	122	Twe-Goh Ct	A	Garth Sund	000	yes	#	#	2	#	#
14	1	Cher-Ae Ln	R	Tribal Offic		no	2-4	no			
15	15	Cher-Ae Ln	R	Cathy Silva		yes	5-10	no	2		
16	101	Cher-Ae Ln	R	Marian Seid	)	yes	3	no	2	1.5	groundwater
17	9	Ma-We-Mor-View Ln	R	UIHS		no	2-4	no			
18	28	Ma-We-Mor-View Ln	R	David Letso	)	yes	2	no	2	5	groundwater
19	71	Ma-We-Mor-View Ln	R	Christensen		no	2-4	no			
20	131	Ma-We-Mor-View Ln	R	Louis E. Du		no	n/a	yes	3	3	groundwater
21	131-C	Ma-We-Mor-View Ln	R	Louis G. Du		no	n/a	yes	3	3	groundwater
22	25	Pa-Pah Ln	R	Nicole Van		yes	6	no	2	4	bedrock
23	29	Pa-Pah Ln	R	Juanita Sa	)	yes	4	no	3	2	groundwater
24	33	Pa-Pah Ln	R	Larry Letson	0	yes	5	no	2	2	groundwater
25	67	Pa-Pah Ln	R	Sonya Rhod	0	yes	4	yes	2	9	bedrock
26	72	Pa-Pah Ln	R	Carol & Keit		no	4	no	2 to 1	4	groundwater
27	73	Pa-Pah Ln	R	Vera Weath		no	3	no	2	2.5	groundwater
28	78	Pa-Pah Ln	R	Kim Martine	0	yes	2	yes	2 to 1	4	groundwater
29	821	Scenic	R	Lisa Sundbe	0	yes	8	yes	2	3	groundwater
30	824	Scenic	R	Rose Joy Su		no	unk.	no	2	2	groundwater
31	888	Scenic	R	Mark Sundb		no		no	2	2.5	groundwater
32	930	Scenic	R	Joannie Ber		yes	n/a	no	n/a	n/a	n/a
33	950	Scenic	R	Lilian M. Qu		yes	4	no	2	5.5	groundwater
34	80	Ter-Ker-Coo Ln	R	Shirley Laos	C0	yes	4	yes	3	2.5	groundwater
35	85	Ter-Ker-Coo Ln	R	Ruby Rolling							
36	110	Wa-Ray Rd	R	Myra Lowe	)	yes	4	no	2	2	groundwater
37	118	Wa-Ray Rd	R	Fred Lambe		yes	2	no	3	2	groundwater
38	120	Wa-Ray Rd	R	Wendy Lam		no	8	no	3	2	groundwater
39	101	Kay-Win Rd	W	Ken King Sr.	000	yes	5%	yes	2	>12	groundwater
40	102	Kay-Win Rd	W	Gary Quinn							
41	106	Kay-Win Rd	W	William C. C							
42	874	N. Westhaven	W	Louise Dunc		yes	3%	yes	2	2	groundwater
43	11	Teh-Pah Ln	W	Sandra Dun	00	yes	0-3	yes			
44	12	Teh-Pah Ln	W	Glenn Quinn							
45	13	Teh-Pah Ln	W	Fred Lambe							
46	14	Teh-Pah Ln	W	Virginia McK							
47	15	Teh-Pah Ln	W	John E. Wal							

Area: A = Archer Road
R = Rancheria
W = Westhaven

Last Modified on 8/24/00

SITE SUITABILITY			
#	County Setbacks Met?	Ponding on Leachfield ?	Recommendations
1	yes	no	ediate action
2	yes	no	ediate action
3	yes	no	ediate action
4	yes	no	ediate action
5	yes	no	ediate action
6	yes	no	ence of smell problem
7	yes	no	ediate action
8	yes	no	h Basin Plan
9	n/a	n/a	h Basin Plan
10	yes	no	h Basin Plan
11	yes	no	h Basin Plan
12	no - break in slope	no	ediate action
13	#	#	ediate action
14	no - break in slope	yes	being reviewed by Winzler & Kelly
15	no - break in slope	no	ediate action
16	yes	no	k, take no other immediate action.
17	no - break in slope	yes	being reviewed by Winzler & Kelly
18	no - break in slope	no	h Basin Plan
19			h Basin Plan
20	no - break in slope	no	ail new leach field
21	no - break in slope	no	ail new leach field
22	no - ephemeral stream	no	ediate action
23	no - ephemeral stream	yes	ediate action
24	yes	no	ation is necessary
25	yes	no	h Basin Plan
26	yes	no	all new leach field
27	yes	no	ediate action
28	yes	yes	ediate action
29	no-unstable & slope break	no	ediate action
30	no - break in slope	no	ediate action
31	no-unstable & slope break	yes	ation is necessary
32	no-unstable & slope break	n/a	ibly relocate septic tank, analyze wetland system
33	no-unstable & slope break	no	ediate action
34	yes	no	, switch fields regularly
35			mell problem
36	no - break in slope	no	ediate action
37	no - break in slope	no	all new leach field
38	no - break in slope	no	ediate action
39	yes	no	h Basin Plan
40			h Basin Plan
41			h Basin Plan
42	yes	no	ediate action
43			h Basin Plan
44			h Basin Plan
45			h Basin Plan
46			h Basin Plan
47			h Basin Plan

Area: A = Archer Road
R = Rancheria
W = Westhaven

Last Modified on 8/24/00

Appendix B

Casino Wastewater Treatment Plant Flows

TRINIDAD RANCHERIA
WASTE WATER TREATMENT PLANT
DAILY TOTALS - June 2002

		WATER METERS									E.T. METERS													
		WATER TANKS				PROCESS PUMPS				Total Flows	MEMBRANE BANK #1				MEMBRANE BANK #2				FLYGT PUMPS				U.V.	
		81A		81B		P35A		P35B			TRANSFER PUMP		PROCESS PUMP		TRANSFER PUMP		PROCESS PUMP		PUMP #1		PUMP #2			
		GAL.	TOTAL	GAL.	TOTAL	GAL.	TOTAL	GAL.	TOTAL	GAL.	MIN.	TOTAL	HOURS	TOTAL	MIN.	TOTAL	HOURS	TOTAL	HOURS	TOTAL	HOURS	TOTAL	HOURS	TOTAL
PREVIOUS DAY																								
TIME:	DATE																							
	1																							
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	14																							
	15																							
	16																							
	17	7930	7930	22120	22120	1070	1070	129750	129750	130820	1400.2	1400.2	6.6	6.6	1904.2	1904.2	49.8	49.8	153.5	153.5	4499.4	4499.4	158.19	158.19
	18	9800	1870	26860	4740	1070	0	142000	12250	12250	1536.4	136.2	6.7	0.1	2040.4	136.2	49.9	0.1	156	2.5	4500.9	1.5	180.94	22.75
	19	11640	1840	31670	4810	1070	0	156850	14850	14850	1707.8	171.4	12.2	5.5	2159.3	118.9	50	0.1	157.9	1.9	4501.7	0.8	206.72	25.78
	20	11700	60	31790	120	1070	0	163430	6580	6580	1811.2	103.4	18.1	5.9	2227.4	68.1	50.6	0.6	158.2	0.3	4501.9	0.2	229.58	22.86
	21	11910	210	32670	880	1070	0	171950	8520	8520	1923.3	112.1	27.2	9.1	2332.3	104.9	58.3	7.7	158.6	0.4	4503.4	1.5	253.46	23.88
	22	11910	0	32670	0	1070	0	173300	1350	1350	1943.3	20	28	0.8	2352.9	20.6	59.5	1.2	158.6	0	4503.9	0.5	279.37	25.91
	23	11910	0	32760	90	1070	0	180300	7000	7000	2005	61.7	28.6	0.6	2414.5	61.6	65.9	6.4	159	0.4	4506.5	2.6	301.29	21.92
	24	13890	1980	36850	4090	1070	0	191780	11480	11480	2159.8	154.8	29.2	0.6	2525.7	111.2	76.2	10.3	161.2	2.2	4519.2	12.7	325.98	24.69
	25	15540	1650	40420	3570	1070	0	200710	8930	8930	2301.3	141.5	30.2	1	2533.2	7.5	84.4	8.2	164.3	3.1	4519.2	0	347.79	21.81
	26	15670	130	40810	390	1070	0	203020	2310	2310	2320.9	19.6	32.3	2.1	2587.9	54.7	86.4	2	164.8	0.5	4519.2	0	372.09	24.3
	27	16730	1060	43100	2290	1070	0	213610	10590	10590	2420.6	99.7	32.4	0.1	2687.7	99.8	96.1	9.7	165.9	1.1	4519.2	0	396.5	24.41
	28	18900	2170	48000	4900	1070	0	224030	10420	10420	2555.6	135	33.9	1.5	2822.7	135	105.6	9.5	168.4	2.5	4519.2	0	416.62	20.12
	29	20100	1200	50600	2600	1070	0	234230	10200	10200	2667.4	111.8	34.6	0.7	2934.5	111.8	115	9.4	170	1.6	4519.2	0	445.91	29.29
	30	21680	1580	54350	3750	1070	0	245120	10890	10890	2799.2	131.8	34.6	0	3066.3	131.8	124.9	9.9	170.9	0.9	4519.2	0	465.54	19.63
	TOTAL		21680		54350		1070		245120	246190		2799.2		34.6		3066.3		124.9		170.9		4519.2		465.54
	MAX.		7930		22120		1070		129750	14850		1400.2		9.1		1904.2		49.8		153.5		4499.4		158.19
	MIN.		0		0		0		1350	1350		19.6		0		7.5		0.1		0		0		19.63
	AVE.		1548.6		3882.1		76.4		17508.6	8874.6		199.9		2.5		219.0		8.9		12.2		322.8		33.3

Average does not include first reading of pumps

Day	Total Process Pump Flows
17	130820 gallons
18	12250
19	14850
20	6580
21	8520
22	1350
23	7000
24	11480
25	8930
26	2310
27	10590
28	10420
29	10200
30	10890

TRINIDAD RANCHERIA
WASTE WATER TREATMENT PLANT
DAILY TOTALS - JULY 2002

WATER METERS												E.T. METERS													
		WATER TANKS				PROCESS PUMPS				Total Flows GAL.	MEMBRANE BANK #1				MEMBRANE BANK #2				FLYGT PUMPS				U.V.	
		81A		81B		P35A		P35B			TRANSFER PUMP		PROCESS PUMP		TRANSFER PUMP		PROCESS PUMP		PUMP #1		PUMP #2			
		GAL.	TOTAL	GAL.	TOTAL	GAL.	TOTAL	GAL.	TOTAL		MIN.	TOTAL	HOURS	TOTAL	MIN.	TOTAL	HOURS	TOTAL	HOURS	TOTAL	HOURS	TOTAL	HOURS	TOTAL
PREVIOUS DAY		21680		54350		1170		245120			2799.2		34.6		3066.3		124.9		170.9		4519.2		465.54	
TIME:	DATE:																							
	1	28910	7230	68920	14570	1170	0	271990	26870	26870	2834.5	35.3	34.6	0	3456.2	369.9	149.7	24.8	171.3	0.4	4519.2	0	492.12	26.58
	2	29950	1040	71850	2930	1170	0	278870	6880	6880	3133.1	298.6	35.1	0.5	3535.8	79.6	156.1	6.4	172.5	1.2	4519.2	0	515.95	23.83
	3	29950	0	71920	70	1170	0	282720	3850	3850	3303.2	170.1	36.2	1.1	3570.4	34.6	159.4	3.3	172.5	0	4519.2	0	540.04	24.09
	4	30210	260	74290	2370	1170	0	289440	6720	6720	3368.9	65.7	36.3	0.1	3636.7	66.3	165.6	6.2	172.9	0.4	4519.2	0	561.58	21.54
	5	35760	5550	84120	9830	1170	0	312490	23050	23050	3669.1	300.2	36.4	0.1	3936.4	299.7	186.5	20.9	174.8	1.9	4519.2	0	584	22.42
	6	35760	0	84120	0	1170	0	323630	11140	11140	3807.6	138.5	36.8	0.4	4075.1	138.7	196.5	10	175.6	0.8	4519.2	0	611.6	27.8
	7	36930	1170	86830	2710	1170	0	324750	1120	1120	3839.4	31.8	37.9	1.1	4106.7	31.6	197.6	1.1	175.8	0.2	4519.2	0	635.98	24.18
	8	40870	3940	95010	8180	1170	0	341480	16730	16730	4013	173.6	38.1	0.2	4388.3	281.6	213	15.4	178	2.2	4519.2	0	660.11	24.13
	9	40870	0	95010	0	1170	0	346590	5110	5110	4069.4	56.4	217.6	179.5	4385.1	-3.2	217.6	4.6	178.2	0.2	4519.2	0	683.74	23.63
	10	41420	550	96670	1660	1170	0	351170	4580	4580	4126.6	57.2	221.7	4.1	4401.9	16.8	221.7	4.1	178.7	0.5	4519.2	0	606.83	-76.91
	11	41980	560	98350	1680	1170	0	361100	9930	9930	4264.8	138.2	230.9	9.2	4540.1	138.2	230.9	9.2	180.8	2.1	4519.3	0.1	727.09	120.26
	12	41980	0	98350	0	1170	0	367310	6210	6210	4314.6	49.8	236.5	5.6	4589.9	49.8	236.5	5.6	180.8	0	4519.3	0	746.43	19.34
	13	42440	460	100270	1920	1170	0	378580	11270	11270	4456.1	141.5	249.8	13.3	4726.8	136.9	246.8	10.3	181.4	0.6	4519.3	0	773.25	26.82
	14	46610	4170	113820	13550	1170	0	404750	26170	26170	4843.5	387.4	270.8	21	5114.3	387.5	270.8	24	181.4	0	4519.3	0	799.95	26.7
	15	47690	1080	117380	3560	1170	0	414020	9270	9270	4940.8	97.3	279.4	8.6	5211.6	97.3	279.4	8.6	183.2	1.8	4519.3	0	822.35	22.4
	16	47710	20	117600	220	1170	0	418950	4930	4930	4998.5	57.7	283.8	4.4	5269.4	57.8	283.8	4.4	183.7	0.5	4519.3	0	845.27	22.92
	17	47970	260	118400	800	1170	0	420580	1630	1630	5021.4	22.9	285.5	1.7	5292.2	22.8	285.5	1.7	184	0.3	4519.3	0	869.5	24.23
	18	49290	1320	121930	3530	1170	0	433480	12900	12900	5183.4	162	297.3	11.8	5405.9	113.7	297.3	11.8	184	0	4519.3	0	893.41	23.91
	19	50100	810	123810	1880	1170	0	442340	8860	8860	5250.8	67.4	305.5	8.2	5478.8	72.9	305.5	8.2	186.3	2.3	4519.3	0	916.1	22.69
	20	50130	30	123960	150	1170	0	447880	5540	5540	5257	6.2	310.5	5	5673.9	195.1	310.5	5	186.3	0	4519.3	0	941.1	25
	21	51060	930	126490	2530	1170	0	459790	11910	11910	5269.1	12.1	321.6	11.1	6091.4	417.5	321.6	11.1	187.5	1.2	4519.3	0	967.23	26.13
	22	51450	390	127560	1070	1170	0	464920	5130	5130	5273.6	4.5	326.3	4.7	6254.6	163.2	326.3	4.7	187.8	0.3	4519.3	0	990.31	23.08
	23	52040	590	129120	1560	1170	0	470730	5810	5810	5291.9	18.3	331.9	5.6	6434.3	179.7	331.9	5.6	188.7	0.9	4519.3	0	1015.04	24.73
	24	52350	310	130160	1040	1330	160	476460	5730	5890	5298.3	6.4	337.6	5.7	6634.1	199.8	337.6	5.7	189.4	0.7	4519.3	0	1038.38	23.34
	25	52890	540	131790	1630	4110	2780	480950	4490	7270	5310.3	12	341.6	4	6854.7	220.6	341.6	4	189.8	0.4	4519.3	0	1060.91	22.53
	26	53340	450	133020	1230	6350	2240	484990	4040	6280	5317.1	6.8	345.2	3.6	7048.1	193.4	345.2	3.6	190.5	0.7	4519.3	0	1080.19	19.28
	27	53940	600	134660	1640	9800	3450	489150	4160	7610	5331	13.9	349.1	3.9	7272.5	224.4	349.1	3.9	191.3	0.8	4519.3	0	1099.16	18.97
	28	54640	700	136700	2040	16920	7120	493840	4690	11810	5343.9	12.9	353.4	4.3	7666	393.5	353.4	4.3	192.2	0.9	4519.3	0	1131.56	32.4
	29	55230	590	138380	1680	21730	4810	495970	2130	6940	5350.5	6.6	355.3	1.9	7891.7	225.7	355.3	1.9	192.9	0.7	4519.3	0	1157.06	25.5
	30	55540	310	139410	1030	23900	2170	498480	2510	4680	5354.8	4.3	357.6	2.3	8063.8	172.1	357.6	2.3	193.2	0.3	4519.3	0	1186.3	29.24
	31	56200	660	141190	1780	25920	2020	502850	4370	6390	5360.3	5.5	361.6	4	8274.3	210.5	361.6	4	194	0.8	4519.3	0	1205.73	19.43
	TOTAL		34520		86840		24750		257730	282480		2561.1		327		5208		236.7		23.1		0.1		740.19
	MAX.		7230		14570		7120		26870	26870		387.4		179.5		417.5		24.8		2.3		0.1		120.26
	MIN.		0		0		0		1120	1120		4.3		0		-3.2		1.1		0		0		-76.91
	AVE.		1113.5		2801.3		798.4		8313.9	9112.3		82.6		10.5		168.0		7.6		0.7		0.0		23.9

TRINIDAD RANCHERIA
WASTE WATER TREATMENT PLANT
DAILY TOTALS - AUGUST 2002

	WATER METERS										E.T. METERS													
		WATER TANKS				PROCESS PUMPS				Total	MEMBRANE BANK #1				MEMBRANE BANK #2				FLYGT PUMPS				U.V.	
		81A		81B		P35A		P35B		Flows	TRANSFER PUMP		PROCESS PUMP		TRANSFER PUMP		PROCESS PUMP		PUMP #1		PUMP #2			
		GAL..	TOTAL	GAL.	TOTAL	GAL.	TOTAL	GAL.	TOTAL	GAL.	MIN.	TOTAL	HOURS	TOTAL	MIN.	TOTAL	HOURS	TOTAL	HOURS	TOTAL	HOURS	TOTAL	HOURS	TOTAL
PREVIOUS DAY		5620		141190		25920		502850			5360.3		105.4		8274.3		361.6		194		4519.3		1205.73	
TIME:	DATE																							
	1	56860	51240	143020	1830	31500	5580	506560	3710	9290	5370.7	10.4	110.5	5.1	8566.1	291.8	365	3.4	195	1	4519.3	0	1230.85	25.12
	2	57210	350	144070	1050	34380	2880	509480	2920	5800	5377	6.3	113.2	2.7	8757.8	191.7	367.7	2.7	195.3	0.3	4519.3	0	1253.1	22.25
	3	57270	60	144410	340	38100	3720	511950	2470	6190	5382.5	5.5	116.7	3.5	8963.4	205.6	370	2.3	195.3	0	4519.3	0	1275.77	22.67
	4	57960	690	146240	1830	43740	5640	518580	6630	12270	5396.2	13.7	121.8	5.1	9332.1	368.7	376.1	6.1	196	0.7	4519.3	0	1301.8	26.03
	5	58490	530	147670	1430	46920	3180	520910	2330	5510	5401.6	5.4	124.8	3	9526.7	194.6	378.2	2.1	196.8	0.8	4519.3	0	1325.13	23.33
	6	59060	570	149190	1520	50100	3180	524660	3750	6930	5408.7	7.1	127.7	2.9	9751.4	224.7	381.7	3.5	197.6	0.8	4519.3	0	1350.85	25.72
	7	59670	610	150790	1600	55251	5151	526430	1770	6921	5415.2	6.5	131.6	3.9	9949.6	198.2	383.3	1.6	198	0.4	4519.3	0	1373.7	22.85
	8	60250	580	152380	1590	58540	3289	530010	3580	6869	5422.2	7	135.6	4	10197.1	247.5	386.6	3.3	198.9	0.9	4519.3	0	1389.4	15.7
	9	60802	552	153810	1430	62430	3890	533570	3560	7450	5431.7	9.5	139.2	3.6	10430.2	233.1	389.9	3.3	199.6	0.7	4519.3	0	1420.32	30.92
	10	61460	658	155620	1810	67720	5290	535570	2000	7290	5441.7	10	144.1	4.9	10776.7	346.5	394.5	4.6	200.4	0.8	4519.3	0	1447.52	27.2
	11	65202	3742	163920	8300	78910	11190	549600	14030	25220	5463	21.3	154.4	10.3	11489.1	712.4	404.6	10.1	200.5	0.1	4519.3	0	1469.45	21.93
	12	66120	918	166200	2280	82100	3190	553360	3760	6950	5468.7	5.7	157.4	3	11678.5	189.4	408.1	3.5	201.7	1.2	4519.3	0	1493.18	23.73
	13	67050	930	168560	2360	86980	4680	556550	3190	8070	5475	6.3	161.9	4.5	11934.5	256	411	2.9	202.7	1	4519.3	0	1517.32	24.14
	14	67480	430	169790	1230	89320	2340	557950	1400	3740	5478.3	3.3	164.1	2.2	12058.1	123.6	412.3	1.3	202.9	0.2	4519.3	0	1540.5	23.18
	15	67480	0	169810	20	93320	4000	560820	2870	6870	5486.7	8.4	167.8	3.7	12277.2	219.1	414.9	2.6	203.2	0.3	4519.3	0	1565.5	25
	16	67780	300	170790	980	95350	2030	563840	3020	5050	5494.7	8	169.6	1.8	12442.4	165.2	417.7	2.8	203.4	0.2	4519.3	0	1585.65	20.15
	17	69830		176050	5260	106410	11060	573420	9580	20640	5520	25.3	179.9	10.3	13138.3	695.9	426.5	8.8	203.4	0	4519.3	0	1615.08	29.43
	18	75140	5310	187830	11780	119770	13360	588210	14790	28150	5556.5	36.5	192.3	12.4	14015.4	877.1	440.2	13.7	204.1	0.7	4519.3	0	1639.06	23.98
	19	76190	1050	190260	2430	122590	2820	591530	3320	6140	5579.6	23.1	195	2.7	14160.1	144.7	443.3	3.1	205.5	1.4	4519.3	0	1661.79	22.73
	20	76630	440	191610	1350	125550	2960	594120	2590	5550	5586.1	6.5	197.7	2.7	14335	174.9	445.7	2.4	206.3	0.8	4519.3	0	1685.11	23.32
	21	77210	580	193170	1560	125876	326	597280	3160	3486	5591.8	5.7	200.7	3	14535.1	200.1	448.6	2.9	208.8	2.5	4519.3	0	1709.04	23.93
	22	77240	30	193270	100	136570	10694	597580	300	10994	5598.3	6.5	207.9	7.2	14738.7	203.6	449.7	1.1	208.8	0	4519.7	0.4	1732.21	23.17
	23	78000	760	195260	1990	141760	5190	602700	5120	10310	5605.2	6.9	212.7	4.8	15004.5	265.8	454.6	4.9	210.9	2.1	4519.7	0	1754.47	22.26
	24	78600	600	197100	1840	147030	5270	605750	3050	8320	5614.6	9.4	218.3	5.6	15301.5	297	457.4	2.8	214.7	3.8	4519.7	0	1778.11	23.64
	25	79410	810	199230	2130	153540	6510	611260	5510	12020	5625.8	11.2	224.6	6.3	15654.6	353.1	463	5.6	218.1	3.4	4519.7	0	1801.15	23.04
	26	80090	680	201030	1800	156490	2950	615390	4130	7080	5633	7.2	227.3	2.7	15898.4	243.8	466.6	3.8	220	1.9	4519.7	0	1827.42	26.27
	27	80750	660	202770	1740	158820	2330	618930	3540	5870	5638.6	5.6	229.4	2.1	16081.6	183.2	470.1	3.3	222.4	2.4	4519.7	0	1851.21	23.79
	28	81130	380	203880	1110	161050	2230	621250	2320	4550	5643.6	5	231.5	2.1	16239.9	158.3	472.3	2.2	223	0.6	4519.7	0	1873.72	22.51
	29	81640	510	205290	1410	165340	4290	625060	3810	8100	5652.7	9.1	235.5	4	16504.7	264.8	475.6	3.5	226.2	3.2	4519.7	0	1899.43	25.71
	30	81640	0	205290	0	168000	2660	627940	2880	5540	5657.3	4.6	238	2.5	16687.8	183.1	478.5	2.7	226.2	0	4519.7	0	1920.73	21.3
	31	81890	250	206080	790	172890	4890	631650	3710	8600	5667.3	10	242.5	4.5	16975.6	287.8	481.9	3.4	227.5	1.3	4519.7	0	1946.33	25.6
	TOTAL		74220		64890		146970		128800	275770		307		137.1		8701.3		120.3		33.5		0.4		740.6
	MAX.		51240		11780		13360		14790	28150		36.5		12.4		877.1		13.7		3.8		0.4		30.92
	MIN.		0		0		326		300	3486		3.3		1.8		123.6		1.1		0		0		15.7
	AVE.		2474.0		2093.2		4741.0		4154.8	8895.8		9.9		4.4		280.7		3.9		1.1		0.0		23.9

TRINIDAD RANCHERIA																								
WASTE WATER TREATMENT PLANT																								
DAILY TOTALS - SEPTEMBER 2002																								
	WATER METERS										E.T. METERS													
		WATER TANKS				PROCESS PUMPS				Total	MEMBRANE BANK #1				MEMBRANE BANK #2				FLYGT PUMPS				U.V.	
		81A		81B		P35A		P35B		Flows	TRANSFER PUMP		PROCESS PUMP		TRANSFER PUMP		PROCESS PUMP		PUMP #1		PUMP #2			
		GAL..	TOTAL	GAL.	TOTAL	GAL.	TOTAL	GAL.	TOTAL	GAL.	MIN.	TOTAL	HOURS	TOTAL	MIN.	TOTAL	HOURS	TOTAL	HOURS	TOTAL	HOURS	TOTAL	HOURS	TOTAL
PREVIOUS DAY		81890		206080		172890		631650			5667.3		242.5		16975.6		481.9		227.5		4521.7		1946.33	
TIME:	DATE																							
	1	82810	920	208510	2430	178550	5660	639480	7830	13490	5681.7	14.4	247.8	5.3	17387.8	412.2	489.2	7.3	231.2	3.7	4521.7	0	1971.33	25
	2	83160	350	209830	1320	180980	2430	642470	2990	5420	5686.9	5.2	250.1	2.3	17576.1	188.3	492	2.8	233.3	2.1	4521.7	0	1993.27	21.94
	3	83830	670	211660	1830	184340	3360	645610	3140	6500	5692.9	6	253.2	3.1	17786.4	210.3	494.9	2.9	235.6	2.3	4523.5	1.8	2019.13	25.86
	4	84070	240	212480	820	186350	2010	648220	2610	4620	5698.8	5.9	256.1	2.9	17945	158.6	497.3	2.4	236	0.4	4523.8	0.3	2043	23.87
	5	84500	430	213720	1240	190300	3950	650520	2300	6250	5705.6	6.8	258.8	2.7	18149.3	204.3	499.4	2.1	237.4	1.4	4528.3	4.5	2065.67	22.67
	6	85020	520	215180	1460	192060	1760	654700	4180	5940	5710.7	5.1	260.5	1.7	18352.4	203.1	503.4	4	238.7	1.3	4537.9	9.6	2089.35	23.68
	7	85870	850	217510	2330	197720	5660	659820	5120	10780	5720.4	9.7	265.7	5.2	18708.5	356.1	508.1	4.7	240.8	2.1	4543.2	5.3	2117.88	28.53
	8	86270	400	218760	1250	201530	3810	664520	4700	8510	5729.4	9	269.3	3.6	18969.2	260.7	512.6	4.5	241.9	1.1	4543.7	0.5	2139.35	21.47
	9	86720	450	220050	1290	203470	1940	667180	2660	4600	5734	4.6	271.1	1.8	19116.9	147.7	515	2.4	243.3	1.4	4543.8	0.1	2163.22	23.87
	10	87050	330	221180	1130	206680	3210	668360	1180	4390	5737.9	3.9	274.1	3	19267.8	150.9	516.1	1.1	243.3	0	4551.2	7.4	2178.19	14.97
	11	87460	410	222400	1220	207860	1180	671080	2720	3900	5752.3	14.4	275.2	1.1	19389	121.2	518.7	2.6	244.4	1.1	4555.1	3.9	2209.69	31.5
	12	88050	590	224080	1680	210800	2940	675740	4660	7600	5759.2	6.9	278	2.8	19641.3	252.3	523	4.3	245	0.6	4558.8	3.7	2234.79	25.1
	13	88590	540	225620	1540	215130	4330	678640	2900	7230	5765.8	6.6	282	4	19880.7	239.4	525.8	2.8	245.5	0.5	4563.3	4.5	2258.7	23.91
	14	89180	590	228200	2580	217790	2660	683640	5000	7660	5773.1	7.3	284.5	2.5	20125.3	244.6	530.4	4.6	245.9	0.4	4570.2	6.9	2281.15	22.45
	15	89940	760	229310	1110	223050	5260	689620	5980	11240	5784.8	11.7	289.5	5	20499.1	373.8	536	5.6	246.4	0.5	4576.8	6.6	2309.06	27.91
	16	90280	340	230290	980	224220	1170	692810	3190	4360	5795.8	11	290.6	1.1	20629.7	130.6	539	3	247.4	1	4580.5	3.7	2330.69	21.63
	17	90860	580	231240	950	226180	1960	696350	3540	5500	5800.2	4.4	292.4	1.8	20840	210.3	542.3	3.3	247.4	0	4582.8	2.3	2355.44	24.75
	18	91070	210	232820	1580	229190	3010	698720	2370	5380	5817.2	17	295.2	2.8	20967.4	127.4	544.5	2.2	248.1	0.7	4585.2	2.4	2378.94	23.5
	19	91660	590	234630	1810	231900	2710	703230	4510	7220	5826.1	8.9	297.7	2.5	21192.9	225.5	548.7	4.2	249	0.9	4586.8	1.6	2402.14	23.2
	20	92110	450	236180	1550	235570	3670	705260	2030	5700	5832.6	6.5	301.2	3.5	21394.7	201.8	550.6	1.9	249.8	0.8	4589.1	2.3	2424.76	22.62
	21	93000	890	238730	2550	241110	5540	710180	4920	10460	5847.1	14.5	306.4	5.2	21743.5	348.8	555.2	4.6	250.5	0.7	4595.8	6.7	2451.56	26.8
	22	93680	680	240720	1990	246060	4950	716700	6520	11470	5864.2	17.1	311	4.6	22082.4	338.9	561.3	6.1	251.4	0.9	4598.1	2.3	2478.47	26.91
	23	93980	300	241710	990	248430	2370	718450	1750	4120	5877.4	13.2	313.2	2.2	22203.4	121	562.9	1.6	251.4	0	4601	2.9	2498.96	20.49
	24	94410	430	242900	1190	250670	2240	720740	2290	4530	5881.3	3.9	315.4	2.2	22356.5	153.1	565.1	2.2	251.9	0.5	4601.3	0.3	2523	24.04
	25	94870	460	244290	1390	253270	2600	723260	2520	5120	5887.2	5.9	317.8	2.4	22529.8	173.3	567.4	2.3	252.4	0.5	4604.2	2.9	2547.13	24.13
	26	95300	430	245610	1320	255510	2240	727320	4060	6300	5904.9	17.7	319.9	2.1	22728	198.2	571.2	3.8	252.9	0.5	4606.8	2.6	2570.68	23.55
	27	95750	450	247000	1390	259900	4390	729730	2410	6800	5913.5	8.6	324	4.1	22928.4	200.4	573.5	2.3	252.9	0	4609.6	2.8	2593.25	22.57
	28	96460	710	248970	1970	265180	5280	734440	4710	9990	5934.1	20.6	328.9	4.9	23238.9	310.5	577.9	4.4	253.4	0.5	4612.5	2.9	2618.29	25.04
	29	97000	540	250500	1530	269380	4200	740820	6380	10580	5947.9	13.8	332.9	4	23583.8	344.9	583.9	6	253.9	0.5	4616.3	3.8	2641.84	23.55
	30	97520	520	251970	1470	271360	1980	744590	3770	5750	5959.4	11.5	334.8	1.9	23763.5	179.7	587.5	3.6	254.3	0.4	4618.5	2.2	2666.61	24.77
	31																							
	TOTAL		15630		45890		98470		112940	211410		292.1		92.3		6787.9		105.6		26.8		96.8		720.28
	MAX.		920		2580		5660		7830	13490		20.6		5.3		412.2		7.3		3.7		9.6		31.5
	MIN.		210		820		1170		1180	3900		3.9		1.1		121		1.1		0		0		14.97
	AVE.		521.0		1529.7		3282.3		3764.7	7047.0		9.7		3.1		226.3		3.5		0.9		3.2		24.0

TRINIDAD RANCHERIA
WASTE WATER TREATMENT PLANT
DAILY TOTALS - OCTOBER 2002

	WATER METERS										E.T. METERS													
		WATER TANKS				PROCESS PUMPS				Total	MEMBRANE BANK #1				MEMBRANE BANK #2				FLYGT PUMPS				U.V.	
		B1A		B1B		P35A		P35B		Flows	TRANSFER PUMP		PROCESS PUMP		TRANSFER PUMP		PROCESS PUMP		PUMP #1		PUMP #2			
		GAL..	TOTAL	GAL.	TOTAL	GAL.	TOTAL	GAL.	TOTAL	GAL.	MIN.	TOTAL	HOURS	TOTAL	MIN.	TOTAL	HOURS	TOTAL	HOURS	TOTAL	HOURS	TOTAL	HOURS	TOTAL
PREVIOUS DAY		97520		251970		271360		744590			5959.4		334.8		23763.5		587.5		254.3		4618.5		2666.61	
TIME:	DATE																							
	1	97930	410	253300	1330	273780	2420	746990	2400	4820	5964	4.6	337.1	2.3	23929.6	166.1	589.7	2.2	254.8	0.5	4622.2	3.7	2690.1	23.49
	2	98330	400	254620	1320	277360	3580	748550	1560	5140	5969.2	5.2	340.5	3.4	24090	160.4	591.2	1.5	255.2	0.4	4622.8	0.6	2714.82	24.72
	3	98770	440	255910	1290	280270	2910	752180	3630	6540	5979.8	10.6	343.2	2.7	24298	208	594.5	3.3	255.2	0	4633.9	11.1	2737.85	23.03
	4	99360	590	257730	1820	284930	4660	755180	3000	7660	5987.9	8.1	347.5	4.3	24543.4	245.4	597.4	2.9	255.7	0.5	4639.6	5.7	2762.78	24.93
	5	99920	560	259540	1810	288550	3620	760580	5400	9020	5995.2	7.3	351	3.5	24840.5	297.1	602.5	5.1	256	0.3	4643.2	3.6	2769.03	26.25
	6	100315	395	260775	1235	290935	2385	765100	4520	6905	6001.7	6.5	353.3	2.3	25067	226.5	606.7	4.2	256.4	0.4	4644.4	1.2	2811.8	22.77
	7	100710	395	262010	1235	293320	2385	769620	4520	6905	6008.2	6.5	355.5	2.2	25293.5	226.5	611	4.3	256.7	0.3	4645.6	1.2	2834.8	23
	8	100880	170	262690	680	295620	2300	771610	1990	4290	6023.7	15.5	357.7	2.2	25414.2	120.7	612.9	1.9	256.7	0	4645.6	0	2858.19	23.39
	9	101160	280	263670	980	299090	3470	773830	2220	5690	6027.4	3.7	359.6	1.9	25556.4	142.2	614.9	2	256.8	0.1	4646.3	0.7	2881.11	22.92
	10	101740	580	265270	1600	302560	3470	777200	3370	6840	6047.4	20	364.2	4.6	25818.7	262.3	618.2	3.3	257	0.2	4647.9	1.6	2906.62	25.51
	11	101960	220	265970	700	306980	4420	780510	3310	7730	6061.4	14	368.4	4.2	26039.7	221	621.3	3.1	257	0	4648.2	0.3	2930.44	23.82
	12	102630	670	267880	1910	312210	5230	784700	4190	9420	6072.9	11.5	373.3	4.9	26340.9	301.2	625.3	4	257.2	0.2	4648.5	0.3	2956.91	26.47
	13	103010	380	269020	1140	314800	2590	789370	4670	7260	6082	9.1	375.7	2.4	26579.7	238.8	629.6	4.3	257.3	0.1	4648.8	0.3	2978.42	21.51
	14	103380	370	270130	1110	318570	3770	789820	450	4220	6088.7	6.7	379.4	3.7	26718.6	138.9	630.1	0.5	257.5	0.2	4649	0.2	3000.62	22.2
	15	103840	460	271320	1190	320100	1530	793850	4030	5560	6106.6	17.9	383.3	3.9	26853	134.4	635.4	5.3	257.7	0.2	4649	0	3025.68	25.06
	16	104170	330	272340	1020	321430	1330	797420	3570	4900	6110	3.4	384.6	1.3	26996.4	143.4	638.9	3.5	257.9	0.2	4649.5	0.5	3049.57	23.89
	17	104520	350	273540	1200	324980	3550	800600	3180	6730	6120.4	10.4	388.9	4.3	27238.9	242.5	641.8	2.9	258	0.1	4649.7	0.2	3074.8	25.23
	18	104910	390	274830	1290	329280	4300	802430	1830	6130	6129.7	9.3	393	4.1	27431.3	192.4	643.7	1.9	258.2	0.2	4649.9	0.2	3098.97	24.17
	19	105290	380	275950	1120	332790	3510	805690	3260	6770	6145	15.3	396.3	3.3	27642.3	211	646.8	3.1	258.3	0.1	4650.2	0.3	3121.48	22.51
	20	105670	380	277050	1100	336600	3810	809050	3360	7170	6160.8	15.8	399.9	3.6	27865.1	222.8	649.9	3.1	258.5	0.2	4650.5	0.3	3145.92	24.44
	21	106050	380	278150	1100	340410	3810	812410	3360	7170	6176.7	15.9	403.5	3.6	28087.9	222.8	653.1	3.2	258.7	0.2	4650.9	0.4	3170.37	24.45
	22	106340	290	278950	800	342050	1640	815330	2920	4560	6192.9	16.2	405.1	1.6	28230.1	142.2	655.9	2.8	258.7	0	4651.1	0.2	3193.5	23.13
	23	107040	700	280710	1760	347670	5620	820910	5580	11200	6215.3	22.4	410.2	5.1	28580.6	350.5	661.2	5.3	259	0.3	4651.4	0.3	3219.11	25.61
	24	107340	300	281570	860	349550	1880	823760	2850	4730	6234.9	19.6	412.3	2.1	28720.6	140	663.9	2.7	259	0	4651.8	0.4	3240.45	21.34
	25	107760	420	282770	1200	353830	4280	826620	2860	7140	6263.8	28.9	416.3	4	28935.9	215.3	666.7	2.8	259.2	0.2	4652.1	0.3	3265.84	25.39
	26	108340	580	284630	1860	360940	7110	830190	3570	10680	6282.6	18.8	423.1	6.8	29260.3	324.4	670	3.3	259.5	0.3	4652.6	0.5	3294.73	28.89
	27	108566	226	285240	610	363850	2910	832730	2540	5450	6288.7	6.1	425.7	2.6	29439.4	179.1	672.6	2.6	259.5	0	4652.8	0.2	3319.24	24.51
	28	108790	224	286070	830	366800	2950	835280	2550	5500	6294.5	5.8	428.7	3	29619.1	179.7	674.8	2.2	259.6	0.1	4653.2	0.4	3338.21	18.97
	29	109290	500	287530	1460	372280	5480	835860	580	6060	6313.6	19.1	434	5.3	29799.5	180.4	677.6	2.8	259.8	0.2	4653.5	0.3	3362.08	23.85
	30	109630	540	289270	1740	375980	3700	840410	4550	8250	6324.2	10.6	437.4	3.4	30041.5	242	681.8	4.2	260	0.2	4654.2	0.7	3392.27	30.21
	31	109950	120	289590	320	377560	1580	841100	690	2270	6337	12.8	439	1.6	30101.5	60	682.5	0.7	260	0	4654.2	0	3408.25	15.98
	TOTAL		12430		37620		106200		96510	202710		377.6		104.2		6338		95		5.7		35.7		741.64
	MAX.		700		1910		7110		5580	11200		28.9		6.8		350.5		5.3		0.5		11.1		30.21
	MIN.		120		320		1330		450	2270		3.4		1.3		60		0.5		0		0		15.98
	AVE.		401.0		1213.5		3425.8		3113.2	6539.0		12.2		3.4		204.5		3.1		0.2		1.2		23.9

TRINIDAD RANCHERIA
WASTE WATER TREATMENT PLANT
DAILY TOTALS - NOVEMBER 2002

	WATER METERS										E.T. METERS													
		WATER TANKS				PROCESS PUMPS				Total	MEMBRANE BANK #1				MEMBRANE BANK #2				FLYGT PUMPS				U.V.	
		81A		81B		P35A		P35B		Flows	TRANSFER PUMP		PROCESS PUMP		TRANSFER PUMP		PROCESS PUMP		PUMP #1		PUMP #2			
		GAL..	TOTAL	GAL.	TOTAL	GAL.	TOTAL	GAL.	TOTAL	GAL.	MIN.	TOTAL	HOURS	TOTAL	MIN.	TOTAL	HOURS	TOTAL	HOURS	TOTAL	HOURS	TOTAL	HOURS	TOTAL
PREVIOUS DAY		109950		289590		377560		841100			6337		439		30101.5		682.5		260		4654.2		3408.25	
TIME:	DATE																							
	1	110000	50	289770	160	379410	1850	841350	250	2100	6353	16	440.7	1.7	30155.7	54.2	682.7	0.2	260.2	0.2	4654.2	0	3431.05	22.8
	2	110000	0	289770	0	383600	4190	845010	3660	7850	6365.5	12.5	444.7	4	30436.2	280.5	686.2	3.5	260.2	0	4654.2	0	3459.32	28.27
	3	110000	0	289770	0	387870	4270	846770	3760	8030	6373.2	7.7	448.8	4.1	30703.5	267.3	689.8	3.6	260.2	0	4654.4	0.2	3484.15	24.83
	4	110100	100	290120	350	390360	2490	852000	3230	5720	6378	4.8	451.2	2.4	30899.3	195.8	692.9	3.1	260.3	0.1	4654.4	0	3507.16	23.01
	5	110360	260	290970	850	391920	1560	854710	2710	4270	6382.1	4.1	452.6	1.4	31052.3	153	695.4	2.5	260.5	0.2	4654.7	0.3	3531.45	24.29
	6	110620	260	291910	940	393980	2060	857000	2290	4350	6385.8	3.7	454.6	2	31201.4	149.1	697.6	2.2	260.5	0	4655	0.3	3554.98	23.53
	7	111020	400	293160	1250	397460	3480	860450	3450	6930	6409.1	23.3	457.9	3.3	31402.5	201.1	701	3.4	260.7	0.2	4655.3	0.3	3579.76	24.78
	8	111430	410	294470	1310	400430	2970	863850	3400	6370	6416.1	7	460.8	2.9	31626.1	223.6	704.2	3.2	260.7	0	4656.1	0.8	3602.79	23.03
	9	111630	200	295200	730	404000	3570	867190	3340	6910	6422.8	6.7	464.2	3.4	31892.1	266	707.4	3.2	260.8	0.1	4656.2	0.1	3625.81	23.02
	10	112510	880	297670	2470	411000	7000	874090	6900	13900	6437.7	14.9	470.9	6.7	32367.4	475.3	714	6.6	261.2	0.4	4656.7	0.5	3655.2	29.39
	11	112830	320	298660	990	413400	2400	876540	2450	4850	6441.2	3.5	473.2	2.3	32520.9	153.5	716.3	2.3	261.2	0	4657.5	0.8	3674.97	19.77
	12	113230	400	300430	1770	416130	2730	878910	2370	5100	6449.4	8.2	475.9	2.7	32704.3	183.4	719	2.7	261.5	0.3	4657.8	0.3	3700.29	25.32
	13	113580	350	301420	990	418980	2850	880510	1600	4450	6463.4	14	478.6	2.7	32845.6	141.3	720.6	1.6	261.5	0	4658.1	0.3	3722.89	22.6
	14	113920	340	302530	1110	420460	1480	885030	4520	6000	6469.5	6.1	480	1.4	33061.8	216.2	724.9	4.3	261.7	0.2	4658.4	0.3	3745.33	22.44
	15	114190	270	303460	930	422390	1930	888130	3100	5030	6480.9	11.4	481.9	1.9	33248.8	187	728.4	3.5	261.8	0.1	4658.7	0.3	3769.82	24.49
	16	114650	460	304800	1340	425620	3230	893300	5170	8400	6495	14.1	485	3.1	33527.9	279.1	732.8	4.4	262	0.2	4659.1	0.4	3794.77	24.95
	17	115280	630	306670	1870	429790	4170	900270	6970	11140	6508.4	13.4	488.9	3.9	33915	387.1	739.5	6.7	262.3	0.3	4659.5	0.4	3823.54	28.77
	18	116620	1340	307630	960	432740	2950	901540	1270	4220	6512.9	4.5	491.8	2.9	34061.3	146.3	740.7	1.2	262.5	0.2	4659.9	0.4	3845.21	21.67
	19	115880	-740	308520	890	434000	1260	903810	2270	3530	6516.4	3.5	493.1	1.3	34188.2	126.9	743	2.3	262.5	0	4660.3	0.4	3864.47	19.26
	20	116290	410	309930	1410	436710	2710	905820	2010	4720	6512.2	-4.2	495.6	2.5	34280.4	92.2	744.8	1.8	262.5	0	4660.6	0.3	3890.68	26.21
	21	116720	430	311180	1250	441540	4830	907160	1340	6170	6538.7	26.5	500.3	4.7	34483	202.6	746.1	1.3	262.8	0.3	4661	0.4	3913.45	22.77
	22	117310	590	312920	1740	446360	4820	910410	3250	8070	6546.2	7.5	504.9	4.6	34770.1	287.1	749.2	3.1	262.9	0.1	4661.3	0.3	3941.17	27.72
	23	117690	380	314090	1170	448750	2390	913960	3550	5940	6551.3	5.1	507.2	2.3	34976.4	206.3	752.6	3.4	263.1	0.2	4661.7	0.4	3961.59	20.42
	24	118780	1090	317160	3070	453590	4840	921720	7760	12600	6565.5	14.2	511.8	4.6	35417.7	441.3	760	7.4	263.4	0.3	4662.7	1	3992.06	30.47
	25	118870	90	317550	390	454770	1180	922480	760	1940	6567.1	1.6	513	1.2	35505.8	88.1	760.8	0.8	263.4	0	4662.7	0	4007.67	15.61
	26	119510	640	319390	1840	457640	2870	925890	3410	6280	6572.3	5.2	515.8	2.8	35690.3	184.5	765.3	4.5	263.8	0.4	4663.1	0.4	4035.99	28.32
	27	119750	240	320180	790	461860	4220	925890	0	4220	6574.5	2.2	519.8	4	35755.4	65.1	768.4	3.1	263.8	0	4663.8	0.7	4057.88	21.89
	28	120260	510	321590	1410	474570	12710	925890	0	12710	6582.1	7.6	532.2	12.4	35952.3	196.9	778.9	10.5	264	0.2	4664.6	0.8	4087.6	29.72
	29	120710	450	322810	1220	478700	4130	925890	0	4130	6588.2	6.1	536.2	4	35993.1	40.8	783.3	4.4	264.2	0.2	4664.6	0	4100.47	12.87
	30	121410	700	324680	1870	495240	16540	925890	0	16540	6600	11.8	552.2	16	36277.4	284.3	793.9	10.6	264.3	0.1	4666	1.4	4132.1	31.63
	TOTAL		11460		35090		117680		84790	202470		263		113.2		6175.9		111.4		4.3		11.8		723.65
	MAX.		1340		3070		16540		7760	16540		26.5		16		475.3		10.6		0.4		1.4		31.63
	MIN.		-740		0		1180		0	1940		-4.2		1.2		40.8		0.2		0		0		12.87
	AVE.		382.0		1169.7		3922.7		2626.3	6749.0		8.8		3.8		205.9		3.7		0.1		0.4		24.1

TRINIDAD RANCHERIA
WASTE WATER TREATMENT PLANT
DAILY TOTALS - DECEMBER 2002

	WATER METERS										E.T. METERS													
		WATER TANKS				PROCESS PUMPS				Total	MEMBRANE BANK #1				MEMBRANE BANK #2				FLYGT PUMPS				U.V.	
		81A		81B		P35A		P35B		Flows	TRANSFER PUMP		PROCESS PUMP		TRANSFER PUMP		PROCESS PUMP		PUMP #1		PUMP #2			
		GAL..	TOTAL	GAL.	TOTAL	GAL.	TOTAL	GAL.	TOTAL	GAL.	MIN.	TOTAL	HOURS	TOTAL	MIN.	TOTAL	HOURS	TOTAL	HOURS	TOTAL	HOURS	TOTAL	HOURS	TOTAL
PREVIOUS DAY		121410		324680		495240		925890			6600		552.2		36277.4		793.9		264.3		4666		4132.1	
TIME:	DATE																							
	1	122020	610	326200	1520	509490	14250	925890	0	14250	6608.2	8.2	565.9	13.7	36473.6	196.2	808.1	14.2	264.5	0.2	4667	1	4157.44	25.34
	2	122450	430	327280	1080	513650	4160	925890	0	4160	6610.1	1.9	569.9	4	36525.7	52.1	811.4	3.3	264.7	0.2	4667	0	4175.59	18.15
	3	122850	400	328610	1330	520220	6570	925890	0	6570	6613.2	3.1	576.2	6.3	36602.1	76.4	816.8	5.4	264.8	0.1	4668.1	1.1	4201.6	26.01
	4	123210	360	329820	1210	525460	5240	925890	0	5240	6616.3	3.1	581.3	5.1	36679.8	77.7	819.9	3.1	265	0.2	4668.1	0	4225.51	23.91
	5	123720	510	331420	1600	534510	9050	925890	0	9050	6622.9	6.6	590.1	8.8	36818.1	138.3	824	4.1	265.3	0.3	4668.1	0	4254.16	28.65
	6	124050	330	332450	1030	540970	6460	925890	0	6460	6626.5	3.6	596.3	6.2	36892.4	74.3	831.5	7.5	265.5	0.2	4668.1	0	4273.52	19.36
	7	124650	600	334200	1750	555030	14060	925890	0	14060	6635.2	8.7	609.9	13.6	37096.1	203.7	845.1	13.6	265.8	0.3	4668.1	0	4304.69	31.17
	8	125160	510	335620	1420	561940	6910	925890	0	6910	6639	3.8	616.6	6.7	37189.4	93.3	852.1	7	266.1	0.3	4668.1	0	4323.14	18.45
	9	125710	550	337230	1610	570750	8810	925890	0	8810	6642.4	3.4	625.3	8.7	37276.8	87.4	867.6	15.5	266.3	0.2	4668.1	0	4347.08	23.94
	10	125830	120	337760	530	574440	3690	925890	0	3690	6650.4	8	629.4	4.1	37333.3	56.5	870.6	3	266.4	0.1	4668.1	0	4370.21	23.13
	11	126200	370	338970	1210	580430	5990	925890	0	5990	6660.1	9.7	635.3	5.9	37406	72.7	874.4	3.8	266.7	0.3	4668.1	0	4393.74	23.53
	12	126400	200	339630	660	586550	6120	925890	0	6120	6663.5	3.4	641.4	6.1	37492.7	86.7	879	4.6	266.7	0	4668.7	0.6	4417.51	23.77
	13	126750	350	340660	1030	586940	390	933450	7560	7950	6681.5	18	647.7	6.3	37582.4	89.7	886.2	7.2	266.9	0.2	4669.5	0.8	4441.73	24.22
	14	127630	880	342080	1420	587600	660	942260	8810	9470	6700.3	18.8	655.2	7.5	37717.1	134.7	894.7	8.5	267.1	0.2	4671.4	1.9	4464.1	22.37
	15	128200	570	343580	1500	591230	3630	946610	4350	7980	6704.9	4.6	659.9	4.7	37853	135.9	900	5.3	267.2	0.1	4676.1	4.7	4488.43	24.33
	16	128810	610	345350	1770	594330	3100	948940	2330	5430	6708.9	4	661.9	2	37944.2	91.2	902.2	2.2	267.5	0.3	4684.4	8.3	4513.54	25.11
	17	129070	260	346290	940	596910	2580	950850	1910	4490	6711.7	2.8	664.3	2.4	38025.3	81.1	904	1.8	267.5	0	4685.5	1.1	4534.14	20.6
	18	129560	490	347700	1410	598330	1420	953990	3140	4560	6717.4	5.7	665.7	1.4	38105.6	80.3	907	3	267.6	0.1	4687.2	1.7	4560.11	25.97
	19	129970	410	348890	1190	601220	2890	956080	2090	4980	6726.4	9	668.5	2.8	38186.2	80.6	909	2	267.7	0.1	4687.8	0.6	4578.06	17.95
	20	130340	370	350060	1170	603020	1800	959450	3370	5170	6732.6	6.2	670.2	1.7	38273.7	87.5	912.2	3.2	267.7	0	4689.8	2	4601.51	23.45
	21	130850	510	351650	1590	607090	4070	962060	2610	6680	6738	5.4	674.1	3.9	38394.3	120.6	914.6	2.4	268.1	0.4	4692.8	3	4629.02	27.51
	22	131220	370	352740	1090	610040	2950	966120	4060	7010	6743	5	677	2.9	38510.3	116	918.5	3.9	268.1	0	4695.1	2.3	4650.01	20.99
	23	131890	670	354500	1760	613400	3360	968750	2630	5990	6747.5	4.5	680.1	3.1	38614.1	103.8	921	2.5	268.4	0.3	4697	1.9	4674.39	24.38
	24	132390	500	355840	1340	615330	1930	971770	3020	4950	6756.8	9.3	682	1.9	38697.2	83.1	923.8	2.8	268.5	0.1	4697.8	0.8	4698.59	24.2
	25	132390	0	357650	1810	619010	3680	973780	2010	5690	6760.8	4	685.5	3.5	38792.9	95.7	925.7	1.9	268.8	0.3	4699.1	1.3	4722.91	24.32
	26	133620	1230	358270	620	621040	2030	979140	5360	7390	6764.9	4.1	687.8	2.3	38928.4	135.5	930.8	5.1	269	0.2	4700.7	1.6	4748.72	25.81
	27	134570	950	361970	3700	625770	4730	985000	5860	10590	6784.3	19.4	692.1	4.3	39092.3	163.9	936.4	5.6	269.2	0.2	4714.4	13.7	4778.4	29.68
	28	135240	670	363800	1830	628680	3110	988440	3440	6550	6791.8	7.5	695.2	3.1	39204.6	112.3	939.7	3.3	269.4	0.2	4719.3	4.9	4800.96	22.56
	29	135450	210	364400	600	630980	2100	991540	3100	5200	6802.4	10.6	697.2	2	39289.2	84.6	942.6	2.9	269.4	0	4721.1	1.8	4819.99	19.03
	30	136000	550	366070	1670	633310	2330	994770	3230	5560	6806.6	4.2	699.4	2.2	39381.8	92.6	945.7	3.1	269.6	0.2	4722.4	1.3	4845.06	25.07
	31	136470	470	367370	1300	635850	2540	997040	2270	4810	6819.1	12.5	701.9	2.5	39456.6	74.8	948.1	2.4	269.8	0.2	4723.4	1	4866.64	21.58
	TOTAL		15060		42690		140610		71150	211760		219.1		149.7		3179.2		154.2		5.5		57.4		734.54
	MAX.		1230		3700		14250		8810	14250		19.4		13.7		203.7		15.5		0.4		13.7		31.17
	MIN.		0		530		390		0	3690		1.9		1.4		52.1		1.8		0		0		17.95
	AVE.		485.8		1377.1		4535.8		2295.2	6831.0		7.1		4.8		102.6		5.0		0.2		1.9		23.7

TRINIDAD RANCHERIA																								
WASTE WATER TREATMENT PLANT																								
DAILY TOTALS - JANUARY 2003																								
	WATER METERS										E.T. METERS													
		WATER TANKS				PROCESS PUMPS				Total	MEMBRANE BANK #1				MEMBRANE BANK #2				FLYGT PUMPS				U.V.	
		B1A		B1B		P35A		P35B		Flows	TRANSFER PUMP		PROCESS PUMP		TRANSFER PUMP		PROCESS PUMP		PUMP #1		PUMP #2			
		GAL..	TOTAL	GAL.	TOTAL	GAL.	TOTAL	GAL.	TOTAL	GAL.	MIN.	TOTAL	HOURS	TOTAL	MIN.	TOTAL	HOURS	TOTAL	HOURS	TOTAL	HOURS	TOTAL	HOURS	TOTAL
PREVIOUS DAY		136470		367370		635650		997040			6819.1		701.9		39456.6		948.1		269.6		4723.4		4866.64	
TIME:	DATE																						4891.6	
	1	137360	890	369540	2170	644670	6820	1004500	7460	16280	6839	19.9	710.5	8.6	39734.2	277.6	955.3	7.2	270.2	0.4	4725	1.6	4891.6	24.96
	2	137910	550	371660	2120	648260	3590	1007100	2600	6190	6844.9	5.9	716.2	5.7	39853.3	119.1	961.5	6.2	270.3	0.1	4726	1	4918.28	26.68
	3	138420	510	372330	670	650660	2400	1010910	3810	6210	6847.1	2.2	718.6	2.4	39943.6	90.3	965.2	3.7	270.4	0.1	4727.7	1.7	4935.98	17.7
	4	139140	720	374300	1970	655580	4920	1015900	4990	9910	6857.8	10.7	723.2	4.6	40113.5	169.9	969.9	4.7	270.7	0.3	4728.9	1.2	4967.56	31.58
	5	139730	590	375880	1580	660340	4760	1019630	3730	8490	6866.5	8.7	727.8	4.6	40253.2	139.7	973.4	3.5	270.9	0.2	4729.8	0.9	4992.34	24.78
	6	140140	410	376830	950	661700	1360	1020910	1280	2640	6877.2	10.7	729.1	1.3	40286.3	33.1	974.6	1.2	271.1	0.2	4730.9	1.1	5011.18	18.84
	7	140270	130	377440	610	663440	1740	1022420	1510	3250	6885.6	8.4	730.8	1.7	40339.4	53.1	976.1	1.5	271.1	0	4730.9	0	5034.05	22.87
	8	140610	340	378330	890	665680	2240	1024400	1980	4220	6894.6	9	733.5	2.7	40404.7	65.3	978.3	2.2	271.3	0.2	4731.7	0.8	5058.96	24.91
	9	140930	320	379330	1000	668270	2590	1026680	2280	4870	6898.4	3.8	736	2.5	40492.6	87.9	980.5	2.2	271.4	0.1	4733.5	1.8	5081.52	22.56
	10	141400	470	380660	1330	670610	2340	1031650	4970	7310	6903.9	5.5	738.3	2.3	40609	116.4	985.2	4.7	271.4	0	4735.7	2.2	5107.18	25.66
	11	141940	540	382190	1530	674910	4300	1034070	2420	6720	6914.1	10.2	742.5	4.2	40725.8	116.8	987.6	2.4	271.6	0.2	4739.2	3.5	5129.7	22.52
	12	142720	780	384330	2140	680850	5940	1038870	4800	10740	6926	11.9	748.3	5.8	40898.6	172.8	992.1	4.5	271.9	0.3	4742.6	3.4	5160.64	30.94
	13	142960	240	385100	770	682320	1470	1040370	1500	2970	6927.6	1.6	749.3	1	40934.1	35.5	993.2	1.1	271.9	0	4742.9	0.3	5183.4	22.76
	14	143200	240	385870	770	683790	1470	1041880	1510	2980	6929.2	1.6	751.4	2.1	41002.7	68.6	995	1.8	271.9	0	4745.3	2.4	5206.15	22.75
	15	143430	230	386560	690	685500	1710	1043060	1180	2890	6934.6	5.4	753.2	1.8	41095	92.3	996.2	1.2	271.9	0	4746.5	1.2	5226.93	20.78
	16	143780	350	387610	1050	689030	3530	1045060	2000	5530	6938.3	3.7	756.5	3.3	41135.8	40.8	998	1.8	272.1	0.2	4746.5	0	5249.17	22.24
	17	144320	540	389180	1570	693600	4570	1048110	3050	7620	6942.6	4.3	761	4.5	41269	133.2	1000.9	2.9	272.4	0.3	4746.5	0	5278.09	28.92
	18	144820	500	390750	1570	696640	3040	1052930	4820	7860	6948.4	5.8	764	3	41395.8	126.6	1005.5	4.6	272.7	0.3	4746.5	0	5302.62	24.53
	19	145310	490	392270	1520	701810	5170	1056890	3960	9130	6956.7	8.3	769	5	41547.7	151.9	1009.2	3.7	273	0.3	4746.5	0	5327.32	24.7
	20	145670	360	393250	980	703720	1910	1058660	1770	3680	6965.5	8.8	770.9	1.9	41601.1	53.4	1010.9	1.7	273.2	0.2	4746.5	0	5346.49	19.17
	21	145840	170	393940	690	705860	2140	1059900	1240	3380	6967.2	1.7	773.3	2.4	41660	58.9	1012.1	1.2	273.3	0.1	4746.5	0	5369.23	22.74
	22	146190	350	395060	1120	707170	1310	1062910	3010	4320	6970.2	3	774.6	1.3	41731.2	71.2	1014.9	2.8	273.5	0.2	4746.5	0	5393.48	24.25
	23	146600	410	396210	1150	710640	3470	1064690	1780	5250	6979.6	9.4	778	3.4	41821.5	90.3	1016.6	1.7	273.7	0.2	4746.5	0	5418.03	24.55
	24	146980	380	397350	1140	714100	3460	1067390	2700	6160	6991.3	11.7	781.3	3.3	41912.8	91.3	1019.2	2.6	274	0.3	4746.5	0	5440.78	22.75
	25	147600	620	399210	1860	718610	4510	1071630	4240	8750	7007.1	15.8	785.6	4.3	42052.4	139.6	1023.2	4	274.3	0.3	4746.5	0	5468.76	27.98
	26	148080	480	400660	1450	722880	4270	1077490	5860	10130	7019	11.9	789.8	4.2	42220.1	167.7	1028.8	5.6	274.6	0.3	4746.5	0	5490.97	22.21
	27	148480	400	401860	1200	725480	2600	1079590	2100	4700	7021.4	2.4	792.3	2.5	42299.9	79.8	1030.8	2	274.8	0.2	4746.5	0	5514.83	23.86
	28	148710	230	402780	920	727490	2010	1081570	1980	3990	7024.1	2.7	794.2	1.9	42372.4	72.5	1032.7	1.9	274.9	0.1	4746.5	0	5538.93	24.1
	29	149200	490	404210	1430	729120	1630	1083920	2350	3980	7037.5	13.4	795.8	1.6	42427	54.6	1034.9	2.2	275.3	0.4	4746.5	0	5562.42	23.49
	30	149220	20	404210	0	730050	930	1083970	50	980	7046.8	9.3	796.7	0.9	42436.3	9.3	1035	0.1	275.3	0	4746.5	0	5585.61	23.19
	31	149220	0	404210	0	730700	650	1085820	1850	2500	7053.2	6.4	797.4	0.7	42474.8	38.5	1036.7	1.7	275.3	0	4746.5	0	5607.18	21.57
	TOTAL		12750		36840		94850		88780	183630		234.1		95.5		3018.2		88.6		5.5		23.1		740.54
	MAX.		890		2170		6820		7460	16280		19.9		8.6		277.6		7.2		0.4		3.5		31.58
	MIN.		0		0		650		50	980		1.6		0.7		9.3		0.1		0		0		17.7
	AVE.		411.3		1188.4		3059.7		2863.9	5923.5		7.6		3.1		97.4		2.9		0.2		0.7		23.9

TRINIDAD RANCHERIA
WASTE WATER TREATMENT PLANT
DAILY TOTALS - FEBRUARY 2003

	WATER METERS										E.T. METERS													
		WATER TANKS				PROCESS PUMPS				Total	MEMBRANE BANK #1				MEMBRANE BANK #2				FLYGT PUMPS				U.V.	
		81A		81B		P35A		P35B		Flows	TRANSFER PUMP		PROCESS PUMP		TRANSFER PUMP		PROCESS PUMP		PUMP #1		PUMP #2			
		GAL..	TOTAL	GAL.	TOTAL	GAL.	TOTAL	GAL.	TOTAL	GAL.	MIN.	TOTAL	HOURS	TOTAL	MIN.	TOTAL	HOURS	TOTAL	HOURS	TOTAL	HOURS	TOTAL	HOURS	TOTAL
PREVIOUS DAY		149220		404210		730700		1085820			7053.2		797.4		42474.8		1036.7		275.3		4746.5		5607.18	
TIME:	DATE			-																				
	1	149220	0	404210	0	730700	0	1085820	0	0	7053.2	0	797.4	0	42474.8	0	1036.7	0	275.3	0	4746.5	0	5607.18	0
	2	149220	0	404210	0	730700	0	1085820	0	0	7053.2	0	797.4	0	42474.8	0	1036.7	0	275.3	0	4746.5	0	5607.18	0
	3	149220	0	404210	0	741880	11180	1097780	11960	23140	7078.2	25	808.1	10.7	42864.9	390.1	1047.9	11.2	275.3	0	4746.5	0	5681.61	74.43
	4	149320	100	404680	470	744850	2970	1098680	900	3870	7088	9.8	811	2.9	42925.9	61	1048.8	0.9	275.4	0.1	4746.5	0	5704.29	22.68
	5	149520	200	405290	610	746440	1590	1100450	1770	3360	7098.2	10.2	812.5	1.5	42980.1	54.2	1050.5	1.7	275.6	0.2	4746.5	0	5729.61	25.32
	6	150010	490	406690	1400	749550	3110	1103860	3410	6520	7108	9.8	815.6	3.1	43091	110.9	1053.8	3.3	275.9	0.3	4746.5	0	5755.01	25.4
	7	150570	560	408340	1650	754400	4850	1106370	2510	7360	7119.8	11.8	820.3	4.7	43219.4	128.4	1056.2	2.4	276.1	0.2	4746.5	0	5780.99	25.98
	8	151000	430	409700	1360	757860	3460	1109320	2950	6410	7133.3	13.5	823.7	3.4	43327.6	108.2	1059	2.8	276.5	0.4	4746.5	0	5801.81	20.82
	9	151830	830	411990	2290	765050	7190	1113810	4490	11680	7142.4	9.1	830.7	7	43510.4	182.8	1063.3	4.3	276.8	0.3	4746.5	0	5829.56	27.75
	10	152250	420	413210	1220	767080	2030	1116110	2300	4330	7147.2	4.8	832.6	1.9	43572.6	62.2	1065.4	2.1	277.1	0.3	4746.5	0	5850.74	21.18
	11	152660	410	414440	1230	769310	2230	1117740	1630	3860	7149.6	2.4	834.9	2.3	43640	67.4	1067.1	1.7	277.3	0.2	4746.5	0	5873.35	22.61
	12	152920	260	415050	610	770120	810	1118560	820	1630	7161.2	11.6	836.6	1.7	43685.1	45.1	1067.8	0.7	277.4	0.1	4746.5	0	5896.85	23.5
	13	153240	320	416240	1190	772780	2660	1122870	4310	6970	7164.4	3.2	838.3	1.7	43782.8	97.7	1072	4.2	277.6	0.2	4746.5	0	5920.24	23.39
	14	153960	720	418300	2060	776900	4120	1127130	4260	8380	7170.7	6.3	842.3	4	43920.6	137.8	1076	4	277.9	0.3	4746.5	0	5945.47	25.23
	15	154780	820	420250	1950	781470	4570	1133290	6160	10730	7185.7	15	846.8	4.5	44109.4	188.8	1081.9	5.9	285.8	7.9	4747.3	0.8	5964.11	18.64
	16	155620	840	422500	2250	785490	4020	1139910	6620	10640	7194.3	8.6	851	4.2	44256.6	147.2	1090.6	8.7	286.5	0.7	4747.8	0.5	5992.32	28.21
	17	156200	580	424330	1830	790210	4720	1142870	2960	7680	7199.8	5.5	855.3	4.3	44396.5	139.9	1091.1	0.5	287	0.5	4748.7	0.9	6017.05	24.73
	18	156540	340	425340	1010	792480	2270	1144000	1130	3400	7207.2	7.4	857.5	2.2	44458.3	61.8	1092.2	1.1	287.5	0.5	4748.7	0	6042.24	25.19
	19	156650	110	425760	420	794450	1970	1145290	1290	3260	7216.4	9.2	861.2	3.7	44506.2	47.9	1096	3.8	288	0.5	4748.7	0	6065.59	23.35
	20	156930	280	426820	1060	796650	2200	1148650	3360	5560	7219.9	3.5	863.3	2.1	44599.2	93	1099.2	3.2	288.5	0.5	4748.7	0	6090.23	24.64
	21	157370	440	428110	1290	799690	3040	1151930	3280	6320	7234.7	14.8	866.3	3	44689.7	90.5	1102.4	3.2	289	0.5	4748.7	0	6111.91	21.68
	22	158060	690	430270	2160	804130	4440	1157260	5330	9770	7241.9	7.2	870.6	4.3	44854.9	165.2	1107.5	5.1	290	1	4748.7	0	6141.24	29.33
	23	158410	350	431400	1130	806410	2280	1160340	3080	5360	7244.7	2.8	872.9	2.3	44945.9	91	1110.4	2.9	291.3	1.3	4748.7	0	6159.45	18.21
	24	158880	470	432850	1450	809520	3110	1163260	2920	6030	7251.6	6.9	877	4.1	45054.8	108.9	1114.2	3.8	292.2	0.9	4748.7	0	6185.23	25.78
	25	159240	360	434050	1200	811710	2190	1165020	1760	3950	7254.9	3.3	879.2	2.2	45114.5	59.7	1115.9	1.7	292.6	0.4	4748.7	0	6208.98	23.75
	26	159410	170	434700	650	813360	1650	1166260	1240	2890	7257.8	2.9	880.7	1.5	45174.4	59.9	1117	1.1	293.1	0.5	4748.7	0	6232.62	23.64
	27	159780	370	435930	1230	815460	2100	1169820	3560	5660	7264.7	6.9	882.8	2.1	45271.8	97.4	1120.5	3.5	293.6	0.5	4748.7	0	6255.54	22.92
	28	160220	440	437400	1470	819170	3710	1172660	2840	6550	7274.1	9.4	886.5	3.7	45368.2	116.4	1123.2	2.7	294.4	0.8	4748.7	0	6281.02	25.48
	TOTAL		11000		33190		88470		86840	175310		220.9		89.1		2913.4		86.5		19.1		2.2		673.84
	MAX.		840		2290		11180		11960	23140		25		10.7		390.1		11.2		7.9		0.9		74.43
	MIN.		0		0		0		0	0		0		0		0		0		0		0		0
	AVE.		392.9		1165.4		3159.6		3101.4	6261.1		7.9		3.2		104.1		3.1		0.7		0.1		24.1

TRINIDAD RANCHERIA																								
WASTE WATER TREATMENT PLANT																								
DAILY TOTALS - MARCH 2003																								
	WATER METERS										E.T. METERS													
		WATER TANKS				PROCESS PUMPS				Total	MEMBRANE BANK #1				MEMBRANE BANK #2				FLYGT PUMPS				U.V.	
		81A		81B		P35A		P35B		Flows	TRANSFER PUMP		PROCESS PUMP		TRANSFER PUMP		PROCESS PUMP		PUMP #1		PUMP #2			
		GAL..	TOTAL	GAL.	TOTAL	GAL.	TOTAL	GAL.	TOTAL	GAL.	MIN.	TOTAL	HOURS	TOTAL	MIN.	TOTAL	HOURS	TOTAL	HOURS	TOTAL	HOURS	TOTAL	HOURS	TOTAL
PREVIOUS DAY		160220		437400		819170		1172660			7274.1		886.5		45388.2		1123.2		294.4		4748.7		6281.62	
TIME:	DATE																							
	1	161080	860	439970	2570	824310	5140	1180030	7370	12510	7306	31.9	891.6	5.1	45609.2	221	1130.4	7.2	295.7	1.3	4748.7	0	6310.51	28.89
	2	161820	740	441920	1950	827030	2720	1185900	5870	8590	7318	12	894.2	2.6	45734.9	125.7	1136	5.6	296.4	0.7	4748.7	0	6334.32	23.81
	3	162440	620	443430	1510	829370	2340	1187380	1480	3820	7344.8	26.8	898.3	4.1	45789	54.1	1139.2	3.2	297.7	1.3	4748.7	0	6353.02	18.7
	4	162570	130	443810	380	830550	1180	1189520	2140	3320	7346.6	1.8	900.6	2.3	45837.8	48.8	1141.6	2.4	297.7	0	4748.7	0	6377.1	24.08
	5	162660	90	444180	370	833280	2730	1190570	1050	3780	7355.8	9.2	903.3	2.7	45899	61.2	1143.4	1.8	298.1	0.4	4748.7	0	6400.87	23.77
	6	162960	300	445040	860	840320	7040	1190570	0	7040	7359.3	3.5	910.2	6.9	45998.2	99.2	1149.4	6	298.5	0.4	4748.7	0	6423.92	23.05
	7	163650	690	446990	1950	849340	9020	1191090	520	9540	7371.3	12	919.6	9.4	46116.1	117.9	1159	9.6	299	0.5	4748.7	0	6448.93	25.01
	8	164330	680	449050	2060	854270	4930	1195530	4440	9370	7377.3	6	924.5	4.9	46284.9	168.8	1163.3	4.3	300.2	1.2	4748.7	0	6478.89	29.96
	9	164700	370	450250	1200	857400	3130	1198550	3020	6150	7381	3.7	927.5	3	46400.3	115.4	1166.2	2.9	300.6	0.4	4748.7	0	6502.97	24.08
	10	165020	320	451280	1030	858640	1240	1200590	2040	3280	7383.7	2.7	928.7	1.2	46459	58.7	1168.2	2	300.8	0.2	4748.7	0	6521.34	18.37
	11	165290	270	452060	780	860230	1590	1202430	1840	3430	7386.4	2.7	930.3	1.6	46526.5	67.5	1170	1.8	301.5	0.7	4748.7	0	6543.7	22.36
	12	165370	80	452480	420	861960	1730	1204020	1590	3320	7389.2	2.8	932	1.7	46582.5	56	1171.6	1.6	301.7	0.2	4748.7	0	6565.15	21.45
	13	165680	310	453690	1210	864750	2790	1206750	2730	5520	7396	6.8	934.8	2.8	46681	98.5	1174.2	2.6	302.3	0.6	4748.7	0	6588.35	23.2
	14	166370	690	455850	2160	869820	5070	1211220	4470	9540	7397	1	939.8	5	46863.7	182.7	1178.6	4.4	303	0.7	4749.1	0.4	6619.72	31.37
	15	166960	590	457630	1780	876430	6610	1214820	3600	10210	7398.9	1.9	946.5	6.7	47057.5	193.8	1182.2	3.6	303.2	0.2	4750.9	1.8	6646.7	26.98
	16	167630	670	459530	1900	881180	4750	1219870	5050	9800	7402.3	3.4	951	4.5	47223.8	166.3	1186.9	4.7	303.6	0.4	4752.1	1.2	6669.51	22.81
	17	167920	290	460360	830	882720	1540	1221350	1480	3020	7407.8	5.5	952.5	1.5	47274.1	50.3	1188.5	1.6	304.4	0.8	4752.1	0	6689.35	19.84
	18	168190	270	461320	960	884560	1840	1223320	1970	3810	7421.3	13.5	954.3	1.8	47334.5	60.4	1190.3	1.8	304.9	0.5	4752.2	0.1	6714.58	25.23
	19	168380	190	461870	550	886690	2130	1224300	980	3110	7442	20.7	956.5	2.2	47384.5	50	1191.6	1.3	305.1	0.2	4753	0.8	6737.02	22.44
	20	168700	320	462840	970	889130	2440	1226820	2520	4960	7445.3	3.3	958.9	2.4	47477	92.5	1193.7	2.1	305.3	0.2	4753.8	0.8	6760.09	23.07
	21	169100	400	464050	1210	891940	2810	1230320	3500	6310	7453.4	8.1	961.6	2.7	47586	109	1197.1	3.4	305.6	0.3	4754.7	0.9	6783.16	23.07
	22	169560	460	465500	1450	895660	3720	1233650	3330	7050	7474.6	21.2	965.4	3.8	47708.1	122.1	1200.4	3.3	306.5	0.9	4754.7	0	6808.59	25.43
	23	170060	500	466860	1360	900170	4510	1238200	4550	9060	7481.4	6.8	969.8	4.4	47804	95.9	1204	3.6	307.4	0.9	4755.8	1.1	6832.88	24.29
	24	170360	300	467930	1070	901640	1470	1241180	2980	4450	7491.3	9.9	971.3	1.5	47952.3	148.3	1207.8	3.8	307.9	0.5	4756.5	0.7	6861.84	28.96
	25	170600	240	468530	600	902950	1310	1243310	2130	3440	7493.5	2.2	974.1	2.8	48001.1	48.8	1209	1.2	308.4	0.5	4756.5	0	6880.42	18.58
	26	171270	670	470350	1820	906710	3760	1247250	3940	7700	7501.7	8.2	978.4	4.3	48136.5	135.4	1213.8	4.8	308.8	0.4	4758.4	1.9	6910.49	30.07
	27	171450	180	471000	650	907740	1030	1249560	2310	3340	7503.8	2.1	980.5	2.1	48189.7	53.2	1216	2.2	309.2	0.4	4758.4	0	6928.62	18.13
	28	172040	590	472530	1530	909530	1790	1254800	5240	7030	7514.8	11	985.1	4.6	48294.3	104.6	1221.2	5.2	309.7	0.5	4759.4	1	6950.03	21.41
	29	172520	480	474090	1560	915050	5520	1257970	3170	8690	7521.1	6.3	990.6	5.5	48446.6	152.3	1224.4	3.2	310	0.3	4762.7	3.3	6978.06	28.03
	30	173100	580	475850	1760	919240	4190	1264050	6080	10270	7528.6	7.5	994.7	4.1	48622.4	175.8	1230.4	6	310.4	0.4	4765.7	3	7006.27	28.21
	31	173160	60	476030	180	920430	1190	1264880	830	2020	7536.2	7.6	996	1.3	48656.7	34.3	1231.3	0.9	310.5	0.1	4766	0.3	7021.65	15.38
	TOTAL		12940		38630		101260		92220	193480		262.1		109.5		3268.5		108.1		16.1		17.3		740.03
	MAX.		860		2570		9020		7370	12510		31.9		9.4		221		9.6		1.3		3.3		31.37
	MIN.		60		180		1030		0	2020		1		1.2		34.3		0.9		0		0		15.38
	AVE.		417.4		1246.1		3266.5		2974.8	6241.3		8.5		3.5		105.4		3.5		0.5		0.6		23.9

TRINIDAD RANCHERIA
WASTE WATER TREATMENT PLANT
DAILY TOTALS - APRIL 2003

	WATER METERS										E.T. METERS													
		WATER TANKS				PROCESS PUMPS				Total	MEMBRANE BANK #1				MEMBRANE BANK #2				FLYGT PUMPS				U.V.	
		81A		81B		P35A		P35B		Flows	TRANSFER PUMP		PROCESS PUMP		TRANSFER PUMP		PROCESS PUMP		PUMP #1		PUMP #2			
		GAL..	TOTAL	GAL.	TOTAL	GAL.	TOTAL	GAL.	TOTAL	GAL.	MIN.	TOTAL	HOURS	TOTAL	MIN.	TOTAL	HOURS	TOTAL	HOURS	TOTAL	HOURS	TOTAL	HOURS	TOTAL
PREVIOUS DAY		173160		476030		920430		1264880			7536.2		996		48656.7		1231.3		310.5		4766		7021.65	
TIME:	DATE																							
	1	173255	95	476420	390	921975	1545	1266270	1390	2935	7538.3	2.1	997.5	1.5	48720.4	63.7	1232.6	1.3	310.6	0.1	4767.3	1.3	7045.43	23.78
	2	173350	95	476810	390	923520	1545	1267660	1390	2935	7540.4	2.1	999	1.5	48784.1	63.7	1234	1.4	310.8	0.2	4768.5	1.2	7069.2	23.77
	3	173590	240	477620	810	926510	2990	1270810	3150	6140	7543.3	2.9	1002	3	48896.3	112.2	1237.2	3.2	311.1	0.3	4769.4	0.9	7096.09	26.89
	4	173790	200	478380	760	928160	1650	1275120	4310	5960	7549.5	6.2	1004.6	2.6	48997.6	101.3	1241.5	4.3	311.4	0.3	4769.4	0	7118.01	21.92
	5	174290	500	479890	1510	928160	0	1284240	9120	9120	7554.3	4.8	1013.1	8.5	49130.6	133	1250.9	9.4	311.8	0.4	4771.4	2	7143.58	25.57
	6	174590	300	480820	930	928425	265	1290220	5980	6245	7558.2	3.9	1013.3	0.2	49246.2	115.6	1257.2	6.3	312.1	0.3	4772.8	1.4	7166.35	22.77
	7	174890	300	481750	930	928790	365	1296200	5980	6345	7562	3.8	1013.6	0.3	49360.6	114.4	1263.4	6.2	312.4	0.3	4774.2	1.4	7189.12	22.77
	8	175160	270	482630	880	928910	120	1300930	4730	4850	7567.5	5.5	1018.2	4.6	49436.5	75.9	1268.4	5	312.7	0.3	4774.2	0	7215.31	26.19
	9	175160	0	482630	0	929000	90	1303010	2080	2170	7576	8.5	1020.9	2.7	49511.8	75.3	1270.8	2.4	312.7	0	4775.4	1.2	7241.18	25.87
	10	175300	140	483010	380	929800	800	1309770	6760	7560	7586.1	10.1	1026.2	5.3	49591.9	80.1	1278.3	7.5	313	0.3	4775.4	0	7261.16	19.98
	11	175450	150	483540	530	931740	1940	1312500	2730	4670	7589.9	3.8	1028.2	2	49683.8	91.9	1281.2	2.9	313	0	4775.6	0.2	7281.36	20.2
	12	176120	670	485810	2270	937450	5710	1317310	4810	10520	7606.1	16.2	1034.3	6.1	49872.3	188.5	1286.3	5.1	313.6	0.6	4775.8	0.2	7314.14	32.76
	13	176515	395	486990	1180	940360	2910	1320355	3045	5955	7611.2	5.1	1037.3	3	49971.3	99	1289.5	3.2	313.9	0.3	4776	0.2	7335.87	21.73
	14	176910	395	488170	1180	943270	2910	1323400	3045	5955	7616.2	5	1040.4	3.1	50070.4	99.1	1292.8	3.3	314.3	0.4	4776.2	0.2	7357.6	21.73
	15	177200	290	489120	950	945350	2080	1324930	1530	3610	7619.2	3	1042.8	2.4	50139.1	68.7	1294.4	1.6	314.3	0	4776.4	0.2	7380.33	22.73
	16	177430	230	489940	820	945750	400	1331560	6630	7030	7622.8	3.6	1048.2	5.4	50236.6	97.5	1301.4	7	314.5	0.2	4776.6	0.2	7405.34	25.01
	17	177880	450	491270	1330	946990	1240	1336680	5120	6360	7627.2	4.4	1049.5	1.3	50354.3	117.7	1306.8	5.4	315.2	0.7	4776.6	0	7429.74	24.4
	18	178230	350	492320	1050	949250	2260	1340450	3770	6030	7635.1	7.9	1054.1	4.6	50453.4	99.1	1310.9	4.1	315.5	0.3	4776.6	0	7451.74	22
	19	178810	580	493880	1560	951540	2290	1346350	5900	8190	7643.3	8.2	1059.5	5.4	50579.7	126.3	1317.1	6.2	316	0.5	4776.6	0	7472.75	21.01
	20	179590	780	496080	2200	954840	3300	1357200	10850	14150	7653.1	9.8	1067.5	8	50810.1	230.4	1328.5	11.4	316.8	0.8	4776.6	0	7506.82	34.07
	21	179950	360	497000	920	956110	1270	1358420	1220	2490	7655.1	2	1069	1.5	50862.6	52.5	1330.8	2.3	317.6	0.8	4776.6	0	7524.33	17.51
	22	180260	310	498000	1000	958530	2420	1361300	2880	5300	7657.9	2.8	1071.5	2.5	50941.1	78.5	1332.8	2	317.9	0.3	4776.6	0	7549.8	25.47
	23	180300	40	498250	250	959600	1070	1362800	1500	2570	7660.1	2.2	1072.6	1.1	51003.9	62.8	1334.4	1.6	318	0.1	4776.6	0	7572.85	23.05
	24	180590	290	499180	930	961800	2200	1366690	3890	6090	7664.6	4.5	1074.8	2.2	51106.1	102.2	1338.4	4	318.3	0.3	4776.6	0	7594.98	22.13
	25	180870	280	500180	1000	964300	2500	1370210	3520	6020	7670	5.4	1077.3	2.5	51219.1	113	1342.1	3.7	318.7	0.4	4776.6	0	7620.58	25.6
	26	184460	3590	508650	8470	974780	10480	1380240	10030	20510	7683.4	13.4	1088	10.7	51565.7	346.6	1352.5	10.4	319.1	0.4	4776.6	0	7647.08	26.5
	27	185070	610	510250	1600	978520	3740	1383490	3250	6990	7687.7	4.3	1091.7	3.7	51679.1	113.4	1355.8	3.3	319.2	0.1	4776.6	0	7666.42	19.34
	28	186120	1050	513010	2760	983170	4650	1388920	5430	10080	7696	8.3	1096.4	4.7	51860.4	181.3	1361.4	5.6	319.6	0.4	4776.6	0	7695.16	28.74
	29	186460	340	513960	950	986590	3420	1391950	3030	6450	7704.3	8.3	1099.9	3.5	51964.3	103.9	1364.8	3.4	320.1	0.5	4776.6	0	7718.6	23.44
	30	186800	340	514910	950	990010	3420	1394990	3040	6460	7712.7	8.4	1103.5	3.6	52068.5	104.2	1368.2	3.4	320.7	0.6	4776.6	0	7742.05	23.45
	31									0														
	TOTAL		13640		38880		69580		130110	199690		176.5		107.5		3411.8		136.9		10.2		10.6		720.4
	MAX.		3590		8470		10480		10850	20510		16.2		10.7		346.6		11.4		0.8		2		34.07
	MIN.		0		0		0		1220	0		2		0.2		52.5		1.3		0		0		17.51
	AVE.		454.7		1296.0		2319.3		4337.0	6441.6		5.9		3.6		113.7		4.6		0.3		0.4		24.0

Cher-Ae Heights Casino
Wastewater Treatment Plant BOD

2002	Influent	Effluent
January	Off line	
February	Off line	
March	Off line	
April	Off line	
May	Off line	
June	550 ppm	0 ppm
July	540 ppm	0 ppm
August	400 ppm	0 ppm
September	540 ppm	0 ppm
October	560 ppm	0 ppm
November	700 ppm	0 ppm
December	630 ppm	0 ppm

Appendix C

Wastewater Treatment Regulations

Title 22 Code of Regulations

DIVISION 4. ENVIRONMENTAL HEALTH
CHAPTER 1. INTRODUCTION

ARTICLE 1. DEFINITIONS

60001. Department

Whenever the term "department" is used in this division, it means the State Department of Health Services, unless otherwise specified.

60003. Director

Whenever the term "director" is used in this division, it means the Director, State Department of Health Services, unless otherwise specified.

CHAPTER 2. REGULATIONS FOR THE IMPLEMENTATION OF THE CALIFORNIA ENVIRONMENTAL QUALITY ACT

ARTICLE 1. GENERAL REQUIREMENTS AND CATEGORICAL EXEMPTIONS

60100. General requirements

The Department of Health Services incorporates by reference the objectives, criteria, and procedures as delineated in Chapters 1, 2, 2.5, 2.6, 3, 4, 5, and 6, Division 13, Public Resources Code, Sections 21000 et seq., and the Guidelines for the Implementation of the California Environmental Quality Act, Title 14, Division 6, Chapter 3, California Administrative Code, Sections 15000 et seq.

60101. Specific activities within categorical exempt classes

The following specific activities are determined by the Department to fall within the classes of categorical exemptions set forth in Sections 15300 et seq. of Title 14 of the California Administrative Code:

(a) Class 1: Existing Facilities.

CHAPTER 3 WATER RECYCLING CRITERIA
ARTICLE 1 DEFINITIONS

60301. Definitions

60301.100. Approved laboratory

"Approved laboratory" means a laboratory that has been certified by the Department to perform microbiological analyses pursuant to section 116390, Health and Safety Code.

60301.160. Coagulated wastewater

"Coagulated wastewater" means oxidized wastewater in which colloidal and finely divided suspended matter have been destabilized and agglomerated upstream from a filter by the addition of suitable floc-forming chemicals.

60301.170. Conventional treatment

"Conventional treatment" means a treatment chain that utilizes a sedimentation unit process between the coagulation and filtration processes and produces an effluent that meets the definition for disinfected tertiary recycled water.

60301.200. Direct beneficial use

"Direct beneficial use" means the use of recycled water that has been transported from the point of treatment or production to the point of use without an intervening discharge to waters of the State.

60301.220. Disinfected secondary-2.2 recycled water

"Disinfected secondary-2.2 recycled water" means recycled water that has been oxidized and disinfected so that the median concentration of total coliform bacteria in the disinfected effluent does not exceed a most probable number (MPN) of 2.2 per 100 milliliters utilizing the bacteriological results of the last seven days for which analyses have been completed, and the number of total coliform bacteria does not exceed an MPN of 23 per 100 milliliters in more than one sample in any 30 day period.

60301.225. Disinfected secondary-23 recycled water

"Disinfected secondary-23 recycled water" means recycled water that has been oxidized and disinfected so that the median concentration of total coliform bacteria in the disinfected effluent does not exceed a most probable number (MPN) of 23 per 100

60301.250. Dual plumbed system

"Dual plumbed system" or "dual plumbed" means a system that utilizes separate piping systems for recycled water and potable water within a facility and where the recycled water is used for either of the following purposes:

(a) To serve plumbing outlets (excluding fire suppression systems) within a building or

(b) Outdoor landscape irrigation at individual residences.

60301.300. F-Specific bacteriophage MS-2

"F-specific bacteriophage MS-2" means a strain of a specific type of virus that infects coliform bacteria that is traceable to the American Type Culture Collection (ATCC 15597B1) and is grown on lawns of E. coli (ATCC 15597).

60301.310. Facility

"Facility" means any type of building or structure, or a defined area of specific use that receives water for domestic use from a public water system as defined in section 116275 of the Health and Safety Code.

60301.320. Filtered wastewater

"Filtered wastewater" means an oxidized wastewater that meets the criteria in subsection (a) or (b):

(a) Has been coagulated and passed through natural undisturbed soils or a bed of filter media pursuant to the following:

(1) At a rate that does not exceed 5 gallons per minute per square foot of surface area in mono, dual or mixed media gravity, upflow or pressure filtration systems, or does not exceed 2 gallons per minute per square foot of surface area in traveling bridge automatic backwash filters; and

(2) So that the turbidity of the filtered wastewater does not exceed any of the following:

(A) An average of 2 NTU within a 24-hour period;

(B) 5 NTU more than 5 percent of the time within a 24-hour period; and

60301.630. NTU

"NTU" (Nephelometric turbidity unit) means a measurement of turbidity as determined by the ratio of the intensity of light scattered by the sample to the intensity of incident light as measured by method 2130 B. in Standard Methods for the Examination of Water and Wastewater, 20th ed.; Eaton, A. D., Clesceri, L. S., and Greenberg, A. E., Eds; American Public Health Association: Washington, DC, 1995; p. 2-8.

60301.650. Oxidized wastewater.

"Oxidized wastewater" means wastewater in which the organic matter has been stabilized, is nonputrescible, and contains dissolved oxygen.

60301.660. Peak dry weather design flow

"Peak Dry Weather Design Flow" means the arithmetic mean of the maximum peak flow rates sustained over some period of time (for example three hours) during the maximum 24-hour dry weather period. Dry weather period is defined as periods of little or no rainfall.

60301.700. Recycled wateragency.

"Recycled water agency" means the public water system, or a publicly or privately owned or operated recycled water system, that delivers or proposes to deliver recycled water to a facility.

60301.710. Recycling plant

"Recycling plant" means an arrangement of devices, structures, equipment, processes and controls which produce recycled water.

60301.740. Regulatory Agency

"Regulatory agency" means the California Regional Water Quality Control Board(s) that have jurisdiction over the recycling plant and use areas.

60301.750. Restricted access golf course

"Restricted access golf course" means a golf course where public access is controlled so that areas irrigated with recycled water cannot be used as if they were part of a park, playground, or school yard and where irrigation is conducted only in areas and during periods when the golf course is not being used by golfers.

ARTICLE 3. USES OF RECYCLED WATER.

60303. Exceptions

The requirements set forth in this chapter shall not apply to the use of recycled water onsite at a water recycling plant, or wastewater treatment plant, provided access by the public to the area of onsite recycled water use is restricted.

60304. Use of recycled water for irrigation

(a) Recycled water used for the surface irrigation of the following shall be a disinfected tertiary recycled water, except that for filtration pursuant to Section 60301.320(a) coagulation need not be used as part of the treatment process provided that the filter effluent turbidity does not exceed 2 NTU, the turbidity of the influent to the filters is continuously measured, the influent turbidity does not exceed 5 NTU for more than 15 minutes and never exceeds 10 NTU, and that there is the capability to automatically activate chemical addition or divert the wastewater should the filter influent turbidity exceed 5 NTU for more than 15 minutes:

(1) Food crops, including all edible root crops, where the recycled water comes into contact with the edible portion of the crop,

(2) Parks and playgrounds,

(3) School yards,

(4) Residential landscaping,

(5) Unrestricted access golf courses, and

(6) Any other irrigation use not specified in this section and not prohibited by other sections of the California Code of Regulations.

(b) Recycled water used for the surface irrigation of food crops where the edible portion is produced above ground and not contacted by the recycled water shall be at least disinfected secondary-2.2 recycled water.

(c) Recycled water used for the surface irrigation of the following shall be at least disinfected secondary-23 recycled water:

(1) Cemeteries,

60305. Use of recycled water for impoundments.

(a) Except as provided in subsection (b), recycled water used as a source of water supply for nonrestricted recreational impoundments shall be disinfected tertiary recycled water that has been subjected to conventional treatment.

(b) Disinfected tertiary recycled water that has not received conventional treatment may be used for nonrestricted recreational impoundments provided the recycled water is monitored for the presence of pathogenic organisms in accordance with the following:

> (1) During the first 12 months of operation and use the recycled water shall be sampled and analyzed monthly for *Giardia*, enteric viruses, and *Cryptosporidium*. Following the first 12 months of use, the recycled water shall be sampled and analyzed quarterly for *Giardia*, enteric viruses, and *Cryptosporidium*. The ongoing monitoring may be discontinued after the first two years of operation with the approval of the department. This monitoring shall be in addition to the monitoring set forth in section 60321.
>
> (2) The samples shall be taken at a point following disinfection and prior to the point where the recycled water enters the use impoundment. The samples shall be analyzed by an approved laboratory and the results submitted quarterly to the regulatory agency.

(c) The total coliform bacteria concentrations in recycled water used for nonrestricted recreational impoundments, measured at a point between the disinfection process and the point of entry to the use impoundment, shall comply with the criteria specified in section 60301.230 (b) for disinfected tertiary recycled water.

(d) Recycled water used as a source of supply for restricted recreational impoundments and for any publicly accessible impoundments at fish hatcheries shall be at least disinfected secondary-2.2 recycled water.

(e) Recycled water used as a source of supply for landscape impoundments that do not utilize decorative fountains shall be at least disinfected secondary-23 recycled water.

60306. Use of recycled water for cooling

(a) Recycled water used for industrial or commercial cooling or air conditioning that involves the use of a cooling tower, evaporative condenser, spraying or any mechanism that creates a mist shall be a disinfected tertiary recycled water.

(9) Commercial car washes, including hand washes if the recycled water is not heated, where the general public is excluded from the washing process.

(b) Recycled water used for the following uses shall be at least disinfected secondary-23 recycled water:

(1) Industrial boiler feed,

(2) Nonstructural fire fighting,

(3) Backfill consolidation around nonpotable piping,

(4) Soil compaction,

(5) Mixing concrete,

(6) Dust control on roads and streets,

(7) Cleaning roads, sidewalks and outdoor work areas and

(8) Industrial process water that will not come into contact with workers.

(c) Recycled water used for flushing sanitary sewers shall be at least undisinfected secondary recycled water.

ARTICLE 4. USE AREA REQUIREMENTS.

60310. Use area requirements

(a) No irrigation with disinfected tertiary recycled water shall take place within 50 feet of any domestic water supply well unless all of the following conditions have been met:

(1) A geological investigation demonstrates that an aquitard exists at the well between the uppermost aquifer being drawn from and the ground surface.

(2) The well contains an annular seal that extends from the surface into the aquitard.

(3) The well is housed to prevent any recycled water spray from coming into contact with the wellhead facilities.

(h) Except as allowed under section 7604 of title 17, California Code of Regulations, no physical connection shall be made or allowed to exist between any recycled water system and any separate system conveying potable water.

(i) The portions of the recycled water piping system that are in areas subject to access by the general public shall not include any hose bibbs. Only quick couplers that differ from those used on the potable water system shall be used on the portions of the recycled water piping system in areas subject to public access.

ARTICLE 5. DUAL PLUMBED RECYCLED WATER SYSTEMS.

60313. General requirements.

(a) No person other than a recycled water agency shall deliver recycled water to a dual-plumbed facility.

(b) No recycled water agency shall deliver recycled water for any internal use to any individually-owned residential units including free-standing structures, multiplexes, or condominiums.

(c) No recycled water agency shall deliver recycled water for internal use except for fire suppression systems, to any facility that produces or processes food products or beverages. For purposes of this Subsection, cafeterias or snack bars in a facility whose primary function does not involve the production or processing of foods or beverages are not considered facilities that produce or process foods or beverages.

(d) No recycled water agency shall deliver recycled water to a facility using a dual plumbed system unless the report required pursuant to section 13522.5 of the Water Code, and which meets the requirements set forth in section 60314, has been submitted to, and approved by, the regulatory agency.

60314. Report submittal

(a) For dual-plumbed recycled water systems, the report submitted pursuant to section 13522.5 of the Water Code shall contain the following information in addition to the information required by section 60323:

(1) A detailed description of the intended use area identifying the following:

(A) The number, location, and type of facilities within the use area proposing to use dual plumbed systems,

(B) The average number of persons estimated to be served by each facility on a daily basis,

(C) The specific boundaries of the proposed use area including a map showing the location of each facility to be served,

(D) The person or persons responsible for operation of the dual plumbed system at each facility, and control specialist certified by the California-Nevada section of the American Water Works Association or an organization with equivalent certification requirements. A written report documenting the result of the inspection or testing for the prior year shall be submitted to the department within 30 days following completion of the inspection or testing.

(b) The recycled water agency shall notify the department of any incidence of backflow from the dual-plumbed recycled water system into the potable water system within 24 hours of the discovery of the incident.

(c) Any backflow prevention device installed to protect the public water system serving the dual-plumbed recycled water system shall be inspected and maintained in accordance with section 7605 of Title 17, California Code of Regulations.

ARTICLE 5.1. GROUNDWATER RECHARGE

60320. Groundwater recharge

(a) Reclaimed water used for groundwater recharge of domestic water supply aquifers by surface spreading shall be at all times of a quality that fully protects public health. The State Department of Health Services' recommendations to the Regional Water Quality Control Boards for proposed groundwater recharge projects and for expansion of existing projects will be made on an individual case basis where the use of reclaimed water involves a potential risk to public health.

(b) The State Department of Health Services' recommendations will be based on all relevant aspects of each project, including the following factors: treatment provided; effluent quality and quantity; spreading area operations; soil characteristics; hydrogeology; residence time; and distance to withdrawal.

(c) The State Department of Health Services will hold a public hearing prior to making the final determination regarding the public health aspects of each groundwater recharge project. Final recommendations will be submitted to the Regional Water Quality Control Board in an expeditious manner.

(b) The report shall be prepared by a properly qualified engineer registered in California and experienced in the field of wastewater treatment, and shall contain a description of the design of the proposed reclamation system. The report shall clearly indicate the means for compliance with these regulations and any other features specified by the regulatory agency.

(c) The report shall contain a contingency plan which will assure that no untreated or inadequately treated wastewater will be delivered to the use area.

60325. Personnel

(a) Each reclamation plant shall be provided with a sufficient number of qualified personnel to operate the facility effectively so as to achieve the required level of treatment at all times.

(b) Qualified personnel shall be those meeting requirements established pursuant to Chapter 9 (commencing with Section 13625) of the Water Code.

60327. Maintenance

A preventive maintenance program shall be provided at each reclamation plant to ensure that all equipment is kept in a reliable operating condition.

60329. Operating records and reports

(a) Operating records shall be maintained at the reclamation plant or a central depository within the operating agency. These shall include: all analyses specified in the reclamation criteria; records of operational problems, plant and equipment breakdowns, and diversions to emergency storage or disposal; all corrective or preventive action taken.

(b) Process or equipment failures triggering an alarm shall be recorded and maintained as a separate record file. The recorded information shall include the time and cause of failure and corrective action taken.

(c) A monthly summary of operating records as specified under (a) of this section shall be filed monthly with the regulatory agency.

(d) Any discharge of untreated or partially treated wastewater to the use area, and the cessation of same, shall be reported immediately by telephone to the regulatory agency, the State Department of Health, and the local health officer.

not attended full time, the alarm(s) shall be connected to sound at a police station, fire station or other full time service unit with which arrangements have been made to alert the person in charge at times that the reclamation plant is unattended.

60337. Power supply

The power supply shall be provided with one of the following reliability features:

(a) Alarm and standby power source.

(b) Alarm and automatically actuated short-term retention or disposal provisions as specified in Section 60341.

(c) Automatically actuated long-term storage or disposal provisions as specified in Section 60341.

ARTICLE 9. RELIABILITY REQUIREMENTS FOR PRIMARY EFFLUENT

60339. Primary treatment

Reclamation plants producing reclaimed water exclusively for uses for which primary effluent is permitted shall be provided with one of the following reliability features:

(a) Multiple primary treatment units capable of producing primary effluent with one unit not in operation.

(b) Long-term storage or disposal provisions as specified in Section 60341.

Note: Use of primary effluent for recycled water is no longer allowed. [repeal of Section 60309, effective December 2000]

ARTICLE 10. RELIABILITY REQUIREMENTS FOR FULL TREATMENT

60341. Emergency storage or disposal

(a) Where short-term retention or disposal provisions are used as a reliability feature, these shall consist of facilities reserved for the purpose of storing or disposing of untreated or partially treated wastewater for at least a 24-hour period. The facilities shall include all the necessary diversion devices, provisions for odor control, conduits, and pumping and pump back equipment. All of the equipment other than the pump back

60345. Biological treatment

All biological treatment unit processes shall be provided with one of the following reliability features:

(a) Alarm and multiple biological treatment units capable of producing oxidized wastewater with one unit not in operation.

(b) Alarm, short-term retention or disposal provisions, and standby replacement equipment.

(c) Alarm and long-term storage or disposal provisions.

(d) Automatically actuated long-term storage or disposal provisions.

60347. Secondary sedimentation

All secondary sedimentation unit processes shall be provided with one of the following reliability features:

(a) Multiple sedimentation units capable of treating the entire flow with one unit not in operation.

(b) Standby sedimentation unit process.

(c) Long-term storage or disposal provisions.

60349. Coagulation

(a) All coagulation unit processes shall be provided with the following mandatory features for uninterrupted coagulant feed:

(1) Standby feeders,

(2) Adequate chemical stowage and conveyance facilities,

(3) Adequate reserve chemical supply, and

(4) Automatic dosage control.

(3) Chlorine scales, and

(4) Automatic devices for switching to full chlorine cylinders.

Automatic residual control of chlorine dosage, automatic measuring and recording of chlorine residual, and hydraulic performance studies may also be required.

(b) All disinfection unit processes where chlorine is used as the disinfectant shall be provided with one of the following reliability features:

(1) Alarm and standby chlorinator;

(2) Alarm, short-term retention or disposal provisions, and standby replacement equipment;

(3) Alarm and long-term storage or disposal provisions;

(4) Automatically actuated long-term storage or disposal provisions; or

(5) Alarm and multiple point chlorination, each with independent power source, separate chlorinator, and separate chlorine supply.

60355. Other alternatives to reliability requirements

Other alternatives to reliability requirements set forth in Articles 8 to 10 may be accepted if the applicant demonstrates to the satisfaction of the State Department of Health that the proposed alternative will assure an equal degree of reliability.

(i) "Reclaimed Water" is a wastewater which as a result of treatment is suitable for uses other than potable use.

(j) "Reduced Pressure Principle Backflow Prevention Device (RP)" is a backflow preventer incorporating not less than two check valves, an automatically operated differential relief valve located between the two check valves, a tightly closing shut-off valve on each side of the check valve assembly, and equipped with necessary test cocks for testing.

(k) "User Connection" is the point of connection of a user's piping to the water supplier's facilities.

(l) "Water Supplier" is the person who owns or operates the public water system.

(m) "Water User" is any person obtaining water from a public water supply.

7584. Responsibility and scope of program

The water supplier shall protect the public water supply from contamination by implementation of a cross-connection control program. The program, or any portion thereof, may be implemented directly by the water supplier or by means of a contract with the local health agency, or with another agency approved by the health agency. The water supplier's cross-connection control program shall for the purpose of addressing the requirements of Sections 7585 through 7605 include, but not be limited to, the following elements:

(a) The adoption of operating rules or ordinances to implement the cross-connection program.

(b) The conducting of surveys to identify water user premises where cross-connections are likely to occur,

(c) The provisions of backflow protection by the water user at the user's connection or within the user's premises or both,

(d) The provision of at least one person trained in cross-connection control to carry out the cross-connection program,

(e) The establishment of a procedure or system for testing backflow preventers, and

(f) The maintenance of records of locations, tests, and repairs of backflow preventers.

ARTICLE 2. PROTECTION OF WATER SYSTEM

7601. Approval of backflow preventers

Backflow preventers required by this Chapter shall have passed laboratory and field evaluation tests performed by a recognized testing organization which has demonstrated their competency to perform such tests to the Department.

7602. Construction of backflow preventers

(a) Air-gap Separation. An Air-gap separation (AG) shall be at least double the diameter of the supply pipe, measured vertically from the flood rim of the receiving vessel to the supply pipe; however, in no case shall this separation be less than one inch.

(b) Double Check Valve Assembly. A required double check valve assembly (DC) shall, as a minimum, conform to the AWWA Standard C506-78 (R83) adopted on January 28, 1978 for Double Check Valve Type Backflow Preventive Devices which is herein incorporated by reference.

(c) Reduced Pressure Principle Backflow Prevention Device. A required reduced pressure principle backflow prevention device (RP) shall, as a minimum, conform to the AWWA Standard C506-78 (R83) adopted on January 28, 1978 for Reduced Pressure Principle Type Backflow Prevention Devices which is herein incorporated by reference.

7603. Location of backflow preventers

(a) Air-gap Separation. An air-gap separation shall be located as close as practical to the user's connection and all piping between the user's connection and the receiving tank shall be entirely visible unless otherwise approved in writing by the water supplier and the health agency.

(b) Double Check Valve Assembly. A double check valve assembly shall be located as close as practical to the user's connection and shall be installed above grade, if possible, and in a manner where it is readily accessible for testing and maintenance.

(c) Reduced Pressure Principle Backflow Prevention Device. A reduced pressure principle backflow prevention device shall be located as close as practical to the user's connection and shall be installed a minimum of twelve inches (12") above grade and not more than thirty-six inches (36") above grade measured from the bottom of the device and with a minimum of twelve inches (12") side clearance.

TABLE 1
TYPE OF BACKFLOW PROTECTION REQUIRED

Degree of Hazard	Minimum Type of Backflow Prevention
(a) Sewage and Hazardous Substances	
(1) Premises where there are waste water pumping and/or treatment plants and there is no interconnection with the potable water system. This does not include a single-family residence that has a sewage lift pump. A RP be provided in lieu of an AG if approved by the health agency and water supplier.	AG
(2) Premises where hazardous substances are handled in any manner in which the substances may enter the potable water system. This does not include a single-family residence that has a sewage lift pump. A RP may be provided in lieu of an AG if approved by the health agency and water supplier.	AG
(3) Premises where there are irrigation systems into which fertilizers, herbicides, or pesticides are, or can be, injected.	RP
(b) Auxiliary Water Supplies	
(1) Premises where there is an unapproved auxiliary water supply which is interconnected with the public water system. A RP or DC may be provided in lieu of an AG if approved by the health agency and water supplier.	AG
(2) Premises where there is an unapproved auxiliary RP water supply and there are no interconnections with the public water system. A DC may be provided in lieu of a RP if approved by the health agency and water supplier.	RP

(e) Dockside Watering Points and Marine Facilities	
(1) Pier hydrants for supplying water to vessels for any purpose.	RP
(2) Premises where there are marine facilities.	RP
(f) Premises where entry is restricted so that inspections for cross-connections cannot be made with sufficient frequency or at sufficiently short notice to assure that do not exist.	RP
(g) Premises where there is a repeated history of cross-connections being established or re-established.	RP

Section 7605. Testing and maintenance of backflow preventers

(a) The water supplier shall assure that adequate maintenance and periodic testing are provided by the water user to ensure their proper operation.

(b) Backflow preventers shall be tested by persons who have demonstrated their competency in testing of these devices to the water supplier or health agency.

(c) Backflow preventers shall be tested at least annually or more frequently if determined to be necessary by the health agency or water supplier. When devices are found to be defective, they shall be repaired or replaced in accordance with the provisions of this Chapter.

(d) Backflow preventers shall be tested immediately after they are installed, relocated or repaired and not placed in service unless they are functioning as required.

(e) The water supplier shall notify the water user when testing of backflow preventers is needed. The notice shall contain the date when the test must be completed.

(f) Reports of testing and maintenance shall be maintained by the water supplier for a minimum of three years.

* * * * *

APPENDIX B

DRAFT GEOTECHNICAL FEASIBILITY AND PRELIMINARY DESIGN REPORT

DRAFT GEOTECHNICAL FEASIBILITY AND PRELIMINARY DESIGN REPORT

TRINIDAD RANCHERIA CHER-AE HEIGHTS HOTEL

Trinidad, California

Prepared by:

Crawford & Associates, Inc.
4220 Rocklin Road, Suite 1
Rocklin, CA 95677

November 2016

Prepared for:

Trinidad Rancheria Economic Development Corporation
P.O. Box 630
Trinidad, CA 95570

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November 8, 2016
CAInc File No. 16-319.1

Mr. David Tyson
Trinidad Rancheria Economic Development Corporation
P.O. Box 630
Trinidad, CA 95570

Subject: **DRAFT GEOTECHNICAL FEASIBILITY AND PRELIMINARY DESIGN REPORT**
Trinidad Rancheria Cher-Ae Heights Hotel
Trinidad, California

Dear Mr. Tyson,

Attached is our **DRAFT** Geotechnical Feasibility and Preliminary Design Report for the Trinidad Rancheria Cher-Ae Heights Hotel. Crawford & Associates, Inc. (CAInc) completed this report in accordance with our agreement with Trinidad Rancheria Economic Development Corporation (TREDC) dated August 26, 2016.

This report provides geotechnical data, geological hazards assessment, and preliminary geotechnical recommendations for the proposed hotel project. We will issue a final report upon receiving comments from you on this draft.

Please call if you have questions or require additional information.

Sincerely,

Crawford & Associates, Inc.,

Adam J. Killinger, PE, GE
Project Manager

Rick Sowers, PE, CEG
Principal Engineering Geologist

Nick Anderson, EIT
Project Engineer

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1 INTRODUCTION

1.1 PURPOSE

Crawford & Associates, Inc. (CAInc) prepared this Draft Geotechnical Feasibility and Preliminary Design Report for the Trinidad Rancheria Cher-Ae Heights Hotel project in Trinidad, California. This report provides our geotechnical data, geologic hazards evaluation, feasibility assessment and preliminary geotechnical recommendations for planning and preliminary design/costing. CAInc will prepare a final Geotechnical Design Report for the project based on further definition of project details, including final structure layouts, building loads, retaining walls, site grading and drainage/subdrainage elements.

1.2 SCOPE OF SERVICES

To prepare this report, CAInc:

- Reviewed published geologic, soils, groundwater and seismic maps pertaining to the site;
- Reviewed previous geotechnical studies at the casino and along nearby sections of Scenic Drive;
- Conducted geologic reconnaissance of the site and immediate area;
- Discussed the project elements with the design team;
- Drilled, logged, and sampled 6 exploratory borings to a maximum depth of 81.4 ft below ground surface (bgs);
- Performed laboratory testing on soil samples recovered from the borings;
- Conducted engineering analysis for preliminary foundation design; and
- Developed preliminary geotechnical recommendations based on the data and test results.

2 SITE & PROJECT DESCRIPTION

The site is located near the top of a 230±ft high bluff overlooking Trinidad Bay. Scenic Drive traverses the slope between the site and the ocean, approximately 65ft below the top of bluff. The overall slope between the casino and the ocean is about 2:1 (H:V) and is heavily vegetated, including numerous water-loving plants suggestive of shallow groundwater/springs. Scenic Drive is a county-owned road that has experienced numerous slip-outs and slides due to wave attach undercutting the ocean bluff. Several structures are present along the slope below the casino, including a residence about half-way along the slope between the casino and Scenic Drive.

The project includes a proposed 6-story hotel and complementary facilities (e.g. pool, fitness center, mechanical building, offices, etc.) located along the southwest side of the existing casino building. The hotel will be a steel-frame, stand-alone structure. The base level is expected to be near existing grade, which is generally flat within the building footprint. Some retaining walls may be incorporated into the final design to account for sloping ground to the southwest of the building.

Public access to the hotel is expected to be from a porte cochere with entrance from an existing paved roadway along the east side of the casino property; no additional grading is required for this access. Truck/delivery access is expected to be via a new road constructed from near the existing exit road at Scenic Drive with a “hairpin” turn near the existing residence and end near the northwest corner of the casino near the existing kitchen/restaurant. The road grade will be on the order of 7-12% and require new cut/fills to about 10-15 feet high. New cuts may require retaining walls to about 10 ft high. We understand the existing residence will be acquired by the tribe and removed as part of this project.

We show the tentative layout on Figure 1.

3 GEOLOGY

The site is underlain by Pleistocene marine terrace sediments deposited on a wave-cut bench in rock of the Jura-Cretaceous Franciscan Complex. The marine terrace sediments are generally comprised of pebbly sand, silt and clay. The underlying Franciscan Complex is comprised of weathered/sheared shale. We show the site geology on Figure 6.

Rock consistent with the Franciscan Complex is exposed near beach-level and locally in the site vicinity near the intersection of Scenic Drive and the casino exit road. This rock is observed to be variably-weathered shale and greywacke sandstone, with layering dipping typically to the northeast. Some rock is very hard while some is soft (mostly within sheared shale layers). The hard rock is generally resistant to erosion, as evidenced by the “sea stacks” left standing in the bay and along the shore.

We observed marine terrace deposits exposed along the road cuts of Scenic Drive and along the slopes below the casino. These soils are partly-cemented, pebbly sand and silt.

The slopes adjacent west of the site are moderately steep with localized areas of instability. An active slide is located along at the south end of the site and extends from the top of bluff to ocean level 200+ft below. The existing casino is not affected by this feature, although the existing parking area near the mechanical building is at the head of this slide and the outer edge of the pavement has broken and dropped about 6-inches vertically. Scenic Drive crosses this slide and has experienced distress from this movement. This slope contains evidence of shallow groundwater and springs that likely contribute to the slope instability in this area.

The active Trinidad Fault is mapped near the ocean and trending about parallel to the shoreline. The proposed hotel project is located approximately 500 feet northeast of this fault. Further discussion of fault rupture hazard and seismic ground motions are presented in Sections 8 and 9 below.

4 PREVIOUS EXPLORATION

4.1 CASINO EXPANSION EXPLORATIONS

The original casino building was expanded in 2000 from 21,000±sf to 50,000±sf, including expansions to the north and south. SHN Consulting Engineers & Geologists (SHN) performed three machine-drilled borings and one hand boring for the northern expansion to a maximum depth of 27ft bgs (report dated October 1998). Taber Consultants (Taber) excavated six test pits for the southern expansion, including a retaining wall and water tank, to a maximum depth of 12ft bgs (reports dated January 1999 and May 1999). These studies show that the existing casino, retaining wall and water tank are founded on strip/ring footings established in the weathered shale bedrock. We include pertinent data from the existing casino expansions in Appendix D.

4.2 SCENIC DRIVE SLOPE STABILITY EXPLORATIONS

Reviewed nearby geotechnical studies along Scenic Drive include three investigations performed by Taber (at PM 2.45, PM 2.20 and PM 1.25) and one investigation performed by SHN Consulting Engineers & Geologists (at PM 2.05). These studies show that groundwater is a primary initiator of landslides in the area. Terrace deposit and slide debris thicknesses varied from 0 to up to 40ft (generally 10-20ft), which lie on top of the weathered bedrock.

Slope stability measures to support the road have included drained, reconstructed embankments, soldier-pile retaining walls and welded-wire retaining walls.

5 CURRENT EXPLORATION

For this project, CAInc retained Geo-Ex Subsurface Exploration (Geo-Ex) to perform six (6) exploratory test borings between September 13, 2016 and September 16, 2016 ranging in depth from 31½ to 81½ ft below ground surface (bgs). Geo-Ex used a truck-mounted CME 75 drill rig equipped with flight augers or rotary wash techniques to perform this work.

During the drilling operations, penetration tests (blow counts) were performed at regular intervals using a Modified California Sampler (2.4” ID) or Standard Penetration Test Sampler (1.4” ID) to evaluate the relative density of coarse-grained (cohesionless) soil and to retain soil samples for laboratory testing. The penetration tests were performed by using a 140-pound automatic trip-hammer falling 30 inches. The recorded blow counts are shown on our boring logs and on the cross sections (Figures 3 and 4). The consistency of fine-grained (cohesive) soil was determined in accordance with ASTM D2488.

Our project engineer, Mr. Nick Anderson, logged the borings and visually classified the soils encountered according to the Unified Soil Classification System (USCS). Soil samples obtained from the borings were packaged and sealed in the field to reduce moisture loss and disturbance and delivered to laboratories for testing.

CAInc made ground water observations during drilling operations. One-inch diameter piezometers were installed in B3 and B5 to monitor future groundwater fluctuations. The remaining borings were backfilled with soil cuttings or neat cement grout. Details of the piezometer construction are shown on Detail 1.

6 SURFACE AND SUBSURFACE CONDITIONS

6.1 SOIL UNITS

We divide the soils overlying the bedrock into two general units. The uppermost unit is fill comprised of mostly stiff sandy lean clay and medium dense silty gravel. This unit is present across the majority of the hotel site and generally less than about 5 feet in depth.

The fill is underlain by marine terrace deposits within the northern half of the hotel footprint. These deposits are generally orange-tan, medium dense to very dense, silty and clayey sand with variable amounts of gravel and cementation. We encountered these soils to a depth of about 8 feet in B3 (near center of hotel footprint); the thickness then increases rapidly to a depth of 43 feet at B2 (north end of hotel footprint). The sharp drop in the bedrock surface toward the north likely represents deposition over an eroded, wave-cut bedrock surface.

6.2 BEDROCK

We encountered bedrock consistent with the Franciscan Complex as described above in each of the borings below the fill and/or terrace soils. The rock is predominately decomposed to moderately weathered shale with lesser sandstone and mudstone layers. Where decomposed, the rock is mostly angular rock fragments within a sheared clay matrix. The rock unit was drillable to the full depth of our test borings (maximum 81.4 ft, B3) with power auger and rotary wash methods; rock coring was not required for drill penetration. Table 1 summarizes the bedrock depth/elevation and description at the exploration locations completed by this office and those of SHN (1998) and Taber (1998) for the casino expansion work.

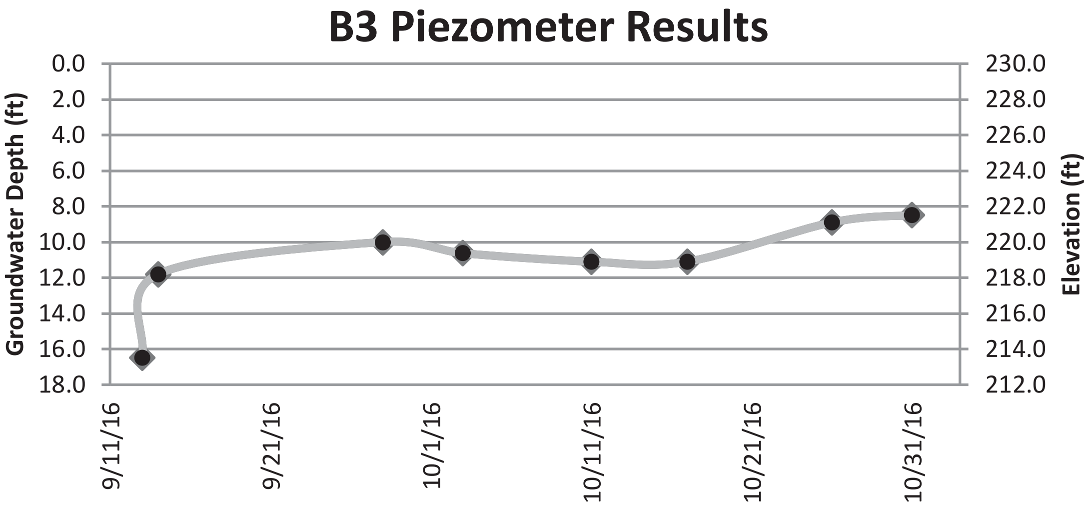
Table 1: Bedrock Summary

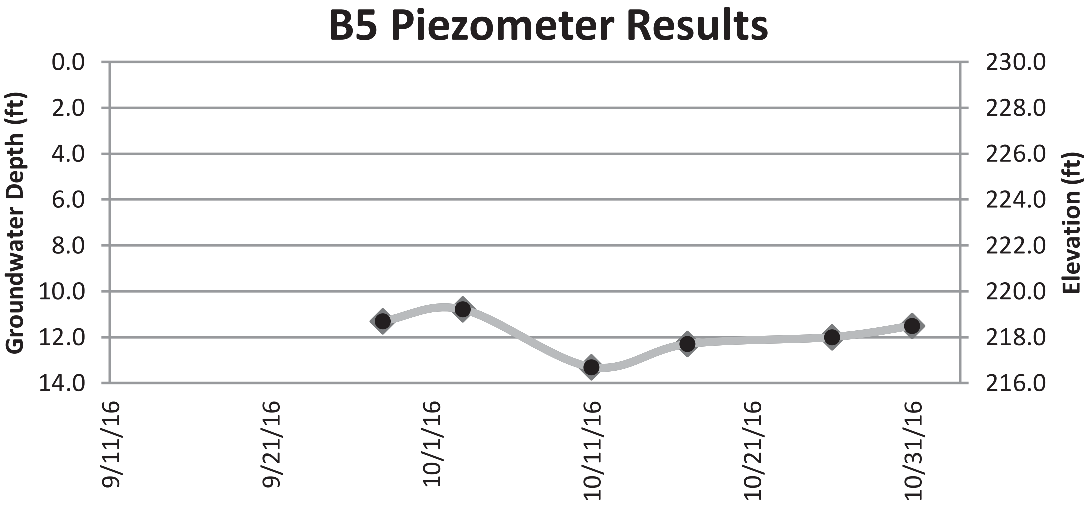
Exploration	Boring/Test Pit Number	Depth (ft)	Approximate Elevation (ft)	Description
SHN (1998)	B1	6.0	210	Sandstone/Mudstone, fractured
	B2	Unknown	Unknown	Unknown
	B3	6.0	213	Sandstone/Mudstone, fracture, highly weathered
	HB1	Unknown	Unknown	Unknown
Taber (1998)	TP1	6.5	227.5	Shale, completely weathered and fractured
	TP2	8.5	230.0	Shale, weathered and completely fractured
	TP3	6.5	229.0	Shale, completely weathered and fractured/sheared
	TP4	10.0	228.0	Shale, completely weathered and fractured/sheared
	TP5	4.0	227.0	Shale, completely weathered and fractured/sheared
	TP6	1.0	234.0	Shale, highly weathered and completely fractured
CAInc (2016)	B1	>31	<184	Not encountered
	B2	43.2	181.8	Shale, soft
	B3	8.0	222.0	Shale, decomposed to moderately weathered
	B4	4.0	226.0	Shale, decomposed to moderately weathered
	B5	3.5	226.5	Shale, intensely to moderately weathered
	B6	4.0	226.0	Shale, very intensely to moderately weathered

We present detailed logs of our test borings in Appendix A. Data from the SHN and Taber studies are included in Appendix D.

6.3 GROUNDWATER

We encountered free groundwater during drilling in boring B3 at a depth of about 16.5 ft; this level rose to about depth 12 ft within 24 hours after drilling. The remaining borings were dry to full auger depth. Piezometers were installed in B3 and B5 to monitor seasonal groundwater fluctuations. The casino's Facilities Manager, Butch Rindels, is collecting groundwater readings using an electronic water level meter on a weekly basis. Through October, groundwater in both B3 and B5 has been measured at about depth 8-12 ft, as shown below. Groundwater rises significantly shortly after heavy rains.





In general, we interpret groundwater to be seasonally present within the terrace soils near the bedrock contact. The groundwater is likely "perched" over the less-permeable bedrock and daylights onto the subjacent slope as springs/seeps, as evidenced by extensive water-loving plants along the slopes below the casino. Groundwater within the bedrock unit appears to be intermittent and restricted to the decomposed/sheared zones.

7 LABORATORY TESTING

CAInc completed the following laboratory tests on representative soil samples obtained from our exploratory borings:

- Moisture Content / Dry Density (ASTM D2216 / D2937)
- Particle Size Analysis (ASTM D422)
- No. 200 Sieve Wash (ASTM D1140)
- Atterberg Limits (ASTM D4318)
- Expansion Index Test (ASTM D4829)
- Unconsolidated-Undrained Triaxial Shear Strength Test (ASTM D2850)
- Unconfined Compressive Strength (ASTM D2166)
- Direct Shear Strength (ASTM D3080)
- R-value (CTM 301)
- Sulfate/Chloride Content (CTM 417/422)
- pH/Minimum Resistivity (CTM 643)

We present the complete laboratory test results in Appendix B.

7.1 CLASSIFICATION AND STRENGTH TESTS

Table 2 summarizes the results of classification and strength tests on representative samples from the terrace soils and weathered bedrock.

Table 2: Classification and Strength Tests

Sub-surface Unit	Sample		Classification Tests					Strength Tests	
	Boring - Sample Number	Depth (ft)	Moisture Content (%)	Dry Density (pcf)	% Passing 200	Liquid Limit	Plastic Limit	Cohesion (psf)	Friction Angle (°)
Terrace Deposits	B1-1	6.0	18.3	105.3	24	NP	NP	-	-
	B1-2	11.0	9.2	123.4	16	-	-	-	-
	B1-3	16.0	12.7	103.1	15	-	-	-	-
	B1-4	21.0	13.4	94.5	-	-	-	85	34.4
	B1-5	25.0	-	-	22	-	-	-	-
	B1-6	31.0	6.3	124.3	-	-	-	-	-
	B2-2	8.0	6.9	114.9	-	-	-	-	-
	B2-3	13.0	14.6	113.0	18	-	-	-	-
	B2-4	18.0	13.0	116.3	22	-	-	-	-
	B2-5	23.0	8.5	109.9	15	-	-	-	-
	B2-6	28.0	13.7	95.0	-	-	-	50	34.3
	B2-7	33.0	-	-	23	-	-	-	-
	B3-1	5.3	15.5	100.9	-	-	-	-	-
Bedrock	B3-2	11.0	8.5	133.0	-	-	-	3,051	-
	B3-3	16.0	4.9	138.2	-	-	-	2,387	-
	B3-4	21.0	-	-	-	27	14	-	-
	B3-6	31.0	8.1	127.7	-	-	-	-	-
	B3-10	51.0	7.0	142.3	-	-	-	-	-
	B4-1	6.0	8.8	129.6	-	-	-	1,272	-
	B4-2	11.0	8.5	137.1	-	-	-	-	-
	B4-4	21.0	-	-	-	33	17	-	-
	B4-7	36.0	6.2	143.0	-	-	-	1,400	21.8
	B5-1	6.0	4.1	137.3	-	-	-	-	-
	B5-3	16.0	-	-	-	24	13	-	-
	B5-4	21.0	5.8	148.7	-	-	-	-	-
	B5-7	36.0	-	-	-	29	14	-	-
	B5-8	41.0	6.2	141.0	-	-	-	1,225	27.5
	B6-2	11.0	6.6	123.6	-	-	-	3,783	-

Based on these results, we assign an average angle of internal friction value of 32 degrees to the terrace soils and modeled the weak bedrock with an undrained shear strength of 3,750 psf (represented as a very stiff to hard clay). The rock specimens tested were of the sheared matrix material that is weak relative to the rock mass as a whole; overall we consider the rock unit to be classed as “soft” and “highly weathered”, with typical allowable bearing pressures on the order of 4-8 tsf (8,000-16,000 psf).

7.2 CORROSION TESTS

Table 3 summarizes the results of soil corrosivity tests on samples from various levels within the bedrock unit.

Table 3: Soil Corrosion Test Summary

Boring - Sample Number	Depth (ft)	pH	Minimum Resistivity (ohm-cm)	Chloride Content (ppm)	Sulfate Content (ppm)
B3-7	36.0	8.57	1,070	12.1	225.9
B4-4	21.0	8.18	1,150	12.0	175.2
B4-8	40.0	8.54	1,850	3.7	19.4
B5-9	46.0	8.55	800	12.9	131.8
B6-1	6.0	7.72	1,720	6.9	100.4

According to Caltrans Corrosion Guidelines, a site is considered corrosive to foundation elements if one or more of the following conditions exist: Chloride concentration is greater than or equal to 500 ppm, sulfate concentration is greater than or equal to 2000 ppm, minimal resistivity of 1000 ohm-cm or less, or the pH is 5.5 or less.

Based on Caltrans guidelines, the site soils are non-corrosive to cementitious materials but may be corrosive to ferrous material. We recommend consulting a corrosion engineer to develop possible corrosion mitigation measures, as needed.

7.3 EXPANSION INDEX TESTS

Results of Expansion Index (EI) tests conducted on both the terrace soils and the bedrock show EI = 3 and 54, respectively. Table 4 summarizes these results and those previously performed for the casino expansion in 2000 by Taber Consultants.

Table 4: Expansion Index Test Summary

Exploration	Boring - Sample Number	Description	EI	Expansion Potential
Crawford (2016)	Bulk 1	Terrace Deposits	3	Very Low
	Bulk 2	Bedrock	54	Medium
Taber (1998)	TP1@4’	Terrace Deposits	14	Very Low
	TP3@8’	Bedrock	30	Low

These results indicate that some portions of the bedrock (likely the decomposed, clay-rich matrix) may be at least moderately expansive and require consideration in design of some project elements (e.g., slab-on-grade floors, flatwork, etc).

8 SEISMIC DESIGN PARAMETERS

The USGS Interactive Deaggregation Page[1] indicates a maximum peak horizontal ground acceleration (PGA) of 0.52g for a seismic event with a 10% probability of exceedance in 50 years.

Based on our exploratory borings and the previous site investigations, we provide the California Building Code (CBC) seismic parameters as shown in Table 5. We determined these values using a site latitude of 41.0530°N and longitude of 124.1293°W.

Table 5: Seismic Parameters

Site Class	**C**
Risk Category	**I/II/III/IV**
Ss – Acceleration Parameter	2.440 g
S1 – Acceleration Parameter	1.001 g
Fa – Site Coefficient	1.000
Fv – Site Coefficient	1.300
SMS – Adjusted MCE* Spectral Response Acceleration Parameter	2.440 g
SM1 – Adjusted MCE* Spectral Response Acceleration Parameter	1.301 g
SDS – Design Spectral Acceleration Parameter	1.627 g
SD1 – Design Spectral Acceleration Parameter	0.868 g
Tl – Long-Period Transition Period**	12

* Maximum Considered Earthquake
** Figure 22-12, ASCE 7-10

9 PRELIMINARY CONCLUSIONS AND RECOMMENDATIONS

Based on the data presented above, we consider the site is suitable for construction of the proposed hotel and complementary facilities provided that appropriate mitigation of the geologic hazards is incorporated into project design. Below, we provide a discussion of the geologic hazards, mitigation alternatives, and preliminary geotechnical recommendations for the structure foundations, retaining walls, pavement structural sections and site grading.

We anticipate that the project will be somewhat modified based on these conclusions. Further geotechnical study by this office will be completed for final design, based on the final structure layout, retaining walls and site grading.

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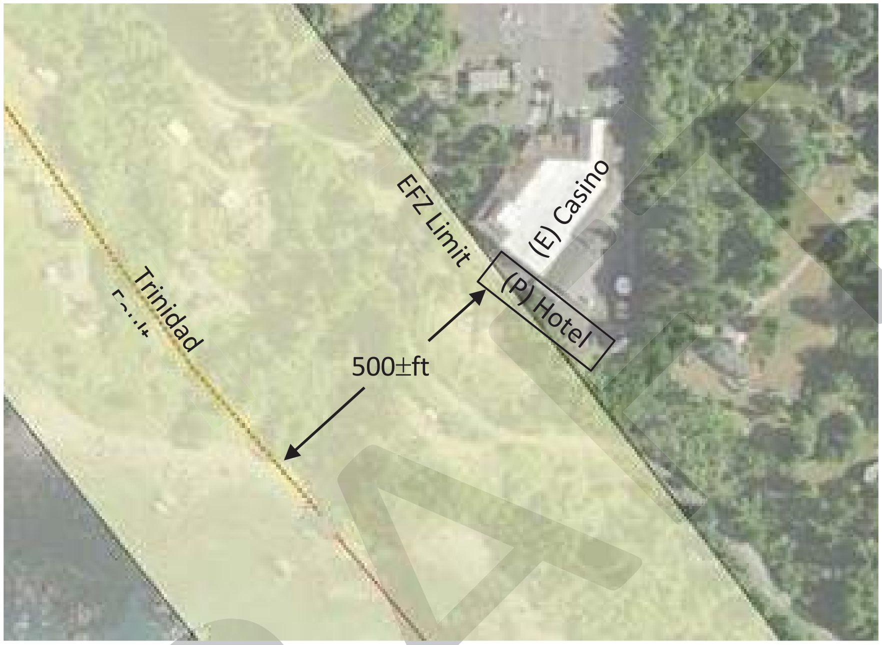
[1] http://geohazards.usgs.gov/deaggint/2008/ accessed June 8, 2016

9.1 GEOLOGIC HAZARDS

9.1.1 FAULT RUPTURE

The active Trinidad Fault is mapped near the shoreline approximately 500±ft to the southwest of the proposed hotel. The California Geologic Survey (CGS) considers a fault to be active if it has shown evidence of ground displacement during the Holocene period, defined as about the last 11,000 years. The hotel lies at the eastern edge of an Alquist–Priolo Earthquake Fault Zone (EFZ) as defined by CGS.



The Earthquake Fault Zone Act requires structures for human occupancy to be set-back a minimum of 50 ft from an active fault. EFZ boundaries are commonly set at 500 feet from major active faults to accommodate imprecise fault locations and possible branches of active faults. The basis for establishing the Trinidad EFZ is a Fault Evaluation Report (FER-138, California Division of Mines and Geology, 1982); this report concludes that the fault scarp can be traced with confidence north of the site but is less distinct along the coast to the south. The relatively wide zone in this area reflects the imprecise location of the Trinidad Fault and potential for other branches of this fault to exist.

Except for the northwest corner, the proposed hotel footprint is positioned outside of the mapped EFZ. While we cannot say conclusively that an active fault is not present within this footprint, we consider the likelihood of an active fault through the site to be low and that the risk of fault rupture does not represent a "fatal flaw" to the project. Further investigation would be necessary to confirm this assessment, if required.

9.1.2 LANDSLIDES

Landslides are common along the slopes below the site, particularly at and below Scenic Drive. These slides are typically initiated at the beach level by wave erosion that undercuts the toe of slope preferentially within the "weak rock" areas of the shale bedrock. This erosion leads to block failures within the bedrock that translate upslope as individual translational/rotational slides. Several of these slides have affected Scenic Drive in this vicinity and have been the subject of past site investigations;

roadway slope stabilization measures taken by Humboldt County have included retaining walls systems, slope reconstruction and subdrainage elements.

An active slide extends upslope of Scenic Drive to near the southwest corner of the proposed hotel. This slide appears to be relatively shallow (perhaps on the order of 10-15 feet deep). The head of the slide is near the edge of the existing casino parking area. We show the approximate limits of this slide on Figure 1.

The active slide appears to involve primarily the terrace deposits overlying the bedrock. Groundwater is a major contributor to slope instability and appears to move within and through the terrace materials, "daylighting" out-of-slope where the rock is exposed. Areas of surface seepage, springs and water-loving vegetation are evidence of seasonal, shallow groundwater within the slope.

Based on preliminary discussions with the design team, we expect the hotel footprint will be modified to avoid the slide feature. Depending on the final hotel layout, some level of slope stabilization should be considered to limit headward encroachment of the slide. Appropriate stabilization work may include such options as a soil nail wall, welded wire wall or cantilevered soldier pile wall, with wall height likely on the order of 10-15 feet. If the hotel footprint cannot be modified to avoid the slide, then more extensive slope stabilization will be required, such as a drained, reconstructed embankment, regraded slope, tie-back soldier pile wall(s) or a tiered wall system. Table 6, below, summarizes a few of these options. Figure 5 shows some conceptual design elements.

Table 6: Slope Stabilization Options

Stabilization Technique/System	Advantages	Disadvantages
Soil Nail Wall	• Minor grading required to install "nails" (comprised of steel bars placed in pre-drilled holes, grouted in place) • "Top-down" construction minimizes ground disturbance • Cost-effective	• Requires drain elements against the excavation face and permanent facing connected to the nail heads
Drained, Reconstructed Embankment	• Provides secure slope stabilization if slope geometry and slide depth is confirmed • Utilizes on-site soils for reconstruction	• Requires significant grading and subdrainage • Requires keyway at toe into intact material • Likely requires work beyond property limits
Lightweight Fill Slope	• Unloads the slope and creates usable fill • Free draining material • Possibly qualifies for state grant funds	• Requires significant grading and off-haul of native soils • Costly (without the use of State grant) • Limited contractors have experience
Soldier Pile and Lagging Wall	• Stabilizes the upper portion of the slope • May provide additional usable area	• Requires moderate grading • Requires tie-backs for systems typically greater than 8-10 ft high
Tensar Geopier SRT System	• Suitable for shallow unstable soil • Low impact • Cost-effective	• Proprietary design • Loud installation • Slide plane may be too deep (>15ft limit)
Welded Wire (e.g., Hilfiker) Wall	• Flexible and cost-effective • Local product (based in Eureka, CA) • Commonly used in the area	• Requires secure support at toe of wall • Requires backslope excavation into the slope

9.1.3 LIQUEFACTION POTENTIAL

Liquefaction can occur when saturated, loose to medium dense, granular soils (generally within 50 ft of the surface), or specifically defined cohesive soils, are subjected to ground shaking. Based on the soil, rock, and groundwater conditions encountered during our exploration and current industry accepted liquefaction evaluation methods, liquefaction is not generally expected to occur, unless sustained high groundwater levels are identified within the granular terrace soils. Liquefaction potential is considered low within the underlying bedrock.

9.1.4 TSUNAMI

The coastal area is mapped within a tsunami inundation hazard to an elevation of less than 50ft as shown on Figure 7. The casino site is at an elevation approximately 230 feet above the ocean level and is therefore outside of the hazard mapping.

9.2 PRELIMINARY RECOMMENDATIONS

9.2.1 HOTEL SUPPORT

The site is considered stable for hotel foundations established within undisturbed terrace deposits and/or bedrock. Due to the potential for landsliding along the subjacent slope and the variable materials across the longitudinal footprint (involving both weak bedrock and terrace soils), we do not recommend spread footings or other shallow foundation systems for the hotel structure. Pile foundations, achieving penetration into the bedrock unit, are therefore recommended. Driven piles (e.g., pre-cast concrete, cast-in-steel-shell (CISS), pipe piles, and H-piles) may be feasible, however, are not considered as appropriate as drilled piles due to vibrations/noise from the pile-driving equipment and variable driving conditions into the rock unit.

We consider cast-in-drilled-hole (CIDH) piles to be most appropriate; these piles require smaller equipment for installation than for driven piles and minimize noise/vibrations. The potential for groundwater and caving soils will require casing and minimum 24-inch diameter piles. For use in preliminary design, we recommend using skin friction only due to the “wet” method installation. Based on the strength data obtained from the field and laboratory tests, we recommend preliminary axial pile capacities be based on factored (allowable) adhesion value in bedrock of 1.5 kips/ft^2 and frictional capacity of 0.5 kips/ft^2 in the terrace deposits. Piles should be embedded a minimum of 10ft into bedrock. See Figure 4 for our interpreted bedrock profile along the longitudinal axis of the hotel.

We performed preliminary lateral pile analysis for both 24-inch and 36-inch diameter CIDH piles with 1% steel and a fixed-head condition (as requested by Steve Vasquez, PE) for ½-inch of deflection at the top of the pile. We performed two models – one model assuming terrace deposits and one model assuming bedrock to the surface. We summarize these results in Table 7. We will perform additional analysis to develop axial and lateral pile capacities for final design.

Table 7: Lateral Pile Analysis (Shear Resistance, ½-in deflection)

Soil/Rock Deposit	24-inch CIDH	36-inch CIDH
Terrace Deposits	75 kips	150 kips
Bedrock	127 kips	235 kips

We include deflection vs depth, bending moment vs depth, and shear resistance vs depth graphs in Appendix C.

9.2.2 COMPLEMENTARY FACILITIES SUPPORT

Soil support for the complementary facilities (e.g. fitness center, mechanical building, offices, etc.) are available by means of shallow spread or isolated footings bearing in compacted fill, undisturbed terrace deposits, or bedrock at least 2ft below nearest adjacent grade and at least 2ft wide. Allowable bearing pressure on the order of 2,000 psf in compacted fill or terrace deposits and 4,000 psf in bedrock is available for support. Maintain a minimum 5ft horizontal clearance from the top of slope.

Support for the pool (currently shown at the south end of the hotel, near the slide) may require drilled piers into bedrock depending on final layouts. Use similar adhesion values as for the hotel support. The pool should be set back a minimum of 10ft from the top of slope and the slope adequately stabilized to prevent headward encroachment of the slide.

9.2.3 RETAINING WALL SUPPORT & LATERAL PRESSURES

Depending on final structure layouts, retaining walls up to 10ft in height (e.g., concrete cantilever walls or similar) may be required for this project. On level ground, adequate soil support for the retaining wall foundations are available by means of shallow spread footings bearing in newly compacted fill, undisturbed terrace deposits, or bedrock at least 2ft below nearest adjacent grade and 2ft wide. Allowable bearing pressure on the order of 2,000 psf in compacted fill or terrace deposits and 4,000 psf in bedrock is available for support.

On sloped ground, soil support may be available on spread footings with reduced bearing pressure. However, drilled piers into bedrock may be recommended depending on the location and proximity to slide features.

Retaining walls should be drained with a minimum of 1ft thick permeable rock with filter fabric backing, or an appropriate geocomposite drain (e.g., Mirafi G-series or equivalent).

For preliminary design, use the equivalent fluid weights (EFWs) shown in Table 8 below to design assuming level backfill conditions. These values are based on a soil friction of 32 degrees and assume the use of native granular terrace soils or granular import for backfill. These use of native soils will be verified as part of the final design study.

Table 8: Equivalent Fluid Weights

Condition	Static EFW (pcf)	Seismic EFW (pcf)
Active	39	45
Passive	203	152

For static design, apply the resultant of the static at-rest earth pressure at a depth of 0.33H from the base of the wall where H equals the wall height.

For seismic design, apply the additional resultant force of the seismic at-rest earth pressure at a depth of 0.66H from the base of the wall where H equals the wall height.

9.2.4 PAVEMENT

We completed one R-Value test (CTM 301) on a bulk sample of near surface (granular fill) soil. Test results indicate an R-value of 74 by stabilometer. Using a maximum Caltrans allowable R-Value of 50 and Chapter 600 of the Caltrans Highway Design Manual (CHDM), 6th Edition, and assuming similar native (granular) soils at pavement subgrade, we recommend the sections shown in Table 9 below for design of entrance and parking lot pavement.

Table 9: Pavement Design

Traffic Index (TI)	5.0	6.0	7.0	8.0	9.0
Hot Mix Asphalt (feet)	0.20	0.25	0.30	0.40	0.45
Class 2 Aggregate Base (feet)	0.30	0.35	0.45	0.45	0.55

*The upper 0.2 feet of HMA may be replaced with rubberized hot mix asphalt.

If select import fill is used for pavement subgrade, we recommend the R-value of import fill to be greater than 50.

9.3 GRADING

For preliminary design of the truck/delivery access road, use fill slopes of 2:1 (H:V) or flatter and cut slopes of 1½:1 or flatter. Fill slopes constructed at 1½:1 may be acceptable depending on the quality of the embankment fill.

General grading recommendations typically include clearing the site to remove vegetation, tree roots, debris, abandoned utilities, soft or unstable areas, and other deleterious materials. For this site, we estimate an average sub-excavation average of about 2 feet to expose undisturbed, native ground. This exposed surface should then be scarified to a minimum depth of 6 inches, moisture-conditioned, and compacted to at least 90% relative compaction per ASTM D1557. Local swale and/or spring areas may create wet ground conditions that would require drainage and/or drying of soil to achieve the required compaction.

Due to the presence of springs and possible "perched" groundwater throughout the slopes, we recommend subdrainage at the base of new fills. Depending on the final alignment and fill prism, a trenched underdrain or blanket drains may be suitable along the upslope side of the fill sections. Final subdrain details will depend on the selected alignment and fill dimensions and be addressed in the geotechnical design report.

Site soils are erodible (especially the granular terrace soils) and surface drainage will require control by directing runoff to suitable discharge points with erosion dissipaters, as necessary.

10 LIMITATIONS

CAInc performed these services in accordance with generally accepted geotechnical engineering principles and practices currently used in this area. This report is intended to provide assistance to the design team for project feasibility, planning and preliminary design/costing. CAInc will complete a Geotechnical Report for final design based on specific structure layout, grades, loading conditions and other details. Do not use this report for different locations and/or projects without the written consent of CAInc. Where referenced, we used ASTM or Caltrans standards as a general (not strict) guideline only.

CAInc based this report on the current site conditions. We assumed the soil/rock and groundwater conditions are representative of the subsurface conditions on the site. Actual conditions between explorations will vary.

Our scope did not include evaluation of on-site hazardous materials.

Logs of our explorations are presented in Appendix A. The lines designating the interface between soil types are approximate. The transition between soil types may be abrupt or gradual. Our recommendations are based on the final logs, which represent our interpretation of the field logs and general knowledge of the site and geological conditions.

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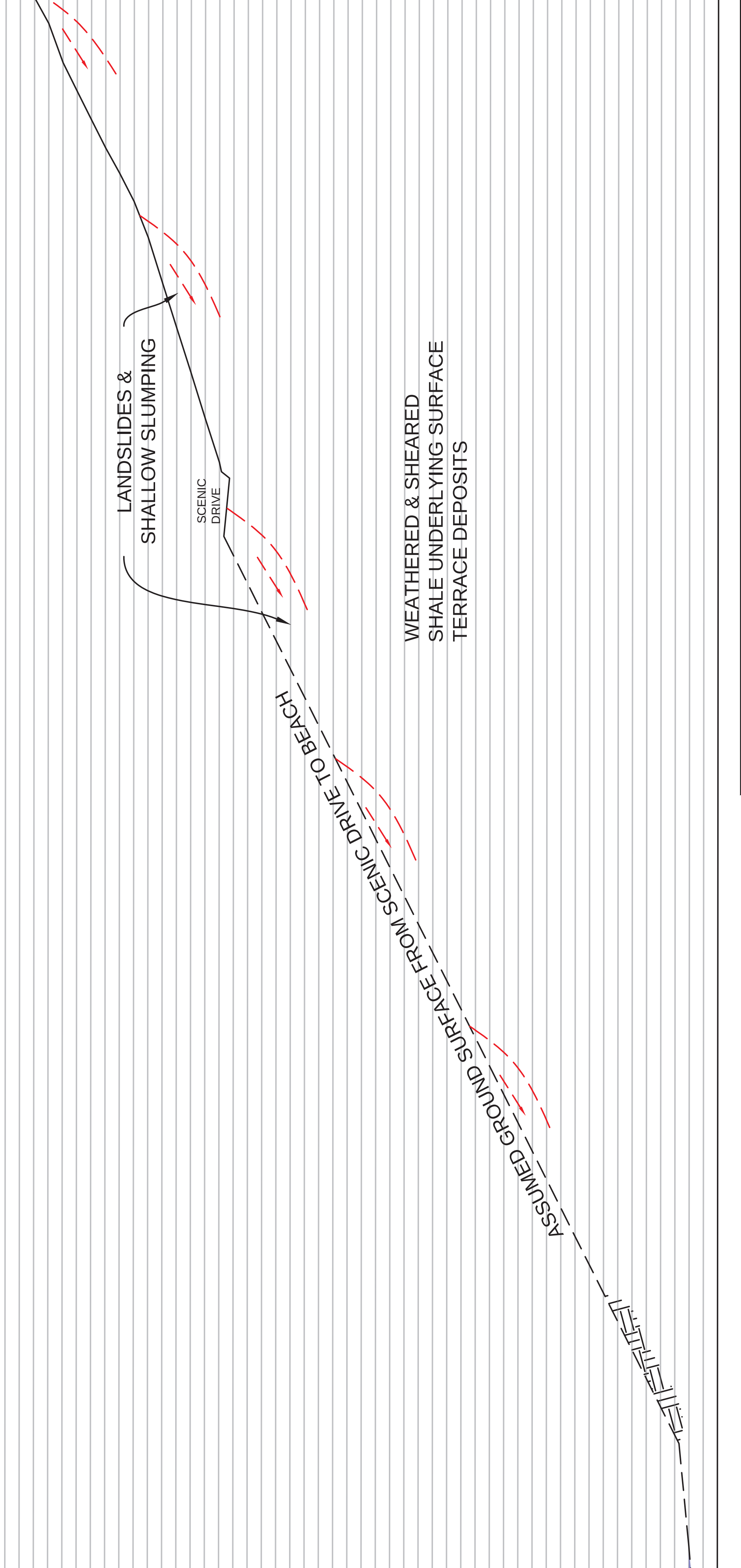
Tsunami Inundation Map for Emergency Planning: Trinidad Quadrangle, Crannell Quadrangle, California Geological Survey, 2009.

FIGURES

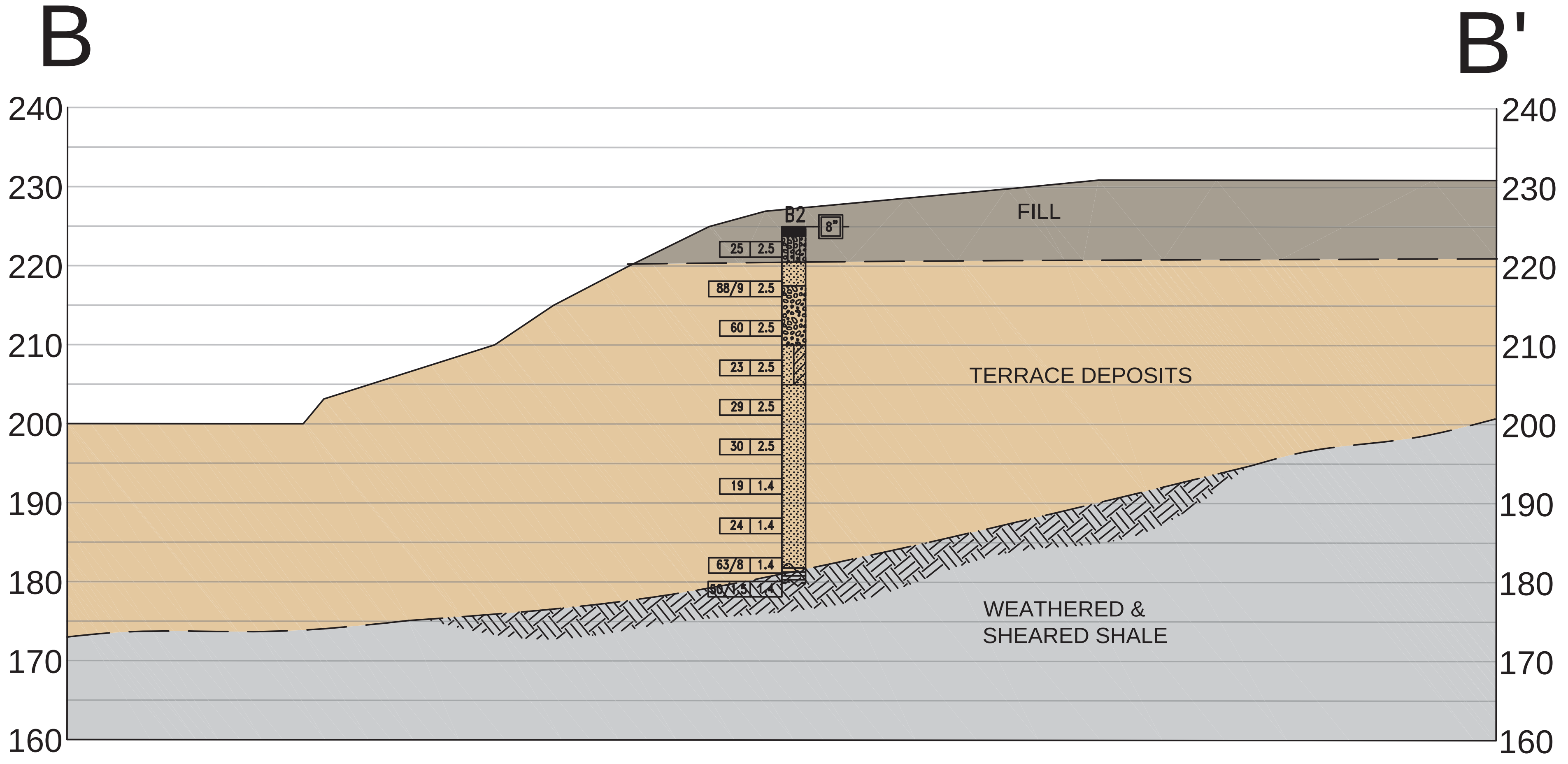

(E) CASINO
TAB-TP4
TAB-TP6
(E) CONCRETE RETAINING WALL
TAB-TP3
(E) WATER TANK
TAB-TP1
TAB-TP2
SHN-B3
CAI-B1
CAI-B2
CAI-B3
CAI-B4
CAI-B6
CAI-B5
B'
B
A'
A
C'
(E) RESIDENCE
(P) ACCESS/DELIVERY ROAD
(OFF SCREEN) Taber PM 2.45 Slide Investigation
Project Location
WESTHAVEN DR N
Mill Cr
101
SCENIC DR
Cap Rock
Marine terrace deposits exposed locally along the bluff slope and road cuts
Sandstone/shale exposed along base of bluff
Taber PM 2.20
Investigation
PACIFIC OCEAN
(OFF SC
2.05 S
and Tabe

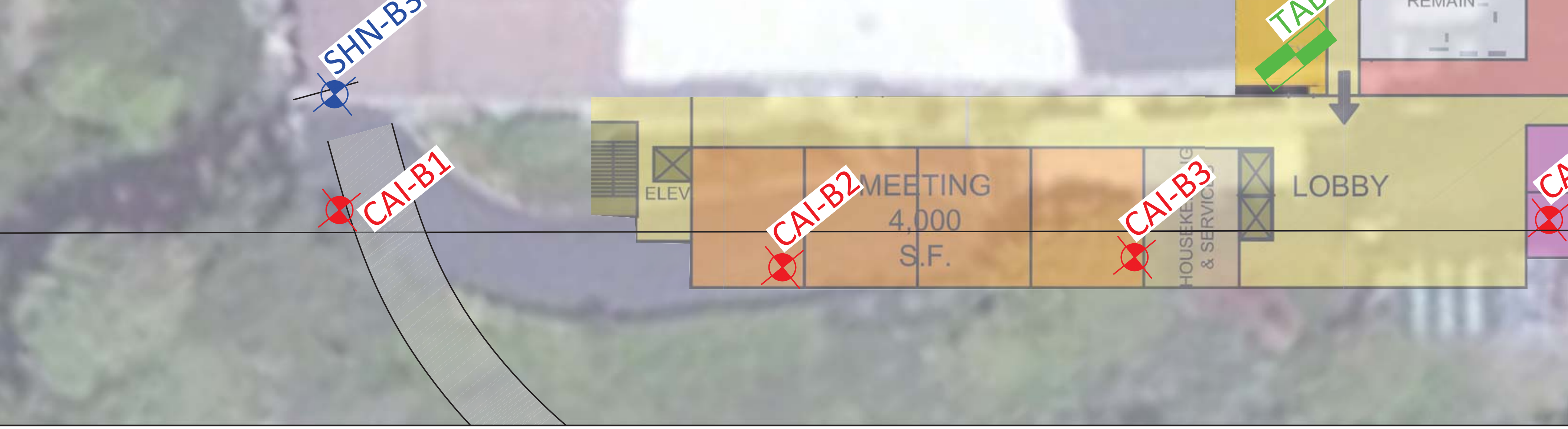
E) SCENIC DRIVE
POOL

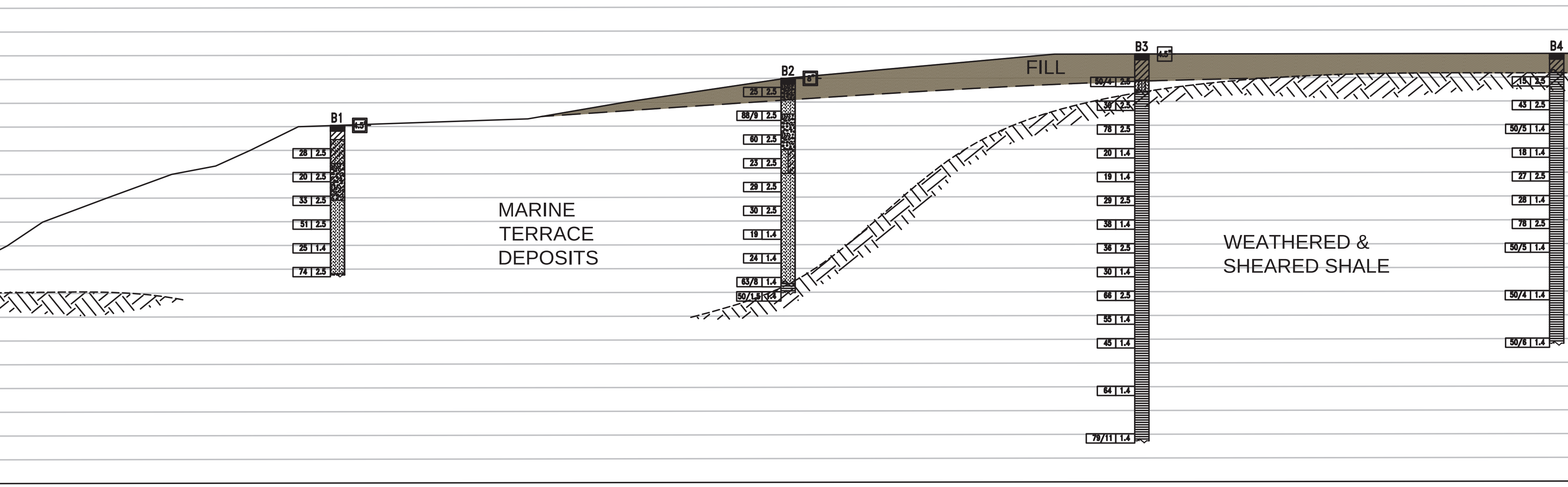


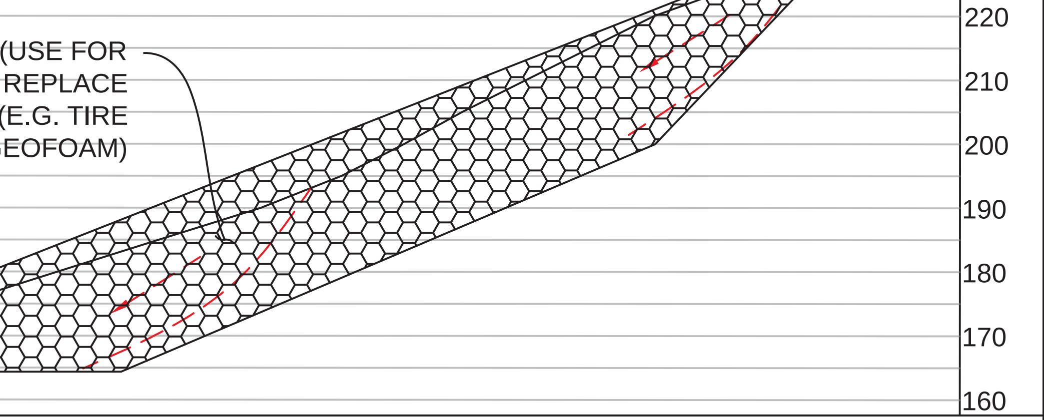
LANDSLIDES &
SHALLOW SLUMPING
SCENIC
DRIVE
WEATHERED & SHEARED
SHALE UNDERLYING SURFACE
TERRACE DEPOSITS
ASSUMED GROUND SURFACE FROM SCENIC DRIVE TO BEACH

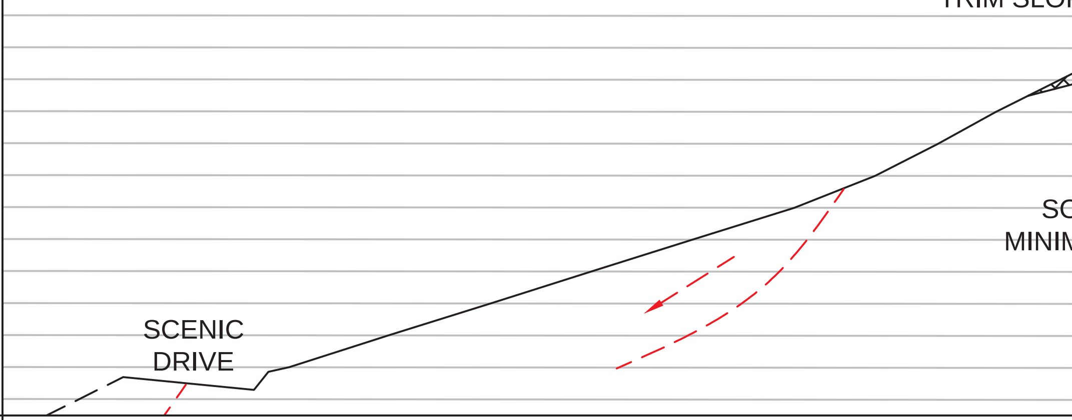

B
B'
(E) BUILDING
CAI-B2
CAI-B3
MEETING
4,000
S.F.
ELEV
HOUSEKE
& SERVIC


B
B'
240
230
220
210
200
190
180
170
160
FILL
TERRACE DEPOSITS
WEATHERED &
SHEARED SHALE
B2
8"
25 2.5
88/9 2.5
60 2.5
23 2.5
29 2.5
30 2.5
19 1.4
24 1.4
63/8 1.4
50/1.5 1.4

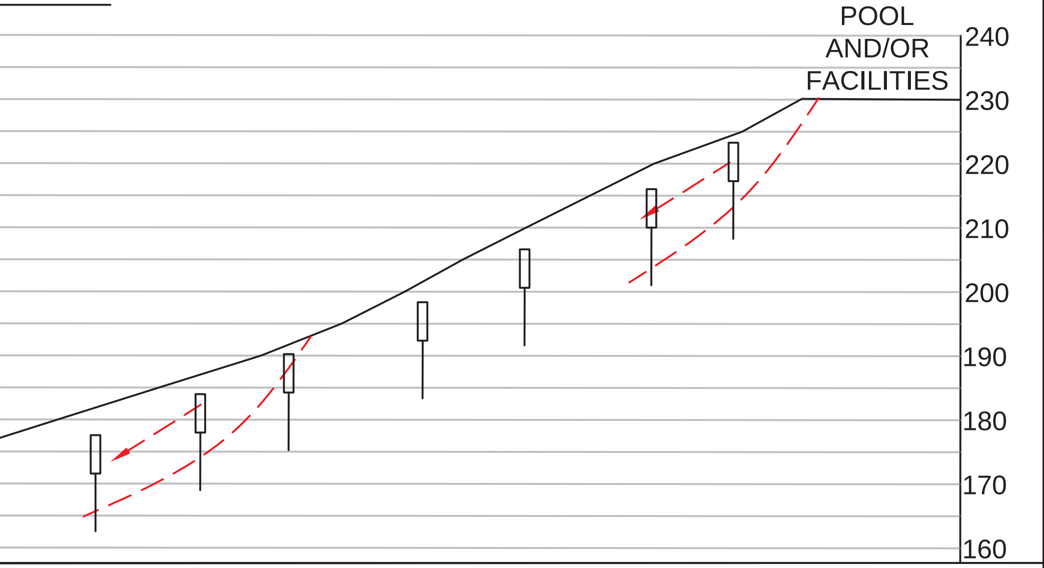

SHN-B
CAI-B1
ELEV
CAI-B2
MEETING
4,000
S.F.
CAI-B3
HOUSEKE
& SERVIC
LOBBY
REMAIN


B1
4.5"
28 | 2.5
20 | 2.5
33 | 2.5
51 | 2.5
25 | 1.4
74 | 2.5
MARINE
TERRACE
DEPOSITS
B2
8"
25 | 2.5
88/9 | 2.5
60 | 2.5
23 | 2.5
29 | 2.5
30 | 2.5
19 | 1.4
24 | 1.4
63/8 | 1.4
50/1.5 | 1.4
FILL
B3
4.5"
50/4 | 2.5
36 | 2.5
78 | 2.5
20 | 1.4
19 | 1.4
29 | 2.5
38 | 1.4
36 | 2.5
30 | 1.4
66 | 2.5
55 | 1.4
45 | 1.4
64 | 1.4
79/11 | 1.4
WEATHERED &
SHEARED SHALE
B4
15 | 2.5
43 | 2.5
50/5 | 1.4
18 | 1.4
27 | 2.5
28 | 1.4
78 | 2.5
50/5 | 1.4
50/4 | 1.4
50/6 | 1.4



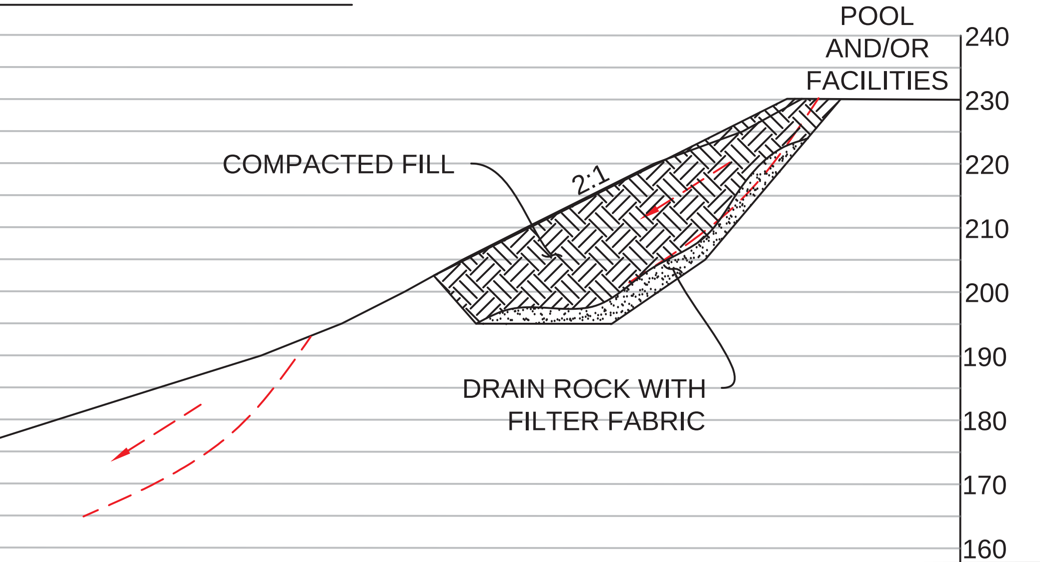


STEM



WELDED WIRE (HILFIKER) WALL

ED EMBANKMENT



SOIL NAIL WALL

Qbs Holocene beach deposits

Qls Historic to Pleistocene landslide deposits

Qmt Pleistocene marine terrace deposits *(Qmt_1 - Patricks Pt. terrace, age 64 ka; Qmt_2 - Savage Creek terrace, age 83 ka, and McKinleyville terrace, age 96 ka; Qmt_3 - Westhaven terrace, 103 ka; Qmt_4 - Fox Farm terrace, 120 ka, and Sky Horse terrace, 130 ka; Qmt_5 - A-Line terrace, 176 ka and older)*

KJfm Late Cretaceous to Late Jurassic Melange of the Central Belt

Anticline Syncline

Strike and dip of bedding/foliation

Location of fault

Project Mgr.	AJK	11/1/16
Project Eng.	NRA	11/1/16
Designer		
Checked By		
Drawn By	NRA	11/1/16
	By	Date

Source: "Preliminary Geologic Map of Onshore Portions of the Crescent City and Orick 30' x 60' Quadrangles, California", California Geologic Survey, 2012

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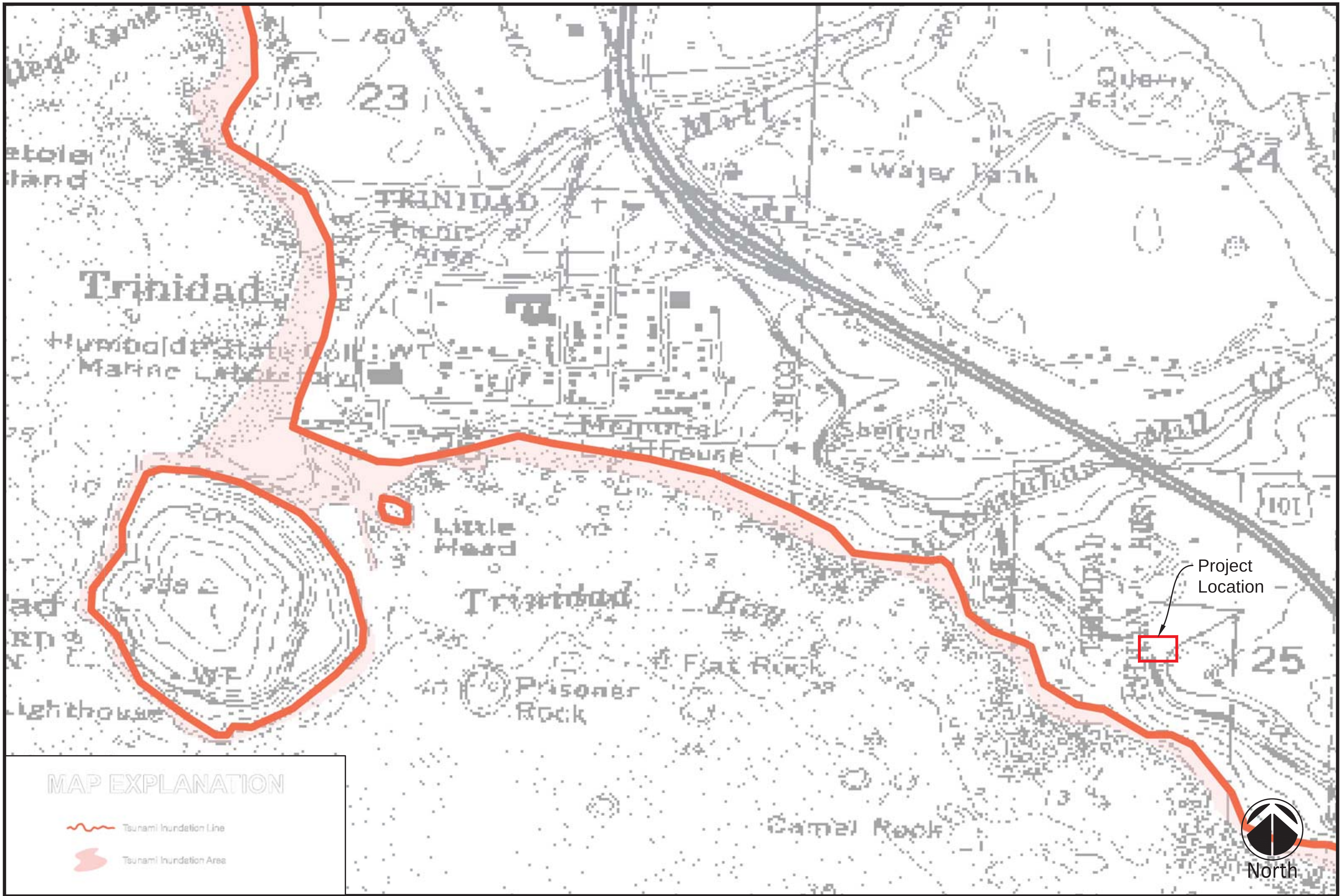
Cher-Ae Heights Hotel
27 Scenic Drive
Trinidad, California 95570

Figure 6
Geology Map

Project No.	16-319.1
Scale	1"=3,000'
Date	11/1/16



Project Mgr.	AJK	11/1/16	
Project Eng.	NRA	11/1/16	
Designer			
Checked By			
Drawn By	NRA	11/1/16	
	By	Date	

Source: "Tsunami Inundation Map for Emergency Planning, Trinidad Quadrangle, Crannel Quadrangle", California Emergency Management Agency, 2009

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Figure 7
Tsunami Inundation Map

Project No.	16-319.1
Scale	1"=1,000'
Date	11/1/16

LEGEND

Quaternary Fault (Age)
- 🟥 <150 years
- 🟧 <15,000 years
- 🟨 <130,000 years

Quaternary Fault (Age)
- 🟦 <750,000 years
- 🟦 <1.6 million years

Location
- ——— Well Constrained
- - - - Moderately Constrained
- -------- Inferred

Project Mgr.	AJK	11/1/16
Project Eng.	NRA	11/1/16
Designer		
Checked By		
Drawn By	NRA	11/1/16
	By	Date

Source: Google Earth with USGS Fault Map overlay

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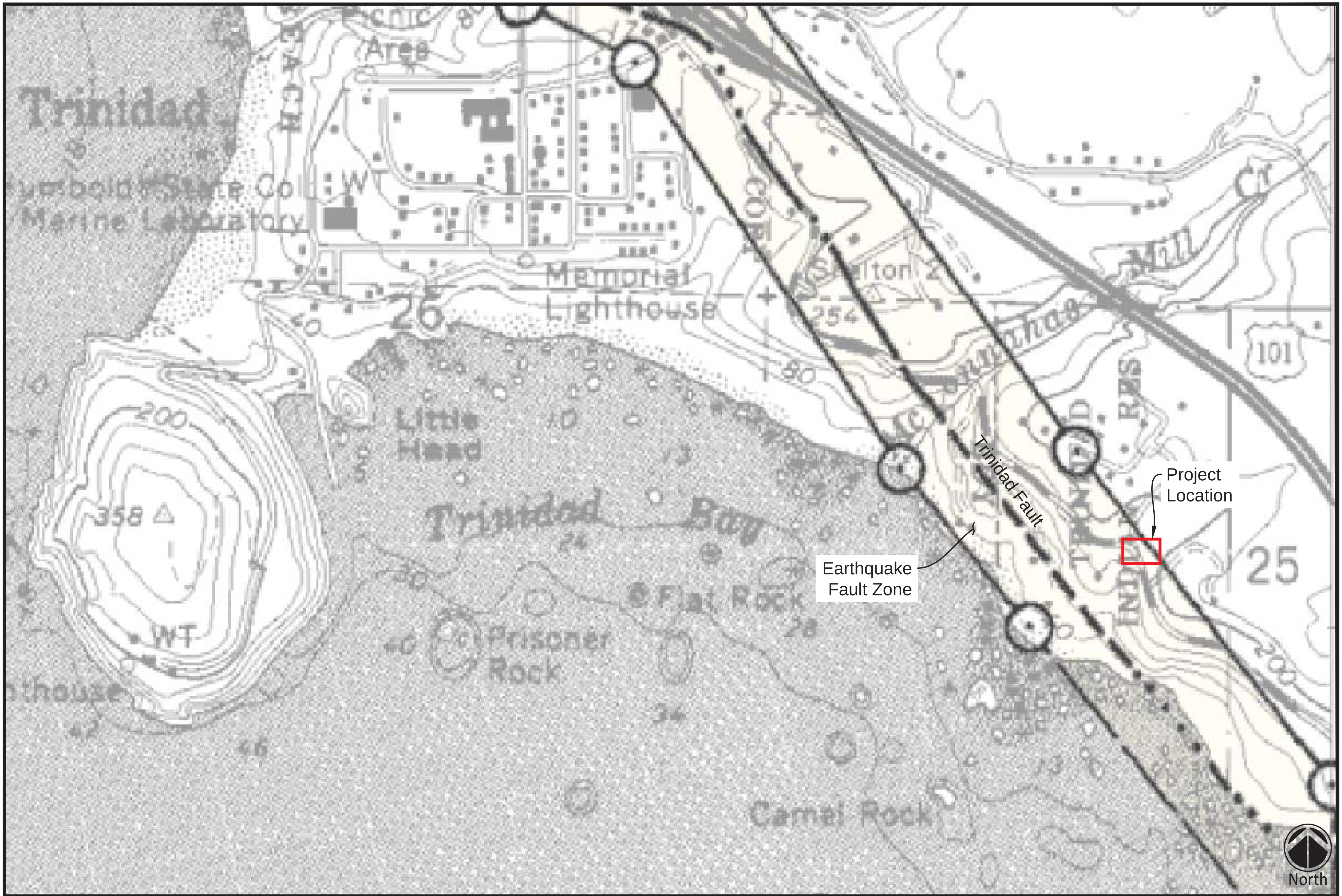
Figure 8
Fault Activity Map

Project No.	16-319.1
Scale	1"=20,000'
Date	11/1/16



Project Mgr.	AJK	11/1/16
Project Eng.	NRA	11/1/16
Designer		
Checked By		
Drawn By	NRA	11/1/16
	By	Date

Source: "State of California Special Studies Zones, Trinidad Quadrangle", California Division of Mines and Geology, 1983

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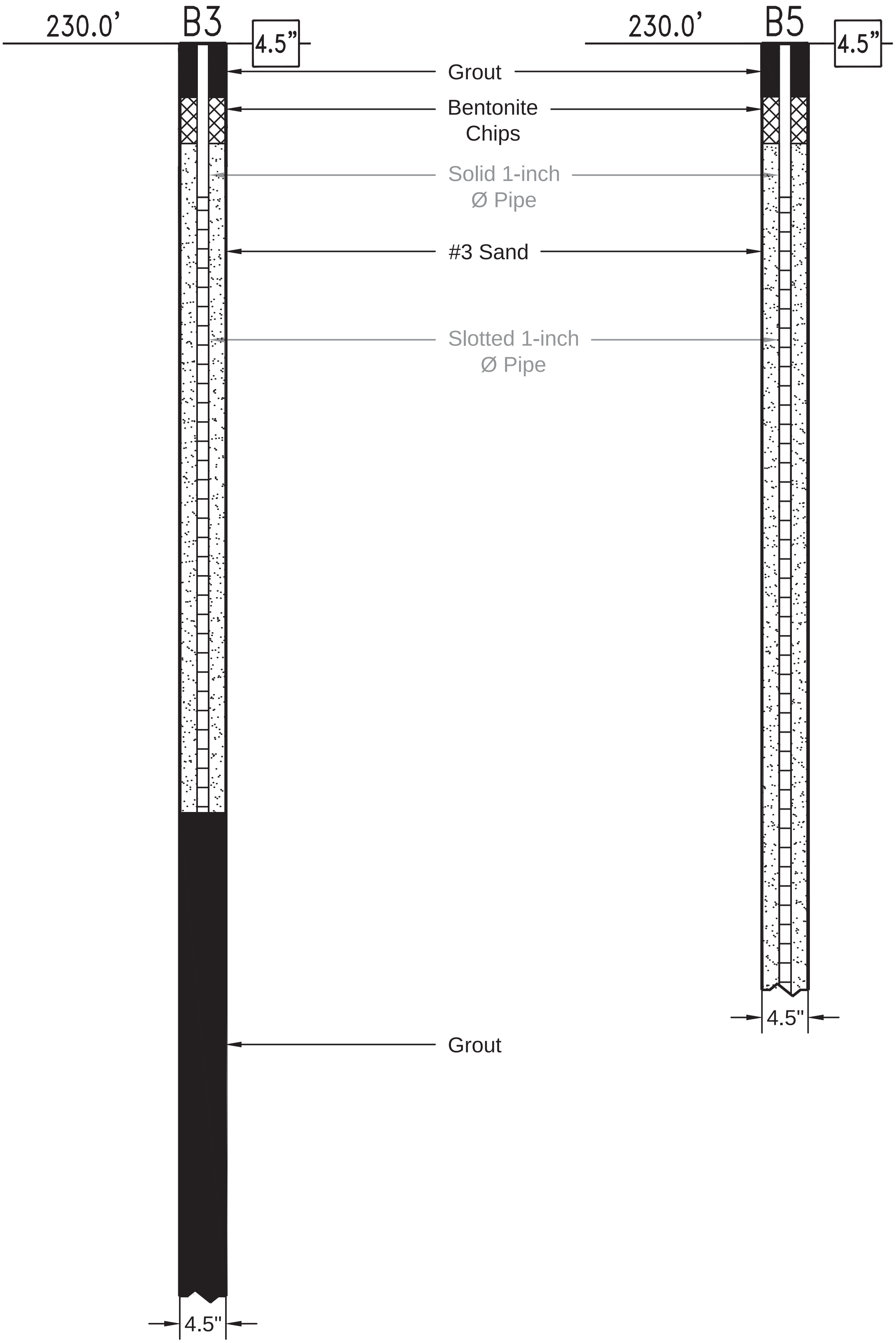
Figure 9
Earthquake Fault Zone Map

Project No.	16-319.1
Scale	NTS
Date	11/1/16

Piezometer Logs



Project Mgr.	AJK	11/1/16
Project Eng.	NRA	11/1/16
Designer		
Checked By		
Drawn By	NRA	11/1/16
	By	Date

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Detail 1
Piezometer Logs

Project No.	16-319.1
Scale	1"=10'
Date	11/1/16

APPENDIX A

Boring Log Legend
Boring Logs

UNIFIED SOIL CLASSIFICATION (ASTM D 2487-06)

MATERIAL TYPES	CRITERIA FOR ASSIGNING SOIL GROUP NAMES			GRAPHIC SYMBOL	GROUP SYMBOL	SOIL GROUP NAMES
COARSE-GRAINED SOILS >50% RETAINED ON NO. 200 SIEVE	**GRAVELS** >50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	CLEAN GRAVELS <5% FINES	Cu ≥ 4 AND 1 ≤ Cc ≤ 3	▨	**GW**	WELL-GRADED GRAVEL
			Cu < 4 AND/OR 1 > Cc > 3	▨	**GP**	POORLY-GRADED GRAVEL
		GRAVELS WITH FINES >12% FINES	FINES CLASSIFY AS ML OR MH	▨	**GM**	SILTY GRAVEL
			FINES CLASSIFY AS CL OR CH	▨	**GC**	CLAYEY GRAVEL
	SANDS <50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	CLEAN SANDS <5% FINES	Cu ≥ 6 AND 1 ≤ Cc ≤ 3	▨	**SW**	WELL-GRADED SAND
			Cu < 6 AND/OR 1 > Cc > 3	▨	**SP**	POORLY-GRADED SAND
		SANDS WITH FINES >12% FINES	FINES CLASSIFY AS ML OR MH	▨	**SM**	SILTY SAND
			FINES CLASSIFY AS CL OR CH	▨	**SC**	CLAYEY SAND
FINE-GRAINED SOILS >50% PASSING NO. 200 SIEVE	**SILTS AND CLAYS** LIQUID LIMIT <50	INORGANIC	PI>7 AND PLOTS ON OR ABOVE "A" LINE	▨	**CL**	LEAN CLAY
			PI>4 AND PLOTS BELOW "A" LINE	▨	**ML**	SILT
		ORGANIC	LL (oven dried)<0.75/LL (not dried)	▨	**OL**	ORGANIC CLAY OR SILT
	SILTS AND CLAYS LIQUID LIMIT >50	INORGANIC	PI PLOTS ON OR ABOVE "A" LINE	▨	**CH**	FAT CLAY
			PI PLOTS BELOW "A" LINE	▨	**MH**	ELASTIC SILT
		ORGANIC	LL (oven dried)<0.75/LL (not dried)	▨	**OH**	ORGANIC CLAY OR SILT
HIGHLY ORGANIC SOILS		PRIMARILY ORGANIC MATTER, DARK COLOR, ORGANIC ODOR		▨	**PT**	PEAT

NOTE: $Cu = D_{60}/D_{10}$

$Cc = (D_{30})^2 / D_{10} \times D_{60}$

BLOW COUNT

The number of blows of a 140-lb. hammer falling 30-inches required to drive the sampler the last 12-inches of an 18-inch drive. The notation 50/0.4 indicates 4-inches of penetration achieved in 50 blows.

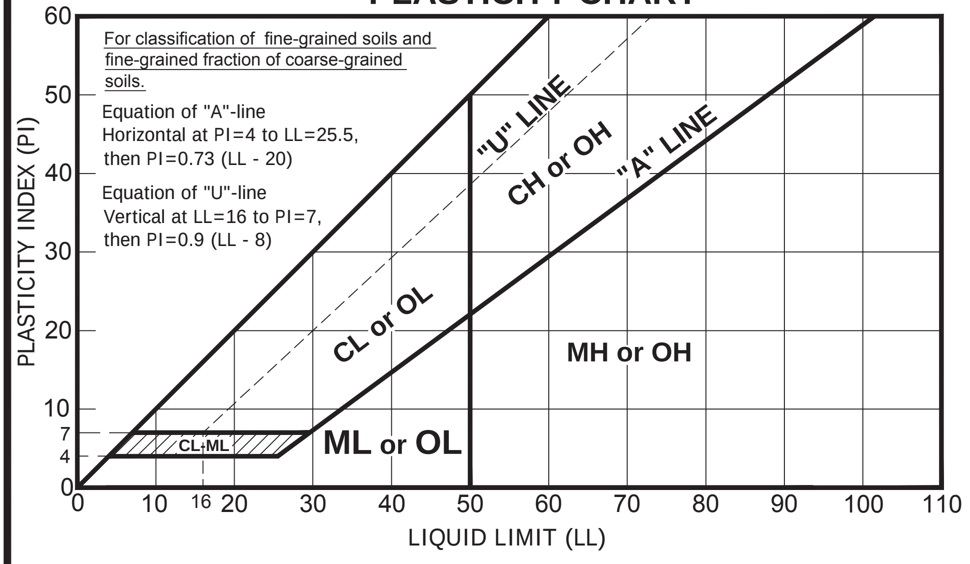
SAMPLE TYPES

- ▮ Auger or backhoe cuttings
- ▮ Shelby tube
- ☒ Standard Penetration (SPT)
- ▩ Bulk Sample
- ⧗ Modified California 2"
- ⧗ California Standard 2.5"
- ▮ Rock core

ADDITIONAL TESTS

C	- Consolidation
CP	- Compaction Curve
CR	- Corrosivity Testing
CU	- Consolidated Undrained Triaxial
DS	- Direct Shear
EI	- Expansion Index
P	- Permeability
PA	- Partical Size Analysis
PI	- Plasticity Index
PP	- Pocket Penetrometer
R	- R-Value
SE	- Sand Equivalent
SG	- Specific Gravity
SL	- Shrinkage Limit
SW	- Swell Potential
TV	- Pocket Torvane Shear Test
UC	- Unconfined Compression
UU	- Unconsolidated Undrained Triaxial

PLASTICITY CHART



GROUND WATER LEVELS

▼ Later water level after drilling

▽ Water level at time of drilling

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BORING LOG / TEST PIT LEGEND AND SOIL DESCRIPTIONS

LOG OF BORING B1

PROJECT NO: 16-319.1
PROJECT: Trinidad Rancheria Hotel
LOCATION: Trinidad, CA
CLIENT: TREDC
LOGGED BY: NRA
DEPTH OF BORING: 31.5 (ft)

BEGIN DATE: 9/13/2016
COMPLETION DATE: 9/13/2016
SURFACE ELEVATION: 215 (ft)
SURFACE CONDITION: Asphalt
WATER DEPTH: Not encountered
READING TAKEN: 9/13/2016
HAMMER EFFICIENCY: 70%

DRILLING CONTRACTOR: Geo-Ex Subsurface
DRILLING METHOD: Solid-Stem Auger
DRILL RIG: CME 75
HAMMER TYPE: Auto 140lb, 30" drop
SAMPLER TYPE & SIZE: MCAL (2.5"ID), SPT (1.4"ID)
BOREHOLE DIAMETER: 4.5 (in)
BACKFILL METHOD: Soil cuttings

FIELD										LABORATORY					
ELEVATION (ft)	DEPTH (ft)	SAMPLE	SAMPLE NO	BLOWS PER 6 IN.	BLOWS PER FOOT	POCKET PEN. (TSF)	GRAPHIC LOG	DESCRIPTION	RECOVERY(%)	PLASTIC LIMIT	LIQUID LIMIT	MOISTURE (%)	DRY DENSITY (PCF)	% PASSING 200 SIEVE	REMARKS
								ASPHALT.							
								Well-graded GRAVEL with SAND (GW); aggregate base.							
	1							SANDY lean CLAY (CL); brown; dry to moist [FILL].							
213	2														
	3							SILTY SAND (SM); medium dense; light orange tan; dry to moist; about 10% fine, subangular to subrounded GRAVEL; about 65% medium to fine SAND; about 25% nonplastic fines [TERRACE DEPOSITS].							
211	4														
	5	⧗	1	13 14 14	28				89			18	105	24	Atterberg limits shown to be non-plastic.
209	6														
	7														
207	8							CLAYEY GRAVEL with SAND (GC); medium dense; orange tan; moist; about 50% fine GRAVEL, max. 1 in. dia.; about 36% medium to fine SAND; about 15% medium plasticity fines; subangular to rounded gravel.							
	9														
205	10	⧗	2	6 7 13	20				72			9	123	16	
	11														
203	12														
	13														
201	14														
	15	⧗	3	11 12 21	33			SILTY SAND (SM); medium dense; orange tan; moist to wet; about 85% fine SAND; about 15% fines.	100			13	103	15	
199	16														
	17														
197	18														
	19														
195	20	⧗	4	14 22 29	51			Dense; light orange tan; medium to fine SAND.	94			13	95		Direct Shear Strength phi = 34.4 psf cohesion = 85 psf
	21														
193	22														
	23														
191	24														

FIELD										LABORATORY					
ELEVATION (ft)	**DEPTH (ft)**	**SAMPLE**	**SAMPLE NO**	**BLOWS PER 6 IN.**	**BLOWS PER FOOT**	**POCKET PEN. (TSF)**	**GRAPHIC LOG**	**DESCRIPTION**	**RECOVERY(%)**	**PLASTIC LIMIT**	**LIQUID LIMIT**	**MOISTURE (%)**	**DRY DENSITY (PCF)**	**% PASSING 200 SIEVE**	**REMARKS**
189	26	☒	5	12 12 13	25			Medium dense; about 20% fines. SILTY SAND (SM) *(continued)*.	89					22	Some caving.
	27														
187	28														
	29														
185	30	⧗	6	11 29 45	74			Dense; coarse to fine, subangular to subrounded SAND.	89			6	124		
	31							Poorly graded GRAVEL with SAND (GP); very dense; orange tan with white and gray gravel; about 60% fine, subrounded GRAVEL; medium to fine SAND; trace fines.							
183	32														
	33							Bottom of borehole at 31.5 ft bgs							
181	34							No free groundwater encountered on 9/13/16.							
	35														
179	36														
	37														
177	38														
	39														
175	40														
	41														
173	42														
	43														
171	44														
	45														
169	46														
	47														
167	48														
	49														
165	50														
	51														
163	52														
	53														
161	54														
	55														

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PROJECT NUMBER: 16-319.1
PROJECT: Trinidad Rancheria Hotel
BORING: B1
ENTRY BY: NRA
CHECKED BY:

LOG OF BORING B2

PROJECT NO: 16-319.1	BEGIN DATE: 9/13/2016	DRILLING CONTRACTOR: Geo-Ex Subsurface
PROJECT: Trinidad Rancheria Hotel	COMPLETION DATE: 9/13/2016	DRILLING METHOD: Hollow-Stem Auger
LOCATION: Trinidad, CA	SURFACE ELEVATION: 225 (ft)	DRILL RIG: CME 75
CLIENT: TREDC	SURFACE CONDITION: Asphalt	HAMMER TYPE: Auto 140lb, 30" drop
LOGGED BY: NRA	WATER DEPTH: Not encountered	SAMPLER TYPE & SIZE: MCAL (2.5"ID), SPT (1.4"ID)
DEPTH OF BORING: 45.1 (ft)	READING TAKEN: 9/13/2016	BOREHOLE DIAMETER: 8 (in)
	HAMMER EFFICIENCY: 70%	BACKFILL METHOD: Soil cuttings

FIELD										LABORATORY					
ELEVATION (ft)	DEPTH (ft)	SAMPLE	SAMPLE NO	BLOWS PER 6 IN.	BLOWS PER FOOT	POCKET PEN. (TSF)	GRAPHIC LOG	DESCRIPTION	RECOVERY(%)	PLASTIC LIMIT	LIQUID LIMIT	MOISTURE (%)	DRY DENSITY (PCF)	% PASSING 200 SIEVE	REMARKS
								ASPHALT.							
								Well-graded GRAVEL with SAND (GW); aggregate base.							
	1														
								SILTY GRAVEL with SAND (GM); medium dense; reddish brown; moist; about 30% coarse to fine, subangular to subrounded GRAVEL; about 25% coarse to fine SAND; about 45% low plasticity fines; bark/mulch present near surface [FILL].							
223	2	⧗	1	6 11 14	25				0						
	3														
221	4														
								Poorly graded SAND (SP); medium dense; orange; dry to moist; medium to fine, subangular to subrounded SAND; trace fines [TERRACE DEPOSITS].							
	5														
219	6														
	7	⧗	2	15 38 50/3	88/9				100						
								SILTY SAND with GRAVEL (SM); very dense; tan with bronze mottling and black spots; dry to moist; about 30% fine, angular to subangular GRAVEL; about 55% angular to subangular SAND; about 15% fines.							
217	8											7	115		
	9														
215	10														
	11														
213	12	⧗	3	11 27 33	60			Dense; moist; moderate cementation; quartz gravel present.	83						
	13											15	113	18	
211	14														
	15							CLAYEY SAND (SC); medium dense; orange and bronze; moist to wet; trace fine GRAVEL; coarse to medium, subangular to subrounded SAND; about 20% medium plasticity fines.							
209	16														
	17	⧗	4	8 10 13	23				78						
207	18											13	116	22	
	19														
205	20							SILTY SAND (SM); medium dense; orangish gray; moist to wet; about 85% medium to fine, subangular to subrounded SAND; about 15% fines.							
	21														
203	22	⧗	5	9 13 16	29				100						
	23											9	110	15	
201	24														

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PROJECT NUMBER: 16-319.1
PROJECT: Trinidad Rancheria Hotel
BORING: B2
ENTRY BY: NRA
CHECKED BY:

FIELD										LABORATORY					
ELEVATION (ft)	DEPTH (ft)	SAMPLE	SAMPLE NO	BLOWS PER 6 IN.	BLOWS PER FOOT	POCKET PEN. (TSF)	GRAPHIC LOG	DESCRIPTION	RECOVERY(%)	PLASTIC LIMIT	LIQUID LIMIT	MOISTURE (%)	DRY DENSITY (PCF)	% PASSING 200 SIEVE	REMARKS
								SILTY SAND (SM) *(continued)*.							
199	26														
	27		6	10 12 18	30			Orangish brown.	89						
197	28											14	95		Direct Shear Strength phi = 34.3 psf cohesion = 50 psf
	29														
195	30														
	31														
193	32		7	8 9 10	19			Moist; about 25% fines.	100						
	33													23	
191	34														
	35														
189	36														
	37		8	8 11 13	24				94						
187	38														
	39														
185	40														
	41														
183	42		9	9 13 50/2	63/8			Very dense; wet; coarse to fine, subangular to subrounded SAND.	86						
	43							SEDIMENTARY ROCK (SHALE) [BEDROCK].							Very tough, slow drilling.
181	44														
	45		10	50/1.5	REF			Bottom of borehole at 45.1 ft bgs	0						
179	46							Auger refusal. No free groundwater encountered on 9/13/16.							
	47														
177	48														
	49														
175	50														
	51														
173	52														
	53														
171	54														
	55														

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PROJECT NUMBER: 16-319.1
PROJECT: Trinidad Rancheria Hotel
BORING: B2
ENTRY BY: NRA
CHECKED BY:
SHEET 2 of 2

LOG OF BORING B3

PROJECT NO: 16-319.1
PROJECT: Trinidad Rancheria Hotel
LOCATION: Trinidad, CA
CLIENT: TREDC
LOGGED BY: NRA
DEPTH OF BORING: 81.4 (ft)

BEGIN DATE: 9/13/2016
COMPLETION DATE: 9/14/2016
SURFACE ELEVATION: 230 (ft)
SURFACE CONDITION: Asphalt
WATER DEPTH: 16.5
READING TAKEN: 9/14/2016
HAMMER EFFICIENCY: 70%

DRILLING CONTRACTOR: Geo-Ex Subsurface
DRILLING METHOD: Rotary Wash
DRILL RIG: CME 75
HAMMER TYPE: Auto 140lb, 30" drop
SAMPLER TYPE & SIZE: MCAL (2.5"ID), SPT (1.4"ID)
BOREHOLE DIAMETER: 4.5 (in)
BACKFILL METHOD: Piezometer Installed

FIELD										LABORATORY					
ELEVATION (ft)	**DEPTH (ft)**	**SAMPLE**	**SAMPLE NO**	**BLOWS PER 6 IN.**	**BLOWS PER FOOT**	**POCKET PEN. (TSF)**	**GRAPHIC LOG**	**DESCRIPTION**	**RECOVERY(%)**	**PLASTIC LIMIT**	**LIQUID LIMIT**	**MOISTURE (%)**	**DRY DENSITY (PCF)**	**% PASSING 200 SIEVE**	**REMARKS**
								ASPHALT.							
								Well-graded GRAVEL with SAND (GW); aggregate base.							
	1														
								SANDY lean CLAY (CL); orange brown; moist; about 30% medium to fine SAND; about 70% medium plasticity fines [FILL].							
228	2														
	3														
226	4														
	5	⧗	1	29 50/4	50/4				80			16	101		Tough drilling.
								SILTY SAND (SM); very dense; orange, light tan, gray, and bronze; dry to moist; about 80% medium to fine SAND; about 20% low plasticity fines; moderate cementation [TERRACE DEPOSITS].							
224	6														
	7														
222	8							SEDIMENTARY ROCK (SHALE), blue gray to dark gray, decomposed, moist; angular shale fragments and sub-grounded gravel in clay matrix [BEDROCK].							Easier drilling.
	9														
220	10	⧗	2	6 14 16	30				100			9	133		Unconfined Compressive Strength cohesion = 3051 psf
	11														
218	12														
	13														
216	14														
	15	⧗	3	22 34 44	78			Intensely weathered.	100			5	138		Unconfined Compressive Strength cohesion = 2387 psf
214	16														
	17														Tough drilling; auger bit grinds against rock.
212	18														
	19														
210	20	☒	4	10 8 12	20			Very intensely weathered, wet.	78	14	27				Switch from auger to mud rotary. PI
	21														
208	22														
	23														
206	24														

FIELD										LABORATORY					
ELEVATION (ft)	DEPTH (ft)	SAMPLE	SAMPLE NO	BLOWS PER 6 IN.	BLOWS PER FOOT	POCKET PEN. (TSF)	GRAPHIC LOG	DESCRIPTION	RECOVERY(%)	PLASTIC LIMIT	LIQUID LIMIT	MOISTURE (%)	DRY DENSITY (PCF)	% PASSING 200 SIEVE	REMARKS
204	26		5	7 7 12	19			Decomposed. SEDIMENTARY ROCK (Shale) *(continued)*.	44						
202	27 28 29														
200	30 31		6	9 13 16	29			Intensely weathered.	89			8	128		
198 196	32 33 34 35														
194	36		7	10 13 25	38				56						<u>Corrosion Testing</u> pH = 8.57 Min. Resistivity = 1,070 ohm-cm Chlorides = 12.1 ppm Sulfates = 225.9 ppm
192	37 38 39														
190	40 41		8	14 14 22	36			Decomposed.	22						
188 186	42 43 44 45														
184	46		9	15 11 19	30				39						
182	47 48 49														Tough drilling.
180	50 51		10	10 28 38	66			Intensely weathered.	44			7	142		
178 176	52 53 54 55														
			11		55			Moderately weathered.	50						

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PROJECT NUMBER: 16-319.1
PROJECT: Trinidad Rancheria Hotel
BORING: B3
ENTRY BY: NRA
CHECKED BY:
SHEET 2 of 3

FIELD										LABORATORY					
ELEVATION (ft)	DEPTH (ft)	SAMPLE	SAMPLE NO	BLOWS PER 6 IN.	BLOWS PER FOOT	POCKET PEN. (TSF)	GRAPHIC LOG	DESCRIPTION	RECOVERY(%)	PLASTIC LIMIT	LIQUID LIMIT	MOISTURE (%)	DRY DENSITY (PCF)	% PASSING 200 SIEVE	REMARKS
174	56	☒	11	8 29 26	55				50						
	57														
172	58														
	59														
170	60	☒	12	11 20 25	45			Intensely weathered.	39						Tough drilling and easy drilling sections from 48ft to 70ft.
	61														
168	62														
	63														
166	64														
	65														
164	66														
	67														
162	68														
	69														
160	70	☒	13	16 18 46	64			Intensely to moderately weathered.	72						Very tough, slow drilling from 70-80ft.
	71														
158	72														
	73														
156	74														
	75														
154	76														
	77														
152	78														
	79														
150	80	☒	14	22 29 50/5	79/11			Moderately weathered.	41						
	81														
148	82							Bottom of borehole at 81.4 ft bgs Near mud rotary refusal. Groundwater during augering encountered at 16.5ft on 9/13/16. Groundwater rose to 11.8ft on 9/14/16. Piezometer installed to 50ft; see Detail 1.							
	83														
146	84														
	85														

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PROJECT NUMBER: 16-319.1
PROJECT: Trinidad Rancheria Hotel
BORING: B3
ENTRY BY: NRA
CHECKED BY:

LOG OF BORING B4

PROJECT NO: 16-319.1
PROJECT: Trinidad Rancheria Hotel
LOCATION: Trinidad, CA
CLIENT: TREDC
LOGGED BY: NRA
DEPTH OF BORING: 61 (ft)

BEGIN DATE: 9/15/2016
COMPLETION DATE: 9/15/2016
SURFACE ELEVATION: 230 (ft)
SURFACE CONDITION: Asphalt
WATER DEPTH: Not encountered
READING TAKEN: 9/15/2016
HAMMER EFFICIENCY: 70%

DRILLING CONTRACTOR: Geo-Ex Subsurface
DRILLING METHOD: Rotary Wash
DRILL RIG: CME 75
HAMMER TYPE: Auto 140lb, 30" drop
SAMPLER TYPE & SIZE: MCAL (2.5"ID), SPT (1.4"ID)
BOREHOLE DIAMETER: 4.5 (in)
BACKFILL METHOD: Cement grout

FIELD										LABORATORY					
ELEVATION (ft)	DEPTH (ft)	SAMPLE	SAMPLE NO	BLOWS PER 6 IN.	BLOWS PER FOOT	POCKET PEN. (TSF)	GRAPHIC LOG	DESCRIPTION	RECOVERY(%)	PLASTIC LIMIT	LIQUID LIMIT	MOISTURE (%)	DRY DENSITY (PCF)	% PASSING 200 SIEVE	REMARKS
								ASPHALT.							
	1							Well-graded GRAVEL with SAND (GW); aggregate base.							
228	2							SANDY lean CLAY (CL); grayish brown with bronze streaks; dry to moist; medium to fine SAND; medium plasticity fines [FILL].							
	3														
226	4							SEDIMENTARY ROCK (SHALE), dark gray, decomposed, moist; angular shale fragments and sub-grounded gravel in clay matrix [BEDROCK].							
	5	⧗	1	3 6 9	15				56						
224	6											9	130		Unconfined Compressive Strength cohesion = 1272 psf
	7														
222	8														
	9														
220	10	⧗	2	3 8 35	43	4.5+		Intensely weathered, white quartz angular gravel present.	78						
	11											9	137		
218	12														
	13														
216	14														
	15	☒	3	4 50/5	50/5			Moderately weathered.	91						
214	16														Very tough drilling. Auger bit grinding on rock.
	17														
212	18														Easier drilling.
	19														
210	20	☒	4	5 8 10	18			Intensely weathered.	89						Switch from auger to mud rotary.
	21									17	33				Corrosion Testing pH = 8.18 Min. Resistivity = 1,150 ohm-cm Chlorides = 12.0 ppm Sulfates = 175.2 ppm PI
208	22														
	23														
206	24														

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PROJECT NUMBER: 16-319.1
PROJECT: Trinidad Rancheria Hotel
BORING: B4
ENTRY BY: NRA
CHECKED BY:

FIELD										LABORATORY					
ELEVATION (ft)	DEPTH (ft)	SAMPLE	SAMPLE NO	BLOWS PER 6 IN.	BLOWS PER FOOT	POCKET PEN. (TSF)	GRAPHIC LOG	DESCRIPTION	RECOVERY(%)	PLASTIC LIMIT	LIQUID LIMIT	MOISTURE (%)	DRY DENSITY (PCF)	% PASSING 200 SIEVE	REMARKS
204	26	⧗	5	6 13 14	27			SEDIMENTARY ROCK (Shale) *(continued)*.	22						
	27														
202	28														
	29														
200	30	☒	6	20 15 13	28			Intensely to moderately weathered, intensely fractured, white quartz angular gravel present.	67						
	31														
198	32														
	33														
196	34														
	35	⧗	7	15 31 47	78			Moderately weathered.	56						
194	36											6	143		<u>Triaxial Shear Strength - Staged UU</u> phi = 21.8 degrees cohesion = 1400 psf
	37														
192	38														
	39														
190	40	☒	8	50/5	REF				60						
	41														<u>Corrosion Testing</u> pH = 8.54 Min. Resistivity = 1,850 ohm-cm Chlorides = 3.7 ppm Sulfates = 19.4 ppm
188	42														
	43														
186	44														
	45														
184	46														
	47														
182	48														
	49														
180	50	☒	9	50/4	REF				75						
	51														
178	52														
	53														
176	54														
	55														

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PROJECT NUMBER: 16-319.1
PROJECT: Trinidad Rancheria Hotel
BORING: B4
ENTRY BY: NRA
CHECKED BY:
SHEET 2 of 3

FIELD										LABORATORY					
ELEVATION (ft)	DEPTH (ft)	SAMPLE	SAMPLE NO	BLOWS PER 6 IN.	BLOWS PER FOOT	POCKET PEN. (TSF)	GRAPHIC LOG	DESCRIPTION	RECOVERY(%)	PLASTIC LIMIT	LIQUID LIMIT	MOISTURE (%)	DRY DENSITY (PCF)	% PASSING 200 SIEVE	REMARKS
174	56														
	57														
172	58														
	59														
170	60	☒	10	45 50/6	50/6				8						
	61							Bottom of borehole at 61.0 ft bgs No free groundwater encountered within auger depth of 20ft on 9/15/16.							
168	62														
	63														
166	64														
	65														
164	66														
	67														
162	68														
	69														
160	70														
	71														
158	72														
	73														
156	74														
	75														
154	76														
	77														
152	78														
	79														
150	80														
	81														
148	82														
	83														
146	84														
	85														

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PROJECT NUMBER: 16-319.1
PROJECT: Trinidad Rancheria Hotel
BORING: B4
ENTRY BY: NRA
CHECKED BY:

LOG OF BORING B5

PROJECT NO: 16-319.1	BEGIN DATE: 9/16/2016	DRILLING CONTRACTOR: Geo-Ex Subsurface
PROJECT: Trinidad Rancheria Hotel	COMPLETION DATE: 9/16/2016	DRILLING METHOD: Rotary Wash
LOCATION: Trinidad, CA	SURFACE ELEVATION: 230 (ft)	DRILL RIG: CME 75
CLIENT: TREDC	SURFACE CONDITION: Asphalt	HAMMER TYPE: Auto 140lb, 30" drop
LOGGED BY: NRA	WATER DEPTH: Not encountered	SAMPLER TYPE & SIZE: MCAL (2.5"ID), SPT (1.4"ID)
DEPTH OF BORING: 61.5 (ft)	READING TAKEN: 9/16/2016	BOREHOLE DIAMETER: 4.5 (in)
	HAMMER EFFICIENCY: 70%	BACKFILL METHOD: Piezometer Installed

FIELD										LABORATORY					
ELEVATION (ft)	DEPTH (ft)	SAMPLE	SAMPLE NO	BLOWS PER 6 IN.	BLOWS PER FOOT	POCKET PEN. (TSF)	GRAPHIC LOG	DESCRIPTION	RECOVERY(%)	PLASTIC LIMIT	LIQUID LIMIT	MOISTURE (%)	DRY DENSITY (PCF)	% PASSING 200 SIEVE	REMARKS
								ASPHALT.							
	1							Well-graded GRAVEL with SAND (GW); aggregate base.							
228	2							SANDY lean CLAY (CL); grayish brown; moist; medium to fine SAND; medium plasticity fines [FILL].							
	3														
226	4							SEDIMENTARY ROCK (SHALE), dark bluish gray, intensely to moderately weathered, moist; angular shale fragments and sub-grounded gravel in clay matrix [BEDROCK].							Tougher drilling.
	5	⧗	1	6 10 13	23				61			4	137		
224	6														
	7														
222	8														
	9														
220	10	⧗	2	17 17 16	33			Moderately weathered.	78						
	11														
218	12														
	13														
216	14														
	15	⧖	3	18 16 24	40				67	13	24				PI
214	16														
	17														
212	18														
	19														
210	20	⧗	4	18 20 29	49			Pebbly subrounded gravel in clay matrix.	83			6	149		Switch from auger to mud rotary.
	21														
208	22														
	23														
206	24														

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PROJECT NUMBER: 16-319.1
PROJECT: Trinidad Rancheria Hotel
BORING: B5
ENTRY BY: NRA
CHECKED BY:

FIELD							GRAPHIC LOG	DESCRIPTION	RECOVERY(%)	LABORATORY					REMARKS
ELEVATION (ft)	DEPTH (ft)	SAMPLE	SAMPLE NO	BLOWS PER 6 IN.	BLOWS PER FOOT	POCKET PEN. (TSF)				PLASTIC LIMIT	LIQUID LIMIT	MOISTURE (%)	DRY DENSITY (PCF)	% PASSING 200 SIEVE	
204	26	☒	5	7 5 11	16			Moderately weathered. SEDIMENTARY ROCK (Shale) *(continued)*.	61						
	27														
202	28														
	29														Easier drilling.
200	30	⧗	6	33 37 51	88				22						Sample very disturbed.
	31														
198	32														
	33														
196	34														
	35	☒	7	9 16 16	32			Intensely to moderately weathered.	83						
194	36									14	29				PI
	37														
192	38														
	39														
190	40	⧗	8	23 32 38	70			Moderately weathered.	22						
	41											6	141		Triaxial Shear Strength - Staged UU phi = 27.5 degrees cohesion = 1225 psf
188	42														
	43														
186	44														
	45	☒	9	17 10 13	23			Intensely to moderately weathered.	78						
184	46														Corrosion Testing pH = 8.55 Min. Resistivity = 800 ohm-cm Chlorides = 12.9 ppm Sulfates = 131.8 ppm Tougher drilling. Drill bit grinding on rock.
	47														
182	48														
	49														
180	50	☒	10	50/2	REF			Light grayish green and white, slightly weathered, intensely fractured, partly serpentinized.	100						
	51														
178	52														
	53														
176	54														
	55														

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PROJECT NUMBER: 16-319.1
PROJECT: Trinidad Rancheria Hotel
BORING: B5
ENTRY BY: NRA
CHECKED BY:

FIELD										LABORATORY					
ELEVATION (ft)	DEPTH (ft)	SAMPLE	SAMPLE NO	BLOWS PER 6 IN.	BLOWS PER FOOT	POCKET PEN. (TSF)	GRAPHIC LOG	DESCRIPTION	RECOVERY(%)	PLASTIC LIMIT	LIQUID LIMIT	MOISTURE (%)	DRY DENSITY (PCF)	% PASSING 200 SIEVE	REMARKS
174	56														
	57														
172	58														
	59														
170	60	☒	11	25 25 36	61			Intensely weathered.	89						
	61														
168	62							Bottom of borehole at 61.5 ft bgs Flushed with clean water prior to installing piezometer. No free groundwater encountered within auger depth of 20ft on 9/16/16. Piezometer installed to 61.5ft; see Detail 1.							
	63														
166	64														
	65														
164	66														
	67														
162	68														
	69														
160	70														
	71														
158	72														
	73														
156	74														
	75														
154	76														
	77														
152	78														
	79														
150	80														
	81														
148	82														
	83														
146	84														
	85														

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PROJECT NUMBER: 16-319.1
PROJECT: Trinidad Rancheria Hotel
BORING: B5
ENTRY BY: NRA
CHECKED BY:

LOG OF BORING B6

PROJECT NO: 16-319.1
PROJECT: Trinidad Rancheria Hotel
LOCATION: Trinidad, CA
CLIENT: TREDC
LOGGED BY: NRA
DEPTH OF BORING: 31.5 (ft)

BEGIN DATE: 9/15/2016
COMPLETION DATE: 9/16/2016
SURFACE ELEVATION: 230 (ft)
SURFACE CONDITION: Asphalt
WATER DEPTH: Not encountered
READING TAKEN: 9/16/2016
HAMMER EFFICIENCY: 70%

DRILLING CONTRACTOR: Geo-Ex Subsurface
DRILLING METHOD: Solid-Stem Auger
DRILL RIG: CME 75
HAMMER TYPE: Auto 140lb, 30" drop
SAMPLER TYPE & SIZE: MCAL (2.5"ID), SPT (1.4"ID)
BOREHOLE DIAMETER: 4.5 (in)
BACKFILL METHOD: Soil cuttings

FIELD									LABORATORY						
ELEVATION (ft)	DEPTH (ft)	SAMPLE	SAMPLE NO	BLOWS PER 6 IN.	BLOWS PER FOOT	POCKET PEN. (TSF)	GRAPHIC LOG	DESCRIPTION	RECOVERY(%)	PLASTIC LIMIT	LIQUID LIMIT	MOISTURE (%)	DRY DENSITY (PCF)	% PASSING 200 SIEVE	REMARKS
	0							ASPHALT.							
								Well-graded GRAVEL with SAND (GW); aggregate base.							
228	2							Poorly graded SAND (SP); brownish gray; moist; coarse to fine SAND; trace fines; fill for nearby storm drain trench [FILL].							
226	4							SEDIMENTARY ROCK (SHALE), gray, very intensely weathered [BEDROCK].							
	5	⧗	1	18 15 8	23				44						Corrosion Testing pH = 7.72 Min. Resistivity = 1,720 ohm-cm Chlorides = 6.9 ppm Sulfates = 100.4 ppm
220	10	⧗	2	8 10 12	22			Light gray, decomposed, dry to moist; subrounded to subangular gravel in clay matrix.	61			7	124		Unconfined Compressive Strength cohesion = 3783 psf
	15	⧗	3	4 11 19	30			Intensely weathered.	50						Very tough drilling, near auger refusal.
212	18														Drill bit grinding on rock.
210	20	⊠	4	50/2	REF			Moderately weathered, dry.	0						Tougher drilling.
206	24														

Crawford & Associates, Inc.
Geotechnical Engineering, Design and Construction Services

Crawford & Associates, Inc.
1100 Corporate Way, Suite 230
Sacramento, CA 95831
(916) 455-4225

PROJECT NUMBER: 16-319.1
PROJECT: Trinidad Rancheria Hotel
BORING: B6
ENTRY BY: NRA
CHECKED BY:

FIELD										LABORATORY					
ELEVATION (ft)	DEPTH (ft)	SAMPLE	SAMPLE NO	BLOWS PER 6 IN.	BLOWS PER FOOT	POCKET PEN. (TSF)	GRAPHIC LOG	DESCRIPTION	RECOVERY(%)	PLASTIC LIMIT	LIQUID LIMIT	MOISTURE (%)	DRY DENSITY (PCF)	% PASSING 200 SIEVE	REMARKS
204	26	☒	5	15 20 22	42			SEDIMENTARY ROCK (Shale) *(continued)*.	78						Easier drilling.
	27														
202	28														
	29														
200	30	☒	6	20 14 17	31			Intensely to moderately weathered.	78						
	31														
198	32							Bottom of borehole at 31.5 ft bgs No free groundwater encountered on 9/16/16.							
	33														
196	34														
	35														
194	36														
	37														
192	38														
	39														
190	40														
	41														
188	42														
	43														
186	44														
	45														
184	46														
	47														
182	48														
	49														
180	50														
	51														
178	52														
	53														
176	54														
	55														

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PROJECT NUMBER: 16-319.1
PROJECT: Trinidad Rancheria Hotel
BORING: B6
ENTRY BY: NRA
CHECKED BY:

APPENDIX B

Laboratory Test Results

Crawford
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and Construction Services

Project Name: Trinadad Rancheria Hotel
CAInc File No: 16-319.1
Date: 9/30/16
Technician: CAP

MOISTURE-DENSITY TESTS - D2216

	1	2	3	4	5
Sample No.	B1-1	B1-2	B1-3	B1-6	B2-2
USCS Symbol	SM	GC	SM	SP	GP
Depth (ft.)	6	11	16	31	8
Sample Length (in.)	5.544	5.600	5.651	5.622	5.218
Diameter (in.)	2.388	2.374	2.374	2.405	2.375
Sample Volume (ft^3)	0.01437	0.01434	0.01448	0.01478	0.01338
Total Mass Soil+Tube (g)	1087.8	1151.6	1058.3	1157.9	998.2
Mass of Tube (g)	276.0	275.1	295.8	271.8	253.0
Tare No.	P10	P9	P1	P9	G1
Tare (g)	131.7	254.6	131.4	254.5	20.7
Wet Soil + Tare (g)	580.3	741.6	506.6	740.6	59.5
Dry Soil + Tare (g)	510.8	700.7	464.4	711.8	57.0
Dry Soil (g)	379.1	446.1	333.0	457.3	36.4
Water (g)	69.5	40.9	42.2	28.8	2.5
Moisture (%)	**18.3**	**9.2**	**12.7**	**6.3**	**6.9**
Dry Density (pcf)	**105.3**	**123.4**	**103.1**	**124.3**	**114.9**

Notes:

Crawford
& Associates, Inc.
Geotechnical Engineering, Design
and Construction Services

Project Name: Trinadad Rancheria Hotel
CAInc File No: 16-319.1
Date: 9/30/16
Technician: CAP

MOISTURE-DENSITY TESTS - D2216

	1	2	3	4	5
Sample No.	B2-3	B2-4	B2-5	B3-1	B3-6
USCS Symbol	SM	SC	SM	SM	Rock
Depth (ft.)	13	18	23	5.5	31
Sample Length (in.)	5.361	5.589	5.983	3.618	4.657
Diameter (in.)	2.377	2.392	2.358	2.408	2.418
Sample Volume (ft^3)	0.01377	0.01453	0.01512	0.00954	0.01238
Total Mass Soil+Tube (g)	1081.2	1138.4	1120.3	771.5	1040.1
Mass of Tube (g)	272.4	272.0	302.4	267.5	265.1
Tare No.	P18	P8	Q6	D17	C15
Tare (g)	129.0	127.6	186.3	20.8	20.7
Wet Soil + Tare (g)	591.4	509.7	496.0	71.9	69.5
Dry Soil + Tare (g)	532.6	465.8	471.8	65.0	65.9
Dry Soil (g)	403.6	338.2	285.5	44.3	45.2
Water (g)	58.8	43.9	24.2	6.9	3.7
Moisture (%)	**14.6**	**13.0**	**8.5**	**15.5**	**8.1**
Dry Density (pcf)	**113.0**	**116.3**	**109.9**	**100.9**	**127.7**

Notes:

Project Name: Trinadad Rancheria Hotel
CAInc File No: 16-319.1
Date: 9/30/16
Technician: CAP

MOISTURE-DENSITY TESTS - D2216

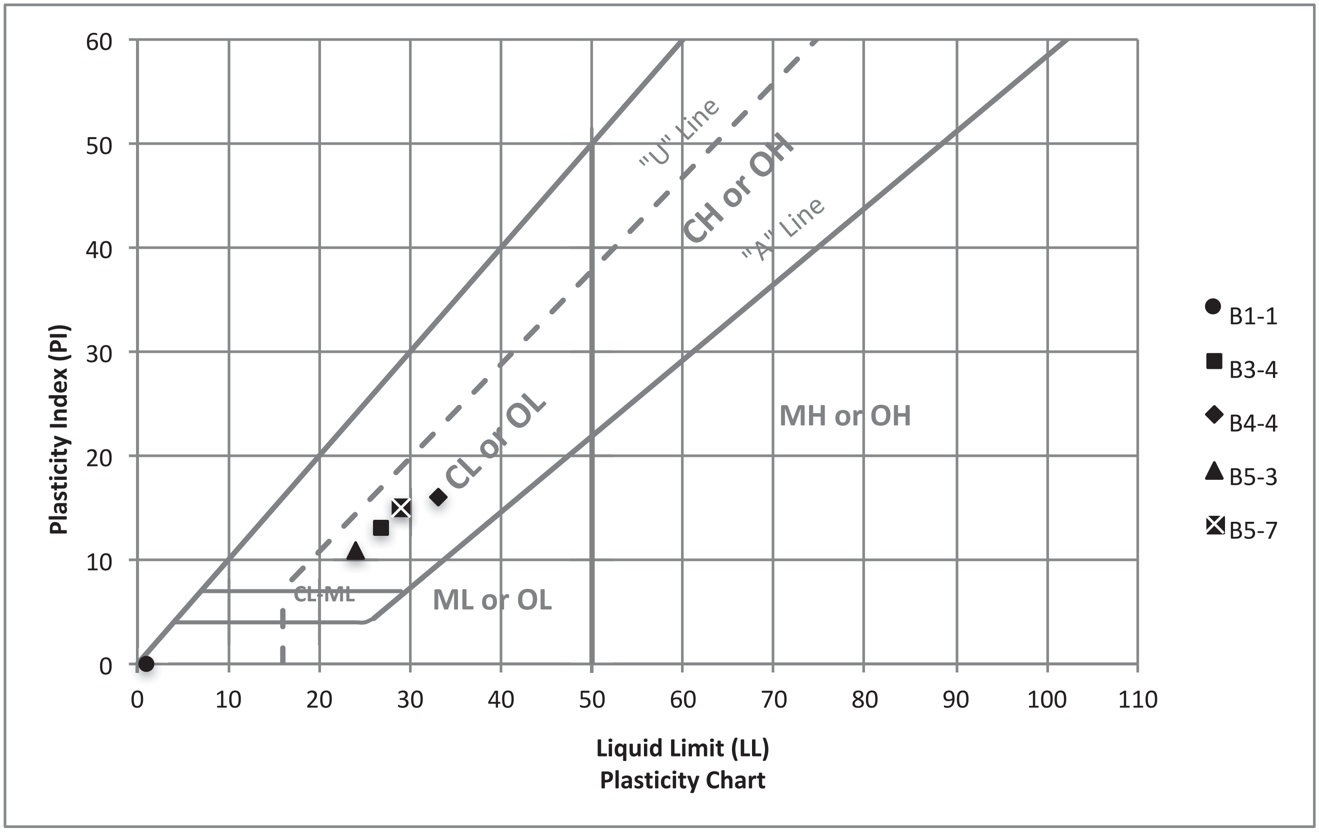
	1	2	3	4	5
Sample No.	B3-10	B4-2	B5-1	B5-4	
USCS Symbol	Rock	Rock	Rock	Rock	
Depth (ft.)	51	11	6	21	
Sample Length (in.)	5.983	5.907	5.749	5.635	
Diameter (in.)	2.377	2.375	2.369	2.377	
Sample Volume (ft^3)	0.01536	0.01514	0.01466	0.01447	
Total Mass Soil+Tube (g)	1334.7	1296.5	1235.5	1221.9	
Mass of Tube (g)	273.4	274.3	284.9	189.8	
Tare No.	H5	D15	G7	C5	
Tare (g)	20.7	20.9	20.5	21.1	
Wet Soil + Tare (g)	61.7	56.1	102.1	82.8	
Dry Soil + Tare (g)	59.0	53.4	98.89	79.4	
Dry Soil (g)	38.4	32.5	78.39	58.3	
Water (g)	2.7	2.8	3.21	3.4	
Moisture (%)	**7.0**	**8.5**	**4.1**	**5.8**	
Dry Density (pcf)	**142.3**	**137.1**	**137.3**	**148.7**	

Notes:

Project Name: Trinidad Rancheria Hotel
CAInc File No: 16-319.1
Date: 10/3/16
Technician: KKL/CAP

Plastic Index - ASTM D4318

Sample ID	Depth (ft)	Liquid Limit	Plastic Limit	PI
B1-1	6	NP	NP	NP
B3-4	21	27	14	13
B4-4	21	33	17	16
B5-3	16	24	13	11
B5-7	36	29	14	15



Plasticity Chart

Note: For B1-1, the material was not able to be rolled into a 3.2 mm diameter thread for the plastic limit and the soil pat slid in the cup when performing the liquid limit.

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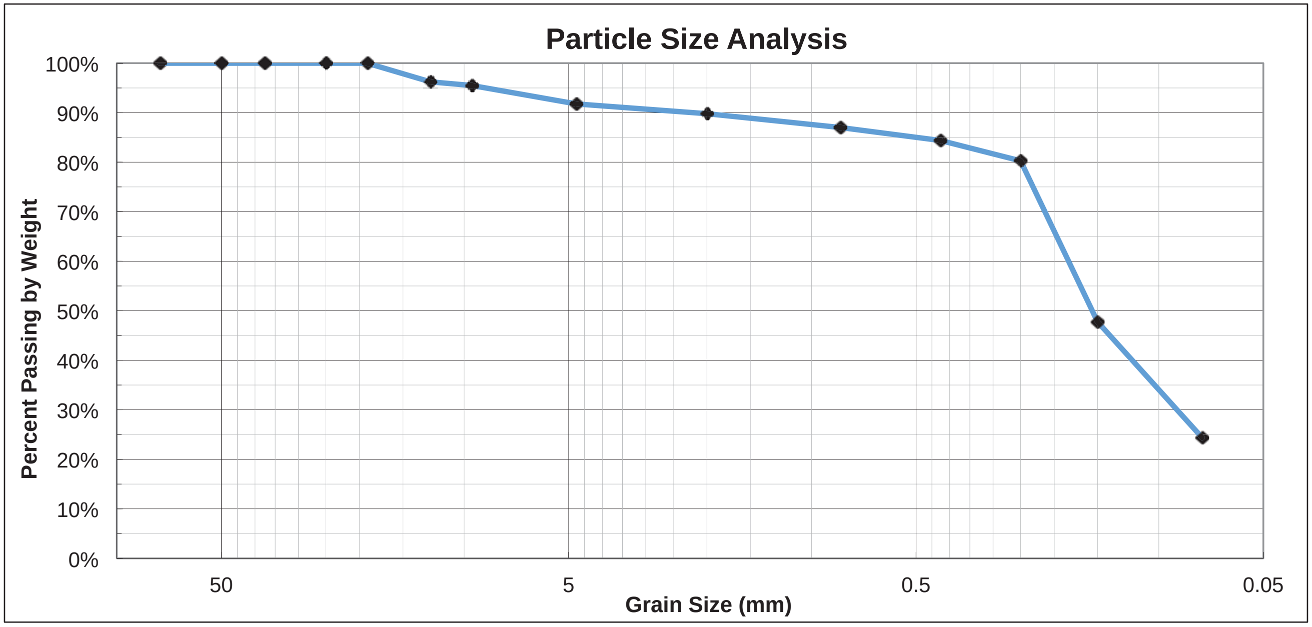
Project Name: Trinadad Rancheria Hotel
CAInc File No: 16-319.1
Date: 10/4/16
Technician: KKL
Sample ID: B1-1
Depth: 6'
USCS Classification: Silty SAND

Grain Size Analysis - ASTM 6913



% Cobble	% Gravel		% Sand			% Fines
	Coarse	Fine	Coarse	Medium	Fine	Silt/Clay
	0	8	2	6	60	
0	**8**		**68**			**24**

		Sieve #	Opening mm	Cummulative Mass Retained (g)	% Passing %
Cobbles		**3"**	75	0.0	100%
Gravel	Coarse	**2"**	50	0.0	100%
		1-1/2"	37.5	0.0	100%
		1"	25.0	0.0	100%
		3/4"	19.0	0.0	100%
	Fine	**1/2"**	12.5	14.3	96%
		3/8"	9.50	17.1	95%
		#4	4.75	31.2	92%
Sand	Coarse	**#10**	2.00	38.7	90%
	Medium	**#20**	0.825	49.3	87%
		#40	0.425	59.2	84%
	Fine	**#60**	0.250	74.8	80%
		#100	0.150	198.1	48%
		#200	0.075	286.7	24%

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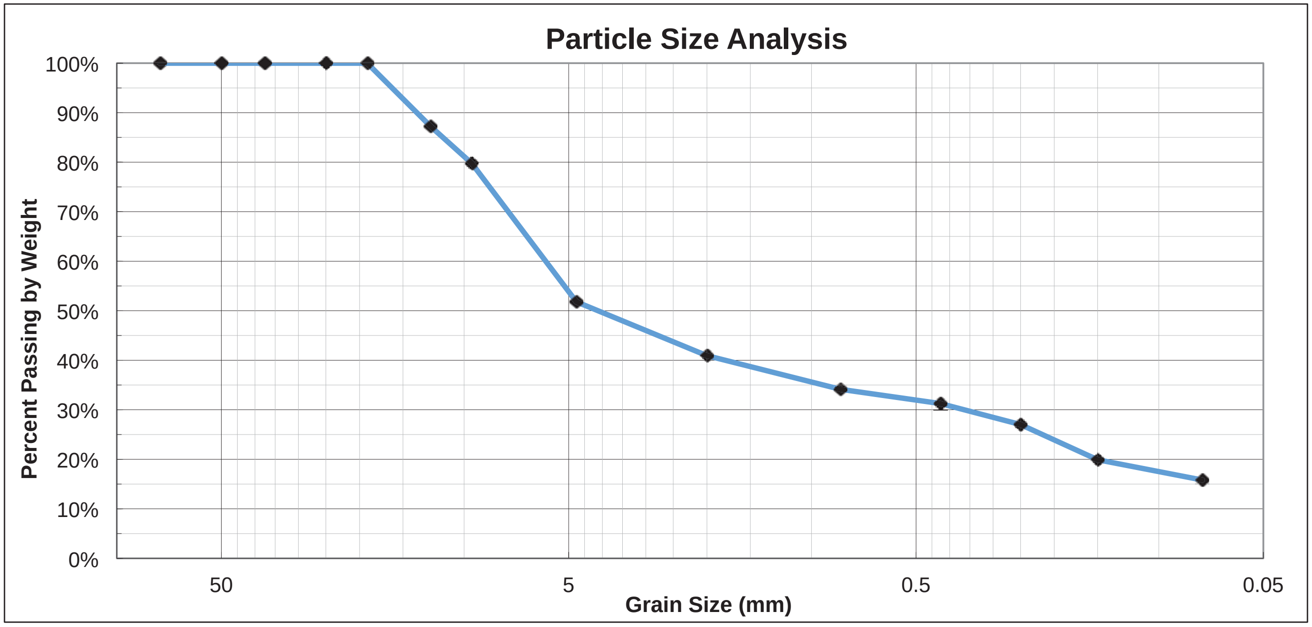
Project Name: Trinadad Rancheria Hotel
CAInc File No: 16-319.1
Date: 10/3/16
Technician: KKL
Sample ID: B1-2
Depth: 11'
USCS Classification: Clayey GRAVEL with SAND

Grain Size Analysis - ASTM 6913



% Cobble	% Gravel		% Sand			% Fines
	Coarse	Fine	Coarse	Medium	Fine	Silt/Clay
	0	48	11	10	15	
0	**48**		**36**			**16**

		Sieve #	Opening mm	Cummulative Mass Retained (g)	% Passing %
Cobbles		**3"**	75	0.0	100%
Gravel	Coarse	**2"**	50	0.0	100%
		1-1/2"	37.5	0.0	100%
		1"	25.0	0.0	100%
		3/4"	19.0	0.0	100%
	Fine	**1/2"**	12.5	48.2	87%
		3/8"	9.50	76.7	80%
		#4	4.75	182.5	52%
Sand	Coarse	**#10**	2.00	223.7	41%
	Medium	**#20**	0.825	249.4	34%
		#40	0.425	260.3	31%
	Fine	**#60**	0.250	276.4	27%
		#100	0.150	303.3	20%
		#200	0.075	318.8	16%

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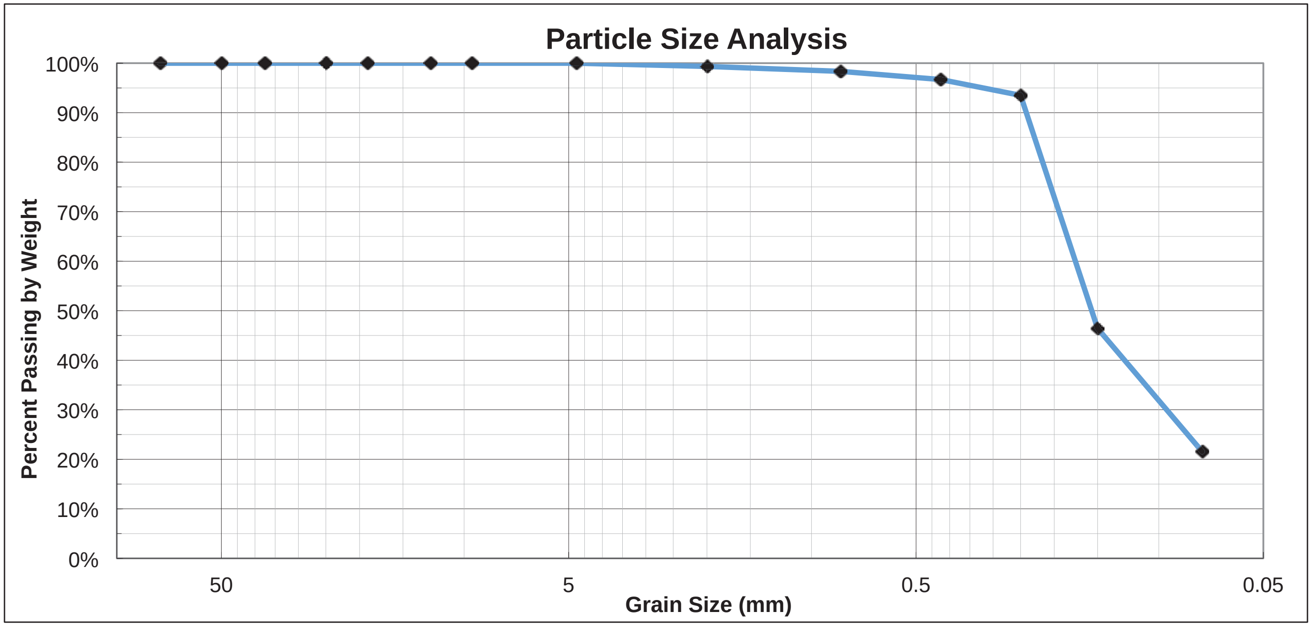
Project Name: Trinadad Rancheria Hotel
CAInc File No: 16-319.1
Date: 10/7/16
Technician: CAP
Sample ID: B1-5
Depth: 26'
USCS Classification: Silty SAND

Grain Size Analysis - ASTM 6913



% Cobble	% Gravel		% Sand			% Fines
	Coarse	Fine	Coarse	Medium	Fine	Silt/Clay
	0	0	1	2	75	
0	**0**		**78**			**22**

		Sieve #	**Opening** mm	**Cummulative Mass Retained (g)**	**% Passing** %
Cobbles		**3"**	75	0.0	100%
Gravel	Coarse	**2"**	50	0.0	100%
		1-1/2"	37.5	0.0	100%
		1"	25.0	0.0	100%
		3/4"	19.0	0.0	100%
	Fine	**1/2"**	12.5	0.0	100%
		3/8"	9.50	0.0	100%
		#4	4.75	0.0	100%
Sand	Coarse	**#10**	2.00	1.1	99%
	Medium	**#20**	0.825	2.8	98%
		#40	0.425	5.6	97%
	Fine	**#60**	0.250	11.0	94%
		#100	0.150	90.7	46%
		#200	0.075	132.8	22%

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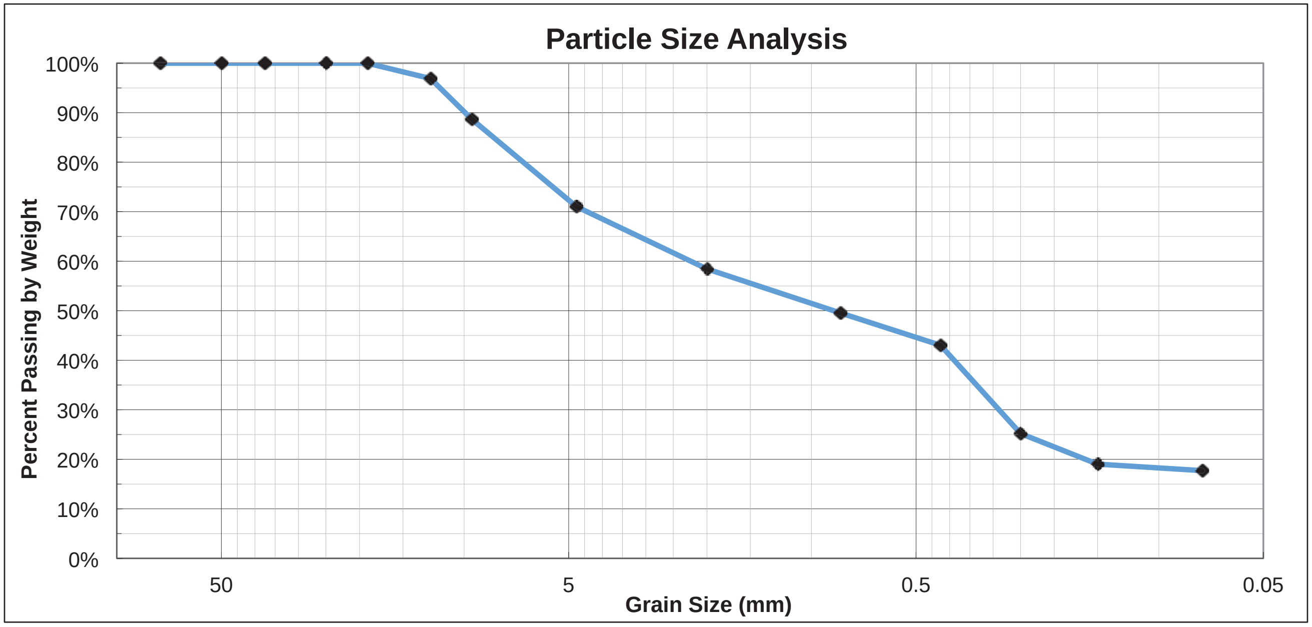
Project Name: Trinadad Rancheria Hotel
CAInc File No: 16-319.1
Date: 10/4/16
Technician: KKL
Sample ID: B2-3
Depth: 13'
USCS Classification: Silty SAND with GRAVEL

Grain Size Analysis - ASTM 6913

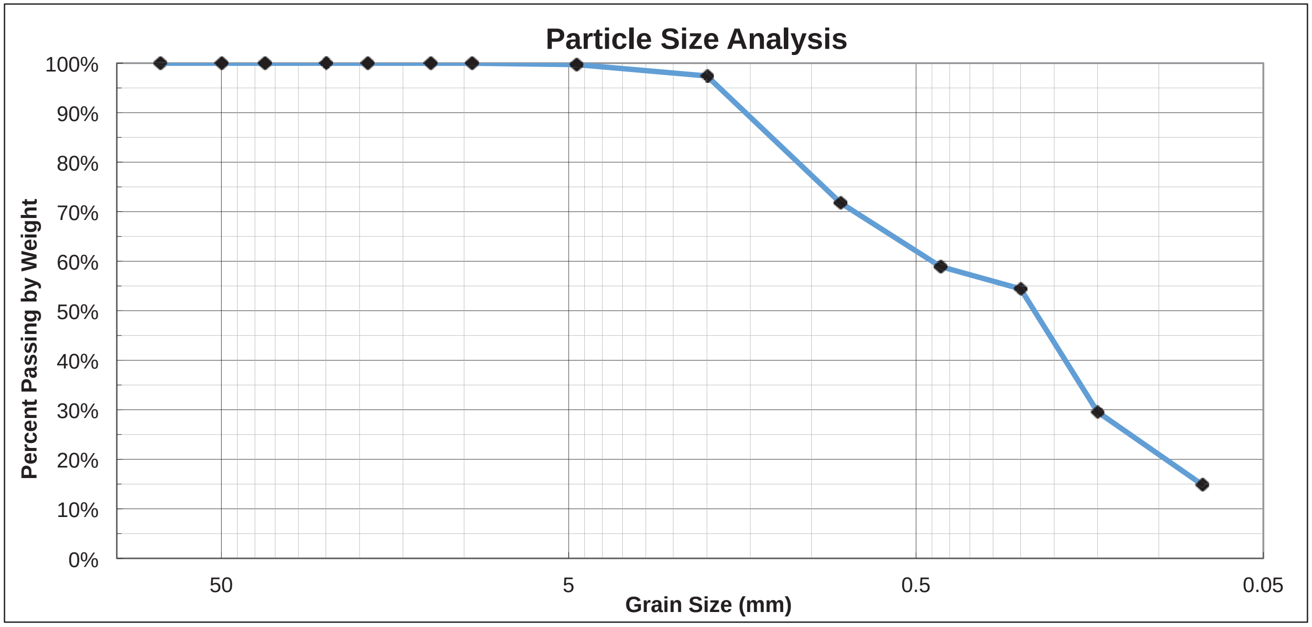


% Cobble	% Gravel		% Sand			% Fines
	Coarse	Fine	Coarse	Medium	Fine	Silt/Clay
	0	29	13	15	25	
0	**29**		**53**			**18**

		Sieve #	Opening mm	Cummulative Mass Retained (g)	% Passing %
Cobbles		**3"**	75	0.0	100%
Gravel	Coarse	**2"**	50	0.0	100%
		1-1/2"	37.5	0.0	100%
		1"	25.0	0.0	100%
		3/4"	19.0	0.0	100%
	Fine	**1/2"**	12.5	12.5	97%
		3/8"	9.50	45.7	89%
		#4	4.75	116.9	71%
Sand	Coarse	**#10**	2.00	167.7	58%
	Medium	**#20**	0.825	203.6	50%
		#40	0.425	229.9	43%
	Fine	**#60**	0.250	301.9	25%
		#100	0.150	326.8	19%
		#200	0.075	332.1	18%

Project Name: Trinadad Rancheria Hotel
CAInc File No: 16-319.1
Date: 10/3/16
Technician: KKL
Sample ID: B2-5
Depth: 23'
USCS Classification: Silty SAND

Grain Size Analysis - ASTM 6913



% Cobble	% Gravel		% Sand			% Fines
	Coarse	Fine	Coarse	Medium	Fine	Silt/Clay
	0	0	3	38	44	
0	**0**		**85**			**15**

		Sieve #	Opening mm	Cummulative Mass Retained (g)	% Passing %
Cobbles		**3"**	75	0.0	100%
Gravel	Coarse	**2"**	50	0.0	100%
		1-1/2"	37.5	0.0	100%
		1"	25.0	0.0	100%
		3/4"	19.0	0.0	100%
	Fine	**1/2"**	12.5	0.0	100%
		3/8"	9.50	0.0	100%
		#4	4.75	0.8	100%
Sand	Coarse	**#10**	2.00	7.4	97%
	Medium	**#20**	0.825	80.5	72%
		#40	0.425	117.3	59%
	Fine	**#60**	0.250	130.1	54%
		#100	0.150	201.1	30%
		#200	0.075	243.0	15%

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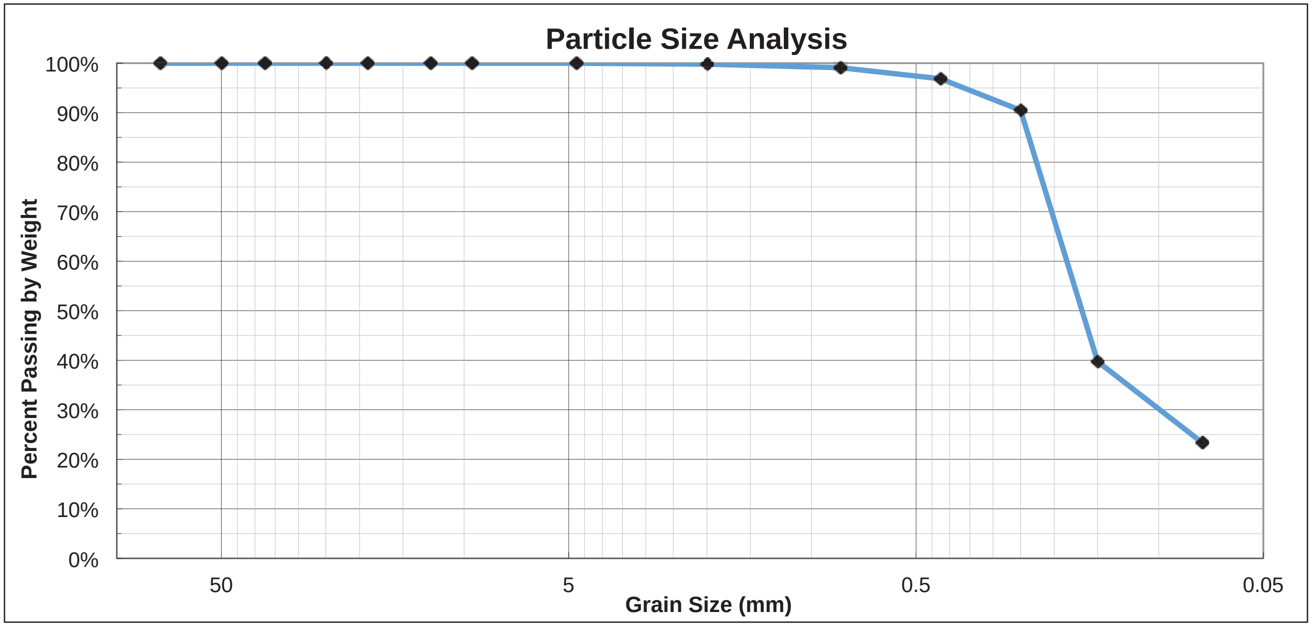
Project Name: Trinadad Rancheria Hotel
CAInc File No: 16-319.1
Date: 10/7/16
Technician: CAP
Sample ID: B2-7
Depth: 33'
USCS Classification: Silty SAND

Grain Size Analysis - ASTM 6913



% Cobble	% Gravel		% Sand			% Fines
	Coarse	Fine	Coarse	Medium	Fine	Silt/Clay
	0	0	0	3	74	
0	**0**		**77**			**23**

		Sieve #	Opening mm	Cummulative Mass Retained (g)	% Passing %
Cobbles		**3"**	75	0.0	100%
Gravel	Coarse	**2"**	50	0.0	100%
		1-1/2"	37.5	0.0	100%
		1"	25.0	0.0	100%
		3/4"	19.0	0.0	100%
	Fine	**1/2"**	12.5	0.0	100%
		3/8"	9.50	0.0	100%
		#4	4.75	0.0	100%
Sand	Coarse	**#10**	2.00	0.3	100%
	Medium	**#20**	0.825	1.3	99%
		#40	0.425	4.5	97%
	Fine	**#60**	0.250	13.6	90%
		#100	0.150	86.1	40%
		#200	0.075	109.5	23%

Project Name: Trindad Rancheria Hotel
CAInc File No: 16-319.1
Date: 10/3/16
Technician: KKL

200 Wash - ASTM D1140

Max Particle Size (100% Passing)	Standard Sieve Size	Recommended Min Mass of Test Specimens
2 mm or less	No. 10	20 g
4.75 mm	No. 4	100 g
9.5 mm	3/8 "	500 g
19.0 mm	3/4 "	2.5 kg
37.5 mm	1 1/2 "	10 kg
75.0 mm	3 "	50 kg

Table from 6.2 of ASTM D1140

Sample No.	B1-3	B2-4			
USCS Symbol	SM	SC			
Depth (ft.)	16	18			
Tare No.	P1	P8			
Tare (g)	131.4	127.6			
Dry Soil + Tare (g)	464.4	465.8			
Dry Mass before (g)	333.0	338.2			
Dry Mass after (g)	281.4	265.1			
Percent Fines (%)	15	22			

EXPANSION INDEX TEST

Project No: S9763-05-86 **JOB** Crawford 16-319.1 ASTM D4829

Sample Bulk 1 **DATE** 10/5-7/16 **BY** MR

Initial Ht = 1 inches **G_s =** 2.7 *Factor =* $\frac{(4)(1728)(2.2046)}{(\pi)(4.01)^{2}(1000)}$ = 0.3016

$$E\,I_{raw} = \frac{(1000)(\Delta H)}{H}$$

Dry Density (pcf) = $\gamma_d = \frac{(\text{Calc'd Dry Wt, gms})\,(\text{Factor})}{(\text{Sample ht. in inches})}$

$$E\,I_{corrected} = E\,I_{raw} - \frac{(50-S)(65+E\,I_{raw})}{220-S}$$

$$\text{Saturation} = \frac{(100)(w)(Gs)(\gamma d)}{[(Gs)(62.4)]-\gamma d}$$

where: w = % moisture in decimal
S = saturation in percent
H = initial height
ΔH = total change in height

0 - 20	VERY LOW
21 - 50	LOW
51 - 90	MEDIUM
91 - 130	HIGH
> 130	VERY HIGH

TRIAL 1

DATE and TIME	LOAD	DIAL READ	REV COUNT	TOTAL EXPAN
DRY				
	1 psi			
	1 psi			0.0000
WET				
	1 psi			0.0000
	1 psi			0.0000
	1 psi			0.0000
	1 psi			0.0000
	1 psi			0.0000
	1 psi			0.0000
	1 psi			0.0000
	1 psi			0.0000

TRIAL 2

DATE and TIME	LOAD	DIAL READ	REV COUNT	TOTAL EXPAN
DRY				
10/5/2016 1:16 PM	1 psi	0.2278		
10/5/2016 1:26 PM	1 psi	0.2274		-0.0004
10/5/2016 2:06 PM	1 psi	0.2104		-0.0170
10/5/2016 2:32 PM	1 psi	0.2304		0.0030
10/5/2016 4:07 PM	1 psi	0.2302		0.0028
10/5/2016 4:32 PM	1 psi	0.2307		0.0033
10/5/2016 4:50 PM	1 psi	0.2307		0.0033
10/6/2016 8:05 AM	1 psi	0.2303		0.0029
10/6/2016 9:27 AM	1 psi	0.2303		0.0029
	1 psi			

TRIAL 1

Moisture Content			Density		
	Before	After		Before	After
Tare No.					
Gross Wet Wt (gm)	983.7		Wet+ring (gms)	549.5	
Gross Dry Wt (gm)	901.6		Ring (gms)	192.8	
Water Loss (gm)	82.1		Wet Soil (gms)	356.7	
Tare Wt. (gm)	224		Calc'd dry soil (gms)	318.2	
Net Dry Wt (gm)	677.6		Dry Dens (pcf)	96.0	
% Moisture	12.1				

Calculated Saturation (%)	43.3	
Total Swell (%)		
Expansion Index		

TRIAL 2

Moisture Content			Density		
	Before	After		Before	After
Tare No.	Adj	MT-6			
Gross Wet Wt (gm)		854.45	Wet+ring (gms)	550.7	588.65
Gross Dry Wt (gm)		771.58	Ring (gms)	192.8	
Water Loss (gm)		82.87	Wet Soil (gms)	357.9	
Tare Wt. (gm)		459.43	Calc'd dry soil (gms)	314.5	312.8
Net Dry Wt (gm)		312.15	Dry Dens (pcf)	94.9	94.0
% Moisture	13.8	26.5			

Calculated Saturation (%)	48.0	90.5
Total Swell (%)	0.3	
Expansion Index	3	

EXPANSION INDEX TEST

Project No: S9763-05-86	**JOB** Crawford 16-319.1		ASTM D4829
Sample Bulk 2	**DATE** 10/5-7/16		**BY** MR

Initial Ht = 1 inches

G_s = 2.7

Factor = $\frac{(4)(1728)(2.2046)}{(\pi)(4.01)^2(1000)}$ = 0.3016

$EI_{raw} = \frac{(1000)(\Delta H)}{H}$

Dry Density (pcf) = $\gamma_d = \frac{\text{(Calc'd Dry Wt, gms) (Factor)}}{\text{(Sample ht. in inches)}}$

$EI_{corrected} = EI_{raw} - \frac{(50-S)(65+EI_{raw})}{220-S}$

Saturation = $\frac{(100)(w)(Gs)(\gamma d)}{[(Gs)(62.4)]-\gamma d}$

where:
w = % moisture in decimal
S = saturation in percent
H = initial height
ΔH = total change in height

0 - 20	VERY LOW
21 - 50	LOW
51 - 90	MEDIUM
91 - 130	HIGH
> 130	VERY HIGH

TRIAL 1					TRIAL 2				
DATE and TIME	LOAD	DIAL READ	REV COUNT	TOTAL EXPAN	DATE and TIME	LOAD	DIAL READ	REV COUNT	TOTAL EXPAN
DRY					**DRY**				
	1 psi				10/5/2016 2:19 PM	1 psi	0.2706		
	1 psi			0.0000	10/5/2016 2:29 PM	1 psi	0.2711		0.0005
WET									
	1 psi			0.0000	10/5/2016 4:05 PM	1 psi	0.3075		0.0364
	1 psi			0.0000	10/5/2016 4:30 PM	1 psi	0.3110		0.0399
	1 psi			0.0000	10/5/2016 4:52 PM	1 psi	0.3121		0.0410
	1 psi			0.0000	10/6/2016 8:04 AM	1 psi	0.3245		0.0534
	1 psi			0.0000	10/6/2016 9:26 AM	1 psi	0.3246		0.0535
	1 psi			0.0000					
	1 psi			0.0000					
	1 psi			0.0000					

TRIAL 1

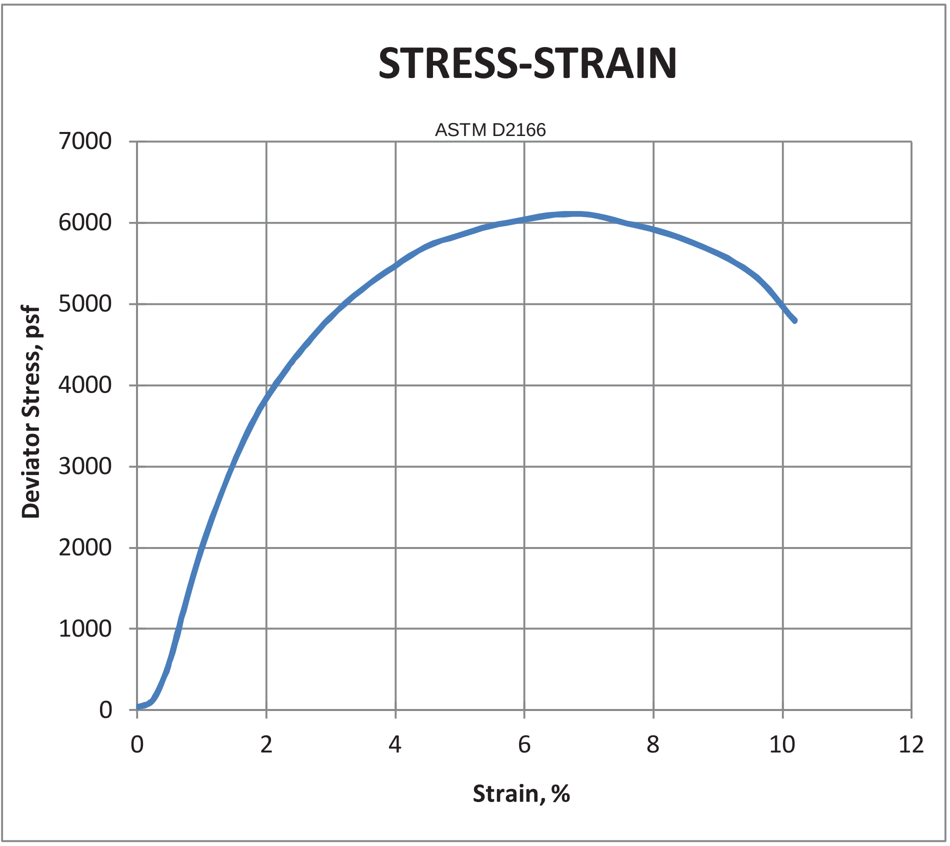
Moisture Content			Density		
	Before	After		Before	After
Tare No.					
Gross Wet Wt (gm)	734.19		Wet+ring (gms)		
Gross Dry Wt (gm)	686.5		Ring (gms)		
Water Loss (gm)	47.69		Wet Soil (gms)	0	
Tare Wt. (gm)	111.4		Calc'd dry soil (gms)	0.0	
Net Dry Wt (gm)	575.1		Dry Dens (pcf)	0.0	
% Moisture	8.3				

Calculated Saturation (%)	0.0	
Total Swell (%)		
Expansion Index		

TRIAL 2

Moisture Content			Density		
	Before	After		Before	After
Tare No.	Adj	MT-6			
Gross Wet Wt (gm)		661.45	Wet+ring (gms)	624.3	657.18
Gross Dry Wt (gm)		593.57	Ring (gms)	199.6	
Water Loss (gm)		67.88	Wet Soil (gms)	424.7	
Tare Wt. (gm)		205.1	Calc'd dry soil (gms)	393.2	389.5
Net Dry Wt (gm)		388.47	Dry Dens (pcf)	118.6	111.5
% Moisture	8.0	17.5			

Calculated Saturation (%)	51.4	92.4
Total Swell (%)	5.4	
Expansion Index	54	



Failure Photo

Sample Description **Gravel up to 1/2" removed and patched as possible**

Sample ID	B3-2
Sample Depth (feet)	11.00
Material Description	Black lean CLAY with gravel (shale)

Initial Conditions at Start of Test

Height (inch) average of 3	4.97
Diameter (inch) average of 3	2.39
Moisture Content (%)	8.5
Dry Density (pcf)	133.0
Estimated Specific Gravity	2.7
Saturation (%)	86.5

Shear Test Conditions

Strain Rate (%/min)	0.9925
Major Principal Stress at Failure (psf)	6100
Strain at Failure (%)	6.5

Test Results

Unconfined Compressive Strength (tons/ft^2)	3.1
Unconfined Compressive Strength (lbs/ft^2)	6101
Shear Strength (tons/ft^2)	1.5
Shear Strength (lbs/ft^2)	3051

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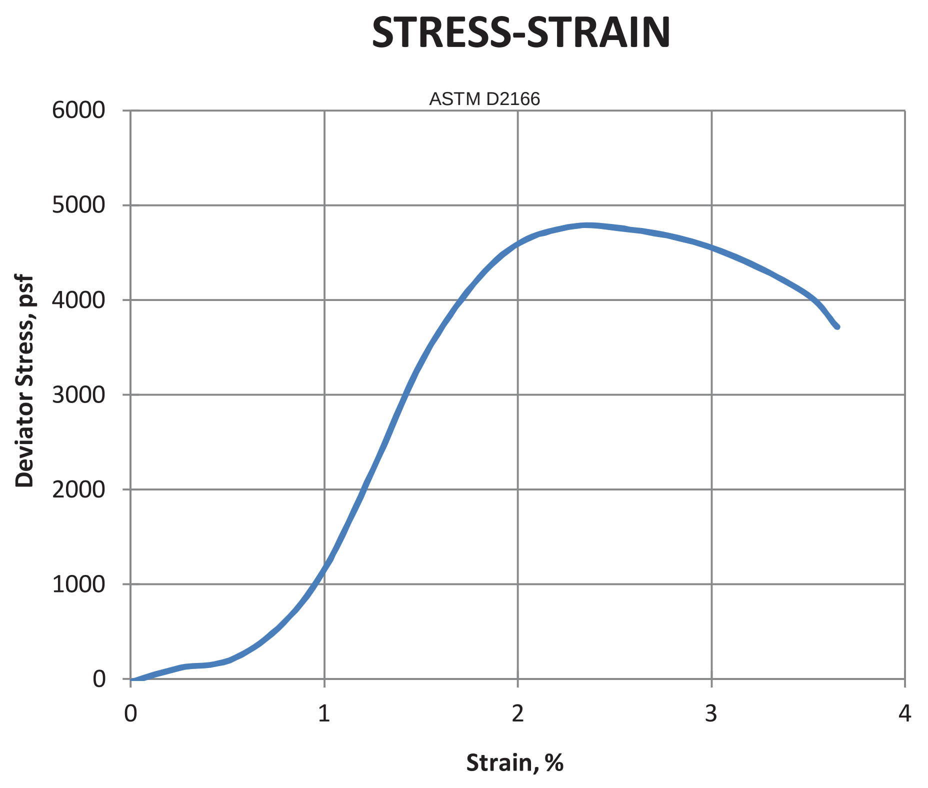
Fax: (916) 852-9132

Unconfined Compressive Strength (ASTM D2166)

Project: Crawford 16-319.1
Location:
Number: S9763-05-86
Figure:



Failure Photo

Sample Description **Sample partially remolded in order to perform test (1/2" gravel)**

Sample ID	B3-3
Sample Depth (feet)	16.00
Material Description	Black lean CLAY with gravel (shale)

Initial Conditions at Start of Test

Height (inch) average of 3	4.69
Diameter (inch) average of 3	2.42
Moisture Content (%)	4.9
Dry Density (pcf)	138.2
Estimated Specific Gravity	2.7
Saturation (%)	60.4

Shear Test Conditions

Strain Rate (%/min)	0.9872
Major Principal Stress at Failure (psf)	4770
Strain at Failure (%)	2.5

Test Results

Unconfined Compressive Strength (tons/ft^2)	2.4
Unconfined Compressive Strength (lbs/ft^2)	4774
Shear Strength (tons/ft^2)	1.2
Shear Strength (lbs/ft^2)	2387

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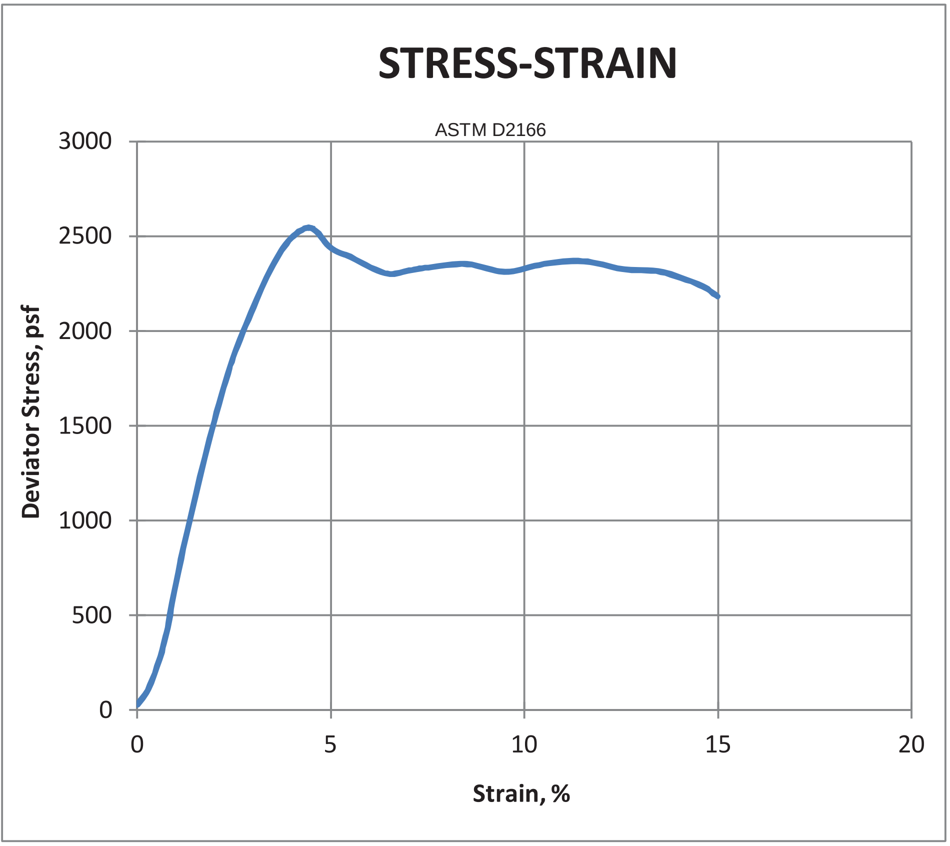
Unconfined Compressive Strength (ASTM D2166)

Project: Crawford 16-319.1
Location:
Number: S9763-05-86
Figure:



Failure Photo

Sample Description Sample partially remolded in order to perform test	
Sample ID	B4-1
Sample Depth (feet)	6.00
Material Description	Black lean CLAY with gravel (shale)
Initial Conditions at Start of Test	
Height (inch) average of 3	4.94
Diameter (inch) average of 3	2.39
Moisture Content (%)	8.8
Dry Density (pcf)	129.6
Estimated Specific Gravity	2.7
Saturation (%)	79.6
Shear Test Conditions	
Strain Rate (%/min)	0.9967
Major Principal Stress at Failure (psf)	2540
Strain at Failure (%)	4.5
Test Results	
Unconfined Compressive Strength (tons/ft^2)	1.3
Unconfined Compressive Strength (lbs/ft^2)	2544
Shear Strength (tons/ft^2)	0.6
Shear Strength (lbs/ft^2)	1272

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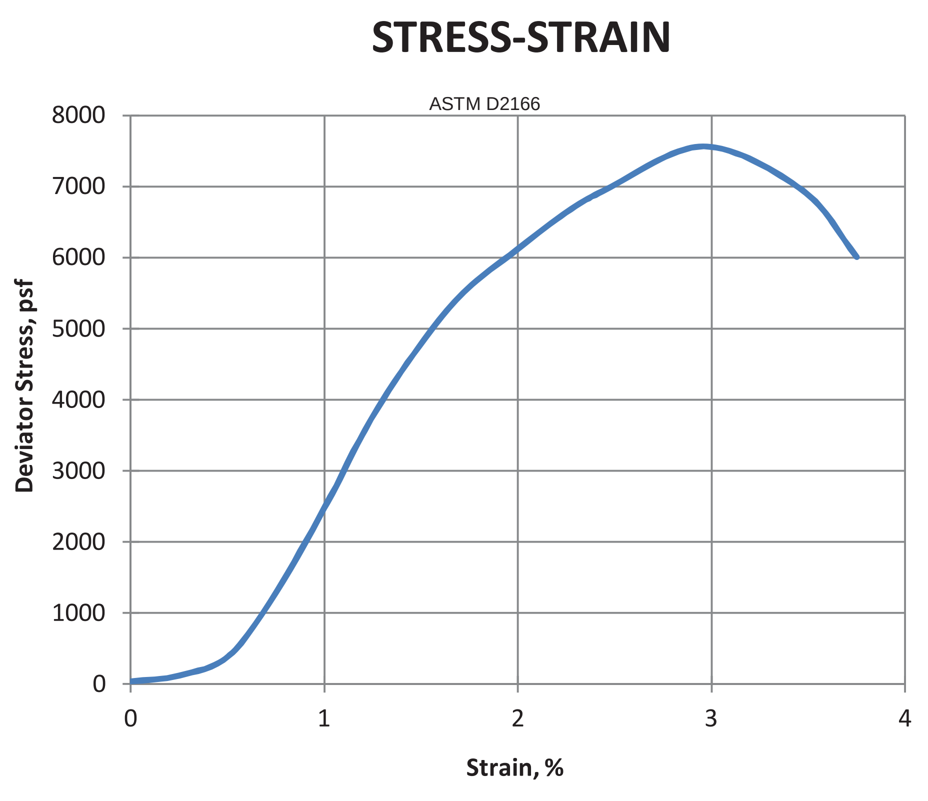
Unconfined Compressive Strength (ASTM D2166)

Project: Crawford 16-319.1
Location:
Number: S9763-05-86
Figure:



Failure Photo

Sample Description	
Sample ID	B6-2
Sample Depth (feet)	11.00
Material Description	Dark gray lean CLAY
Initial Conditions at Start of Test	
Height (inch) average of 3	4.97
Diameter (inch) average of 3	2.39
Moisture Content (%)	6.6
Dry Density (pcf)	123.6
Estimated Specific Gravity	2.7
Saturation (%)	49.3
Shear Test Conditions	
Strain Rate (%/min)	1.0151
Major Principal Stress at Failure (psf)	7570
Strain at Failure (%)	3.0
Test Results	
Unconfined Compressive Strength (tons/ft^2)	3.8
Unconfined Compressive Strength (lbs/ft^2)	7566
Shear Strength (tons/ft^2)	1.9
Shear Strength (lbs/ft^2)	3783

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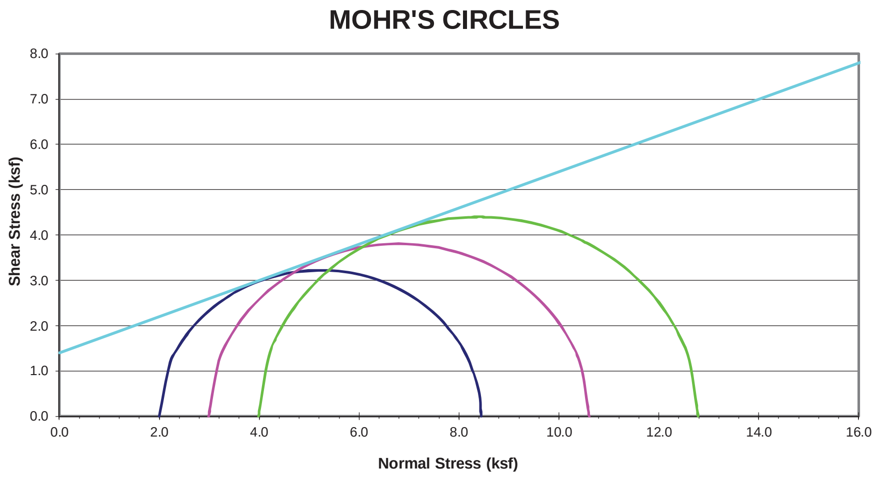
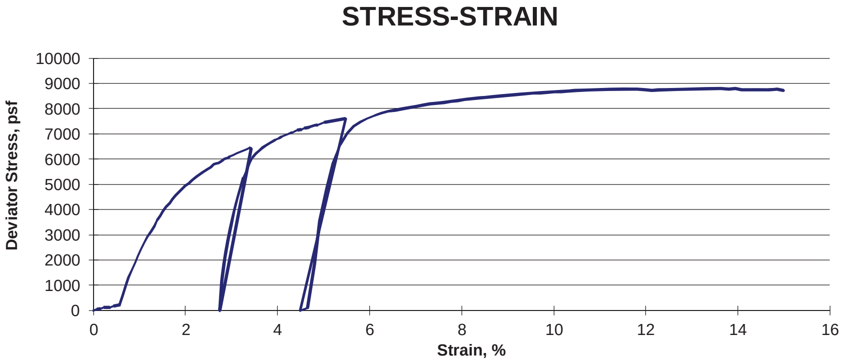
Unconfined Compressive Strength (ASTM D2166)

Project: Crawford 16-319.1
Location:
Number: S9763-05-86
Figure:





Failure Photo

Test Results

	φ, degrees	**21.8**
	c, psf	**1400**

Sample Description

	Sample ID	B4-7
	Sample Depth (feet)	36
	Material Description	Black lean CLAY (Shale)

Initial Conditions at Start of Stage

Sample ID (psf), minor principal stress	**2000**	**3000**	**4000**
Height (inch)	4.970	4.831	4.593
Diameter (inch)	2.396	2.430	2.456
Moisture Content (%)	6.2	6.2	6.2
Dry Density (pcf)	143.0	143.0	143.0
Saturation (%)	93.7	93.7	93.7

Shear Test Conditions

Strain Rate (%/min)	0.2956	0.2941	0.2990
Major Principal Stress at Failure (psf)	8440	10610	12790
Strain at failure (%)	3.39	5.47	13.50
Deviator Stress and Fail (psf)	6440	7620	8800

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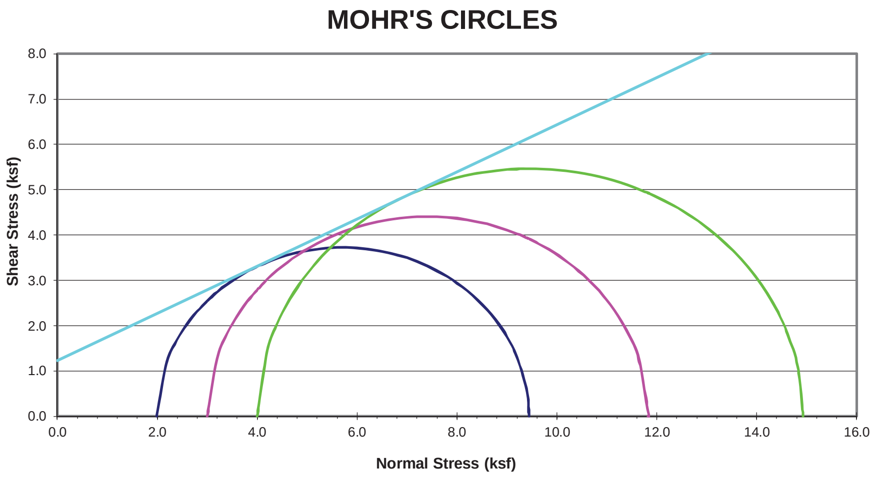
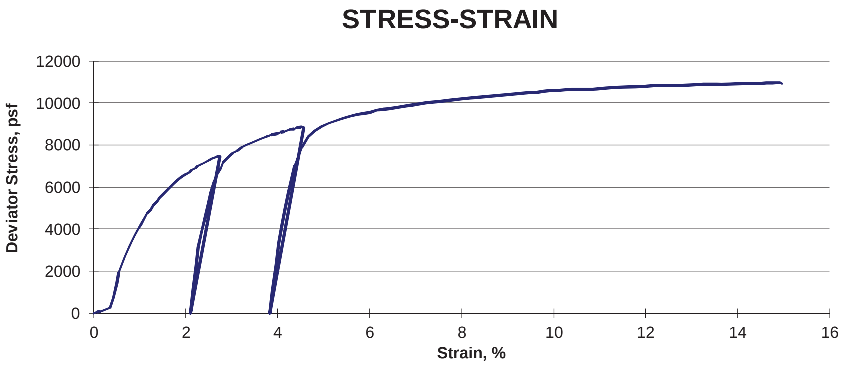
Triaxial Shear Strength - UU Test (staged)

Project: Crawford 16-319.1
Location:
Number: S9763-05-86
Figure:


MOHR'S CIRCLES


STRESS-STRAIN

Failure Photo

Test Results

ϕ, degrees	**27.5**
c, psf	**1225**

Sample Description

Sample ID	B5-8
Sample Depth (feet)	41
Material Description	Black lean CLAY (Shale)

Initial Conditions at Start of Stage

Sample ID (psf), minor principal stress	**2000**	**3000**	**4000**
Height (inch)	4.800	4.697	4.510
Diameter (inch)	2.403	2.429	2.451
Moisture Content (%)	6.2	6.2	6.2
Dry Density (pcf)	141.0	141.0	141.0
Saturation (%)	86.7	86.7	86.7

Shear Test Conditions

Strain Rate (%/min)	0.2940	0.2946	0.2984
Major Principal Stress at Failure (psf)	9440	11820	14930
Strain at failure (%)	2.70	4.56	14.32
Deviator Stress and Fail (psf)	7450	8820	10930

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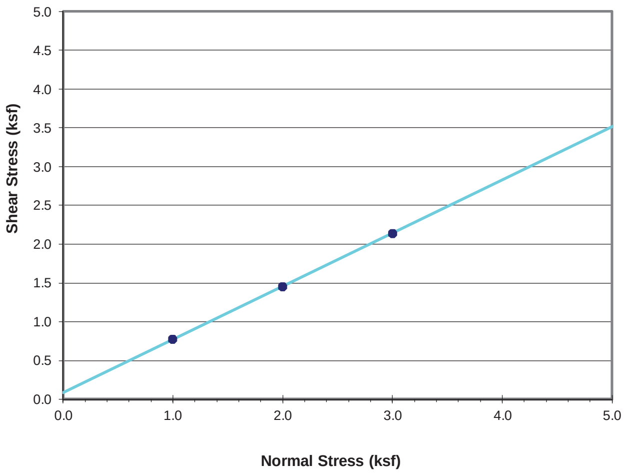
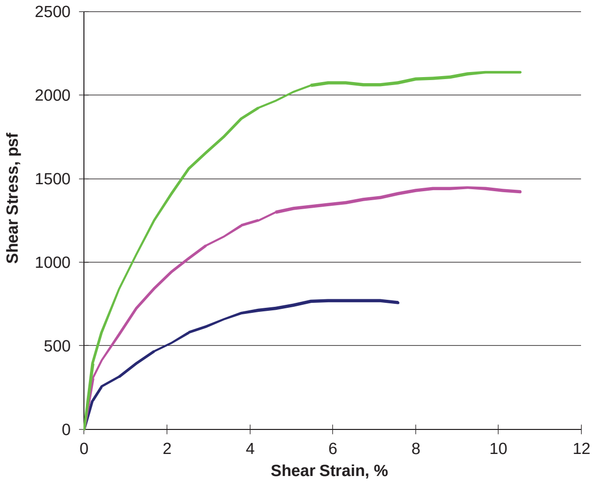
Triaxial Shear Strength - UU Test (staged)

Project: Crawford 16-319.1
Location:
Number: S9763-05-86
Figure:

SHEAR STRENGTH



STRESS-STRAIN



Sample Description			
Boring Number	B1-4		
Sample Depth (feet)			
Material Description	Olive Silty SAND		
Initial Conditions at Start of Test			
Sample ID (psf)	**1000**	**2000**	**3000**
Height (inch)	1.00	1.00	1.00
Diameter (inch)	2.375	2.375	2.375
Moisture Content (%)	14.1	13.0	13.1
Dry Density (pcf)	93.9	93.7	95.8
Estimated Specific Gravity	2.70	2.70	2.70
Saturation (%)	47.9	43.9	46.7
Shear Test Conditions			
Strain Rate (%/min)	1.004	1.049	1.026
Major Principle Stress at Failure (psf)	769	1447	2138
Strain at Failure (%)	5.89	9.26	9.68
Test Results			
ϕ, degrees	**34.4**		
c, psf	**85**		

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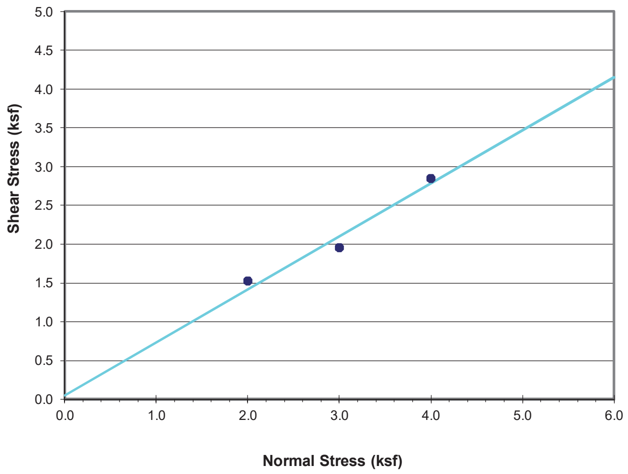
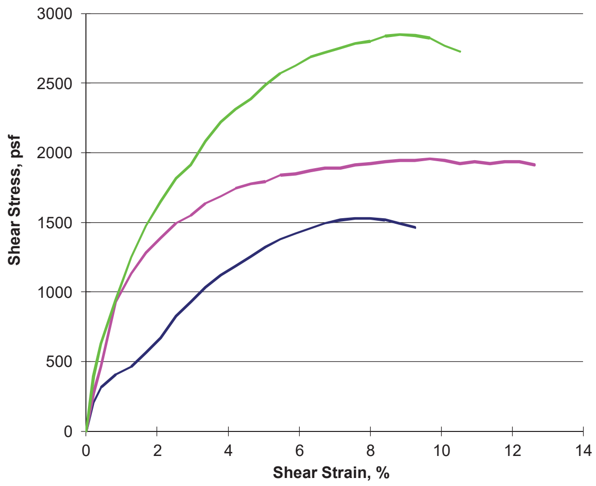
Direct Shear Strength Test (ASTM D3080)

Project: Crawford Lab 16-319.1
Location:
Number: S9763-05-86
Figure:



SHEAR STRENGTH



STRESS-STRAIN

Sample Description			
Boring Number	B2-6		
Sample Depth (feet)	28		
Material Description	Olive Brown Silty SAND		
Initial Conditions at Start of Test			
Sample ID (psf)	**2000**	**3000**	**4000**
Height (inch)	1.00	1.00	1.00
Diameter (inch)	2.375	2.375	2.375
Moisture Content (%)	13.2	13.5	14.4
Dry Density (pcf)	94.2	92.8	97.9
Estimated Specific Gravity	2.70	2.70	2.70
Saturation (%)	45.3	44.8	53.8
Shear Test Conditions			
Strain Rate (%/min)	0.802	0.842	0.833
Major Principle Stress at Failure (psf)	1527	1956	2848
Strain at Failure (%)	7.58	9.68	8.84
Test Results			
ϕ, degrees **34.3**			
c, psf **50**			

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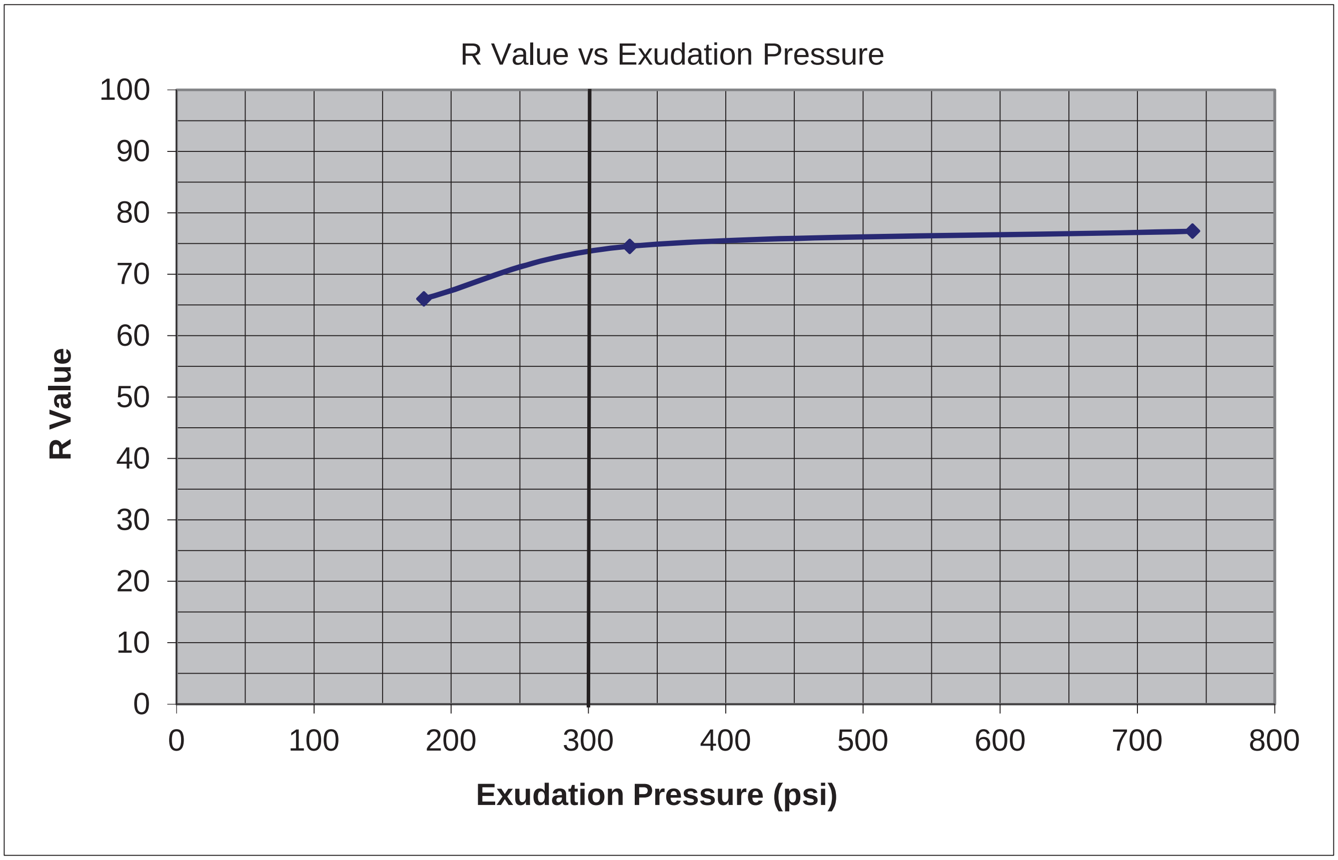
Direct Shear Strength Test (ASTM D3080)

Project: Crawford Lab 16-319.1
Location:
Number: S9763-05-86
Figure:



Sample ID & Description

Boring Number	Bulk-1
Sample Depth (feet)	--
Material Description	Dark reddish brown Silty SAND with gravel

Test Data

Specimen	D	E	F
Exudation Pressure (psi)	180	330	740
Expansion Dial (.0001")	22	25	38
Expansion Pressure (psf)	95	108	165
Resistance 'R' Value	66	75	77
Moisture at test (%)	16.5	15.6	14.7
Dry density at test (pcf)	106.7	104.2	110.0

R Value at 300 psi exudation pressure	**74**
R Value by expansion pressure (TI=5.0)	63

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R Value By Exudation

Project: Crawford 16-319.1
Location:
Number: S9763-05-86
Figure:

Sunland Analytical
11419 Sunrise Gold Cir.#10
Rancho Cordova, CA 95742
(916) 852-8557

Date Reported 09/28/16
Date Submitted 09/23/16

To: Nick Anderson
Crawford and Associates
5701 Lonetree Blvd, Suite 110
Rocklin, CA, 95765

From: Gene Oliphant, Ph.D. \ Randy Horney
General Manager \ Lab Manager

The reported analysis was requested for the following:
Location : 16-319.1 Site ID: B6-1
Thank you for your business.

* For future reference to this analysis please use SUN # 72899 - 152178

EVALUATION FOR SOIL CORROSION

Soil pH	7.72		
Minimum Resistivity	1.72	ohm-cm (x1000)	
Chloride	6.9 ppm		0.0007 %
Sulfate-S	100.4 ppm		0.01 %

METHODS:
pH and Min.Resistivity CA DOT Test #643 Mod.(Sm.Cell)
Sulfate CA DOT Test #417, Chloride CA DOT Test #422

Sunland Analytical
11419 Sunrise Gold Cir.#10
Rancho Cordova, CA 95742
(916) 852-8557

Date Reported 09/28/16
Date Submitted 09/23/16

To: Nick Anderson
Crawford and Associates
5701 Lonetree Blvd, Suite 110
Rocklin, CA, 95765

From: Gene Oliphant, Ph.D. \ Randy Horney
General Manager \ Lab Manager

The reported analysis was requested for the following:
Location : 16-319.1 Site ID: B5-9
Thank you for your business.

* For future reference to this analysis please use SUN # 72899 - 152177

EVALUATION FOR SOIL CORROSION

Soil pH	8.55			
Minimum Resistivity	0.80		ohm-cm (x1000)	
Chloride	12.9	ppm	0.0013	%
Sulfate-S	131.8	ppm	0.0132	%

METHODS:
pH and Min.Resistivity CA DOT Test #643 Mod.(Sm.Cell)
Sulfate CA DOT Test #417, Chloride CA DOT Test #422

Sunland Analytical
11419 Sunrise Gold Cir.#10
Rancho Cordova, CA 95742
(916) 852-8557

Date Reported 09/28/16
Date Submitted 09/23/16

To: Nick Anderson
Crawford and Associates
5701 Lonetree Blvd, Suite 110
Rocklin, CA, 95765

From: Gene Oliphant, Ph.D. \ Randy Horney
General Manager \ Lab Manager

The reported analysis was requested for the following:
Location : 16-319.1 Site ID: B4-8
Thank you for your business.

* For future reference to this analysis please use SUN # 72899 - 152176

EVALUATION FOR SOIL CORROSION

Soil pH	8.54	
Minimum Resistivity	1.85	ohm-cm (x1000)
Chloride	3.7 ppm	0.0004 %
Sulfate-S	19.4 ppm	0.0019 %

METHODS:
pH and Min.Resistivity CA DOT Test #643 Mod.(Sm.Cell)
Sulfate CA DOT Test #417, Chloride CA DOT Test #422

Sunland Analytical
11419 Sunrise Gold Cir.#10
Rancho Cordova, CA 95742
(916) 852-8557

Date Reported 09/28/16
Date Submitted 09/23/16

To: Nick Anderson
Crawford and Associates
5701 Lonetree Blvd, Suite 110
Rocklin, CA, 95765

From: Gene Oliphant, Ph.D. \ Randy Horney
General Manager \ Lab Manager

The reported analysis was requested for the following:
Location : 16-319.1 Site ID: B4-4
Thank you for your business.

* For future reference to this analysis please use SUN # 72899 - 152175

EVALUATION FOR SOIL CORROSION

Soil pH	8.18			
Minimum Resistivity	1.15	ohm-cm (x1000)		
Chloride	12.0 ppm		0.0012	%
Sulfate-S	175.2 ppm		0.0175	%

METHODS:
pH and Min.Resistivity CA DOT Test #643 Mod.(Sm.Cell)
Sulfate CA DOT Test #417, Chloride CA DOT Test #422

Sunland Analytical
11419 Sunrise Gold Cir.#10
Rancho Cordova, CA 95742
(916) 852-8557

Date Reported 09/28/16
Date Submitted 09/23/16

To: Nick Anderson
Crawford and Associates
5701 Lonetree Blvd, Suite 110
Rocklin, CA, 95765

From: Gene Oliphant, Ph.D. \ Randy Horney
General Manager \ Lab Manager

The reported analysis was requested for the following:
Location : 16-319.1 Site ID: B3-7
Thank you for your business.

* For future reference to this analysis please use SUN # 72899 - 152174

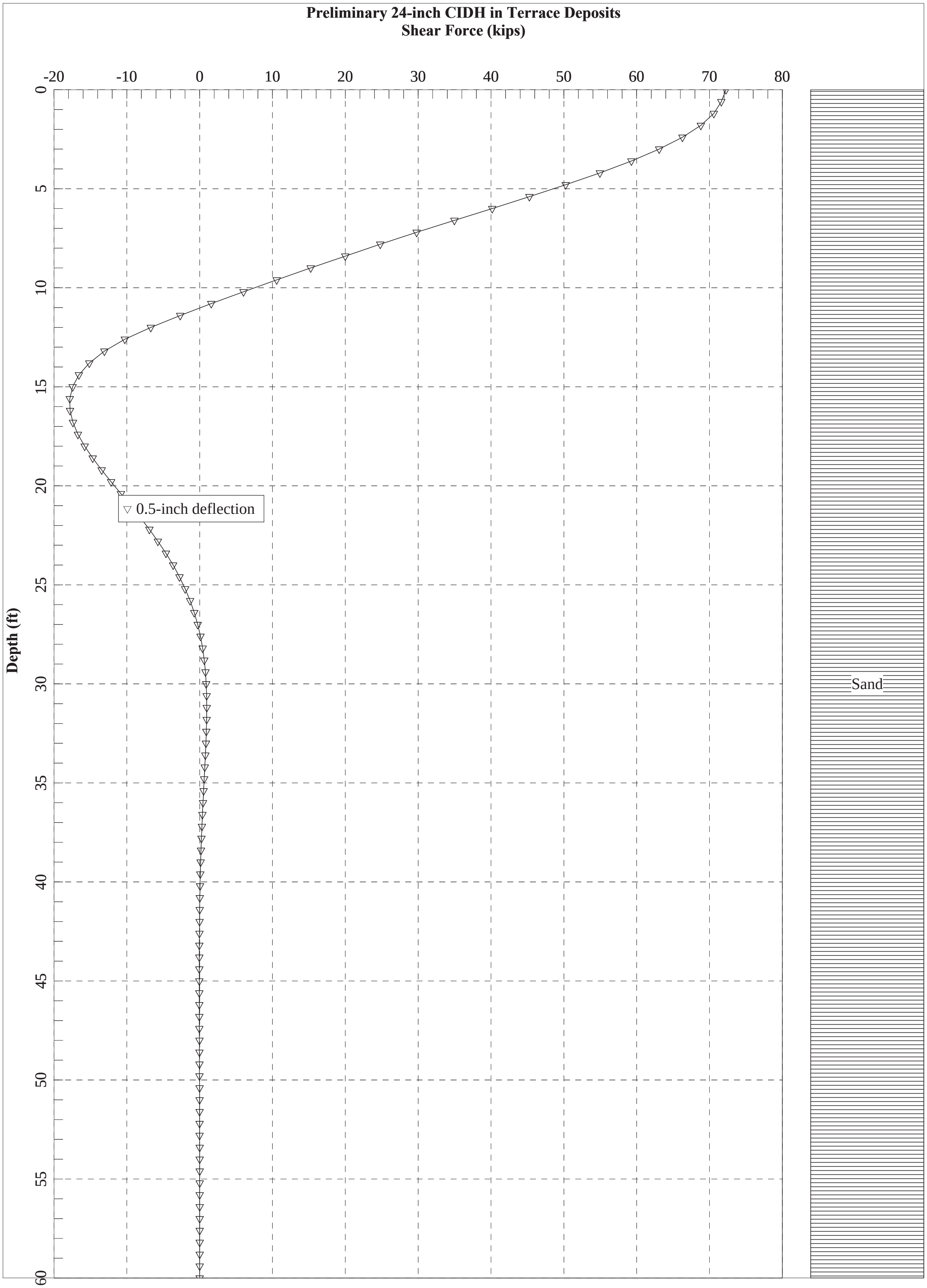
EVALUATION FOR SOIL CORROSION

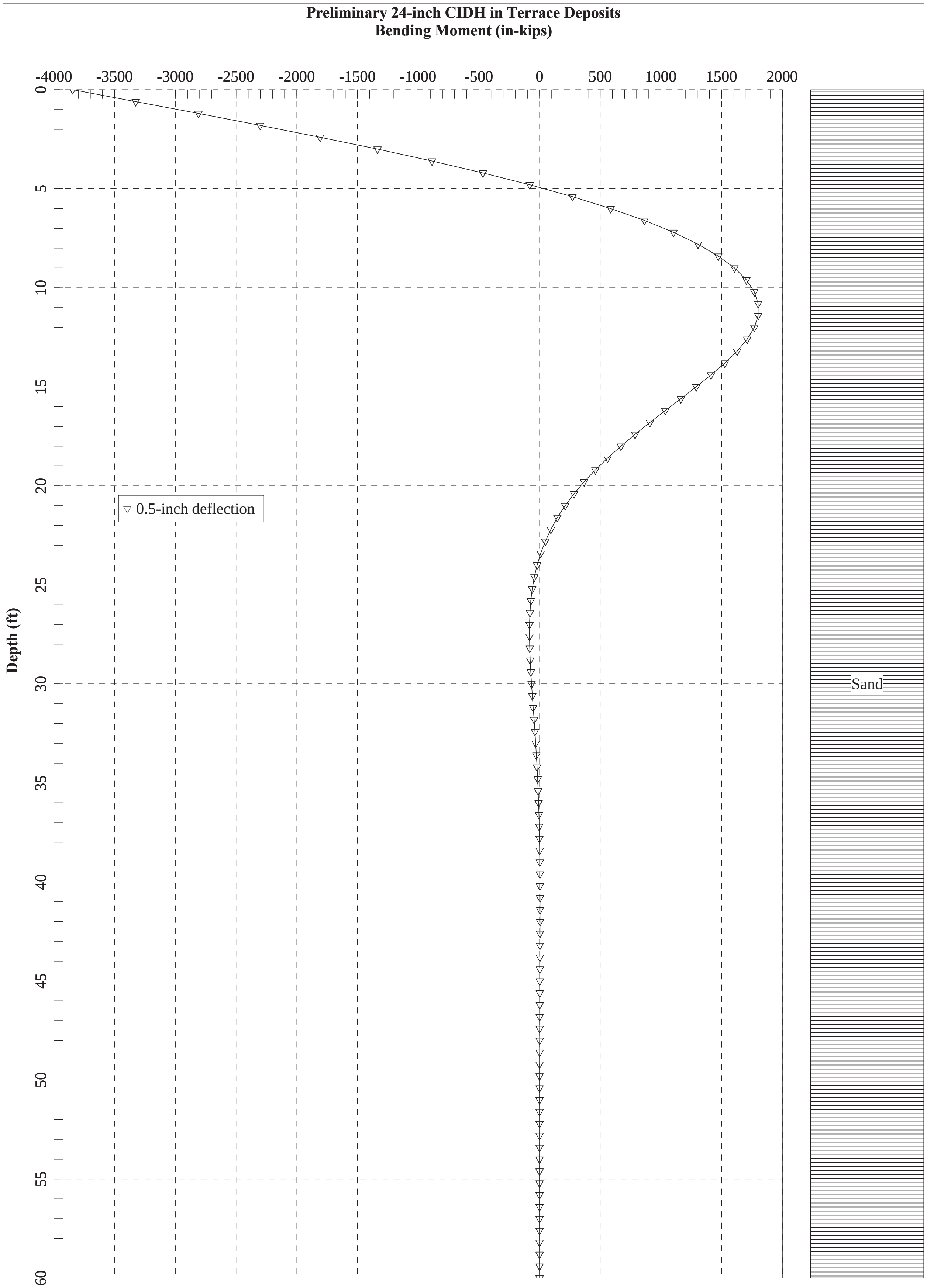
Soil pH	8.57			
Minimum Resistivity	1.07	ohm-cm (x1000)		
Chloride	12.1	ppm	0.0012	%
Sulfate-S	225.9	ppm	0.0226	%

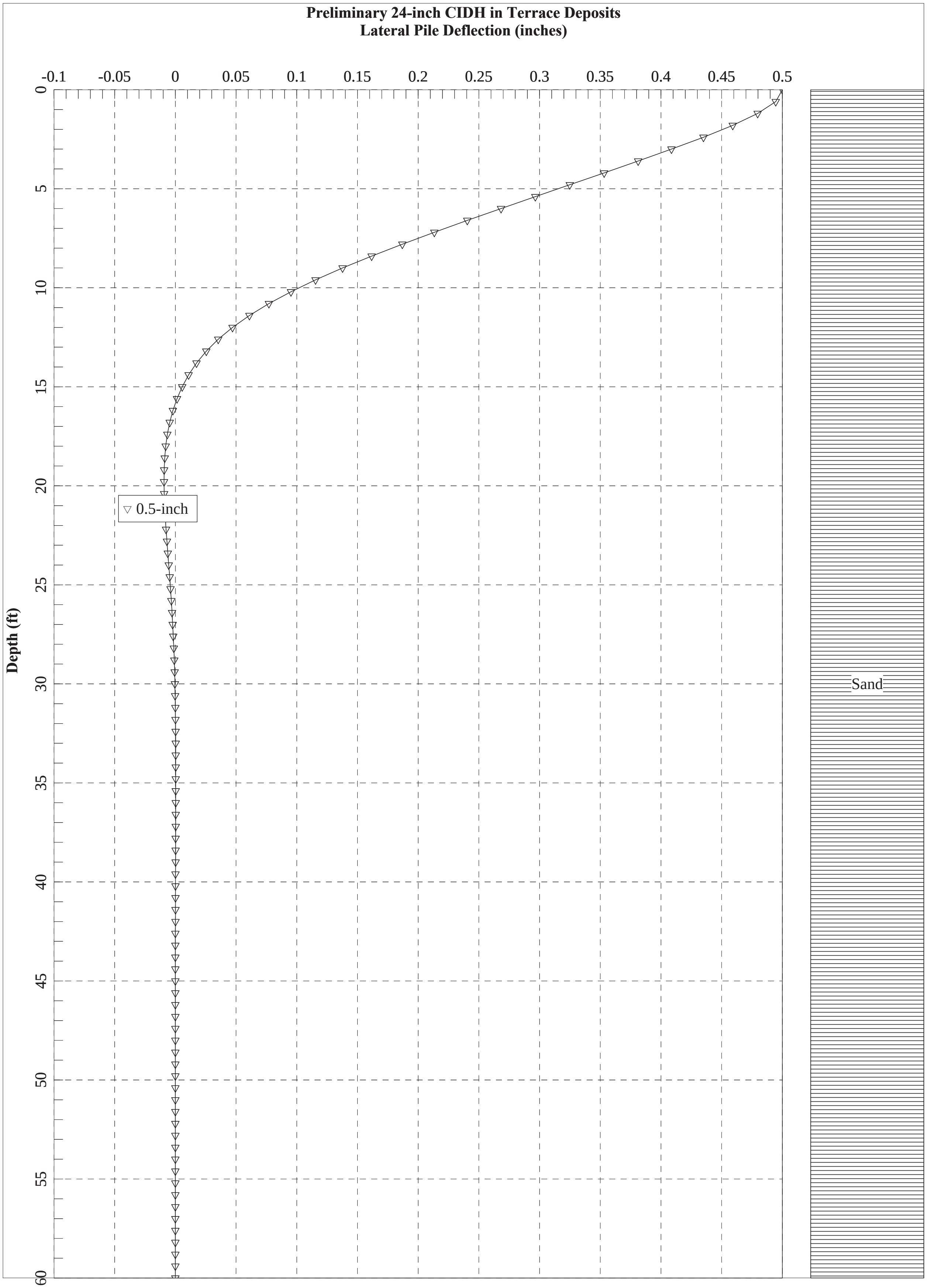
METHODS:
pH and Min.Resistivity CA DOT Test #643 Mod.(Sm.Cell)
Sulfate CA DOT Test #417, Chloride CA DOT Test #422

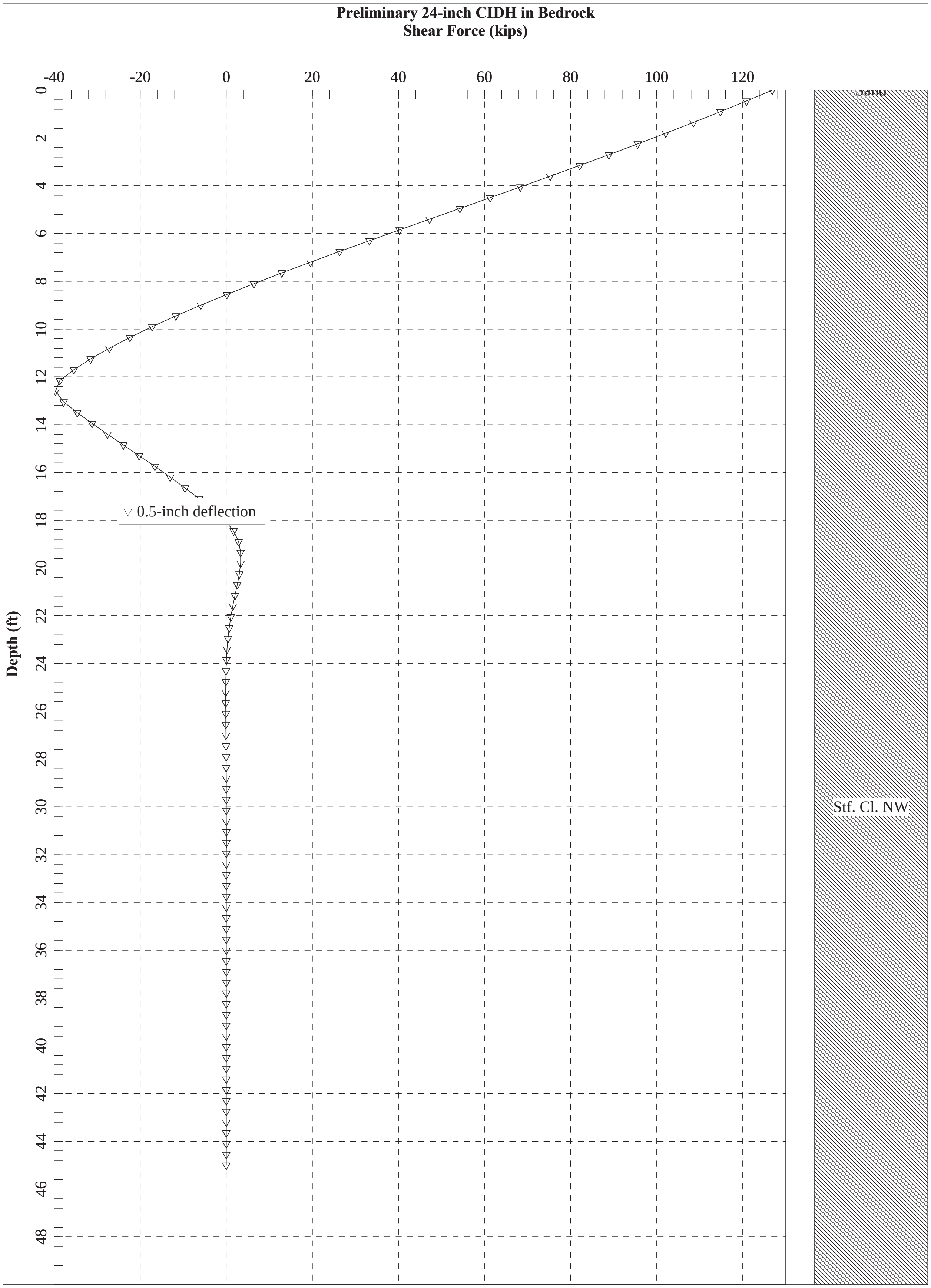
APPENDIX C

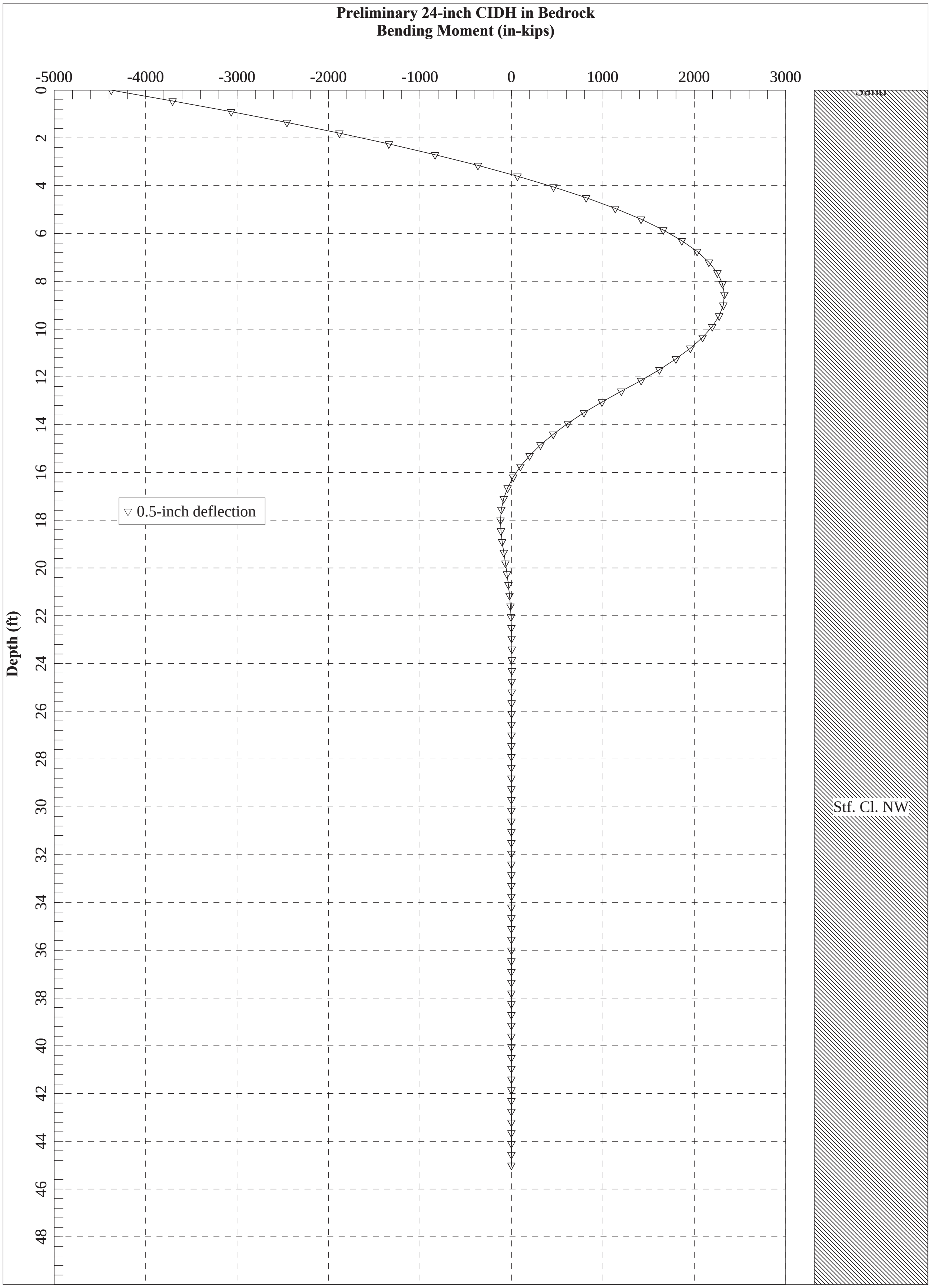
LPile Outputs


Preliminary 24-inch CIDH in Terrace Deposits
Shear Force (kips)
-20
-10
0
10
20
30
40
50
60
70
80
Depth (ft)
0
5
10
15
20
25
30
35
40
45
50
55
60
▽ 0.5-inch deflection
Sand

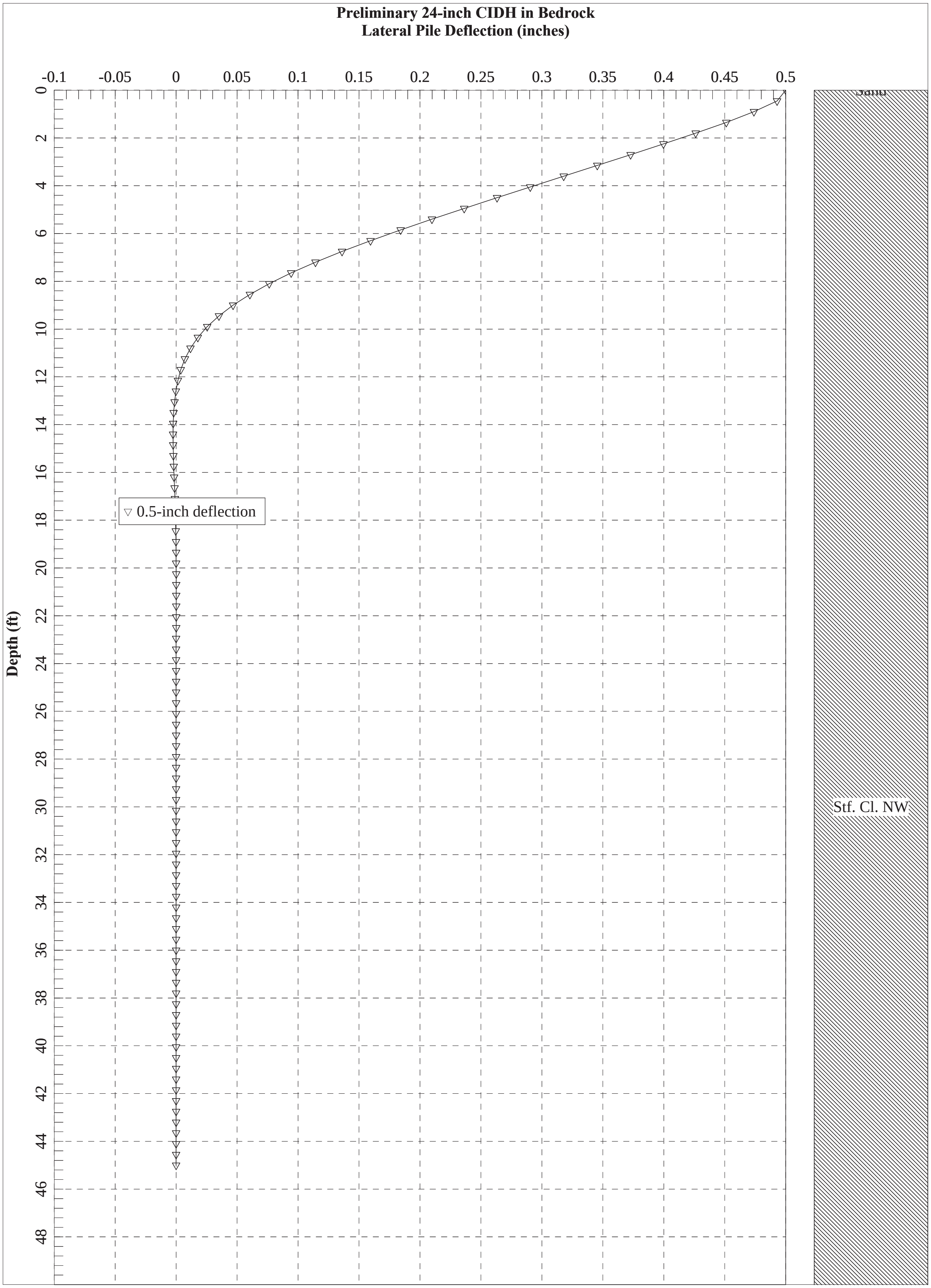

Preliminary 24-inch CIDH in Terrace Deposits
Bending Moment (in-kips)
-4000
-3500
-3000
-2500
-2000
-1500
-1000
-500
0
500
1000
1500
2000
Depth (ft)
0
5
10
15
20
25
30
35
40
45
50
55
60
▽ 0.5-inch deflection
Sand

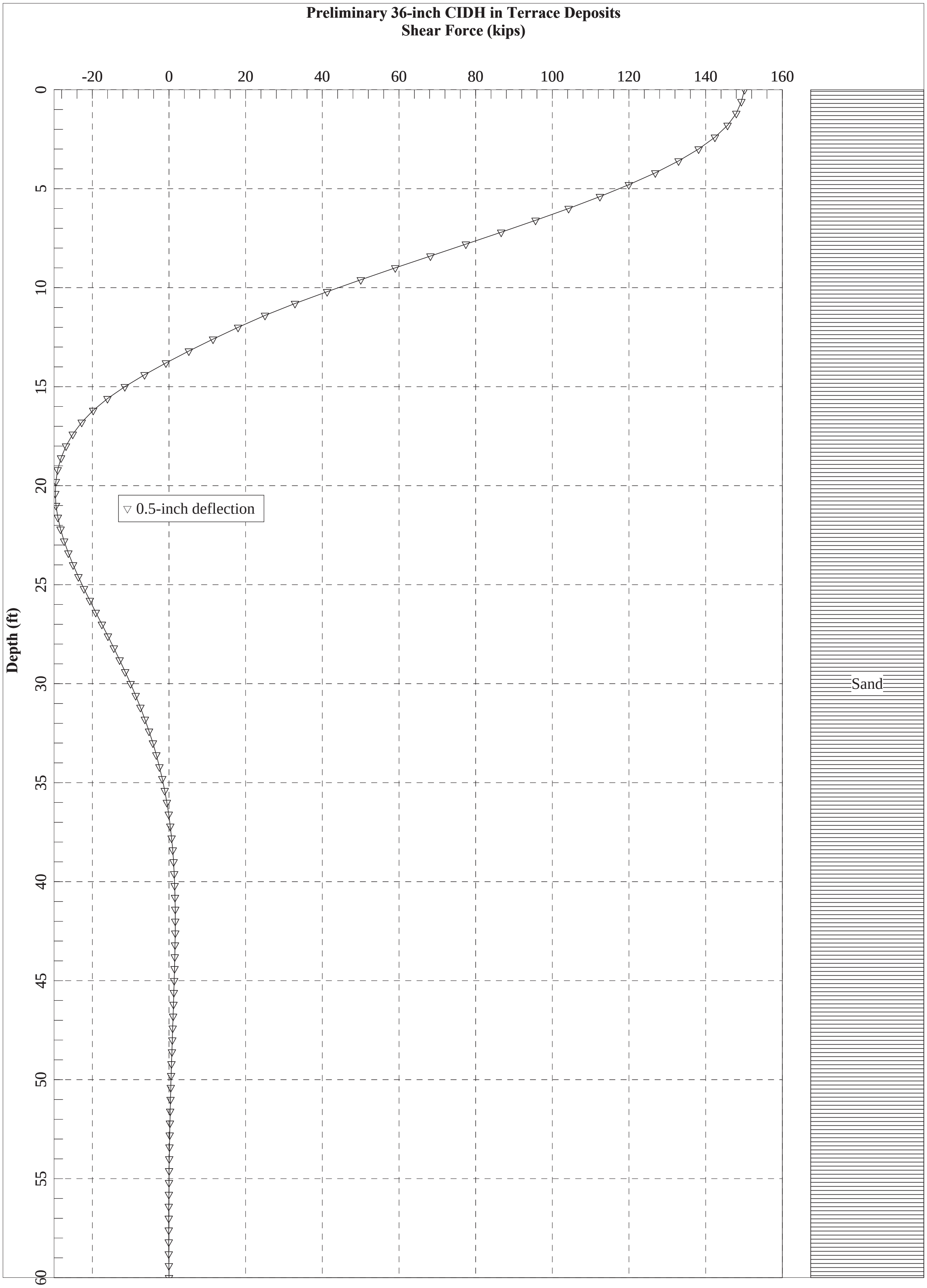

Preliminary 24-inch CIDH in Terrace Deposits
Lateral Pile Deflection (inches)
-0.1
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4
0.45
0.5
Depth (ft)
0
5
10
15
20
25
30
35
40
45
50
55
60
▽ 0.5-inch
Sand


Preliminary 24-inch CIDH in Bedrock
Shear Force (kips)
-40
-20
0
20
40
60
80
100
120
Depth (ft)
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
34
36
38
40
42
44
46
48
▽ 0.5-inch deflection
Sand
Stf. Cl. NW



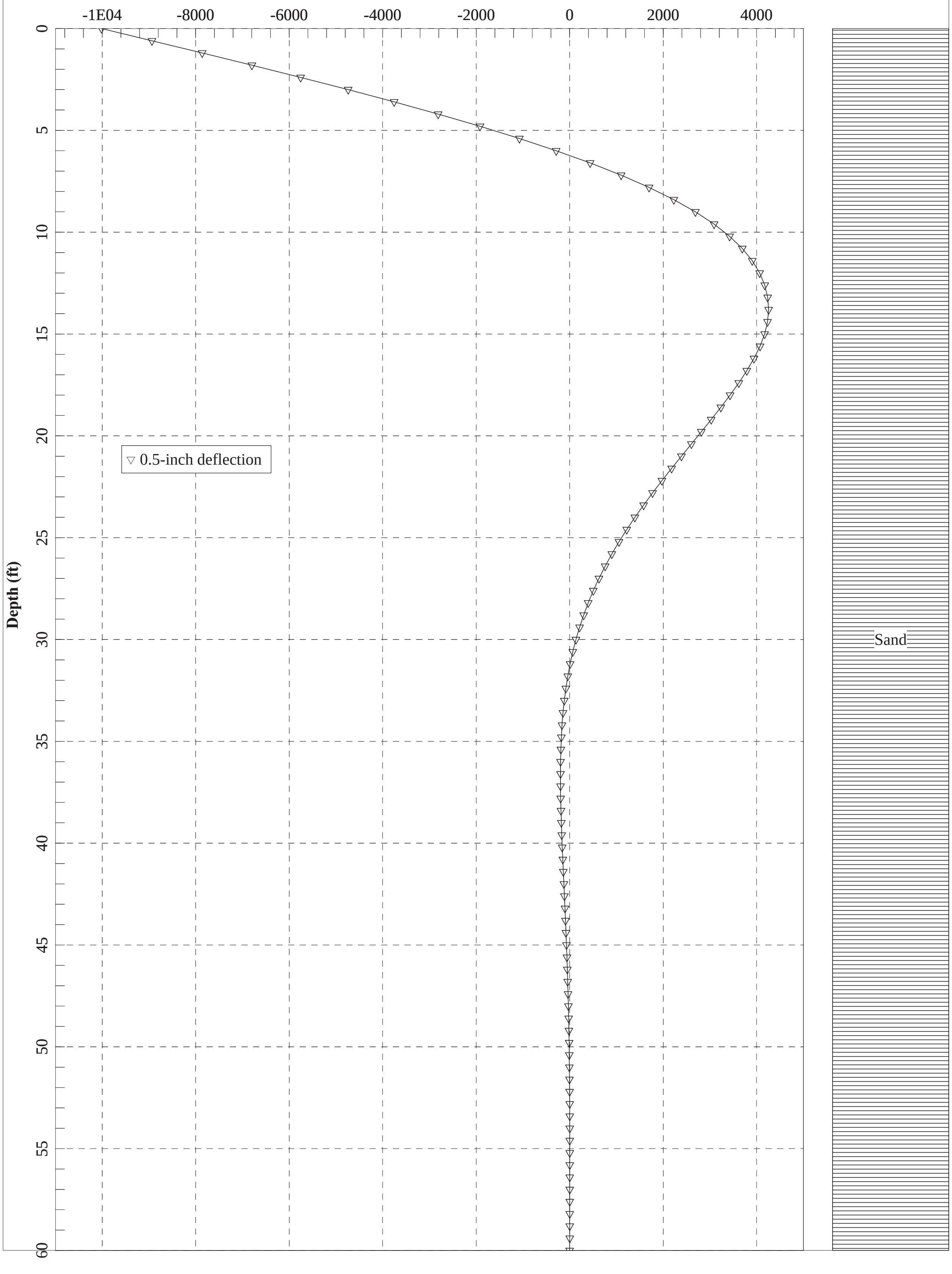
Preliminary 24-inch CIDH in Bedrock
Bending Moment (in-kips)

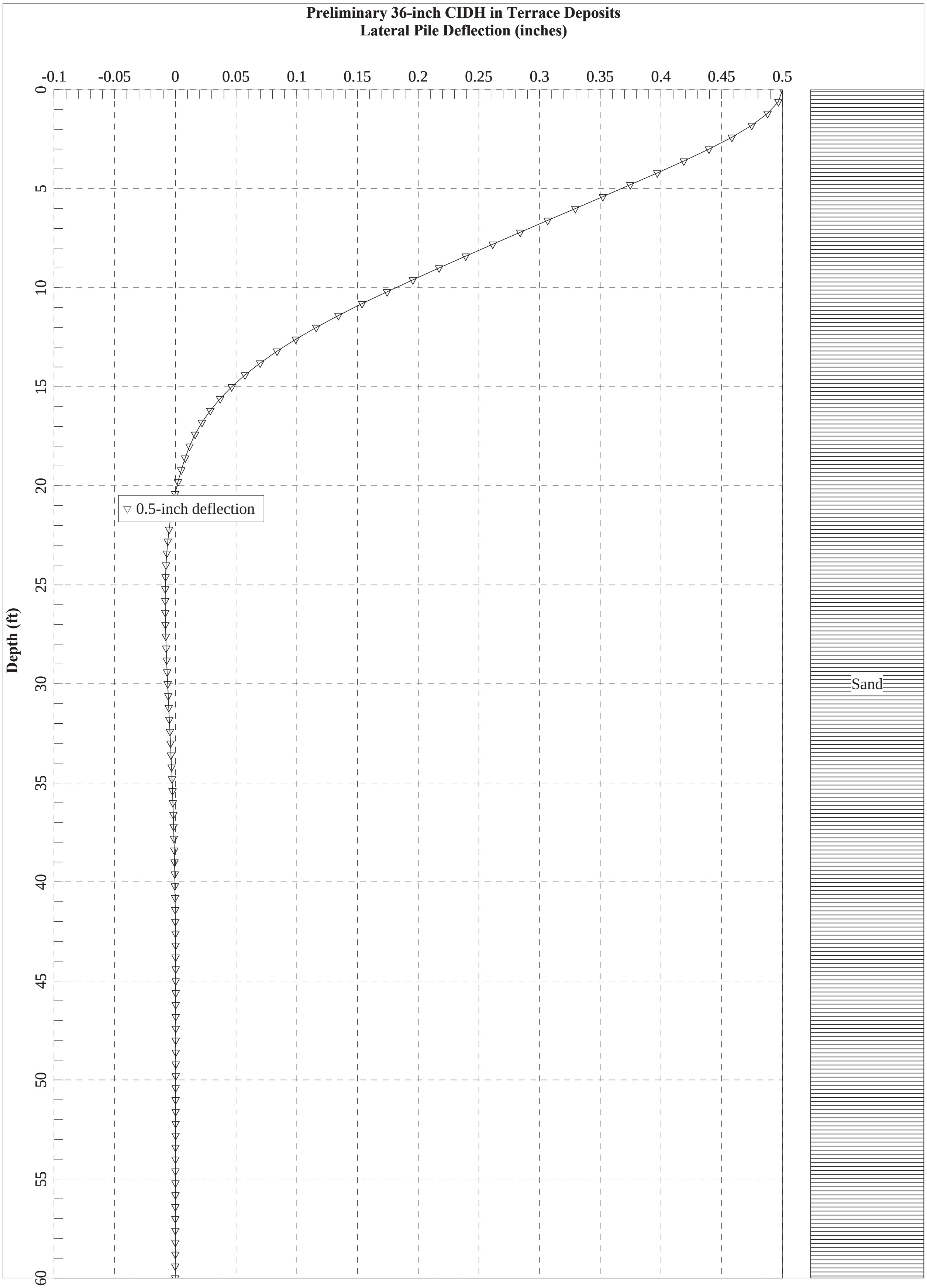

Preliminary 24-inch CIDH in Bedrock
Lateral Pile Deflection (inches)
-0.1
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4
0.45
0.5
Depth (ft)
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
34
36
38
40
42
44
46
48
▽ 0.5-inch deflection
Sand
Stf. Cl. NW



Preliminary 36-inch CIDH in Terrace Deposits
Shear Force (kips)

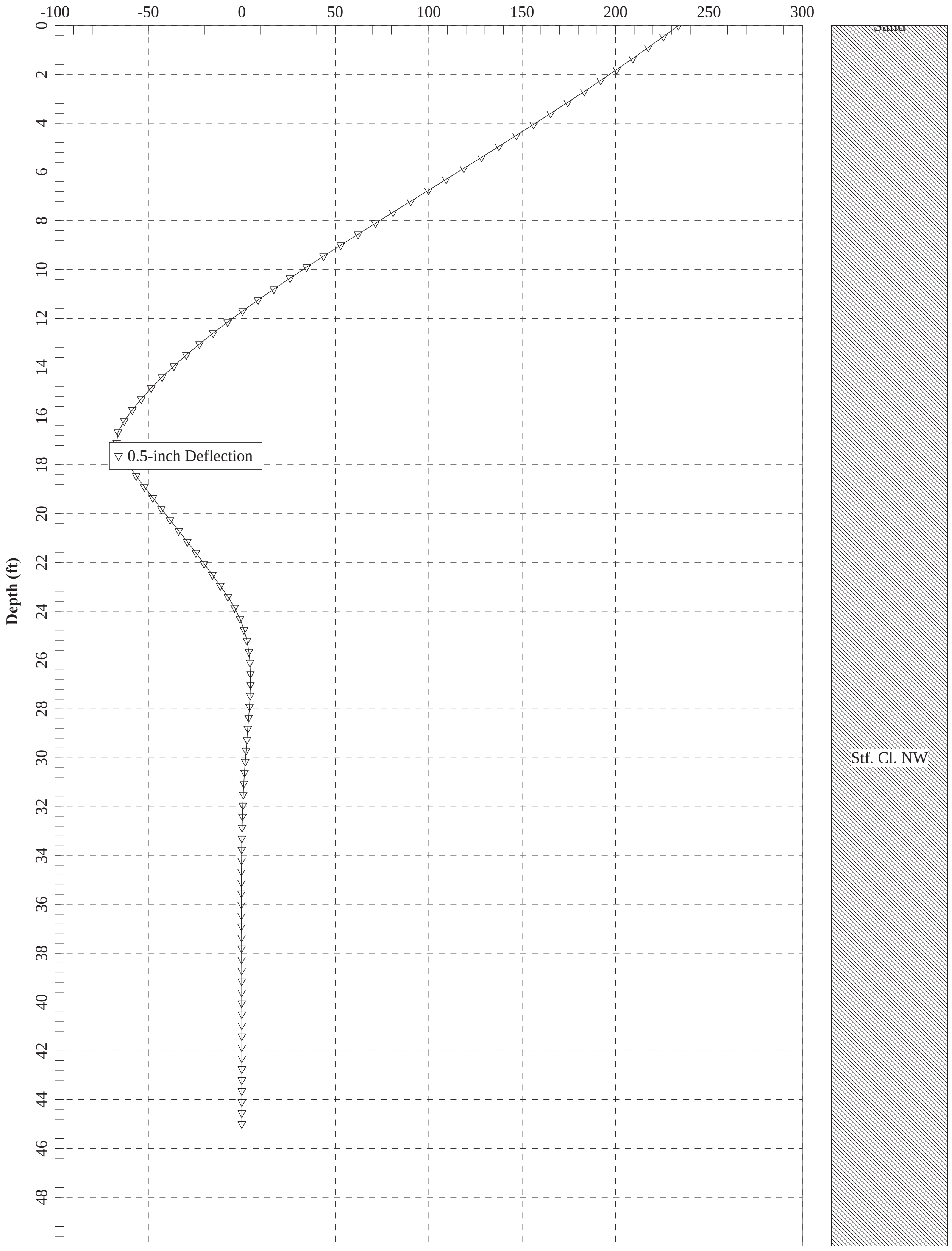
Preliminary 36-inch CIDH in Terrace Deposits
Bending Moment (in-kips)

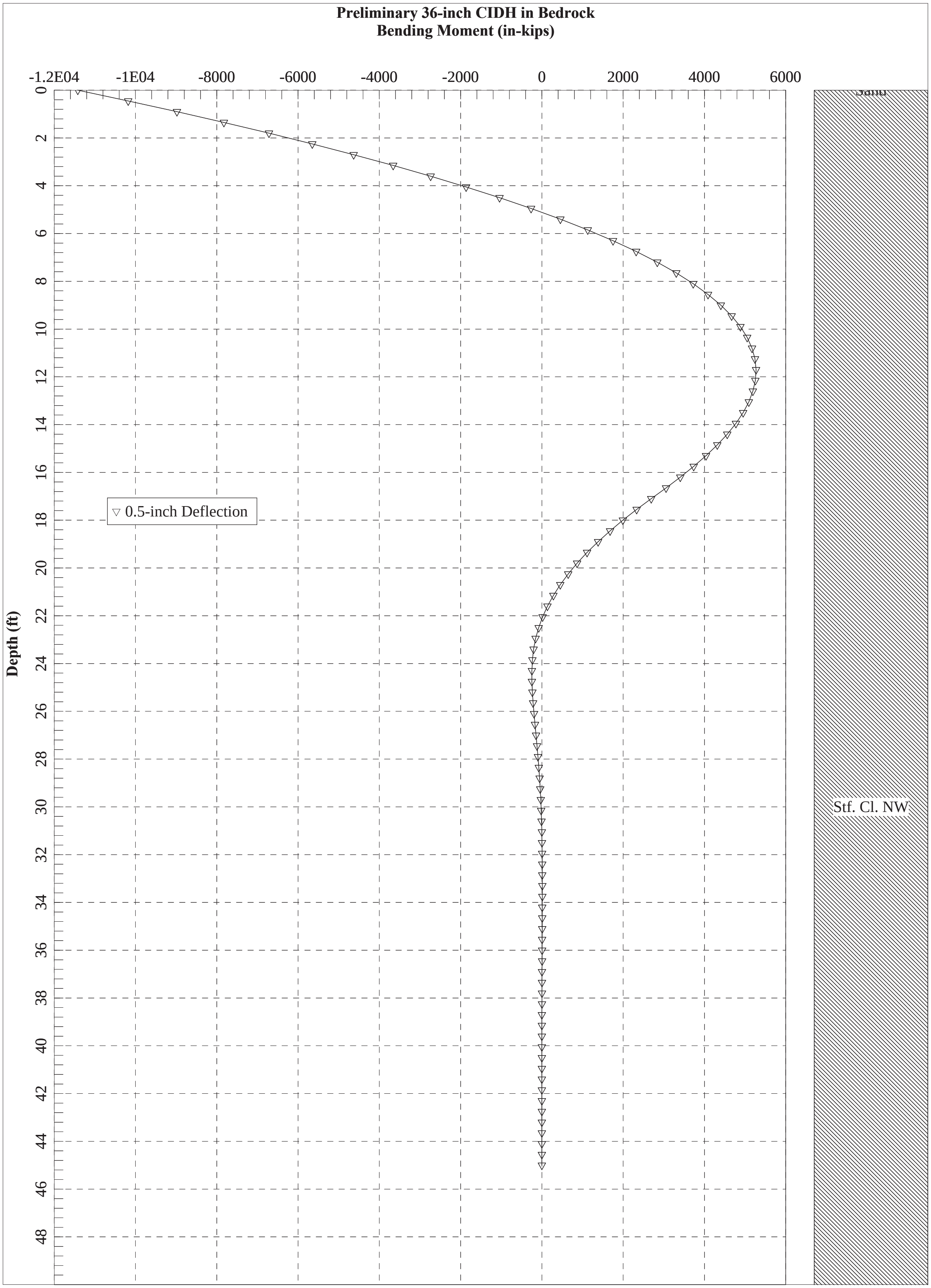


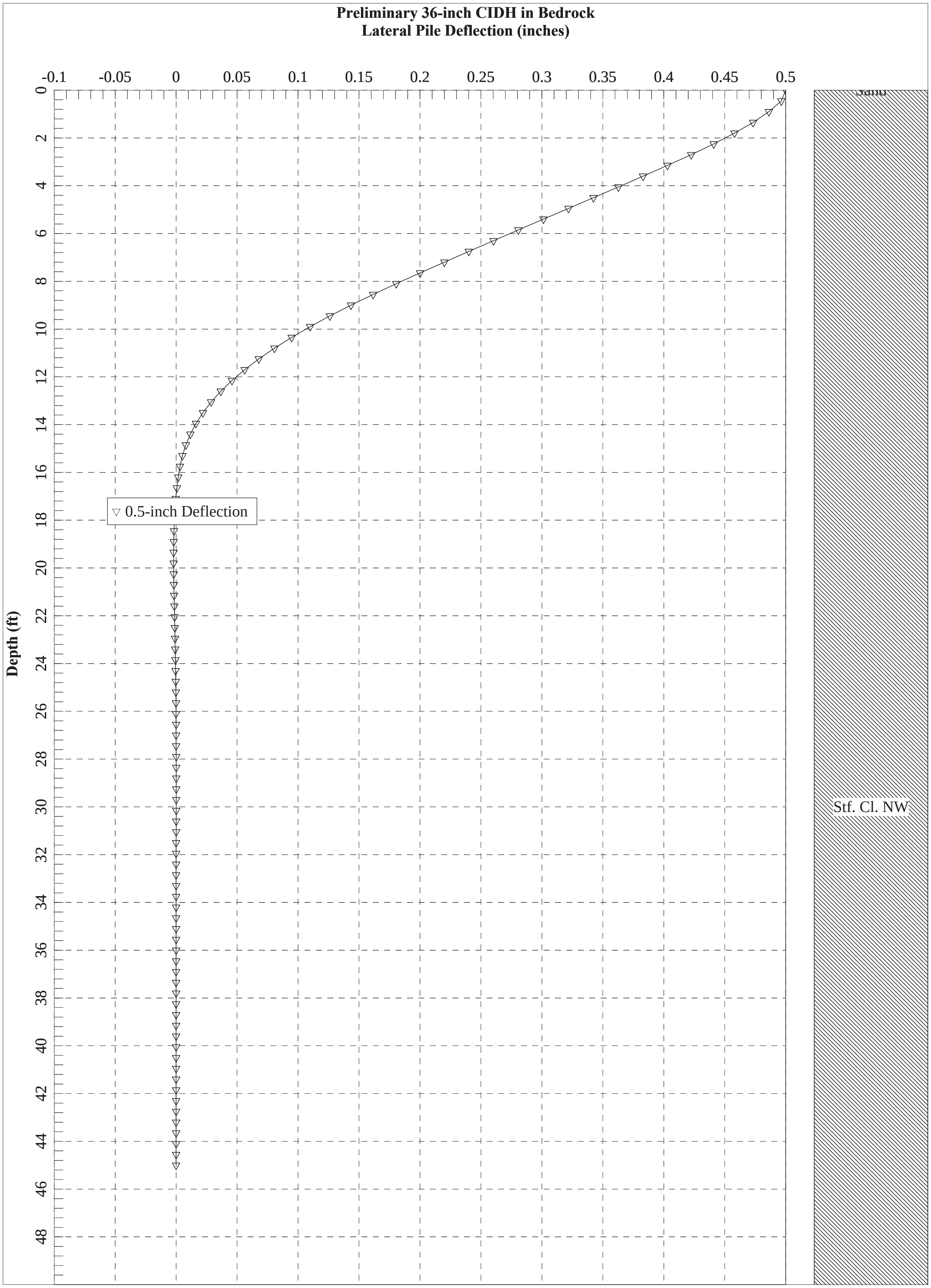


Preliminary 36-inch CIDH in Terrace Deposits
Lateral Pile Deflection (inches)
-0.1
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4
0.45
0.5
Depth (ft)
0
5
10
15
20
25
30
35
40
45
50
55
60
▽ 0.5-inch deflection
Sand

Preliminary 36-inch CIDH in Bedrock
Shear Force (kips)




Preliminary 36-inch CIDH in Bedrock
Bending Moment (in-kips)
-1.2E04
-1E04
-8000
-6000
-4000
-2000
0
2000
4000
6000
Depth (ft)
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
34
36
38
40
42
44
46
48
▽ 0.5-inch Deflection
Sand
Stf. Cl. NW



Preliminary 36-inch CIDH in Bedrock
Lateral Pile Deflection (inches)

APPENDIX D

SHN Geotechnical Report – Proposed Expansion Cher-Ae Heights Gaming Building Boring Logs
Taber Geotechnical Report – Trinidad Rancheria Expansion Project Test Pit Logs

BORING LOG KEY

SAMPLE TYPES

☒	DISTURBED SAMPLE (BULK)
◨	HAND DRIVEN TUBE SAMPLE
I	1.4" I.D. STANDARD PENETRATION TEXT SAMPLE (SPT)
⧅	2.5" I.D. MODIFIED CALIFORNIA SAMPLE (NOT RETAINED)
◩	MODIFIED CALIFORNIA SAMPLE (RETAINED)
⧄	CORE BARREL SAMPLE (NOT RETAINED)
◪	CORE BARREL SAMPLE (RETAINED)

SYMBOLS

▽	INITIAL WATER LEVEL
▼	STABILIZED WATER LEVEL
------	GRADATIONAL CONTACT
———	WELL DEFINED CONTACT
SS	SPLIT SPOON

SHN CONSULTING ENGINEERS
& GEOLOGISTS

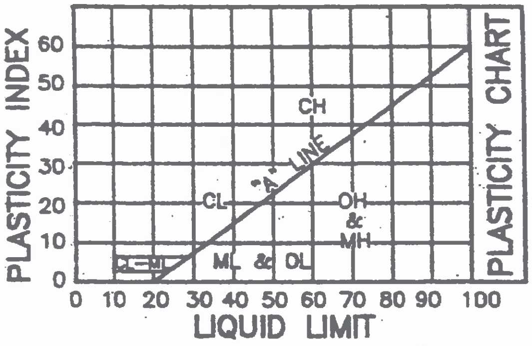
METHOD OF SOIL CLASSIFICATION

MAJOR DIVISIONS		SYMBOLS	TYPICAL NAMES
COARSE GRAINED SOILS (MORE THAN 1/2 OF SOIL >NO. 200 SIEVE SIZE)	GRAVELS (MORE THAN 1/2 OF COARSE FRACTION > NO.4 SIEVE SIZE)	GW	WELL GRADED GRAVELS OR GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
		GP	POORLY GRADED GRAVELS OR GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
		GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
		GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES
	SANDS (MORE THAN 1/2 OF COARSE FRACTION < NO.4 SIEVE SIZE)	SW	WELL GRADED SANDS OR GRAVELLY SANDS, LITTLE OR NO FINES
		SP	POORLY GRADED SANDS OR GRAVELLY SANDS, LITTLE OR NO FINES
		SM	SILTY SANDS, SAND-SILT MIXTURES
		SC	CLAYEY SANDS, SAND-CLAY MIXTURES
FINE GRAINED SOILS (MORE THAN 1/2 OF SOIL <NO. 200 SIEVE SIZE)	SILTS & CLAYS LIQUID LIMIT LESS THAN 50	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
		CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
		OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS & CLAYS LIQUID LIMIT GREATER THAN 50	MH	INORGANIC LILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS, ELASTIC SILTS
		CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
		OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTY CLAYS, ORGANIC SILTS
HIGHLY ORGANIC SOILS		PT	PEAT AND OTHER HIGHLY ORGANIC SOILS

CLASSIFICATION CHART

CLASSIFICATION	U.S. STANDARD SIEVE SIZE
BOULDERS	ABOVE 12"
COBBLES	12" TO 3"
GRAVEL	3" TO NO. 4
COARSE	3" TO 3/4"
FINE	3/4" TO NO. 4
SAND	NO. 4 TO NO. 200
COARSE	NO. 4 TO NO. 10
MEDIUM	NO. 10 TO NO. 40
FINE	NO. 40 TO NO. 200
SILT & CLAY	BELOW NO. 200

GRAIN SIZE CHART



CONSISTANCY OF FINE GRAINED SOILS		DENSITY OF COARSE GRAINED SOILS	
CLASSIFICATION	COHESION (PSF)	CLASSIFICATION	STANDARD PENETRATION (BLOW COUNT)
VERY SOFT	0-250	VERY LOOSE	0-4
SOFT	250-500	LOOSE	4-10
MEDIUM STIFF	500-1000	MEDIUM	10-30
STIFF	1000-2000	DENSE	30-50
VERY STIFF	2000-4000	VERY DENSE	50+
HARD	4000+		

MOISTURE CLASIFICATIONS
DRY
DAMP
MOIST
WET

BASED ON UNIFIED SOILS CLASSIFICATION SYSTEM

HOLE NUMBER B-1

PROJECT Cher-Ae Heights
JOB NUMBER 098210
LOCATION Trinidad, California
DATE DRILLED 9/17/98
GROUND SURFACE ELEVATION 286 ft.
SAMPLER TYPE 2.5" ID Mod. CA; 1.4" SPT w/ no liners; downhole 130 lb hammer, rope & pulley
EXCAVATION METHOD 8.5" Hollow Stem Auger
LOGGED BY CC
TOTAL DEPTH OF HOLE 19.5 ft.

MOISTURE (%)	DRY DEN (PCF)	UNC CMP (PSF)	UNC CMP (PSF) BY POCKET PEN	DEPTH (ft.)	SAMPLES	BLOWS/6 IN	GRAPHIC LOG	USGS CLASS	MATERIALS DESCRIPTION	REMARKS
				0					ASPHALT/CONCRETE	
				1					FILL, GRAVEL, aggregate base, rounded to 3/4" maximum dimension.	
				3		7 9 19			FILL, SILT, sandy, clayey, very stiff, damp, light brown, with angular gravel fragments to 1/4" maximum dimension.	fairly cohesive
24.1	87	1050	—	4						
				5				?		
				7		14 31 27			SANDSTONE, fractured to 2.5" maximum dimension, with minor gray clay.	Very fine sand particle seen under lens.
11.5	117	—	>5000	8						Becomes denser per driller
				10		17 25 50/ 5"			MUDSTONE, fractured to larger than 2.5" maximum dimension, with moisture in fractures, minor clayey silt, plastic.	
7.2	123	—	>5000	11						
				13		50/ 3"				No recovery. Increasing gravel per driller
				14						Very dry, gray cuttings
				15						Hard drilling
				18		11 27 50/ 5"			MUDSTONE, bedded.	
				19.5					Bottom of boring at 19.5 feet. No free goundwater observed.	
				21	SPT					

HOLE NUMBER B-3

PROJECT Cher-Ae Heights
JOB NUMBER 098210
LOCATION Trinidad, California
DATE DRILLED 9/17/98
GROUND SURFACE ELEVATION 289.3 ft.
SAMPLER TYPE 2.5" ID Mod. CA; 1.4" SPT w/ no liners; downhole 130 lb hammer, rope & pulley
EXCAVATION METHOD 8.5" Hollow Stem Auger
LOGGED BY CC
TOTAL DEPTH OF HOLE 26.0 ft.

MOISTURE (%)	DRY DEN (PCF)	UNC CMP (PSF)	UNC CMP (PSF) BY POCKET PEN	DEPTH (ft.)	SAMPLES	BLOWS/6 IN	GRAPHIC LOG	USGS CLASS	MATERIALS DESCRIPTION	REMARKS
				0					ASPHALT/CONCRETE	
				0–1					FILL, GRAVEL, aggregate base, rounded to 3/4" maximum dimension.	
				1				ML	SILT, gravelly, soft, damp to dry, light brown, roots, with gravel to 1/2" maximum dimension, topsoil.	Colluvium?
				3		37 50/ 3"		SM	SAND, silty, very dense, damp, light brown and reddish brown, with angular weathered gravel to 2" maximum dimension. Terrace	
				7		50/ 5"			SANDSTONE, fractured, weathered, very fine grained, dry, greenish brown.	
				10		8 22 24			MUDSTONE, highly weathered, stiff, damp, gray, with silt and clay.	
				13		18 35 41			MUDSTONE, highly weathered, stiff, damp, gray, with silt and clay, with minor rounded mudstone gravel, with quartz vein.	Very hard drilling. Dry cuttings with rounded gravel.
10.1	131	—	—	18		10 11 13 24			SILTSTONE, highly weathered, very stiff, damp, gray.	
				23		15 27 40			MUDSTONE, highly weathered, fractured, damp, gray.	
				25		19 50/ 6"				
				26					Bottom of boring at 26.0 feet. No free groundwater observed.	Auger refusal

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West Sacramento, CA 95691
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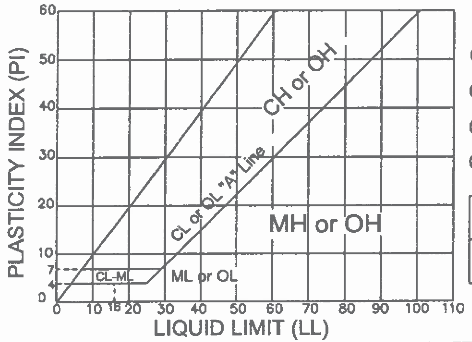
UNIFIED SOIL CLASSIFICATION SUMMARY

(ASTM D 2487-90)

Pt	OH	CH	MH	OL	CL	ML	SC	SM	SP	SW	GC	GM	GP	GW
Highly organic soils	Silts and clays Liquid limit 50 or more			Silts and clays Liquid limit less than 50			Sands with fines >12% fines		Clean sands < 5% fines		Gravels with fines > 12% fines		Clean gravels < 5% fines	
							Sands—50% or more of coarse fraction is smaller than No 4. Sieve				Gravels—more than 50% of coarse fraction is larger than No. 4 sieve			
Fine grained soils (50% or more is smaller than No. 200 sieve)							Coarse grained soils (More than 50% is larger than No. 200 sieve)							



LABORATORY CLASSIFICATION CRITERIA

GW and SW – Cu $\geq$ 4 for GW and 6 FOR SW; 1 $\leq$ Cc $\leq$ 3

GP and SP–Clean gravel or sand not meeting requirements for GW and SW.

GM and SM–Atterberg limits of fines below "A" line or P.I. less than 4.

GC and SC–Atterberg limits of fines above "A" line with P.I. greater than 7.

Fines (silt or clay)	Sand			Gravel		Cobbles	Boulders
	Fine	Medium	Coarse	Fine	Coarse		
Sieve sizes	200	40	10	4	3/4"	3"	10"

Classification of earth materials shown on the test boring logs is based on field inspection and should not be construed to imply laboratory analysis unless so stated.

MATERIAL SYMBOLS

⁂	Gravel	≈	Peat or organic matter
⁘	Sand	▩	Fill material
▧	Silt	▥	Shale
▨	Clay	▦	Sandstone
▨	Sandy clay or clayey sand	▦	Limestone
⁘	Sandy silt or silty sand	▥	Metamorphic rock
▧	Silty clay or clayey silt	▩	Igneous rock

CONSISTENCY CLASSIFICATION FOR SOILS

No. of Blows*	Granular	Cohesive
0–5	Very loose	Very soft
6–10	Loose	Soft
11–20	Semicompact	Stiff
21–35	Compact	Very stiff
36–70	Dense	Hard
> 70	Very dense	Very hard

* According to the Standard Penetration Test (ASTM D 1586)

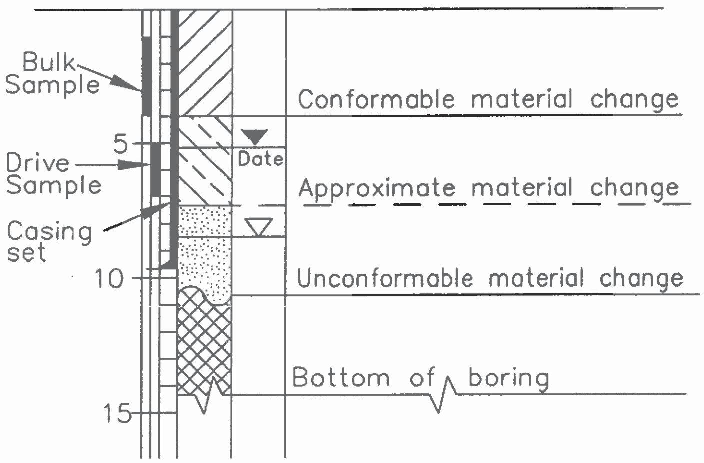
"+" indicates extrapolated blow count

Where standard penetration test has not been performed, consistencies shown on logs are estimated.

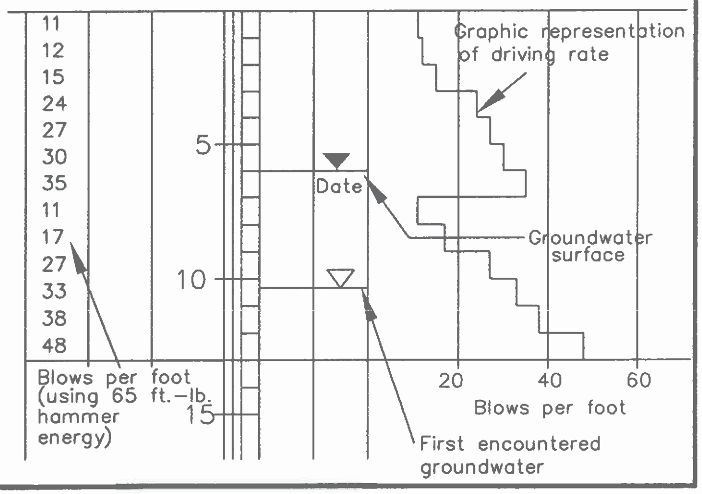
KEY TO "OTHER TESTS" LABORATORY

H – Hydrometer
E – Expansion Index
A – Atterberg Limits
G – Gradation
SE – Sand Equivalent
C – Consolidation
M – Maximum Dry Density Determination
R – Stabilometer Resistance Value
S – Direct Shear
T – Triaxial Shear
P – Permeability
Ch – Corrosivity Testing
SG – Specific Gravity

LEGEND OF BORING



LEGEND OF PENETRATION TEST



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TEST PIT LOG

2P2/398/231

TYPE: Case 490 with 18-Inch Bucket
ELEVATION: 304±
Test Pit No. 1

UNCONFINED COMPRESSIVE STRENGTH (tsf)	OTHER TESTS	DRY DENSITY (lbs/cu. ft.)	Moisture (%)	BLOWS/FOOT 350 ft-lb	SAMPLE SIZE (inches)	SAMPLE No.
		84	27		2.5	1
	S	88	29		2.5	2
	R,G,E				Bag	A

UNIFIED SOIL CLASS	Description
CL	(Stiff) Red brown CLAYEY SILT with very fine SAND and ROOTS/ROOTLETS
SC / SM	(Semicompact-compact) orange brown and brown SILTY very fine-fine SAND with thin lenses of CLAYEY SILT and fine-coarse SANDY GRAVEL
	(Very hard) blue gray gravelly rock fragments in CLAYEY matrix (completely weathered and fractured and sheared sedimentary ROCK-SHALE)

12-22-98

Groundwater measured at 6.3ft. depth;
Test pit backfilled with spoils, tamped/wheel rolled 12-22-98

DEPTH IN FEET: 5, 10, 15, 20

TYPE: Case 490 with 18-Inch Bucket
ELEVATION: 308.5±
Test Pit No. 2

UNCONFINED COMPRESSIVE STRENGTH (tsf)	OTHER TESTS	DRY DENSITY (lbs/cu. ft.)	Moisture (%)	BLOWS/FOOT 350 ft-lb	SAMPLE SIZE (inches)	SAMPLE No.
		80	23		2.5	1
	S,G				Bag	B
		97	25		2.5	2

UNIFIED SOIL CLASS	Description
SM	(Loose) red brown SILTY very fine-fine SAND with ROOTS/ROOTLETS
SM	(Semicompact) light brown SILTY very fine-fine SAND
SC / SM	(Compact-dense) light brown and orange brown SILTY and CLAYEY fine SAND with thin SILTY layers
	12-22-98 (Very hard) dark brown/black weathered and completely fractured sedimentary ROCK-SHALE

Groundwater measured at 9.0ft. depth;
Test pit backfilled with spoils, tamped/wheel rolled 12-22-98

DEPTH IN FEET: 5, 10, 15, 20

UNCONFINED COMPRESSIVE STRENGTH (tsf) | OTHER TESTS | DRY DENSITY (lbs/cu. ft.) | Moisture (%) | BLOWS/FOOT 350 ft-lb | SAMPLE SIZE (inches) | SAMPLE No. | DEPTH IN FEET | MATERIAL SYMBOL | UNIFIED SOIL CLASS

THE BORING LOGS SHOW SUBSURFACE CONDITIONS AT THE DATES AND LOCATIONS INDICATED AND IT IS NOT WARRANTED THAT THEY ARE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES

LOGGED BY: W.E.N.
DATE: 12-22-98

12/98 2P2398231a.dwg 1=1

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TEST PIT LOG

2P2/398/231

TYPE: Case 490 with 18-Inch Bucket
ELEVATION: 305.5±
Test Pit No. 3

UNCONFINED COMPRESSIVE STRENGTH (tsf)	OTHER TESTS	DRY DENSITY (lbs/cu. ft.)	Moisture (%)	BLOWS/FOOT 350 ft-lb	SAMPLE SIZE (inches)	SAMPLE No.
	R,E				Bag	C

SM — (Loose) gray coarse GRAVEL cover over (compact-dense) orange brown to gray weakly cemented SILTY very fine-fine SAND to fine-medium SAND

12-22-98

(Very hard) dark blue gray CLAY with fine-coarse ROCK fragments (completed weathered and fractured/sheared sedimentary ROCK-SHALE)

Groundwater measured at 6.3ft. depth;
Test pit backfilled with spoils, tamped/wheel rolled on 12-22-98

5
10
15
20

TYPE: Case 490 with 18-Inch Bucket
ELEVATION: 308±
Test Pit No. 4

SM — (Compact to dense) orange brown to light brown weakly cemented SILTY very fine-fine SAND

SP — (Semicompact-compact) gray fine SAND grading to coarse SAND

12-22-98

GP — (Compact-dense) gray fine-coarse SANDY GRAVEL/GRAVELLY SAND and COBBLES

(Very stiff-hard) dark gray CLAY with ROCK fragments (completely weathered and fractured/sheared sedimentary ROCK-SHALE

Groundwater measured at 8.5ft. depth;
Test pit backfilled with spoils, tamped/wheel rolled on 12-22-98

5
10
15
20

UNCONFINED COMPRESSIVE STRENGTH (tsf) | OTHER TESTS | DRY DENSITY (lbs/cu. ft.) | Moisture (%) | BLOWS/FOOT 350 ft-lb | SAMPLE SIZE (inches) | SAMPLE No. | DEPTH IN FEET | MATERIAL SYMBOL | UNIFIED SOIL CLASS

THE BORING LOGS SHOW SUBSURFACE CONDITIONS AT THE DATES AND LOCATIONS INDICATED AND IT IS NOT WARRANTED THAT THEY ARE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES

LOGGED BY: W.E.N.
DATE: 12-22-98

12/98 2P2398231b.dwg 1=1

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TEST PIT LOG

2P2/398/231

TYPE: Case 490 with 18-Inch Bucket
ELEVATION: 301±
Test Pit No. 5

UNCONFINED COMPRESSIVE STRENGTH (tsf)	OTHER TESTS	DRY DENSITY (lbs/cu. ft.)	Moisture (%)	BLOWS/FOOT 350 ft-lb	SAMPLE SIZE (inches)	SAMPLE No.	DEPTH IN FEET	UNIFIED SOIL CLASS	
								SM	(Loose-semicompact) orange brown SILTY SAND with ROOTS/ROOTLETS
	S	103	23		2.5	1		CL	(Stiff) gray CLAY
					Bag	D	5		(Very hard) gray GRAVELLY ROCK fragments in CLAYEY matrix (completely weathered and fractured/sheared sedimentary ROCK-SHALE)
							10		No free groundwater encountered. Test pit backfilled with spoils, tamped with bucket on 12-22-98.
							15		
							20		

TYPE: Case 490 with 18-Inch Bucket
ELEVATION: 305±
Test Pit No. 6

UNCONFINED COMPRESSIVE STRENGTH (tsf)	OTHER TESTS	DRY DENSITY (lbs/cu. ft.)	Moisture (%)	BLOWS/FOOT 350 ft-lb	SAMPLE SIZE (inches)	SAMPLE No.	DEPTH IN FEET	UNIFIED SOIL CLASS	
								ML	(Loose) gray fine-coarse GRAVEL (fill) over (semicompact) orange brown fine SANDY SILT
									(Very hard) black highly weathered and completely fractured sedimentary ROCK-SHALE
							5	12-22-98	
							10		Groundwater measured at 6.5ft. depth; Test pit backfilled with spoils, tamped/wheel rolled on 12-22-98
							15		
							20		

MATERIAL SYMBOL

THE BORING LOGS SHOW SUBSURFACE CONDITIONS AT THE DATES AND LOCATIONS INDICATED AND IT IS NOT WARRANTED THAT THEY ARE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES

LOGGED BY: W.E.N.
DATE: 12-22-98

12/98 2P2398231e.dwg 1=1

APPENDIX E

Site Photos

Photo 1: Looking east at head of landslide

Photo 2: "Water loving plants" beneath landslide at Scenic Drive

Photo 3: Vertical drop at landslide scarp

Photo 4: Exposed bedrock at Casino Entrance

Photo 5: Sea stacks at beach west of Scenic Drive

Photo 6: Weathered bedrock

APPENDIX C

BEST MANAGEMENT PRACTICES

BEST MANAGEMENT PRACTICES AND CONSERVATION MEASURES

Construction

The project site development footprint is under one acre (approximately 0.40 acres) and coverage under the General Construction National Pollutant Discharge Elimination System (NPDES) permit is not required and therefore a Stormwater Pollution Prevention Plan (SWPPP) is not required. However, to further reduce construction impacts from construction, Best Management Practices (BMPs) shall be implemented as necessary. BMPs shall be inspected, maintained, and repaired to assure continued performance of their intended function. BMPs shall be chosen to best suit the site and the activities that occur. Construction BMPs may include, but are not limited to, the following:

- Stripped areas shall be stabilized through temporary seeding using dryland grasses.
- Exposed stockpiled soils shall be covered with plastic covering to prevent wind and rain erosion.
- The construction entrance shall be stabilized by the use of riprap, crushed gravel, or other such materials to prevent the track-out of dirt and mud.
- Construction roadways shall be stabilized using frequent watering, stabilizing chemical application, or physical covering of gravel or riprap.
- Filter fences shall be erected at all on-site stormwater exit points and along the edge of graded areas to stabilized non-graded areas and control siltation of on-site stormwater.
- Prior to land-disturbing activities, the clearing and grading limits shall be marked clearly, both in the field and on the plans. This can be done using construction fences or by creating buffer zones.
- Concentrated flows create high potential for erosion; therefore, any slopes shall be protected from concentration flow. This can be done by using gradient terraces, interceptor dikes, and swales, and by installing pipe slope drains or level spreaders. Inlets need to be protected to provide an initial filtering of stormwater runoff; however, any sediment buildup shall be removed so the inlet does not become blocked.
- If construction occurs during wet periods, sub-grade stabilization shall be required. Mulching or netting may be needed for wet-weather construction.
- Temporary erosion control measures (such as silt fence, gravel filter berms, straw wattles, sediment/grease traps, mulching of disturbed soil, construction stormwater chemical treatment, and construction stormwater filtration) shall be employed for disturbed areas.
- Exposed and unworked soils shall be stabilized by the application of effective BMPs. These include, but are not limited to, temporary or permanent seeding, mulching, nets and blankets, plastic covering, sodding, and gradient terraces.
- Temporary erosion control measures (such as silt fences, staked straw bales, and temporary revegetation) shall be employed for disturbed areas and stockpiled soil.
- Potentially hazardous materials shall be stored away from drainages and containment berms shall be constructed to prevent spilled materials from reaching water bodies.
- Vehicles and equipment used during construction shall be provided proper and timely maintenance to reduce potential for mechanical breakdowns leading to a spill of materials into water bodies. Maintenance and fueling shall be conducted in an area that meets the criteria set forth in the spill prevention plan.

Water Resources

The following BMPs would be implemented to reduce water usage at the Hotel:

- In order to reduce water consumption and support LEED and sustainability goals of the building, all plumbing would include low-flow and ultra-flow fixtures to reduce water consumption. All fittings are made of brass construction with a high-quality chrome finish, and polished, per the current Hyatt Place plumbing and accessories list. All proposed fixtures would comply with applicable water use reduction requirements of American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) Standard 189.1 Section 6.

Air Quality and Greenhouse Gasses

Generation of construction-related emissions is a short-term nuisance impact. The following BMPs, required through contractual obligations, would be implemented to reduce these temporary construction emissions.

- The contractor shall designate an on-site Air Quality Construction BMP Manager (AQCBM) whom would be responsible for directing compliance with the following BMPs for project construction relating to heavy-duty equipment use:
    - All diesel-powered equipment shall be properly maintained and shall minimize idling time to 5 minutes when construction equipment is not in use, unless per engine manufacturer's specifications or for safety reasons more time is required.
    - Engines shall be kept in good mechanical condition to minimize exhaust emissions.
- The AQCBM would be responsible for directing compliance with the following BMPs for fugitive dust control practices during project construction:
    - Spray exposed soil with water or other suppressant at least twice a day or as needed.
    - Minimize dust emissions during transport of fill material or soil by wetting down loads, ensuring adequate freeboard (space from the top of the material to the top of the truck bed) on trucks, and/or covering loads.
    - Promptly clean up spills of transported material on public roads.
    - Locate construction equipment and truck staging areas away from sensitive receptors as practical and in consideration of potential effects on other resources.
    - Cover dirt, gravel, and debris piles as needed to reduce dust and wind-blown debris.
- To reduce operational greenhouse gas emissions, the Tribe shall install Energy Star rated appliances such as washing machines, dishwashers, celling fans, and refrigerators. Additionally, the Tribe shall install Energy Star rated low-flow water fixtures such as showerheads and bathroom faucets.

Fire Protection

The following BMPs, required through contractual obligations, would be included as part of Alternative A to minimize the risk of fire during construction:

- Any construction equipment that normally includes a spark arrester would be equipped with an arrester in good working order. This includes, but is not limited to, vehicles, heavy equipment, and chainsaws.

- Structural fire protection would be provided through compliance with Uniform Fire Code requirements for residences and commercial structures similar in size to the proposed clubhouse. The Tribe would cooperate with the fire district by allowing routine inspections. The Tribe would ensure that appropriate water supply and pressure is available for emergency fire flows.
- Typical fire flow allowances would be confirmed with the local Fire Marshall prior to construction of any water storage tank.
- Comply with California Fire Code and National Fire Alarm Code requirements for commercial structures similar in size to the proposed Hotel.

Hazardous Materials

The following BMPs would be required through contractual obligations and would be included as part of Alternative A to minimize the risk from use of hazardous materials during construction:

- Personnel shall follow BMPs for filling and servicing construction equipment and vehicles. To reduce the potential for accidental release, fuel, oil, and hydraulic fluids shall be transferred directly from a service truck to construction equipment and shall not be stored on site.
- Catch-pans shall be placed under equipment to catch potential spills during servicing.
- Refueling shall be conducted only with approved pumps, hoses, and nozzles.
- Vehicle engines shall be shut down during refueling and idling shall be kept to a minimum.
- No smoking, open flames, or welding shall be allowed in refueling or service areas.
- Refueling shall be performed away from bodies of water to prevent contamination of water in the event of a leak or spill.
- Service trucks shall be provided with fire extinguishers and spill containment equipment, such as absorbents.
- Should a spill contaminate soil, the soil shall be put into containers and disposed of in accordance with local, state, and federal regulations.
- All containers used to store hazardous materials shall be inspected at least once per week for signs of leaking or failure. All maintenance, refueling, and storage areas shall be inspected monthly.
- Hazardous materials must be stored in appropriate and approved containers in accordance with applicable regulatory agency protocols.
- Potentially hazardous materials, including fuels, shall be stored away from drainages and secondary containment shall be provided for all hazardous materials stored during construction and operation.
- In the event that contaminated soil and/or groundwater are encountered during construction-related earth-moving activities, all work shall be halted until a professional hazardous materials specialist or other qualified individual assesses the extent of contamination. If contamination is determined to be hazardous, representatives of the Tribe shall consult with the BIA and EPA to determine the appropriate course of action, including development of a Sampling and Remediation Plan, if necessary. Any contaminated soils that are determined to be hazardous shall be disposed of in accordance with federal regulations.

APPENDIX D

REGULATORY CONTEXT

1 WATER QUALITY

1.1 SURFACE WATER

The Clean Water Act (CWA) (33 USC 1251-1376), as amended by the Water Quality Act of 1987, is the major federal legislation governing water quality. The objective of the CWA is “to restore and maintain the chemical, physical, and biological integrity of the Nation’s waters.” The U.S. Environmental Protection Agency (USEPA) is delegated as the authoritative body under the CWA. Important sections of the CWA applicable to the Proposed Action are as follows:

- *Section 303* and *Section 304* provide for water quality standards, criteria, and guidelines. Section 303(d) requires states to identify impaired water bodies and develop total maximum daily loads (TMDLs) for the contaminant(s) of concern. Section 304 publishes water quality criteria for the protection of aquatic life and human health in surface water for approximately 150 pollutants.
- *Section 402* establishes the National Pollutant Discharge Elimination System (NPDES), a permitting system for the discharge of any pollutant (except for dredged or fill material) into waters of the U.S. Each NPDES permit contains limits on pollutant concentrations of wastes discharged to surface waters to prevent degradation of water quality and protect beneficial uses.

1.2 ANTIDEGRADATION POLICY

The federal antidegradation policy (40 CFR Part 131.6) is designed to protect water quality and water resources. The policy directs states to adopt a statewide policy that includes the following primary provisions: (1) existing instream uses and the water quality necessary to protect those uses shall be maintained and protected; (2) where existing water quality is better than necessary to support fishing and swimming conditions, that quality shall be maintained and protected unless the state finds that allowing lower water quality is necessary for important local economic or social development; and (3) where high-quality waters constitute an outstanding national resource, such as waters of national and state parks, wildlife refuges, and waters of exceptional recreational or ecological significance, that water quality shall be maintained and protected. Each state must also develop procedures to implement its antidegradation policy through water quality management processes. Each state’s antidegradation policy must include implementation methods consistent with the provisions outlined in 40 CFR 131.12 (USEPA, 1994).

Complying with the antidegradation provision of the CWA, the North Coast Regional Water Quality Control Board (NCRWQCB) has established general water quality objectives for all inland surface waters under State jurisdiction to protect designated beneficial uses. The Water Quality Control Plan for the North Coast Region (Basin Plan) outlines these surface water quality objectives. **Table 1** lists the specific water quality objectives outlined in the Basin Plan by parameter for surface waters under State jurisdiction within the surrounding watersheds. The Basin Plan does not currently list surface water quality objectives for the Trinidad HU.

The State Water Resources Control Board (SWRCB), in compliance with Section 303 of the CWA, has prepared a list of impaired water bodies in California. Impaired water bodies occur where industrial and technological waste limits or other legal mechanisms for pollution control are not enough to meet water quality standards. The list includes a priority schedule for the development of TMDLs for each contaminant or “stressor” affecting the water body. The Proposed Project will not discharge into or affect any of the listed impaired water bodies (CDWR, 2006).

TABLE 1
GENERAL WATER QUALITY OBJECTIVES

WATERBODY	**SPECIFIC CONDUCTANCE (MICRO-OHM)**		**TOTAL DISSOLVED SOLIDS (MG/L)**			**DISSOLVED OXYGEN (MG/L)**		**PH**		**HARDNESS (MG/L)**	**BORON (MG/L)**	
	90% UPPER LIMIT[1]	**50% UPPER LIMIT[2]**	**90% UPPER LIMIT[1]**	**50% UPPER LIMIT[2]**	**MIN**	**90% UPPER LIMIT[1]**	**50% UPPER LIMIT[2]**	**MIN**	**MAX**	**50% UPPER LIMIT[2]**	**90% UPPER LIMIT[1]**	**50% UPPER LIMIT[2]**
Redwood Creek	2203	1253	1153	753	7.0	7.5	10.0	8.5	6.5	NONE	NONE	NONE
Mad River	3003	1503	1603	903	7.0	7.5	10.0	8.5	6.5	NONE	NONE	NONE
Eel River	3753	2253	2753	1403	7.0	7.5	10.0	8.5	6.5	NONE	NONE	NONE

[1] 50% upper and lower limits represent the 50 percentile values of the monthly means for a calendar year. 50% or more of the monthly means must be less than or equal to an upper limit and greater than or equal to a lower limit.

[2] 90% upper and lower limits represent the 90 percentile values for a calendar year. 90% or more of the values must be less than or equal to an upper limit and greater than or equal to a lower limit.

[3] Does not apply to estuarine areas.

Source: NCRWQCB, 2011a

1.3 GROUNDWATER

The Basin Plan also specifies water quality objectives for groundwater in the north coast. Water quality objectives for groundwater are listed in **Table 2**.

In order to protect drinking water supplies and under the mandate of the Safe Drinking Water Act, USEPA defines National Primary Drinking Water Regulations (primary standards). These legally enforceable standards apply to public water systems. These standards are established to protect human health by limiting the levels of contaminants in drinking water. The USEPA also defines National Secondary Drinking Water Regulations (secondary standards).

TABLE 2
WATER QUALITY OBJECTIVES FOR GROUNDWATER

TASTES AND ODORS	BACTERIA[1]	RADIOACTIVITY[1]	CHEMICAL CONSTITUENTS[1]
Cannot exceed concentrations that cause nuisance or adversely affect beneficial uses	Cannot exceed 1.1 mpn/100ml or 1 colony/100ml	Cannot exceed California Code of Regulations, Title 22, Division 4, Chapter 15, Article 5, Section 64443, Table 4 and Listed in Table 3-2 of the Basin Plan	Cannot exceed Limits Specified in California Code of Regulations, Title 22, Division 4, Chapter 15, Article 4, Section 64435 Tables 2 and 3, and Section 64444.5 (Table 5) and Listed In Table 3-2 of the Basin Plan

[1] Domestic or municipal sources only.

source: NCRWQCB, 2011a

2 AIR QUALITY

2.1 CLEAN AIR ACT

The Federal Clean Air Act (CAA) was enacted for the purpose of protecting and enhancing the quality of the nation's air resources to benefit public health, welfare, and productivity. Basic components of the CAA and its amendments include national ambient air quality standards (NAAQS) for major air pollutants and state implementation plans (SIPs) to ensure countrywide NAAQS compliance. Regulation of air pollution is achieved through both the NAAQS and emissions limitations for individual sources of air pollutants established through permitting requirements. The USEPA is the federal agency responsible for identifying criteria air pollutants (CAPs) for which NAAQS are established, updating and revising the NAAQS, and approving and overseeing SIPs as they relate to compliance with the CAA. The USEPA has identified six CAPs that are both common indicators of regional air quality and detrimental to human health. The six CAPs are ozone, carbon monoxide (CO), particulate matter (≤ 10 microns and ≤ 2.5 microns in diameter (PM_{10} and $PM_{2.5}$)), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), and lead (Pb). The NAAQS, appropriate metrics, and violation criteria for the six CAPs are presented in **Table 3**.

TABLE 3
NATIONAL AMBIENT AIR QUALITY STANDARDS

POLLUTANT	AVERAGING TIME	PARTS PER MILLION (PPM) MICROGRAMS	PER CUBIC METER (µG/M3)	VIOLATION CRITERIA
Ozone	8 hours	0.075	75	If exceeded on more than 3 days in 3 years.
CO	8 hours	9	9,000	If exceeded on more than 1 day per year.
	1 hour	35	35,000	
PM_{10}	24-hour	N/A	150	If exceeded on more than 1 day per year.
$PM_{2.5}$	24-hour	N/A	35	If exceeded on more than 1 day per year.
NO_2	Annual	0.053	100	If exceeded.
	1-hour	0.100	N/A	If exceeded on more than 3 days in 3 years.
SO_2	1-hour	0.075	N/A	If exceeded on more than 1 day per year.
Lead	Quarter	N/A	0.15	If exceeded on more than 1 day per year.
Source: USEPA, 2017				

2.1.1 Federal General Conformity

Under the General Conformity Rule of the CAA, the lead agency with respect to a federal action is required to demonstrate that a proposed federal action conforms to the applicable SIP(s) before the proposed federal action is taken. There are two phases to a demonstration of general conformity:

1) The Conformity Review process, which entails an initial review of the federal action to assess whether a full conformity determination is necessary, and
2) The Conformity Determination process, which requires that a proposed federal action be demonstrated to conform to the applicable SIP(s).

The Conformity Review requires the lead agency to compare estimated emissions attributable to the federal action to the applicable general conformity *de minimis* threshold(s) for all CAPs for which the applicable air basin or region is in nonattainment for the applicable NAAQS. If the emission estimate(s) from step one is below the applicable *de minimis* threshold(s), then a General Conformity Determination is not required under the CAA (40 CFR Part 93). If emission estimates are greater than *de minimis* levels, the lead agency must conduct a Conformity Determination.

2.1.2 Federal Class I Areas

Title 1, Part C of the CAA was established, in part, to preserve, protect, and enhance the air quality in national parks, national wilderness areas, national monuments, national seashores, and other areas of special national or regional natural, recreational, scenic, or historic value. The CAA designates all international parks, national wilderness areas, and memorial parks larger than 5,000 acres and national parks larger than 6,000 acres as “Class I areas.” The CAA prevents significant deterioration of air quality in Class I areas under the Prevention of Significant Deterioration (PSD) program. The PSD Program protects Class I areas by allowing only a small increment of air quality deterioration in these areas by requiring assessment of potential adverse impacts on air quality related values of Class I areas. The nearest federal Class I area, Redwood National Park, is located approximately 10 miles northeast of the project site.

Any major source of emissions within 100 kilometers (km) (62.1 miles) from a federal Class I area is required to conduct a pre-construction review of air quality impacts on the area(s). A “major source” for the PSD program is defined as a facility that will emit 250 tons per year (tpy) of regulated pollutant from direct stationary sources. For certain industries, these requirements apply to facilities that emit 100 tpy or more of regulated pollutants through direct stationary sources. Mobile sources such as vehicle emissions are not stationary sources by definition and are therefore not subject to the PSD program.

2.1.3 Federal Hazardous Air Pollutant Program

Title III of the CAA requires the USEPA to promulgate National Emissions Standards for Hazardous Air Pollutants (NESHAPs). The NESHAPs may differ between regional sources and area sources of hazardous air pollutants (HAPs). Major sources are defined as stationary sources with potential to emit more than 10 tons per year (tpy) of any HAP or more than 25 tpy of any combination of HAPs (all other non-major sources are considered area sources under the NESHAPs program). HAPs are a specific group of airborne chemicals designated by the USEPA. Sources of HAPs include industrial processes such as petroleum refining and chrome plating operations, commercial operations such as gasoline stations and dry cleaners, and motor vehicle exhaust. Cars and trucks release at least 40 different HAPs. The most important HAPs, in terms of health risk, are diesel particulate matter (DPM), benzene, formaldehyde, 1,3-butadiene, and acetaldehyde.

HAPs are less pervasive in the urban atmosphere than CAPs but are linked to short-term (acute) or long-term (chronic or carcinogenic) adverse human health effects. There are hundreds of different types of HAPs, with varying degrees of toxicity. Currently, there are over 188 HAPs listed by the USEPA.
The majority of the estimated health risk from HAPs can be attributed to relatively few compounds, the most important being DPM (CARB, 2005). Diesel engines emit a complex mixture of air pollutants, composed of gaseous and solid material. The visible emissions in diesel exhaust are particulate matter, which includes carbon. Diesel exhaust also contains a variety of harmful gases and over 40 other cancer-causing substances.

2.2 CLIMATE CHANGE

2.2.1 Federal

In 2002, President George W. Bush established a national policy goal of reducing the GHG emission intensity (tons of GHG emissions per million dollars of gross domestic product) of the U.S. economy by 18 percent by 2012. No binding reductions were associated with the goal. Rather, the USEPA administered a variety of voluntary programs and partnerships with GHG emitters, in which the USEPA collaborated with industries producing and utilizing GHGs to reduce associated emissions.

2.2.2 Clean Air Act

In *Massachusetts et al.* vs. *Environmental Protection Agency et al.* (April 2, 2007), the US Supreme Court ruled that the CAA authorizes the USEPA to regulate CO_2 emissions from new motor vehicles. The Court did not mandate that the USEPA enact regulations to reduce GHG emissions but found that the only instances in which the USEPA could avoid taking action were if the USEPA found that GHGs do not contribute to climate change or if the UESPA offered a "reasonable explanation" for not determining that GHGs contribute to climate change. On December 15, 2009, the USEPA issued a final endangerment and cause finding (74 FR 66496), stating that high atmospheric levels of GHGs "are the unambiguous result of human emissions and are very likely the cause of the observed increase in average temperatures and other climatic changes." The USEPA further found that "atmospheric concentrations of GHG endanger public health and welfare within the meaning of Section 202 of the Clean Air Act." The finding itself does not impose any requirements on industry or other entities.

2.2.3 U.S. Environmental Protection Agency

On December 7, 2009, USEPA Administrator Lisa Jackson signed a Final Action, under Section 202(a) of the CAA, finding that six key well-mixed GHGs constitute a threat to public health and welfare and that the combined emissions from motor vehicles cause and contribute to the climate change problem. The following are the most recent regulatory actions taken by the USEPA:

- On September 15, 2009, the USEPA and the U.S. Department of Transportation's (DOT's) National Highway Traffic Safety Administration (NHTSA) proposed a new national program that would reduce GHG emissions and improve fuel economy for all new cars and trucks sold in the United States. The USEPA proposed the first national GHG emissions standards under the CAA and NHTSA proposed an increase in the Corporate Average Fuel Economy (CAFE) standards under the Energy Policy and Conservation Act.

- In response to the FY2008 Consolidated Appropriations Act (HR 2764; PL 110–161), the USEPA issued the Final Mandatory Reporting of Greenhouse Gases Rule. Signed by the Administrator on September 22, 2009, the rule requires that suppliers of fossil fuels and industrial GHGs, manufacturers of vehicles and engines outside of the light duty sector, and facilities that emit 25,000 metric tons or more of GHGs per year to submit annual reports to the USEPA. The rule is intended to collect accurate and timely emissions data to guide future policy decisions on climate change.
- On September 30, 2009, the USEPA proposed new thresholds for GHGs that define when CAA permits under the New Source Review and Title V operating permits programs would be required.

2.2.4 Council on Environmental Quality (CEQ) GHG Guidance

The Council on Environmental Quality (CEQ) recently released a final guidance memorandum on how climate change should be addressed in NEPA documents (CEQ, 2016). The CEQ guidance advises federal lead agencies to address impacts to and from climate change when assessing cumulative project-level impacts under NEPA. To assess impacts, the guidance states that federal agencies should quantify direct and indirect emissions of the Project Alternatives (including the No-Action Alternative), with the level of effort being proportionate to the scale of the emissions relevant to NEPA review, as a proxy for assessing potential effects on climate change in a NEPA analysis. According to CEQ, climate change impacts relating to indirect and direct actions concerning the federal action and associated short-term and long-term effects should also be included in the NEPA analysis.

The guidance does not establish any particular quantity of GHG emissions as "significantly" affecting the quality of the human environment or give greater consideration to the effects of GHG emissions and climate change over other effects on the human environment. However, the guidance does state that agencies should consider reasonable alternatives and mitigation measures to reduce action-related GHG emissions or increase carbon sequestration in the same fashion as they consider alternatives and mitigation measures for any other environmental effects. The guidance further states that climate change effects on the environment and on the Proposed Project should be considered in NEPA analysis if the project is considered vulnerable to the effects of climate change, such as increasing sea level, drought, high intensity precipitation events, increased fire risk, or ecological change. Assessment of such impacts, if applicable, should be conducted with existing information as CEQ states that agencies need not undertake new research or analysis of potential climate change impacts in the Proposed Action area.

Local

The County Draft Climate Action Plan (CAP) includes a GHG inventory and establishes an emission reduction target. The Draft CAP also identifies numerous goals and policies aimed at reducing GHG emissions. These goals and policies are to be incorporated into the County General Plan; however, the General Plan has yet to be adopted by the County Board of Supervisors and does not apply to land held in trust by the federal government (County of Humboldt, 2012a). Primary sources of GHG emissions in the region include vehicles, trucks, airplanes, mills, ships, canneries, and electricity generation facilities.

3 BIOLOGICAL RESOURCES

3.1 FEDERAL ENDANGERED SPECIES ACT

The United States Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NMFS) implement the Federal Endangered Species Act of 1973 (FESA) (16 USC 1531 *et seq*.). Threatened and endangered species on the federal list (50 CFR 17.11 and 17.12) are protected from “take” (direct or indirect harm), unless a Biological Opinion (BO) with incidental take provisions is rendered. Pursuant to the requirements of FESA, an agency reviewing a Proposed Project within its jurisdiction must determine whether any federally listed species may be present in the project site and determine whether the Proposed Project will have a potentially significant impact upon such species. Under FESA, habitat loss is considered an impact to the species. In addition, the agency must determine whether the Proposed Project is likely to jeopardize the existence of species or habitat for species proposed to be listed under FESA (16 USC 1536[3], [4]). USFWS also designates species of concern. Species of concern receive attention from federal agencies during environmental review, although they are not otherwise protected under FESA. Project-related impacts to such species would also be considered significant and would require mitigation.

3.1.1 Waters of the U.S.

Any person, firm, or agency planning to alter or work in navigable waters of the U.S., including the discharge of dredged or fill material, must first obtain authorization from the United States Army Corps of Engineers (USACE). Permits, licenses, variances, or similar authorization may also be required by other federal, state, and local statutes. Section 10 of the Rivers and Harbors Act of 1899 prohibits the obstruction or alteration of navigable waters of the United States without a permit from the Corps of Engineers (33 USC 403). Section 301 of the Federal Water Pollution Control Act and Amendments of 1972 (CWA) prohibits the discharge of pollutants, including dredged or fill material, into waters of the United States without a Section 404 permit from USACE (33 USC 1344). Water Quality Certification (a CWA Section 401 permit) may be required by the USEPA before other permits are issued.

3.1.2 Executive Order 11990 (Protection of Wetlands)

Executive Order (EO) 11990 was established for the protection of wetlands and riparian systems. Wetlands are transitional lands between terrestrial and aquatic systems. EO 11990 requires federal agencies to consider wetland protection as an important part of their policies and take action to minimize the destruction, loss, or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands.

3.1.3 Migratory Bird Treaty Act

Most bird species, especially those that are breeding, migratory, or of limited distribution, are protected under federal and state regulations. Under the Migratory Bird Treaty Act of 1918 (16 USC 703-711), migratory bird species and their nests and eggs that are on the federal list (50 CFR 10.13) are protected from injury or death and project-related disturbances must be reduced or eliminated during the nesting cycle.

4 CULTURAL RESOURCES

4.1 NATIONAL REGISTER OF HISTORIC PLACES

The eligibility of a resource for listing in the National Register of Historic Places (NRHP) is determined by evaluating the resource using criteria defined in 36 CFR 60.4 as follows: the quality of significance in American history, architecture, archaeology, and culture is present in districts, sites, buildings, structures, and objects of state and local importance that possess integrity of location, design, setting, materials, workmanship, feeling, association, and:

A. That are associated with events that have made a significant contribution to the broad patterns of our history;
B. That are associated with the lives of persons significant in our past;
C. That embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
D. That has yielded, or may be likely to yield, information important to prehistory or history.

Sites younger than 50 years, unless of exceptional importance, are not eligible for listing in the NRHP.

While most historic buildings and many historic archaeological properties are significant because of their association with important events, people, or styles (criteria A, B, and C), the significance of most prehistoric and some historic-period archaeological properties is usually assessed under criterion D. This criterion stresses the importance of the information contained in an archaeological site, rather than its intrinsic value as a surviving example of a type or its historical association with an important person or event. It places importance not on physical appearance but rather on information potential.

4.1.1 National Historic Preservation Act

Section 106 of the National Historic Preservation Act (NHPA) as amended, and its implementing regulations found in 36 CFR Part 800, require federal agencies to identify cultural resources that may be affected by actions involving federal lands, funds, or permitting. The significance of the resources must be evaluated using established criteria outlined in 36 CFR 60.4, as described below.

If a resource is determined to be a *historic property*, Section 106 of the NHPA requires that effects of the federal undertaking on the resource be determined. A historic property is defined as:

…any prehistoric or historic district, site, building, structure or object included in, or eligible for inclusion in the National Register of Historic Places, including artifacts, records, and material remains related to such a property (NHPA Sec. 301[5])…

Section 106 of the NHPA prescribes specific criteria for determining whether a project would adversely affect a historic property, as defined in 36 CFR 800.5. An impact is considered adverse when prehistoric or historic archaeological sites, structures, or objects that are listed or eligible for listing in the NRHP are subjected to the following:

- Physical destruction of or damage to all or part of the property;
- Alteration of a property;
- Removal of the property from its historic location;
- Change of the character of the property's use or of physical features within the property's setting that contribute to its historic significance;
- Introduction of visual, atmospheric, or audible elements that diminish the integrity of the property's significant historic features;
- Neglect of a property that causes its deterioration; and
- Transfer, lease, or sale of the property out of federal control without adequate and legally enforceable restrictions or conditions to ensure long-term preservation of the property's historic significance.

If the historic property will be adversely affected by development, then prudent and feasible measures to avoid or reduce adverse impacts must be taken. The State Historic Preservation Officer (SHPO) must be provided an opportunity to review and comment on these measures prior to project implementation.

4.2 TRADITIONAL CULTURAL PROPERTIES

The 1992 amendments to the NHPA allowed for a new designation of a traditional cultural property (TCP). These amendments established "Properties of traditional religious and cultural importance to an Indian tribe or Native Hawaiian organization" might be determined eligible for inclusion in the NRHP (Section 101(d)(6) of the NHPA. Accordingly, a tribal TCP can only be significant and eligible for listing on the NRHP if it meets two criteria: 1) rooted in that community's history; and 2) are important in maintaining the continuing cultural identity of the community."

4.3 NATIVE AMERICAN GRAVES PROTECTION AND REPATRIATION ACT

The Native American Graves Protection and Repatriation Act (NAGPRA) is a federal law passed in 1990. NAGPRA provides a process for museums and federal agencies to return certain Native American cultural items -- human remains, funerary objects, sacred objects, or objects of cultural patrimony -- to lineal descendants and culturally affiliated Indian tribes and Native Hawaiian organizations. NAGPRA includes provisions for unclaimed and culturally unidentifiable Native American cultural items, intentional and inadvertent discovery of Native American burials and cultural items on federal and tribal lands, and penalties for noncompliance and illegal trafficking.

4.4 PALEONTOLOGICAL RESOURCES PRESERVATION ACT

The Paleontological Resources Preservation subtitle of the Omnibus Public Land Management Act, 16 USC 470aaa to aaa-11 requires the U.S. Department of Agriculture and the U.S. Department of the Interior to issue implementation regulations that provide for the preservation, management, and protection of paleontological resources on Federal lands and to insure that these resources are available for current and future generations to enjoy as part of America's national heritage.

Paleontological resources are defined as the traces or remains of prehistoric plants and animals. Such remains often appear as fossilized or petrified skeletal matter, imprints, or endocasts, and reside in sedimentary rock layers. Fossils are important resources, due to their scientific and educational value. Fossil remains of vertebrates are considered significant. Invertebrate fossils are considered significant if they function as index fossils. Index fossils are those that appear in the fossil record for a relatively short and known period, allowing geologists to interpret the age range of the geological formations in which they are found.

Significance Criteria

Significance for paleontological resources is reflected in terms of compliance with the Antiquities Act of 1906 (PL 59-209; 16 USC 431 et seq.; 34 Stat. 225), which calls for the protection of historic landmarks, historic and prehistoric structures, and other objects of historic or scientific interest on federal land. Additional provisions appear in the Archaeological and Historic Data Preservation Act of 1974, as amended, for the survey, recovery, and preservation of significant scientific, prehistoric, historic, archaeological, or paleontological data, in such cases wherein this type of data might be otherwise destroyed or irrecoverably lost because of federal projects.

5 SOCIOECONOMIC CONDITIONS/ENVIRONMENTAL JUSTICE

On February 11, 1994, President Clinton issued EO 12898, “Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations” and an accompanying Presidential Memorandum to focus federal attention on the environmental and human health conditions in minority communities and low-income communities. EO 12898, as amended, directs federal agencies to develop an Environmental Justice Strategy that identifies and addresses disproportionately high human health or environmental effects of their programs, policies, and activities on minority populations and low-income populations. Compliance with EO 12898 has been incorporated into the NEPA compliance requirements of the BIA for the Proposed Action.

6 LAND USE

6.1 REGULATORY SETTING

The Nation's coastal waters are protected by the federal Coastal Zone Management Act (CZMA) of 1972, which is administered by the National Oceanic and Atmospheric Administration (NOAA) within the Department of Commerce. In California, the CZMA is administered by the California Coastal Commission (CCC), which was established by voter initiative and made permanent by the California Coastal Act of 1976. The CCC carries out its statutory responsibilities largely through the review and approval of local coastal programs (LCPs). The Coastal Zone is defined by the California Coastal Act as "the land and water area of the State of California from the Oregon Border to the border of the Republic of Mexico," as officially mapped on 7.5-minute USGS quadrangle maps and adopted by the CCC. The CZMA states that "excluded from the coastal zone are lands of which is held in trust by the federal government." Therefore, the project site is not considered part of the Coastal Zone.

Title 15 CFR Part 930 requires federal consistency determinations for projects directly or indirectly affecting any coastal use or resource. Federal consistency determinations stem from the CZMA requirement that federal actions (that are reasonably likely to affect any land or water use or natural resource of the Coastal Zone) be consistent with the enforceable policies of a coastal State's or territory's federally approved Coastal Management Program ("State CMP" or "CMP"). Federal actions include: (1) direct federal actions--activities and development projects performed by a federal agency or a contractor for the benefit of a federal agency; and (2) indirect federal actions--activities not performed by a federal agency, but requiring federal permits or licenses or other forms of federal approval and federal financial assistance to states, territories, and local governments.

The objective is to ensure that federal agencies and applicants for federal approvals and funding adequately consider and comply with State CMPs. Under CZMA Sec. 307(C), each federal agency shall provide a consistency determination to the relevant State agency designated at the earliest practical time but in no case later than 90 days before final approval of the federal activity (unless both the federal agency and the State agency agree to a different schedule).

7 AGRICULTURE

7.1 WILLIAMSON ACT PROVISIONS

Under the provisions of the Williamson Act (California Land Conservation Act 1965, Section 51200), landowners contract with the County to maintain agricultural or open space use of their lands in return for reduced property tax assessment. Withdrawal involves a ten-year period of tax adjustment to full market value before protected open space can be converted to urban uses. Consequently, land under a Williamson Act Contract can be in either a non-renewal status or a renewal status. Lands with a non-renewal status indicate the owner has withdrawn from the Williamson Act Contract and is waiting for a period of tax adjustment for the land to reach its full market value for tax purposes.

7.2 FARMLAND PROTECTION POLICY ACT

The goal of the Farmland Protection Policy Act (FPPA) is to minimize the extent that federal actions and programs result in the conversion of agricultural lands to non-agricultural uses. Pursuant to the FPPA, the Farmland Conversion Rating Form (Form AD 1006) is used to determine the value of the farmland under consideration and the level of protection such land should receive.

8 NOISE

Noise is generally defined as unwanted sound. Sound, traveling in the form of waves from a source, exerts a sound pressure level (referred to as sound level) which is measured in decibels (dB), with zero dB corresponding roughly to the threshold of human hearing and 120 to 140 dB corresponding to the threshold of pain.

Environmental noise is typically measured in A-weighted decibels (dBA). A dBA is a dB corrected for the variation in frequency response of the typical human ear at commonly encountered noise levels. In general, A-weighting of environmental sound consists of evaluating all of the frequencies of a sound, taking into account the fact that human hearing is less sensitive at low frequencies and extremely high frequencies but is more sensitive in mid-range frequency. **Table 4** provides examples of noise sources and their effects on humans, which correspond to various sound levels.

TABLE 4
TYPICAL A-WEIGHTED SOUND LEVELS

COMMON NOISES	NOISE LEVEL (DBA)	EFFECT
Rocket launching pad	180	Irreversible hearing loss
Carrier deck jet operation/Air raid siren	140	Painfully loud
Thunderclap	130	Painfully loud
Jet takeoff (200 feet)/Auto horn (3 feet)	120	Maximum vocal effort
Pile driver/Rock concert	110	Very loud
Garbage truck/Firecrackers	100	Very loud
Heavy truck (50 feet)/City traffic	90	Very annoying and continuous exposure is likely to result in hearing damage
Alarm Clock (2 feet)/Hair dryer	80	Annoying
Noisy restaurant/Freeway traffic/Business office	70	Telephone use difficult
Air conditioning unit/Conversational speech	60	Intrusive
Light auto traffic (100 feet)	50	Quiet
Living room/Bedroom/Quiet office	40	Quiet
Library/soft whisper (15 feet)	30	Very Quiet
Broadcasting studio	20	Very Quiet
	10	Just Audible
Threshold of hearing	0	Hearing begins

Source: U.S. Department of Housing and Urban Development, 2009

8.1 NOISE EXPOSURE AND COMMUNITY NOISE

An individual's noise exposure is a measure of noise over a period. A noise level is a measure of noise at a given instant in time. However, community noise varies continuously over a period with respect to the contributing sound sources in the community noise environment. What makes community noise constantly variable throughout a day is the addition of short duration, single event noise sources such as aircraft flyovers, vehicle passbys, sirens, etc. that are readily identifiable to the individual. These successive additions of sound to the community noise environment vary the community noise level from instant to instant, requiring the measurement of noise exposure over a period to legitimately characterize a community noise environment and evaluate cumulative noise impacts. This time-varying characteristic of environmental noise is described using statistical noise descriptors. The noise descriptors used in this EA are summarized below:

- Leq: the equivalent sound level (Leq) is used to describe noise over a specified period, typically one hour, in terms of a single numerical value. Leq is the constant sound level which would contain the same acoustic energy as the varying sound level during the same period (i.e. the average noise exposure level for the given time period).
- Ldn: 24-hour day and night A-weighed noise exposure level (Ldn), which accounts for the greater sensitivity of most people to nighttime noise by weighting noise levels at night ("penalizing" nighttime noises). Noise between 10:00 PM and 7:00 AM is weighted (penalized) by adding 10 dB to take into account the greater annoyance of nighttime noises.
- CNEL: similar to the Ldn, the Community Noise Equivalent Level (CNEL) adds a 5-dB "penalty" for the evening hours between 7:00 PM and 10:00 PM, in addition to a 10-dBA penalty between the hours of 10:00 PM and 7:00 AM.

A wide variation in individual thresholds of annoyance exists and different tolerances to noise tend to develop based on an individual's past experiences with noise. Thus, an important way of predicting a human reaction to a new noise environment is the way it compares to the existing environment to which one has adapted: the "ambient noise" level. In general, the more a new noise exceeds the previously existing ambient noise level, the less acceptable the new noise will be judged by those hearing it. With regard to increases in A-weighted noise level, the following relationships occur:

- Except in carefully controlled laboratory experiments, a change of 1 dBA cannot be perceived;
- Outside of the laboratory, a 3-dBA change is considered a just-perceivable difference;
- A change in level of at least 5 dBA is required before any noticeable change in human response would be expected; and
- A 10-dBA change is subjectively heard as approximately a doubling in loudness and can cause adverse response, depending on the existing ambient noise level.

8.2 NOISE STANDARDS

Noise standards used in this study include the Federal Highway Administration (FHWA) Noise Abatement Criteria (NAC) for the assessment of noise consequences related to surface traffic and the noise impact criteria established by the County noise policy. These standards are discussed below.

8.2.1 Federal Noise Abatement Criteria

The Federal Highway Administration (FHWA) provides construction noise level thresholds in its 2006 Construction Noise Handbook, which are provided in **Table 5**. Sensitive receptors with the potential to be impacted by the Project Alternatives include residential land uses; thus, a 78-dBA Leq noise standard would apply. Activity criteria provided in **Table 5** are used to evaluate impacts to the noise environment from construction activities.

TABLE 5
FEDERAL CONSTRUCTION NOISE THRESHOLDS

NOISE RECEPTOR LOCATIONS AND LAND USES	**DAYTIME (7:00 AM- 6:00 PM)**	**EVENING (6:00 PM TO 10:00 PM)**	**NIGHTTIME (10:00 PM TO 7:00 AM)**
	DBA, LEQ[1]		
Noise-Sensitive Locations: (residences, institutions, hotels, etc.)	78 or Baseline + 5 (whichever is louder)	Baseline + 5	Baseline + 5 (if Baseline < 70) or Baseline + 3 (if Baseline > 70)
Commercial Areas: (businesses, offices, stores, etc.)	83 or Baseline + 5	None	None
Industrial Areas: (factories, plants, etc.)	88 or Baseline + 5	None	None

Notes: [1] Leq thresholds were empirically determined (FHWA, 2006)
Source: FHWA Construction Noise Handbook, 2006

8.2.2 County Noise Regulations

The County establishes a maximum acceptable noise threshold of 50 dBA Leq for commercial land use noise (County of Humboldt, 2012). However, pursuant to Noise Control Ordinance Measure N-IM7x, construction is exempt from noise requirements (County of Humboldt, 2012). Construction noise may occur at levels identified as normally unacceptable if mitigation measures and construction standards reduce noise levels to a normally acceptable value.

8.2.3 Sensitive Receptors

Some land uses are considered more sensitive to noise than others due to the amount of noise exposure (in terms of both exposure duration and insulation from noise) and the types of activities typically involved. Residences, motels and hotels, schools, libraries, churches, hospitals, nursing homes, auditoriums, and parks and other outdoor recreation areas are generally more sensitive to noise than commercial and industrial land uses are. A *sensitive receptor* is defined as any living entity or aggregate of entities whose comfort, health, or well-being could be impaired or endangered by the existence of the criteria pollutant, whether it is air emissions or noise, in the atmosphere.

APPENDIX E

CALEEMOD FILES

CalEEMod Inputs

TREDC Hotel Project

Project-Specific Inputs for the TREDC Hotel Project

Input	Type of Input	Project Specific Inputs	
		Inputs	Source/Notes
Project Name	Project Name	TREDC Hotel Project	Project Description
Project Location	County	Humboldt	Modeler, based on location
Climate zone	Climate Zone Number	1	Modeler, based on location
Land Use Setting	Urban or Rural	Rural	Modeler, based on location
Operational Year	1st year of operation after full buildout.	2018 – 1st year 2040 – cumulative	Project Description
Utility Company	Utility Company Name	PG&E	USEPA Power Profiler
Land Use Type and Subtype	Residential, Commercial, Recreation, etc.	See **Table 1.**	See **Table 1.**
Unit Amount	Size of Buildings or Number of units for each Land Use Type.	See **Table 1.**	See **Table 1.**
Lot Acreage	Acreage of each Land Use Type	See **Table 1.**	See **Table 1.**
Population	Population based on persons/household	See **Table 1.**	See **Table 1.**
Construction Phases	Type of construction phase (Demo, Site Prep, etc.) and beginning and ending dates	6 Months starting 6/1/2017	Project Description
Off-Road Equipment	Type of equipment (Excavator, Dozer, etc.) and number of units per construction phase	--	--
Demolition	Sq ft or tons of Demo	3,484 tons	Cal Recycle, 2004. Assuming the depth of asphalt is 6 inches and the entire site is demolished.
Construction Trip Gen Rate	Average number of one-way trips per day	--	--
Operational Trip Reductions	% reduction in trips.	--	--
Operational Trip Gen Rate and trip length	Trips and trip lengths	See **Tables 2**.	See **Tables 2**.
Area Sources	Hearths – # of wood-burning fireplaces, #of gas fireplaces, and # of units with no fireplace.	Not Applicable	No hearths are included in the project design.
	Landscape Equipment - % of equipment that is electric.	--	--
Energy Use	Project Specific Emission Factors.	--	--

Input	Type of Input	Project Specific Inputs	
		Inputs	Source/Notes
Water and Wastewater	Indoor and outdoor water use for each Land Use Subtype in gallons per year.	--	--
Solid waste	Tons of solid waste generated per year (per hotel room)	0.73	Project Description
	Land Fill Gas Capture Rate		
Operational off-road equipment	Excavator, Dozer, etc.	--	--
Land Use Change	Vegetation land use type (cropland, etc.) and initial and final acreage	--	--
Sequestration	Type and net number of new trees added	--	--

Source: AES, 2016; CalEEMod, 2016; USEPA, 2015; Cal Recycle, 2004.

Project–Mitigation Inputs for the TREDC Hotel Project

Mitigation Input Category	CAPCOA Mitigation Number	Include in Model? (yes/no)	Type of Input / Unit	Project Specific Inputs	
				Inputs	Source/Notes
Off-Road Equipment	C-1	Yes	Engine Type, DPF Level, and Oxidation Catalyst	See **Table 3.**	See **Table 3.**
Soil Stabilizer for Unpaved Roads	N/A	Yes	PM10 (% Reduction)	10%	Default % Reduction.
	N/A		PM2.5 (% Reduction)	10%	Default % Reduction.
Water Exposed Area	N/A	Yes	Frequency (per day)	2 times per day	Default % Reduction
	N/A		PM10 (% Reduction)	55%	Default % Reduction.
	N/A		PM2.5 (% Reduction)	55%	Default % Reduction.
Replace Ground Cover of Area Disturbed	N/A	No	PM10 (% Reduction)	--	--
	N/A		PM2.5 (% Reduction)	--	--
Unpaved Road Mitigation	N/A	No	Moisture Content (%)	--	--
	N/A	Yes	Vehicle Speed (mph)	15	Default Reduction
Type of Residential	N/A	No	Type of Residential	--	--
Increased Density	LUT-1	No	Dwelling Units/Acre	--	--
			Job/Job Acre	--	--
Increased Diversity	LUT-3	No	Yes or No	--	--
Improved Walkability Design	LUT-9	No	Intersections/Square Miles	--	--
Improve Destination Accessibility	LUT-4	No	Distance to Downtown/Job Ctr	--	--
Increased Transit Accessibility	LUT-5	No	Average Distance to Transit Station (miles)	--	--
Integrated Below Market Rate Housing	LUT-6	No	# Dwelling Units Below Market Rate	--	--
Improve Pedestrian Network	SDT-1	No	Yes or No; Project Site, Project Site and Connecting off-site, and Rural	--	--

Mitigation Input Category	CAPCOA Mitigation Number	Include in Model? (yes/no)	Type of Input / Unit	Project Specific Inputs	
				Inputs	Source/Notes
Provide Traffic Calming Measures	SDT-2	No	% Streets with Improvement	--	--
		No	% Intersections with Improvement	--	--
Implement Neighborhood Electric Vehicle (NEV) Network	SDT-3	No	% of streets equipped with NEV network.	--	--
Limit Parking Supply	PDT-1	No	% Reduction in Spaces	--	--
Unbundled Parking Costs	PDT-2	No	Monthly Parking Costs ($)	--	--
On-Street Market Pricing	PDT-3	No	% Increase in Price	--	--
Provide a Bus Rapid Transit System	TST-1	No	% Lines BRT	--	--
Expand Transit Network	TST-3	No	% Increase Transit Coverage	--	--
Increase Transit Frequency	TST-4	No	Level of Implementation	--	--
		No	% Reduction in Headways	--	--
Implement Trip Reduction Program	TRT-1, TRT-2	No	% employee eligible	--	--
		No	Program Type	--	--
Transit Subsidy	TRT-4	No	% employee eligible	--	--
		No	Daily Transit Subsidy Amount ($)	--	--
Implement Employee Parking “Cash-Out”	TRT-15	No	% employee eligible	--	--
Workplace Parking Charge	TRT-14	No	% employee eligible	--	--
		No	Daily Parking Charge ($)	--	--
Encourage Telecommuting	TRT-6	No	% employee work 9/80	--	--

Mitigation Input Category	CAPCOA Mitigation Number	Include in Model? (yes/no)	Type of Input / Unit	Project Specific Inputs	
				Inputs	Source/Notes
and Alternative Work Schedules		No	% employee work 4/40	--	--
		No	% employee telecommute 1.5 days	--	--
Market Commute Trip Reduction Option	TRT-7	No	% employee eligible	--	--
Employee Vanpool/Shuttle	TRT-11	No	% employee eligible	--	--
		No	% vanpool mode share	--	--
Provide Ride Sharing Program	TRT-3	No	% employee eligible	--	--
Implement School Bus Program	TRT-13	No	% family using	--	--
Only Natural Gas Hearth	N/A	No	Yes or No	--	--
No hearth	N/A	No	Yes or No	--	--
Use of Low VOC Cleaning Supplies	N/A	No	Yes or No	--	--
Use low VOC Paint (Residential Interior)	N/A	No	Emission Factor (EF) (g/l)	--	--
Use low VOC Paint (Residential Exterior)	N/A	No	EF (g/l)	--	--
Use low VOC Paint (Non-residential Interior)	N/A	No	EF (g/l)	--	--
Use low VOC Paint (Non-residential Exterior)	N/A	No	EF (g/l)	--	--
Electric Lawnmower	A-1	No	Percent of equipment type that will be electric.	--	--
Electric Leafblower	A-1	No	Percent of equipment type that will be electric.	--	--

Mitigation Input Category	CAPCOA Mitigation Number	Include in Model? (yes/no)	Type of Input / Unit	Project Specific Inputs	
				Inputs	Source/Notes
Electric Chainsaw	A-1	No	Percent of equipment type that will be electric.	--	--
Exceed Title 24	BE-1	No	Percentage improvement selected for the Project.	--	--
Install High Efficiently Lighting	LE-1	No	% Lighting Energy Reduction	--	--
On-site Renewable Energy	AE-1, AE-2, AE-3	No	kWh Generated	--	--
		No	% of Electricity Use Generated	--	--
Energy Efficient Appliances	BE-4	Yes	Appliance Type, Land Use Subtype, % Improvement	Use Default Values	Defaults
Apply Water Conservation Strategy	WUW-2	No	% Reduction Indoor	--	--
		No	% Reduction Outdoor	--	--
Use Reclaimed Water	WSW-1	No	% Indoor Water Use	--	--
		No	% Outdoor Water Use	--	--
Use Grey Water	WSW-2	No	% Indoor Water Use	--	--
		No	% Outdoor Water Use	--	--
Install Low-Flow Bathroom Faucet	WUW-1	Yes	% Reduction in flow	32%	Default % reduction assuming implementation of Recommended Mitigation
Install Low-flow Kitchen Faucet	WUW-1	Yes	% Reduction in flow	18%	Default % reduction assuming implementation of Recommended Mitigation.
Install Low-flow Toilet	WUW-1	Yes	% Reduction in flow	20%	Default % reduction assuming implementation of Recommended Mitigation
Install Low-flow Shower	WUW-1	Yes	% Reduction in flow	20%	Default % reduction assuming implementation of Recommended Mitigation
Turf Reduction	WUW-5	No	Turf Reduction Area (sqft)	--	--
		No	% Reduction turf	--	--
Use Water-Efficient Irrigation Systems	WUW-4	No	% Reduction	--	--
Water Efficient Landscape	WUW-3	No	Maximum Applied Water Allowance (MAWA) (gal/yr)	--	--
		No	Estimated Total Water Use (ETWU) (gal/yr)	--	--

Mitigation Input Category	CAPCOA Mitigation Number	Include in Model? (yes/no)	Type of Input / Unit	Project Specific Inputs	
				Inputs	Source/Notes
Institute Recycling and Composting Service	SW-1	No	% Reduction in Waste Disposal over State requirements	--	--

Source: AES, 2016; CalEEMod, 2016

Table 1 – Land Use Inputs

Land Use Type	Land Use Subtype	Unit Amount	Size Metric
Recreation	Hotel	100	Rooms

Table 2 - Trip Generation Rates

Land Use	Daily Trip Generation Rate[1]			Trip Length[2]		
	Weekday	Saturday	Sunday	Commercial-Customer (C-C)	Commercial-Work (C-W)	Commercial-Nonwork (C-NW)
Hotel	5.72 trips/rooms	5.73 trips/rooms	4.17 trips/rooms	24	24	24

Notes: 1 – includes 30% internal capture rate

2 – Trip length adjusted to reflect an average trip length from the City of Eureka

Omni-Means, LTD and SHN Consulting Engineers & Geologist, Inc. 2014

Table 3 – Off-Road Equipment Mitigation Inputs

Equipment Type	Engine Tier	Number of Equipment Mitigated	Diesel Particulate Filter (DPF)
Air Compressors	Tier 3	1	Level 3
Cement and Mortar Mixers	Tier 3	4	Level 3
Concrete/Industrial Saws	Tier 3	2	Level 3
Cranes	Tier 3	1	Level 3
Forklifts	Tier 3	2	Level 3
Graders	Tier 3	1	Level 3
Pavers	Tier 3	1	Level 3
Rollers	Tier 3	1	Level 3
Rubber Tired Dozers	Tier 3	2	Level 3
Tractors/Loaders/Backhoes	Tier 3	8	Level 3

TREDC Hotel Project

Humboldt County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Hotel	100.00	Room	0.40	17,424.00	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	103
Climate Zone	1			**Operational Year**	2018
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Refer to Project Description

Construction Phase -

Vehicle Trips - Refer to CalEEMod input table

Demolition -

Construction Off-road Equipment Mitigation - Refer to CalEEMod tables

Water Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	40	15

tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	8.00
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3

tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblLandUse	BuildingSpaceSquareFeet	145,200.00	17,424.00
tblLandUse	LandUseSquareFeet	145,200.00	17,424.00
tblLandUse	LotAcreage	3.33	0.40
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblVehicleTrips	CC_TL	6.60	24.00
tblVehicleTrips	CNW_TL	6.60	24.00
tblVehicleTrips	CW_TL	14.70	24.00
tblVehicleTrips	ST_TR	8.19	5.73
tblVehicleTrips	SU_TR	5.95	4.17
tblVehicleTrips	WD_TR	8.17	5.72

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2017	0.2876	0.8370	0.5523	9.2000e-004	0.0475	0.0506	0.0982	8.5900e-003	0.0468	0.0554	0.0000	85.3120	85.3120	0.0196	0.0000	85.8012
Maximum	**0.2876**	**0.8370**	**0.5523**	**9.2000e-004**	**0.0475**	**0.0506**	**0.0982**	**8.5900e-003**	**0.0468**	**0.0554**	**0.0000**	**85.3120**	**85.3120**	**0.0196**	**0.0000**	**85.8012**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2017	0.2287	0.4604	0.5466	9.2000e-004	0.0265	4.5200e-003	0.0310	5.2400e-003	4.4700e-003	9.7100e-003	0.0000	85.3120	85.3120	0.0196	0.0000	85.8011
Maximum	**0.2287**	**0.4604**	**0.5466**	**9.2000e-004**	**0.0265**	**4.5200e-003**	**0.0310**	**5.2400e-003**	**4.4700e-003**	**9.7100e-003**	**0.0000**	**85.3120**	**85.3120**	**0.0196**	**0.0000**	**85.8011**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**20.46**	**44.99**	**1.03**	**0.00**	**44.33**	**91.07**	**68.46**	**39.00**	**90.45**	**82.47**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**6-1-2017**	**8-31-2017**	0.5375	0.3010
2	**9-1-2017**	**9-30-2017**	0.1577	0.0759
		Highest	0.5375	0.3010

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0883	1.0000e-005	9.3000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.7900e-003	1.7900e-003	0.0000	0.0000	1.9100e-003
Energy	1.9600e-003	0.0178	0.0150	1.1000e-004		1.3500e-003	1.3500e-003		1.3500e-003	1.3500e-003	0.0000	58.1311	58.1311	2.1200e-003	7.2000e-004	58.3982
Mobile	0.5918	3.8939	8.7755	0.0170	1.1881	0.0375	1.2256	0.3207	0.0356	0.3563	0.0000	1,551.6333	1,551.6333	0.0962	0.0000	1,554.0374
Waste						0.0000	0.0000		0.0000	0.0000	11.1138	0.0000	11.1138	0.6568	0.0000	27.5339
Water						0.0000	0.0000		0.0000	0.0000	0.8048	4.2800	5.0848	0.0829	1.9900e-003	7.7496
Total	**0.6821**	**3.9117**	**8.7914**	**0.0171**	**1.1881**	**0.0389**	**1.2269**	**0.3207**	**0.0370**	**0.3576**	**11.9185**	**1,614.0462**	**1,625.9647**	**0.8379**	**2.7100e-003**	**1,647.7210**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0883	1.0000e-005	9.3000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.7900e-003	1.7900e-003	0.0000	0.0000	1.9100e-003
Energy	1.9600e-003	0.0178	0.0150	1.1000e-004		1.3500e-003	1.3500e-003		1.3500e-003	1.3500e-003	0.0000	58.1311	58.1311	2.1200e-003	7.2000e-004	58.3982
Mobile	0.5918	3.8939	8.7755	0.0170	1.1881	0.0375	1.2256	0.3207	0.0356	0.3563	0.0000	1,551.633 3	1,551.633 3	0.0962	0.0000	1,554.037 4
Waste						0.0000	0.0000		0.0000	0.0000	11.1138	0.0000	11.1138	0.6568	0.0000	27.5339
Water						0.0000	0.0000		0.0000	0.0000	0.6438	3.4814	4.1252	0.0663	1.5900e-003	6.2573
Total	**0.6821**	**3.9117**	**8.7914**	**0.0171**	**1.1881**	**0.0389**	**1.2269**	**0.3207**	**0.0370**	**0.3576**	**11.7576**	**1,613.247 6**	**1,625.005 2**	**0.8214**	**2.3100e-003**	**1,646.228 6**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**1.35**	**0.05**	**0.06**	**1.98**	**14.76**	**0.09**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	6/1/2017	6/14/2017	5	10	
2	Site Preparation	Site Preparation	6/15/2017	6/15/2017	5	1	
3	Grading	Grading	6/16/2017	6/19/2017	5	2	
4	Building Construction	Building Construction	6/20/2017	11/6/2017	5	100	
5	Architectural Coating	Architectural Coating	11/14/2017	11/20/2017	5	5	
6	Paving	Paving	11/7/2017	11/13/2017	5	5	

Acres of Grading (Site Preparation Phase): 0.5

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 26,136; Non-Residential Outdoor: 8,712; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

TREDC Hotel Project - Humboldt County, Annual

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Rubber Tired Dozers	1	1.00	247	0.40
Demolition	Tractors/Loaders/Backhoes	2	6.00	97	0.37
Site Preparation	Graders	1	8.00	187	0.41
Site Preparation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Grading	Concrete/Industrial Saws	1	8.00	81	0.73
Grading	Rubber Tired Dozers	1	1.00	247	0.40
Grading	Tractors/Loaders/Backhoes	2	6.00	97	0.37
Building Construction	Cranes	1	4.00	231	0.29
Building Construction	Forklifts	2	6.00	89	0.20
Building Construction	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Paving	Cement and Mortar Mixers	4	6.00	9	0.56
Paving	Pavers	1	7.00	130	0.42
Paving	Rollers	1	7.00	80	0.38
Paving	Tractors/Loaders/Backhoes	1	7.00	97	0.37
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	4	10.00	0.00	344.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	2	5.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Grading	4	10.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	5	7.00	3.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Paving	7	18.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	1.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Use DPF for Construction Equipment

Use Soil Stabilizer

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

Clean Paved Roads

3.2 Demolition - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0373	0.0000	0.0373	5.6400e-003	0.0000	5.6400e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	6.0500e-003	0.0525	0.0396	6.0000e-005		3.6600e-003	3.6600e-003		3.4900e-003	3.4900e-003	0.0000	5.3493	5.3493	1.0500e-003	0.0000	5.3755
Total	**6.0500e-003**	**0.0525**	**0.0396**	**6.0000e-005**	**0.0373**	**3.6600e-003**	**0.0409**	**5.6400e-003**	**3.4900e-003**	**9.1300e-003**	**0.0000**	**5.3493**	**5.3493**	**1.0500e-003**	**0.0000**	**5.3755**

3.2 Demolition - 2017

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.7100e-003	0.0703	0.0145	1.4000e-004	2.8300e-003	7.5000e-004	3.5700e-003	7.8000e-004	7.1000e-004	1.4900e-003	0.0000	13.3567	13.3567	4.9000e-004	0.0000	13.3690
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.0000e-004	7.3000e-004	5.7700e-003	1.0000e-005	6.0000e-004	1.0000e-005	6.1000e-004	1.6000e-004	1.0000e-005	1.7000e-004	0.0000	0.5892	0.5892	5.0000e-005	0.0000	0.5905
Total	**3.4100e-003**	**0.0710**	**0.0203**	**1.5000e-004**	**3.4300e-003**	**7.6000e-004**	**4.1800e-003**	**9.4000e-004**	**7.2000e-004**	**1.6600e-003**	**0.0000**	**13.9459**	**13.9459**	**5.4000e-004**	**0.0000**	**13.9595**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0168	0.0000	0.0168	2.5400e-003	0.0000	2.5400e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.3300e-003	0.0298	0.0397	6.0000e-005		3.0000e-004	3.0000e-004		3.0000e-004	3.0000e-004	0.0000	5.3492	5.3492	1.0500e-003	0.0000	5.3755
Total	**1.3300e-003**	**0.0298**	**0.0397**	**6.0000e-005**	**0.0168**	**3.0000e-004**	**0.0171**	**2.5400e-003**	**3.0000e-004**	**2.8400e-003**	**0.0000**	**5.3492**	**5.3492**	**1.0500e-003**	**0.0000**	**5.3755**

3.2 Demolition - 2017

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.7100e-003	0.0703	0.0145	1.4000e-004	2.8300e-003	7.5000e-004	3.5700e-003	7.8000e-004	7.1000e-004	1.4900e-003	0.0000	13.3567	13.3567	4.9000e-004	0.0000	13.3690
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.0000e-004	7.3000e-004	5.7700e-003	1.0000e-005	6.0000e-004	1.0000e-005	6.1000e-004	1.6000e-004	1.0000e-005	1.7000e-004	0.0000	0.5892	0.5892	5.0000e-005	0.0000	0.5905
Total	**3.4100e-003**	**0.0710**	**0.0203**	**1.5000e-004**	**3.4300e-003**	**7.6000e-004**	**4.1800e-003**	**9.4000e-004**	**7.2000e-004**	**1.6600e-003**	**0.0000**	**13.9459**	**13.9459**	**5.4000e-004**	**0.0000**	**13.9595**

3.3 Site Preparation - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					2.7000e-004	0.0000	2.7000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	4.3000e-004	5.2600e-003	2.1800e-003	0.0000		2.4000e-004	2.4000e-004		2.2000e-004	2.2000e-004	0.0000	0.4534	0.4534	1.4000e-004	0.0000	0.4569
Total	**4.3000e-004**	**5.2600e-003**	**2.1800e-003**	**0.0000**	**2.7000e-004**	**2.4000e-004**	**5.1000e-004**	**3.0000e-005**	**2.2000e-004**	**2.5000e-004**	**0.0000**	**0.4534**	**0.4534**	**1.4000e-004**	**0.0000**	**0.4569**

3.3 Site Preparation - 2017

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.0000e-005	4.0000e-005	2.9000e-004	0.0000	3.0000e-005	0.0000	3.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0295	0.0295	0.0000	0.0000	0.0295
Total	**3.0000e-005**	**4.0000e-005**	**2.9000e-004**	**0.0000**	**3.0000e-005**	**0.0000**	**3.0000e-005**	**1.0000e-005**	**0.0000**	**1.0000e-005**	**0.0000**	**0.0295**	**0.0295**	**0.0000**	**0.0000**	**0.0295**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					1.2000e-004	0.0000	1.2000e-004	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.2000e-004	2.4400e-003	2.9300e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.4534	0.4534	1.4000e-004	0.0000	0.4569
Total	**1.2000e-004**	**2.4400e-003**	**2.9300e-003**	**0.0000**	**1.2000e-004**	**2.0000e-005**	**1.4000e-004**	**1.0000e-005**	**2.0000e-005**	**3.0000e-005**	**0.0000**	**0.4534**	**0.4534**	**1.4000e-004**	**0.0000**	**0.4569**

3.3 Site Preparation - 2017

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.0000e-005	4.0000e-005	2.9000e-004	0.0000	3.0000e-005	0.0000	3.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0295	0.0295	0.0000	0.0000	0.0295
Total	**3.0000e-005**	**4.0000e-005**	**2.9000e-004**	**0.0000**	**3.0000e-005**	**0.0000**	**3.0000e-005**	**1.0000e-005**	**0.0000**	**1.0000e-005**	**0.0000**	**0.0295**	**0.0295**	**0.0000**	**0.0000**	**0.0295**

3.4 Grading - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					7.5000e-004	0.0000	7.5000e-004	4.1000e-004	0.0000	4.1000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.2100e-003	0.0105	7.9200e-003	1.0000e-005		7.3000e-004	7.3000e-004		7.0000e-004	7.0000e-004	0.0000	1.0699	1.0699	2.1000e-004	0.0000	1.0751
Total	**1.2100e-003**	**0.0105**	**7.9200e-003**	**1.0000e-005**	**7.5000e-004**	**7.3000e-004**	**1.4800e-003**	**4.1000e-004**	**7.0000e-004**	**1.1100e-003**	**0.0000**	**1.0699**	**1.0699**	**2.1000e-004**	**0.0000**	**1.0751**

3.4 Grading - 2017

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.4000e-004	1.5000e-004	1.1500e-003	0.0000	1.2000e-004	0.0000	1.2000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.1178	0.1178	1.0000e-005	0.0000	0.1181
Total	**1.4000e-004**	**1.5000e-004**	**1.1500e-003**	**0.0000**	**1.2000e-004**	**0.0000**	**1.2000e-004**	**3.0000e-005**	**0.0000**	**3.0000e-005**	**0.0000**	**0.1178**	**0.1178**	**1.0000e-005**	**0.0000**	**0.1181**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					3.4000e-004	0.0000	3.4000e-004	1.9000e-004	0.0000	1.9000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.7000e-004	5.9600e-003	7.9400e-003	1.0000e-005		6.0000e-005	6.0000e-005		6.0000e-005	6.0000e-005	0.0000	1.0699	1.0699	2.1000e-004	0.0000	1.0751
Total	**2.7000e-004**	**5.9600e-003**	**7.9400e-003**	**1.0000e-005**	**3.4000e-004**	**6.0000e-005**	**4.0000e-004**	**1.9000e-004**	**6.0000e-005**	**2.5000e-004**	**0.0000**	**1.0699**	**1.0699**	**2.1000e-004**	**0.0000**	**1.0751**

3.4 Grading - 2017

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.4000e-004	1.5000e-004	1.1500e-003	0.0000	1.2000e-004	0.0000	1.2000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.1178	0.1178	1.0000e-005	0.0000	0.1181
Total	**1.4000e-004**	**1.5000e-004**	**1.1500e-003**	**0.0000**	**1.2000e-004**	**0.0000**	**1.2000e-004**	**3.0000e-005**	**0.0000**	**3.0000e-005**	**0.0000**	**0.1178**	**0.1178**	**1.0000e-005**	**0.0000**	**0.1181**

3.5 Building Construction - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0641	0.6380	0.4035	5.7000e-004		0.0430	0.0430		0.0395	0.0395	0.0000	52.8851	52.8851	0.0162	0.0000	53.2902
Total	**0.0641**	**0.6380**	**0.4035**	**5.7000e-004**		**0.0430**	**0.0430**		**0.0395**	**0.0395**	**0.0000**	**52.8851**	**52.8851**	**0.0162**	**0.0000**	**53.2902**

3.5 Building Construction - 2017

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.3400e-003	0.0234	8.4100e-003	4.0000e-005	8.7000e-004	2.9000e-004	1.1600e-003	2.5000e-004	2.8000e-004	5.3000e-004	0.0000	3.6777	3.6777	2.4000e-004	0.0000	3.6837
Worker	4.8700e-003	5.1200e-003	0.0404	5.0000e-005	4.2000e-003	5.0000e-005	4.2500e-003	1.1200e-003	5.0000e-005	1.1600e-003	0.0000	4.1245	4.1245	3.6000e-004	0.0000	4.1336
Total	**6.2100e-003**	**0.0285**	**0.0488**	**9.0000e-005**	**5.0700e-003**	**3.4000e-004**	**5.4100e-003**	**1.3700e-003**	**3.3000e-004**	**1.6900e-003**	**0.0000**	**7.8022**	**7.8022**	**6.0000e-004**	**0.0000**	**7.8173**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0140	0.3065	0.3981	5.7000e-004		2.8900e-003	2.8900e-003		2.8900e-003	2.8900e-003	0.0000	52.8850	52.8850	0.0162	0.0000	53.2901
Total	**0.0140**	**0.3065**	**0.3981**	**5.7000e-004**		**2.8900e-003**	**2.8900e-003**		**2.8900e-003**	**2.8900e-003**	**0.0000**	**52.8850**	**52.8850**	**0.0162**	**0.0000**	**53.2901**

3.5 Building Construction - 2017

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.3400e-003	0.0234	8.4100e-003	4.0000e-005	8.7000e-004	2.9000e-004	1.1600e-003	2.5000e-004	2.8000e-004	5.3000e-004	0.0000	3.6777	3.6777	2.4000e-004	0.0000	3.6837
Worker	4.8700e-003	5.1200e-003	0.0404	5.0000e-005	4.2000e-003	5.0000e-005	4.2500e-003	1.1200e-003	5.0000e-005	1.1600e-003	0.0000	4.1245	4.1245	3.6000e-004	0.0000	4.1336
Total	**6.2100e-003**	**0.0285**	**0.0488**	**9.0000e-005**	**5.0700e-003**	**3.4000e-004**	**5.4100e-003**	**1.3700e-003**	**3.3000e-004**	**1.6900e-003**	**0.0000**	**7.8022**	**7.8022**	**6.0000e-004**	**0.0000**	**7.8173**

3.6 Architectural Coating - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.2019					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	8.3000e-004	5.4600e-003	4.6700e-003	1.0000e-005		4.3000e-004	4.3000e-004		4.3000e-004	4.3000e-004	0.0000	0.6383	0.6383	7.0000e-005	0.0000	0.6400
Total	**0.2027**	**5.4600e-003**	**4.6700e-003**	**1.0000e-005**		**4.3000e-004**	**4.3000e-004**		**4.3000e-004**	**4.3000e-004**	**0.0000**	**0.6383**	**0.6383**	**7.0000e-005**	**0.0000**	**0.6400**

3.6 Architectural Coating - 2017

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.0000e-005	4.0000e-005	2.9000e-004	0.0000	3.0000e-005	0.0000	3.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0295	0.0295	0.0000	0.0000	0.0295
Total	**3.0000e-005**	**4.0000e-005**	**2.9000e-004**	**0.0000**	**3.0000e-005**	**0.0000**	**3.0000e-005**	**1.0000e-005**	**0.0000**	**1.0000e-005**	**0.0000**	**0.0295**	**0.0295**	**0.0000**	**0.0000**	**0.0295**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.2019					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.5000e-004	3.3900e-003	4.5800e-003	1.0000e-005		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005	0.0000	0.6383	0.6383	7.0000e-005	0.0000	0.6400
Total	**0.2021**	**3.3900e-003**	**4.5800e-003**	**1.0000e-005**		**4.0000e-005**	**4.0000e-005**		**4.0000e-005**	**4.0000e-005**	**0.0000**	**0.6383**	**0.6383**	**7.0000e-005**	**0.0000**	**0.6400**

3.6 Architectural Coating - 2017

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.0000e-005	4.0000e-005	2.9000e-004	0.0000	3.0000e-005	0.0000	3.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0295	0.0295	0.0000	0.0000	0.0295
Total	**3.0000e-005**	**4.0000e-005**	**2.9000e-004**	**0.0000**	**3.0000e-005**	**0.0000**	**3.0000e-005**	**1.0000e-005**	**0.0000**	**1.0000e-005**	**0.0000**	**0.0295**	**0.0295**	**0.0000**	**0.0000**	**0.0295**

3.7 Paving - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	2.6300e-003	0.0249	0.0184	3.0000e-005		1.5200e-003	1.5200e-003		1.4100e-003	1.4100e-003	0.0000	2.4610	2.4610	6.8000e-004	0.0000	2.4781
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**2.6300e-003**	**0.0249**	**0.0184**	**3.0000e-005**		**1.5200e-003**	**1.5200e-003**		**1.4100e-003**	**1.4100e-003**	**0.0000**	**2.4610**	**2.4610**	**6.8000e-004**	**0.0000**	**2.4781**

3.7 Paving - 2017

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.3000e-004	6.6000e-004	5.2000e-003	1.0000e-005	5.4000e-004	1.0000e-005	5.5000e-004	1.4000e-004	1.0000e-005	1.5000e-004	0.0000	0.5303	0.5303	5.0000e-005	0.0000	0.5315
Total	**6.3000e-004**	**6.6000e-004**	**5.2000e-003**	**1.0000e-005**	**5.4000e-004**	**1.0000e-005**	**5.5000e-004**	**1.4000e-004**	**1.0000e-005**	**1.5000e-004**	**0.0000**	**0.5303**	**0.5303**	**5.0000e-005**	**0.0000**	**0.5315**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	5.6000e-004	0.0119	0.0173	3.0000e-005		1.1000e-004	1.1000e-004		1.1000e-004	1.1000e-004	0.0000	2.4610	2.4610	6.8000e-004	0.0000	2.4781
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**5.6000e-004**	**0.0119**	**0.0173**	**3.0000e-005**		**1.1000e-004**	**1.1000e-004**		**1.1000e-004**	**1.1000e-004**	**0.0000**	**2.4610**	**2.4610**	**6.8000e-004**	**0.0000**	**2.4781**

3.7 Paving - 2017

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.3000e-004	6.6000e-004	5.2000e-003	1.0000e-005	5.4000e-004	1.0000e-005	5.5000e-004	1.4000e-004	1.0000e-005	1.5000e-004	0.0000	0.5303	0.5303	5.0000e-005	0.0000	0.5315
Total	**6.3000e-004**	**6.6000e-004**	**5.2000e-003**	**1.0000e-005**	**5.4000e-004**	**1.0000e-005**	**5.5000e-004**	**1.4000e-004**	**1.0000e-005**	**1.5000e-004**	**0.0000**	**0.5303**	**0.5303**	**5.0000e-005**	**0.0000**	**0.5315**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.5918	3.8939	8.7755	0.0170	1.1881	0.0375	1.2256	0.3207	0.0356	0.3563	0.0000	1,551.633 3	1,551.633 3	0.0962	0.0000	1,554.037 4
Unmitigated	0.5918	3.8939	8.7755	0.0170	1.1881	0.0375	1.2256	0.3207	0.0356	0.3563	0.0000	1,551.633 3	1,551.633 3	0.0962	0.0000	1,554.037 4

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Hotel	572.00	573.00	417.00	3,244,041	3,244,041
Total	572.00	573.00	417.00	3,244,041	3,244,041

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Hotel	24.00	24.00	24.00	19.40	61.60	19.00	58	38	4

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Hotel	0.448795	0.060687	0.206149	0.145887	0.057916	0.009282	0.014626	0.042627	0.002929	0.001905	0.006409	0.001553	0.001236

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	38.7260	38.7260	1.7500e-003	3.6000e-004	38.8777
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	38.7260	38.7260	1.7500e-003	3.6000e-004	38.8777
NaturalGas Mitigated	1.9600e-003	0.0178	0.0150	1.1000e-004		1.3500e-003	1.3500e-003		1.3500e-003	1.3500e-003	0.0000	19.4052	19.4052	3.7000e-004	3.6000e-004	19.5205
NaturalGas Unmitigated	1.9600e-003	0.0178	0.0150	1.1000e-004		1.3500e-003	1.3500e-003		1.3500e-003	1.3500e-003	0.0000	19.4052	19.4052	3.7000e-004	3.6000e-004	19.5205

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Hotel	363639	1.9600e-003	0.0178	0.0150	1.1000e-004		1.3500e-003	1.3500e-003		1.3500e-003	1.3500e-003	0.0000	19.4052	19.4052	3.7000e-004	3.6000e-004	19.5205
Total		**1.9600e-003**	**0.0178**	**0.0150**	**1.1000e-004**		**1.3500e-003**	**1.3500e-003**		**1.3500e-003**	**1.3500e-003**	**0.0000**	**19.4052**	**19.4052**	**3.7000e-004**	**3.6000e-004**	**19.5205**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Hotel	363639	1.9600e-003	0.0178	0.0150	1.1000e-004		1.3500e-003	1.3500e-003		1.3500e-003	1.3500e-003	0.0000	19.4052	19.4052	3.7000e-004	3.6000e-004	19.5205
Total		**1.9600e-003**	**0.0178**	**0.0150**	**1.1000e-004**		**1.3500e-003**	**1.3500e-003**		**1.3500e-003**	**1.3500e-003**	**0.0000**	**19.4052**	**19.4052**	**3.7000e-004**	**3.6000e-004**	**19.5205**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Hotel	133119	38.7260	1.7500e-003	3.6000e-004	38.8777
Total		**38.7260**	**1.7500e-003**	**3.6000e-004**	**38.8777**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Hotel	133119	38.7260	1.7500e-003	3.6000e-004	38.8777
Total		**38.7260**	**1.7500e-003**	**3.6000e-004**	**38.8777**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0883	1.0000e-005	9.3000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.7900e-003	1.7900e-003	0.0000	0.0000	1.9100e-003
Unmitigated	0.0883	1.0000e-005	9.3000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.7900e-003	1.7900e-003	0.0000	0.0000	1.9100e-003

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0202					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0681					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	9.0000e-005	1.0000e-005	9.3000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.7900e-003	1.7900e-003	0.0000	0.0000	1.9100e-003
Total	**0.0883**	**1.0000e-005**	**9.3000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**1.7900e-003**	**1.7900e-003**	**0.0000**	**0.0000**	**1.9100e-003**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0202					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0681					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	9.0000e-005	1.0000e-005	9.3000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.7900e-003	1.7900e-003	0.0000	0.0000	1.9100e-003
Total	**0.0883**	**1.0000e-005**	**9.3000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**1.7900e-003**	**1.7900e-003**	**0.0000**	**0.0000**	**1.9100e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

Install Low Flow Bathroom Faucet

Install Low Flow Kitchen Faucet

Install Low Flow Toilet

Install Low Flow Shower

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	4.1252	0.0663	1.5900e-003	6.2573
Unmitigated	5.0848	0.0829	1.9900e-003	7.7496

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Hotel	2.53668 / 0.281853	5.0848	0.0829	1.9900e-003	7.7496
Total		**5.0848**	**0.0829**	**1.9900e-003**	**7.7496**

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Hotel	2.02934 / 0.281853	4.1252	0.0663	1.5900e-003	6.2573
Total		**4.1252**	**0.0663**	**1.5900e-003**	**6.2573**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	11.1138	0.6568	0.0000	27.5339
Unmitigated	11.1138	0.6568	0.0000	27.5339

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Hotel	54.75	11.1138	0.6568	0.0000	27.5339
Total		**11.1138**	**0.6568**	**0.0000**	**27.5339**

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Hotel	54.75	11.1138	0.6568	0.0000	27.5339
Total		**11.1138**	**0.6568**	**0.0000**	**27.5339**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

TREDC Hotel Project

Humboldt County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Hotel	100.00	Room	0.40	17,424.00	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	103
Climate Zone	1			**Operational Year**	2040
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Refer to Project Description

Construction Phase -

Demolition -

Vehicle Trips - Refer to CalEEMod input table

Construction Off-road Equipment Mitigation - Refer to CalEEMod tables

Water Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	40	15

tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	8.00
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3

tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblLandUse	BuildingSpaceSquareFeet	145,200.00	17,424.00
tblLandUse	LandUseSquareFeet	145,200.00	17,424.00
tblLandUse	LotAcreage	3.33	0.40
tblProjectCharacteristics	OperationalYear	2018	2040
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblVehicleTrips	CC_TL	6.60	24.00
tblVehicleTrips	CNW_TL	6.60	24.00
tblVehicleTrips	CW_TL	14.70	24.00
tblVehicleTrips	ST_TR	8.19	5.73
tblVehicleTrips	SU_TR	5.95	4.17
tblVehicleTrips	WD_TR	8.17	5.72

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2017	0.2876	0.8370	0.5523	9.2000e-004	0.0475	0.0506	0.0982	8.5900e-003	0.0468	0.0554	0.0000	85.3120	85.3120	0.0196	0.0000	85.8012
Maximum	**0.2876**	**0.8370**	**0.5523**	**9.2000e-004**	**0.0475**	**0.0506**	**0.0982**	**8.5900e-003**	**0.0468**	**0.0554**	**0.0000**	**85.3120**	**85.3120**	**0.0196**	**0.0000**	**85.8012**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2017	0.2287	0.4604	0.5466	9.2000e-004	0.0265	4.5200e-003	0.0310	5.2400e-003	4.4700e-003	9.7100e-003	0.0000	85.3120	85.3120	0.0196	0.0000	85.8011
Maximum	**0.2287**	**0.4604**	**0.5466**	**9.2000e-004**	**0.0265**	**4.5200e-003**	**0.0310**	**5.2400e-003**	**4.4700e-003**	**9.7100e-003**	**0.0000**	**85.3120**	**85.3120**	**0.0196**	**0.0000**	**85.8011**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**20.46**	**44.99**	**1.03**	**0.00**	**44.33**	**91.07**	**68.46**	**39.00**	**90.45**	**82.47**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**6-1-2017**	**8-31-2017**	0.5375	0.3010
2	**9-1-2017**	**9-30-2017**	0.1577	0.0759
		Highest	0.5375	0.3010

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0883	1.0000e-005	9.1000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.7900e-003	1.7900e-003	0.0000	0.0000	1.9000e-003
Energy	1.9600e-003	0.0178	0.0150	1.1000e-004		1.3500e-003	1.3500e-003		1.3500e-003	1.3500e-003	0.0000	58.1311	58.1311	2.1200e-003	7.2000e-004	58.3982
Mobile	0.4794	3.1400	7.5618	0.0163	1.1780	0.0302	1.2082	0.3163	0.0286	0.3450	0.0000	1,483.5605	1,483.5605	0.0815	0.0000	1,485.5976
Waste						0.0000	0.0000		0.0000	0.0000	11.1138	0.0000	11.1138	0.6568	0.0000	27.5339
Water						0.0000	0.0000		0.0000	0.0000	0.8048	4.2800	5.0848	0.0829	1.9900e-003	7.7496
Total	**0.5696**	**3.1578**	**7.5777**	**0.0164**	**1.1780**	**0.0316**	**1.2095**	**0.3163**	**0.0300**	**0.3463**	**11.9185**	**1,545.9735**	**1,557.8920**	**0.8233**	**2.7100e-003**	**1,579.2811**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0883	1.0000e-005	9.1000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.7900e-003	1.7900e-003	0.0000	0.0000	1.9000e-003
Energy	1.9600e-003	0.0178	0.0150	1.1000e-004		1.3500e-003	1.3500e-003		1.3500e-003	1.3500e-003	0.0000	58.1311	58.1311	2.1200e-003	7.2000e-004	58.3982
Mobile	0.4794	3.1400	7.5618	0.0163	1.1780	0.0302	1.2082	0.3163	0.0286	0.3450	0.0000	1,483.5605	1,483.5605	0.0815	0.0000	1,485.5976
Waste						0.0000	0.0000		0.0000	0.0000	11.1138	0.0000	11.1138	0.6568	0.0000	27.5339
Water						0.0000	0.0000		0.0000	0.0000	0.6438	3.4814	4.1252	0.0663	1.5900e-003	6.2573
Total	**0.5696**	**3.1578**	**7.5777**	**0.0164**	**1.1780**	**0.0316**	**1.2095**	**0.3163**	**0.0300**	**0.3463**	**11.7576**	**1,545.1748**	**1,556.9324**	**0.8067**	**2.3100e-003**	**1,577.7888**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**1.35**	**0.05**	**0.06**	**2.01**	**14.76**	**0.09**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	6/1/2017	6/14/2017	5	10	
2	Site Preparation	Site Preparation	6/15/2017	6/15/2017	5	1	
3	Grading	Grading	6/16/2017	6/19/2017	5	2	
4	Building Construction	Building Construction	6/20/2017	11/6/2017	5	100	
5	Paving	Paving	11/7/2017	11/13/2017	5	5	
6	Architectural Coating	Architectural Coating	11/14/2017	11/20/2017	5	5	

Acres of Grading (Site Preparation Phase): 0.5

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 26,136; Non-Residential Outdoor: 8,712; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Rubber Tired Dozers	1	1.00	247	0.40
Demolition	Tractors/Loaders/Backhoes	2	6.00	97	0.37
Site Preparation	Graders	1	8.00	187	0.41
Site Preparation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Grading	Concrete/Industrial Saws	1	8.00	81	0.73
Grading	Rubber Tired Dozers	1	1.00	247	0.40
Grading	Tractors/Loaders/Backhoes	2	6.00	97	0.37
Building Construction	Cranes	1	4.00	231	0.29
Building Construction	Forklifts	2	6.00	89	0.20
Building Construction	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Architectural Coating	Air Compressors	1	6.00	78	0.48
Paving	Cement and Mortar Mixers	4	6.00	9	0.56
Paving	Pavers	1	7.00	130	0.42
Paving	Rollers	1	7.00	80	0.38
Paving	Tractors/Loaders/Backhoes	1	7.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	4	10.00	0.00	344.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	2	5.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Grading	4	10.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	5	7.00	3.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	1.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Paving	7	18.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Use DPF for Construction Equipment

Use Soil Stabilizer

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Demolition - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0373	0.0000	0.0373	5.6400e-003	0.0000	5.6400e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	6.0500e-003	0.0525	0.0396	6.0000e-005		3.6600e-003	3.6600e-003		3.4900e-003	3.4900e-003	0.0000	5.3493	5.3493	1.0500e-003	0.0000	5.3755
Total	**6.0500e-003**	**0.0525**	**0.0396**	**6.0000e-005**	**0.0373**	**3.6600e-003**	**0.0409**	**5.6400e-003**	**3.4900e-003**	**9.1300e-003**	**0.0000**	**5.3493**	**5.3493**	**1.0500e-003**	**0.0000**	**5.3755**

3.2 Demolition - 2017

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.7100e-003	0.0703	0.0145	1.4000e-004	2.8300e-003	7.5000e-004	3.5700e-003	7.8000e-004	7.1000e-004	1.4900e-003	0.0000	13.3567	13.3567	4.9000e-004	0.0000	13.3690
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.0000e-004	7.3000e-004	5.7700e-003	1.0000e-005	6.0000e-004	1.0000e-005	6.1000e-004	1.6000e-004	1.0000e-005	1.7000e-004	0.0000	0.5892	0.5892	5.0000e-005	0.0000	0.5905
Total	**3.4100e-003**	**0.0710**	**0.0203**	**1.5000e-004**	**3.4300e-003**	**7.6000e-004**	**4.1800e-003**	**9.4000e-004**	**7.2000e-004**	**1.6600e-003**	**0.0000**	**13.9459**	**13.9459**	**5.4000e-004**	**0.0000**	**13.9595**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0168	0.0000	0.0168	2.5400e-003	0.0000	2.5400e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.3300e-003	0.0298	0.0397	6.0000e-005		3.0000e-004	3.0000e-004		3.0000e-004	3.0000e-004	0.0000	5.3492	5.3492	1.0500e-003	0.0000	5.3755
Total	**1.3300e-003**	**0.0298**	**0.0397**	**6.0000e-005**	**0.0168**	**3.0000e-004**	**0.0171**	**2.5400e-003**	**3.0000e-004**	**2.8400e-003**	**0.0000**	**5.3492**	**5.3492**	**1.0500e-003**	**0.0000**	**5.3755**

3.2 Demolition - 2017

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.7100e-003	0.0703	0.0145	1.4000e-004	2.8300e-003	7.5000e-004	3.5700e-003	7.8000e-004	7.1000e-004	1.4900e-003	0.0000	13.3567	13.3567	4.9000e-004	0.0000	13.3690
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.0000e-004	7.3000e-004	5.7700e-003	1.0000e-005	6.0000e-004	1.0000e-005	6.1000e-004	1.6000e-004	1.0000e-005	1.7000e-004	0.0000	0.5892	0.5892	5.0000e-005	0.0000	0.5905
Total	**3.4100e-003**	**0.0710**	**0.0203**	**1.5000e-004**	**3.4300e-003**	**7.6000e-004**	**4.1800e-003**	**9.4000e-004**	**7.2000e-004**	**1.6600e-003**	**0.0000**	**13.9459**	**13.9459**	**5.4000e-004**	**0.0000**	**13.9595**

3.3 Site Preparation - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					2.7000e-004	0.0000	2.7000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	4.3000e-004	5.2600e-003	2.1800e-003	0.0000		2.4000e-004	2.4000e-004		2.2000e-004	2.2000e-004	0.0000	0.4534	0.4534	1.4000e-004	0.0000	0.4569
Total	**4.3000e-004**	**5.2600e-003**	**2.1800e-003**	**0.0000**	**2.7000e-004**	**2.4000e-004**	**5.1000e-004**	**3.0000e-005**	**2.2000e-004**	**2.5000e-004**	**0.0000**	**0.4534**	**0.4534**	**1.4000e-004**	**0.0000**	**0.4569**

3.3 Site Preparation - 2017

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.0000e-005	4.0000e-005	2.9000e-004	0.0000	3.0000e-005	0.0000	3.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0295	0.0295	0.0000	0.0000	0.0295
Total	**3.0000e-005**	**4.0000e-005**	**2.9000e-004**	**0.0000**	**3.0000e-005**	**0.0000**	**3.0000e-005**	**1.0000e-005**	**0.0000**	**1.0000e-005**	**0.0000**	**0.0295**	**0.0295**	**0.0000**	**0.0000**	**0.0295**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					1.2000e-004	0.0000	1.2000e-004	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.2000e-004	2.4400e-003	2.9300e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.4534	0.4534	1.4000e-004	0.0000	0.4569
Total	**1.2000e-004**	**2.4400e-003**	**2.9300e-003**	**0.0000**	**1.2000e-004**	**2.0000e-005**	**1.4000e-004**	**1.0000e-005**	**2.0000e-005**	**3.0000e-005**	**0.0000**	**0.4534**	**0.4534**	**1.4000e-004**	**0.0000**	**0.4569**

3.3 Site Preparation - 2017

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.0000e-005	4.0000e-005	2.9000e-004	0.0000	3.0000e-005	0.0000	3.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0295	0.0295	0.0000	0.0000	0.0295
Total	**3.0000e-005**	**4.0000e-005**	**2.9000e-004**	**0.0000**	**3.0000e-005**	**0.0000**	**3.0000e-005**	**1.0000e-005**	**0.0000**	**1.0000e-005**	**0.0000**	**0.0295**	**0.0295**	**0.0000**	**0.0000**	**0.0295**

3.4 Grading - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					7.5000e-004	0.0000	7.5000e-004	4.1000e-004	0.0000	4.1000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.2100e-003	0.0105	7.9200e-003	1.0000e-005		7.3000e-004	7.3000e-004		7.0000e-004	7.0000e-004	0.0000	1.0699	1.0699	2.1000e-004	0.0000	1.0751
Total	**1.2100e-003**	**0.0105**	**7.9200e-003**	**1.0000e-005**	**7.5000e-004**	**7.3000e-004**	**1.4800e-003**	**4.1000e-004**	**7.0000e-004**	**1.1100e-003**	**0.0000**	**1.0699**	**1.0699**	**2.1000e-004**	**0.0000**	**1.0751**

3.4 Grading - 2017

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.4000e-004	1.5000e-004	1.1500e-003	0.0000	1.2000e-004	0.0000	1.2000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.1178	0.1178	1.0000e-005	0.0000	0.1181
Total	**1.4000e-004**	**1.5000e-004**	**1.1500e-003**	**0.0000**	**1.2000e-004**	**0.0000**	**1.2000e-004**	**3.0000e-005**	**0.0000**	**3.0000e-005**	**0.0000**	**0.1178**	**0.1178**	**1.0000e-005**	**0.0000**	**0.1181**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					3.4000e-004	0.0000	3.4000e-004	1.9000e-004	0.0000	1.9000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.7000e-004	5.9600e-003	7.9400e-003	1.0000e-005		6.0000e-005	6.0000e-005		6.0000e-005	6.0000e-005	0.0000	1.0699	1.0699	2.1000e-004	0.0000	1.0751
Total	**2.7000e-004**	**5.9600e-003**	**7.9400e-003**	**1.0000e-005**	**3.4000e-004**	**6.0000e-005**	**4.0000e-004**	**1.9000e-004**	**6.0000e-005**	**2.5000e-004**	**0.0000**	**1.0699**	**1.0699**	**2.1000e-004**	**0.0000**	**1.0751**

3.4 Grading - 2017

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.4000e-004	1.5000e-004	1.1500e-003	0.0000	1.2000e-004	0.0000	1.2000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.1178	0.1178	1.0000e-005	0.0000	0.1181
Total	**1.4000e-004**	**1.5000e-004**	**1.1500e-003**	**0.0000**	**1.2000e-004**	**0.0000**	**1.2000e-004**	**3.0000e-005**	**0.0000**	**3.0000e-005**	**0.0000**	**0.1178**	**0.1178**	**1.0000e-005**	**0.0000**	**0.1181**

3.5 Building Construction - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0641	0.6380	0.4035	5.7000e-004		0.0430	0.0430		0.0395	0.0395	0.0000	52.8851	52.8851	0.0162	0.0000	53.2902
Total	**0.0641**	**0.6380**	**0.4035**	**5.7000e-004**		**0.0430**	**0.0430**		**0.0395**	**0.0395**	**0.0000**	**52.8851**	**52.8851**	**0.0162**	**0.0000**	**53.2902**

3.5 Building Construction - 2017

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.3400e-003	0.0234	8.4100e-003	4.0000e-005	8.7000e-004	2.9000e-004	1.1600e-003	2.5000e-004	2.8000e-004	5.3000e-004	0.0000	3.6777	3.6777	2.4000e-004	0.0000	3.6837
Worker	4.8700e-003	5.1200e-003	0.0404	5.0000e-005	4.2000e-003	5.0000e-005	4.2500e-003	1.1200e-003	5.0000e-005	1.1600e-003	0.0000	4.1245	4.1245	3.6000e-004	0.0000	4.1336
Total	**6.2100e-003**	**0.0285**	**0.0488**	**9.0000e-005**	**5.0700e-003**	**3.4000e-004**	**5.4100e-003**	**1.3700e-003**	**3.3000e-004**	**1.6900e-003**	**0.0000**	**7.8022**	**7.8022**	**6.0000e-004**	**0.0000**	**7.8173**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0140	0.3065	0.3981	5.7000e-004		2.8900e-003	2.8900e-003		2.8900e-003	2.8900e-003	0.0000	52.8850	52.8850	0.0162	0.0000	53.2901
Total	**0.0140**	**0.3065**	**0.3981**	**5.7000e-004**		**2.8900e-003**	**2.8900e-003**		**2.8900e-003**	**2.8900e-003**	**0.0000**	**52.8850**	**52.8850**	**0.0162**	**0.0000**	**53.2901**

3.5 Building Construction - 2017

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.3400e-003	0.0234	8.4100e-003	4.0000e-005	8.7000e-004	2.9000e-004	1.1600e-003	2.5000e-004	2.8000e-004	5.3000e-004	0.0000	3.6777	3.6777	2.4000e-004	0.0000	3.6837
Worker	4.8700e-003	5.1200e-003	0.0404	5.0000e-005	4.2000e-003	5.0000e-005	4.2500e-003	1.1200e-003	5.0000e-005	1.1600e-003	0.0000	4.1245	4.1245	3.6000e-004	0.0000	4.1336
Total	**6.2100e-003**	**0.0285**	**0.0488**	**9.0000e-005**	**5.0700e-003**	**3.4000e-004**	**5.4100e-003**	**1.3700e-003**	**3.3000e-004**	**1.6900e-003**	**0.0000**	**7.8022**	**7.8022**	**6.0000e-004**	**0.0000**	**7.8173**

3.6 Paving - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	2.6300e-003	0.0249	0.0184	3.0000e-005		1.5200e-003	1.5200e-003		1.4100e-003	1.4100e-003	0.0000	2.4610	2.4610	6.8000e-004	0.0000	2.4781
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**2.6300e-003**	**0.0249**	**0.0184**	**3.0000e-005**		**1.5200e-003**	**1.5200e-003**		**1.4100e-003**	**1.4100e-003**	**0.0000**	**2.4610**	**2.4610**	**6.8000e-004**	**0.0000**	**2.4781**

3.6 Paving - 2017

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.3000e-004	6.6000e-004	5.2000e-003	1.0000e-005	5.4000e-004	1.0000e-005	5.5000e-004	1.4000e-004	1.0000e-005	1.5000e-004	0.0000	0.5303	0.5303	5.0000e-005	0.0000	0.5315
Total	**6.3000e-004**	**6.6000e-004**	**5.2000e-003**	**1.0000e-005**	**5.4000e-004**	**1.0000e-005**	**5.5000e-004**	**1.4000e-004**	**1.0000e-005**	**1.5000e-004**	**0.0000**	**0.5303**	**0.5303**	**5.0000e-005**	**0.0000**	**0.5315**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	5.6000e-004	0.0119	0.0173	3.0000e-005		1.1000e-004	1.1000e-004		1.1000e-004	1.1000e-004	0.0000	2.4610	2.4610	6.8000e-004	0.0000	2.4781
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**5.6000e-004**	**0.0119**	**0.0173**	**3.0000e-005**		**1.1000e-004**	**1.1000e-004**		**1.1000e-004**	**1.1000e-004**	**0.0000**	**2.4610**	**2.4610**	**6.8000e-004**	**0.0000**	**2.4781**

3.6 Paving - 2017

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.3000e-004	6.6000e-004	5.2000e-003	1.0000e-005	5.4000e-004	1.0000e-005	5.5000e-004	1.4000e-004	1.0000e-005	1.5000e-004	0.0000	0.5303	0.5303	5.0000e-005	0.0000	0.5315
Total	**6.3000e-004**	**6.6000e-004**	**5.2000e-003**	**1.0000e-005**	**5.4000e-004**	**1.0000e-005**	**5.5000e-004**	**1.4000e-004**	**1.0000e-005**	**1.5000e-004**	**0.0000**	**0.5303**	**0.5303**	**5.0000e-005**	**0.0000**	**0.5315**

3.7 Architectural Coating - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.2019					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	8.3000e-004	5.4600e-003	4.6700e-003	1.0000e-005		4.3000e-004	4.3000e-004		4.3000e-004	4.3000e-004	0.0000	0.6383	0.6383	7.0000e-005	0.0000	0.6400
Total	**0.2027**	**5.4600e-003**	**4.6700e-003**	**1.0000e-005**		**4.3000e-004**	**4.3000e-004**		**4.3000e-004**	**4.3000e-004**	**0.0000**	**0.6383**	**0.6383**	**7.0000e-005**	**0.0000**	**0.6400**

3.7 Architectural Coating - 2017

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.0000e-005	4.0000e-005	2.9000e-004	0.0000	3.0000e-005	0.0000	3.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0295	0.0295	0.0000	0.0000	0.0295
Total	**3.0000e-005**	**4.0000e-005**	**2.9000e-004**	**0.0000**	**3.0000e-005**	**0.0000**	**3.0000e-005**	**1.0000e-005**	**0.0000**	**1.0000e-005**	**0.0000**	**0.0295**	**0.0295**	**0.0000**	**0.0000**	**0.0295**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.2019					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.5000e-004	3.3900e-003	4.5800e-003	1.0000e-005		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005	0.0000	0.6383	0.6383	7.0000e-005	0.0000	0.6400
Total	**0.2021**	**3.3900e-003**	**4.5800e-003**	**1.0000e-005**		**4.0000e-005**	**4.0000e-005**		**4.0000e-005**	**4.0000e-005**	**0.0000**	**0.6383**	**0.6383**	**7.0000e-005**	**0.0000**	**0.6400**

3.7 Architectural Coating - 2017

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.0000e-005	4.0000e-005	2.9000e-004	0.0000	3.0000e-005	0.0000	3.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0295	0.0295	0.0000	0.0000	0.0295
Total	**3.0000e-005**	**4.0000e-005**	**2.9000e-004**	**0.0000**	**3.0000e-005**	**0.0000**	**3.0000e-005**	**1.0000e-005**	**0.0000**	**1.0000e-005**	**0.0000**	**0.0295**	**0.0295**	**0.0000**	**0.0000**	**0.0295**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.4794	3.1400	7.5618	0.0163	1.1780	0.0302	1.2082	0.3163	0.0286	0.3450	0.0000	1,483.560 5	1,483.560 5	0.0815	0.0000	1,485.597 6
Unmitigated	0.4794	3.1400	7.5618	0.0163	1.1780	0.0302	1.2082	0.3163	0.0286	0.3450	0.0000	1,483.560 5	1,483.560 5	0.0815	0.0000	1,485.597 6

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Hotel	572.00	573.00	417.00	3,244,041	3,244,041
Total	572.00	573.00	417.00	3,244,041	3,244,041

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Hotel	24.00	24.00	24.00	19.40	61.60	19.00	58	38	4

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Hotel	0.555197	0.027252	0.217244	0.114264	0.010253	0.002787	0.012651	0.049427	0.004514	0.000798	0.003917	0.001338	0.000357

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	38.7260	38.7260	1.7500e-003	3.6000e-004	38.8777
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	38.7260	38.7260	1.7500e-003	3.6000e-004	38.8777
NaturalGas Mitigated	1.9600e-003	0.0178	0.0150	1.1000e-004		1.3500e-003	1.3500e-003		1.3500e-003	1.3500e-003	0.0000	19.4052	19.4052	3.7000e-004	3.6000e-004	19.5205
NaturalGas Unmitigated	1.9600e-003	0.0178	0.0150	1.1000e-004		1.3500e-003	1.3500e-003		1.3500e-003	1.3500e-003	0.0000	19.4052	19.4052	3.7000e-004	3.6000e-004	19.5205

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Hotel	363639	1.9600e-003	0.0178	0.0150	1.1000e-004		1.3500e-003	1.3500e-003		1.3500e-003	1.3500e-003	0.0000	19.4052	19.4052	3.7000e-004	3.6000e-004	19.5205
Total		**1.9600e-003**	**0.0178**	**0.0150**	**1.1000e-004**		**1.3500e-003**	**1.3500e-003**		**1.3500e-003**	**1.3500e-003**	**0.0000**	**19.4052**	**19.4052**	**3.7000e-004**	**3.6000e-004**	**19.5205**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Hotel	363639	1.9600e-003	0.0178	0.0150	1.1000e-004		1.3500e-003	1.3500e-003		1.3500e-003	1.3500e-003	0.0000	19.4052	19.4052	3.7000e-004	3.6000e-004	19.5205
Total		**1.9600e-003**	**0.0178**	**0.0150**	**1.1000e-004**		**1.3500e-003**	**1.3500e-003**		**1.3500e-003**	**1.3500e-003**	**0.0000**	**19.4052**	**19.4052**	**3.7000e-004**	**3.6000e-004**	**19.5205**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Hotel	133119	38.7260	1.7500e-003	3.6000e-004	38.8777
Total		**38.7260**	**1.7500e-003**	**3.6000e-004**	**38.8777**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Hotel	133119	38.7260	1.7500e-003	3.6000e-004	38.8777
Total		**38.7260**	**1.7500e-003**	**3.6000e-004**	**38.8777**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0883	1.0000e-005	9.1000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.7900e-003	1.7900e-003	0.0000	0.0000	1.9000e-003
Unmitigated	0.0883	1.0000e-005	9.1000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.7900e-003	1.7900e-003	0.0000	0.0000	1.9000e-003

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0202					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0681					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	8.0000e-005	1.0000e-005	9.1000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.7900e-003	1.7900e-003	0.0000	0.0000	1.9000e-003
Total	**0.0883**	**1.0000e-005**	**9.1000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**1.7900e-003**	**1.7900e-003**	**0.0000**	**0.0000**	**1.9000e-003**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0202					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0681					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	8.0000e-005	1.0000e-005	9.1000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.7900e-003	1.7900e-003	0.0000	0.0000	1.9000e-003
Total	**0.0883**	**1.0000e-005**	**9.1000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**1.7900e-003**	**1.7900e-003**	**0.0000**	**0.0000**	**1.9000e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

Install Low Flow Bathroom Faucet

Install Low Flow Kitchen Faucet

Install Low Flow Toilet

Install Low Flow Shower

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	4.1252	0.0663	1.5900e-003	6.2573
Unmitigated	5.0848	0.0829	1.9900e-003	7.7496

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Hotel	2.53668 / 0.281853	5.0848	0.0829	1.9900e-003	7.7496
Total		**5.0848**	**0.0829**	**1.9900e-003**	**7.7496**

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Hotel	2.02934 / 0.281853	4.1252	0.0663	1.5900e-003	6.2573
Total		**4.1252**	**0.0663**	**1.5900e-003**	**6.2573**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	11.1138	0.6568	0.0000	27.5339
Unmitigated	11.1138	0.6568	0.0000	27.5339

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Hotel	54.75	11.1138	0.6568	0.0000	27.5339
Total		**11.1138**	**0.6568**	**0.0000**	**27.5339**

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Hotel	54.75	11.1138	0.6568	0.0000	27.5339
Total		**11.1138**	**0.6568**	**0.0000**	**27.5339**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

TREDC Hotel Project

Humboldt County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Hotel	100.00	Room	0.40	17,424.00	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	103
Climate Zone	1			**Operational Year**	2018
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Refer to Project Description

Construction Phase -

Vehicle Trips - Refer to CalEEMod input table

Demolition -

Construction Off-road Equipment Mitigation - Refer to CalEEMod tables

Water Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	40	15

tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	8.00
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3

tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblLandUse	BuildingSpaceSquareFeet	145,200.00	17,424.00
tblLandUse	LandUseSquareFeet	145,200.00	17,424.00
tblLandUse	LotAcreage	3.33	0.40
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblVehicleTrips	CC_TL	6.60	24.00
tblVehicleTrips	CNW_TL	6.60	24.00
tblVehicleTrips	CW_TL	14.70	24.00
tblVehicleTrips	ST_TR	8.19	5.73
tblVehicleTrips	SU_TR	5.95	4.17
tblVehicleTrips	WD_TR	8.17	5.72

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2017	81.1053	24.6354	11.8194	0.0416	8.1808	0.8815	9.0623	1.3262	0.8410	2.1671	0.0000	4,273.6205	4,273.6205	0.3702	0.0000	4,282.2977
Maximum	**81.1053**	**24.6354**	**11.8194**	**0.0416**	**8.1808**	**0.8815**	**9.0623**	**1.3262**	**0.8410**	**2.1671**	**0.0000**	**4,273.6205**	**4,273.6205**	**0.3702**	**0.0000**	**4,282.2977**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2017	80.8324	20.1020	11.8392	0.0416	4.0803	0.2100	4.2903	0.7053	0.2035	0.9088	0.0000	4,273.6205	4,273.6205	0.3702	0.0000	4,282.2977
Maximum	**80.8324**	**20.1020**	**11.8392**	**0.0416**	**4.0803**	**0.2100**	**4.2903**	**0.7053**	**0.2035**	**0.9088**	**0.0000**	**4,273.6205**	**4,273.6205**	**0.3702**	**0.0000**	**4,282.2977**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.34**	**18.40**	**-0.17**	**0.00**	**50.12**	**76.18**	**52.66**	**46.82**	**75.81**	**58.06**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.4845	1.0000e-004	0.0104	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005		0.0219	0.0219	6.0000e-005		0.0234
Energy	0.0107	0.0977	0.0821	5.9000e-004		7.4200e-003	7.4200e-003		7.4200e-003	7.4200e-003		117.2083	117.2083	2.2500e-003	2.1500e-003	117.9049
Mobile	3.3509	21.7434	48.6571	0.0975	7.2338	0.2144	7.4481	1.9420	0.2034	2.1454		9,813.8772	9,813.8772	0.6002		9,828.8810
Total	**3.8462**	**21.8411**	**48.7495**	**0.0981**	**7.2338**	**0.2218**	**7.4556**	**1.9420**	**0.2109**	**2.1528**		**9,931.1074**	**9,931.1074**	**0.6025**	**2.1500e-003**	**9,946.8092**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.4845	1.0000e-004	0.0104	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005		0.0219	0.0219	6.0000e-005		0.0234
Energy	0.0107	0.0977	0.0821	5.9000e-004		7.4200e-003	7.4200e-003		7.4200e-003	7.4200e-003		117.2083	117.2083	2.2500e-003	2.1500e-003	117.9049
Mobile	3.3509	21.7434	48.6571	0.0975	7.2338	0.2144	7.4481	1.9420	0.2034	2.1454		9,813.8772	9,813.8772	0.6002		9,828.8810
Total	**3.8462**	**21.8411**	**48.7495**	**0.0981**	**7.2338**	**0.2218**	**7.4556**	**1.9420**	**0.2109**	**2.1528**		**9,931.1074**	**9,931.1074**	**0.6025**	**2.1500e-003**	**9,946.8092**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	6/1/2017	6/14/2017	5	10	
2	Site Preparation	Site Preparation	6/15/2017	6/15/2017	5	1	
3	Grading	Grading	6/16/2017	6/19/2017	5	2	
4	Building Construction	Building Construction	6/20/2017	11/6/2017	5	100	
5	Architectural Coating	Architectural Coating	11/14/2017	11/20/2017	5	5	
6	Paving	Paving	11/7/2017	11/13/2017	5	5	

Acres of Grading (Site Preparation Phase): 0.5

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 26,136; Non-Residential Outdoor: 8,712; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Rubber Tired Dozers	1	1.00	247	0.40
Demolition	Tractors/Loaders/Backhoes	2	6.00	97	0.37
Site Preparation	Graders	1	8.00	187	0.41
Site Preparation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Grading	Concrete/Industrial Saws	1	8.00	81	0.73
Grading	Rubber Tired Dozers	1	1.00	247	0.40
Grading	Tractors/Loaders/Backhoes	2	6.00	97	0.37
Building Construction	Cranes	1	4.00	231	0.29
Building Construction	Forklifts	2	6.00	89	0.20
Building Construction	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Paving	Cement and Mortar Mixers	4	6.00	9	0.56
Paving	Pavers	1	7.00	130	0.42
Paving	Rollers	1	7.00	80	0.38
Paving	Tractors/Loaders/Backhoes	1	7.00	97	0.37
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	4	10.00	0.00	344.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	2	5.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Grading	4	10.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	5	7.00	3.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Paving	7	18.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	1.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Use DPF for Construction Equipment

Use Soil Stabilizer

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

Clean Paved Roads

3.2 Demolition - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					7.4554	0.0000	7.4554	1.1288	0.0000	1.1288			0.0000			0.0000
Off-Road	1.2100	10.4978	7.9182	0.0120		0.7318	0.7318		0.6978	0.6978		1,179.3075	1,179.3075	0.2319		1,185.1047
Total	**1.2100**	**10.4978**	**7.9182**	**0.0120**	**7.4554**	**0.7318**	**8.1872**	**1.1288**	**0.6978**	**1.8266**		**1,179.3075**	**1,179.3075**	**0.2319**		**1,185.1047**

3.2 Demolition - 2017

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.5350	14.0022	2.7854	0.0283	0.5977	0.1483	0.7460	0.1635	0.1419	0.3054		2,964.4853	2,964.4853	0.1039		2,967.0835
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1273	0.1354	1.1158	1.3100e-003	0.1277	1.4000e-003	0.1291	0.0339	1.3000e-003	0.0352		129.8277	129.8277	0.0113		130.1095
Total	**0.6623**	**14.1376**	**3.9011**	**0.0296**	**0.7254**	**0.1497**	**0.8751**	**0.1974**	**0.1432**	**0.3406**		**3,094.3130**	**3,094.3130**	**0.1152**		**3,097.1929**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.3549	0.0000	3.3549	0.5080	0.0000	0.5080			0.0000			0.0000
Off-Road	0.2652	5.9644	7.9381	0.0120		0.0603	0.0603		0.0603	0.0603	0.0000	1,179.3075	1,179.3075	0.2319		1,185.1047
Total	**0.2652**	**5.9644**	**7.9381**	**0.0120**	**3.3549**	**0.0603**	**3.4152**	**0.5080**	**0.0603**	**0.5682**	**0.0000**	**1,179.3075**	**1,179.3075**	**0.2319**		**1,185.1047**

3.2 Demolition - 2017

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.5350	14.0022	2.7854	0.0283	0.5977	0.1483	0.7460	0.1635	0.1419	0.3054		2,964.4853	2,964.4853	0.1039		2,967.0835
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1273	0.1354	1.1158	1.3100e-003	0.1277	1.4000e-003	0.1291	0.0339	1.3000e-003	0.0352		129.8277	129.8277	0.0113		130.1095
Total	**0.6623**	**14.1376**	**3.9011**	**0.0296**	**0.7254**	**0.1497**	**0.8751**	**0.1974**	**0.1432**	**0.3406**		**3,094.3130**	**3,094.3130**	**0.1152**		**3,097.1929**

3.3 Site Preparation - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.5303	0.0000	0.5303	0.0573	0.0000	0.0573			0.0000			0.0000
Off-Road	0.8524	10.5148	4.3533	9.7700e-003		0.4726	0.4726		0.4347	0.4347		999.5201	999.5201	0.3063		1,007.1764
Total	**0.8524**	**10.5148**	**4.3533**	**9.7700e-003**	**0.5303**	**0.4726**	**1.0028**	**0.0573**	**0.4347**	**0.4920**		**999.5201**	**999.5201**	**0.3063**		**1,007.1764**

3.3 Site Preparation - 2017

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0637	0.0677	0.5579	6.6000e-004	0.0639	7.0000e-004	0.0646	0.0169	6.5000e-004	0.0176		64.9139	64.9139	5.6400e-003		65.0547
Total	**0.0637**	**0.0677**	**0.5579**	**6.6000e-004**	**0.0639**	**7.0000e-004**	**0.0646**	**0.0169**	**6.5000e-004**	**0.0176**		**64.9139**	**64.9139**	**5.6400e-003**		**65.0547**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.2386	0.0000	0.2386	0.0258	0.0000	0.0258			0.0000			0.0000
Off-Road	0.2382	4.8716	5.8579	9.7700e-003		0.0361	0.0361		0.0361	0.0361	0.0000	999.5201	999.5201	0.3063		1,007.1764
Total	**0.2382**	**4.8716**	**5.8579**	**9.7700e-003**	**0.2386**	**0.0361**	**0.2747**	**0.0258**	**0.0361**	**0.0618**	**0.0000**	**999.5201**	**999.5201**	**0.3063**		**1,007.1764**

3.3 Site Preparation - 2017

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					lb/day									lb/day		
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0637	0.0677	0.5579	6.6000e-004	0.0639	7.0000e-004	0.0646	0.0169	6.5000e-004	0.0176		64.9139	64.9139	5.6400e-003		65.0547
Total	**0.0637**	**0.0677**	**0.5579**	**6.6000e-004**	**0.0639**	**7.0000e-004**	**0.0646**	**0.0169**	**6.5000e-004**	**0.0176**		**64.9139**	**64.9139**	**5.6400e-003**		**65.0547**

3.4 Grading - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					lb/day									lb/day		
Fugitive Dust					0.7528	0.0000	0.7528	0.4138	0.0000	0.4138			0.0000			0.0000
Off-Road	1.2100	10.4978	7.9182	0.0120		0.7318	0.7318		0.6978	0.6978		1,179.3075	1,179.3075	0.2319		1,185.1047
Total	**1.2100**	**10.4978**	**7.9182**	**0.0120**	**0.7528**	**0.7318**	**1.4845**	**0.4138**	**0.6978**	**1.1115**		**1,179.3075**	**1,179.3075**	**0.2319**		**1,185.1047**

3.4 Grading - 2017

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1273	0.1354	1.1158	1.3100e-003	0.1277	1.4000e-003	0.1291	0.0339	1.3000e-003	0.0352		129.8277	129.8277	0.0113		130.1095
Total	**0.1273**	**0.1354**	**1.1158**	**1.3100e-003**	**0.1277**	**1.4000e-003**	**0.1291**	**0.0339**	**1.3000e-003**	**0.0352**		**129.8277**	**129.8277**	**0.0113**		**130.1095**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.3387	0.0000	0.3387	0.1862	0.0000	0.1862			0.0000			0.0000
Off-Road	0.2652	5.9644	7.9381	0.0120		0.0603	0.0603		0.0603	0.0603	0.0000	1,179.3075	1,179.3075	0.2319		1,185.1047
Total	**0.2652**	**5.9644**	**7.9381**	**0.0120**	**0.3387**	**0.0603**	**0.3990**	**0.1862**	**0.0603**	**0.2465**	**0.0000**	**1,179.3075**	**1,179.3075**	**0.2319**		**1,185.1047**

3.4 Grading - 2017

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1273	0.1354	1.1158	1.3100e-003	0.1277	1.4000e-003	0.1291	0.0339	1.3000e-003	0.0352		129.8277	129.8277	0.0113		130.1095
Total	**0.1273**	**0.1354**	**1.1158**	**1.3100e-003**	**0.1277**	**1.4000e-003**	**0.1291**	**0.0339**	**1.3000e-003**	**0.0352**		**129.8277**	**129.8277**	**0.0113**		**130.1095**

3.5 Building Construction - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.2812	12.7589	8.0700	0.0114		0.8591	0.8591		0.7904	0.7904		1,165.916 4	1,165.916 4	0.3572		1,174.847 3
Total	**1.2812**	**12.7589**	**8.0700**	**0.0114**		**0.8591**	**0.8591**		**0.7904**	**0.7904**		**1,165.916 4**	**1,165.916 4**	**0.3572**		**1,174.847 3**

3.5 Building Construction - 2017

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0261	0.4675	0.1585	7.9000e-004	0.0183	5.7400e-003	0.0241	5.2700e-003	5.5000e-003	0.0108		81.9745	81.9745	5.1100e-003		82.1023
Worker	0.0891	0.0948	0.7811	9.2000e-004	0.0894	9.8000e-004	0.0904	0.0237	9.1000e-004	0.0246		90.8794	90.8794	7.8900e-003		91.0766
Total	**0.1152**	**0.5622**	**0.9396**	**1.7100e-003**	**0.1077**	**6.7200e-003**	**0.1145**	**0.0290**	**6.4100e-003**	**0.0354**		**172.8539**	**172.8539**	**0.0130**		**173.1789**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.2793	6.1296	7.9624	0.0114		0.0578	0.0578		0.0578	0.0578	0.0000	1,165.916 4	1,165.916 4	0.3572		1,174.847 3
Total	**0.2793**	**6.1296**	**7.9624**	**0.0114**		**0.0578**	**0.0578**		**0.0578**	**0.0578**	**0.0000**	**1,165.916 4**	**1,165.916 4**	**0.3572**		**1,174.847 3**

3.5 Building Construction - 2017

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0261	0.4675	0.1585	7.9000e-004	0.0183	5.7400e-003	0.0241	5.2700e-003	5.5000e-003	0.0108		81.9745	81.9745	5.1100e-003		82.1023
Worker	0.0891	0.0948	0.7811	9.2000e-004	0.0894	9.8000e-004	0.0904	0.0237	9.1000e-004	0.0246		90.8794	90.8794	7.8900e-003		91.0766
Total	**0.1152**	**0.5622**	**0.9396**	**1.7100e-003**	**0.1077**	**6.7200e-003**	**0.1145**	**0.0290**	**6.4100e-003**	**0.0354**		**172.8539**	**172.8539**	**0.0130**		**173.1789**

3.6 Architectural Coating - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	80.7602					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.3323	2.1850	1.8681	2.9700e-003		0.1733	0.1733		0.1733	0.1733		281.4481	281.4481	0.0297		282.1909
Total	**81.0926**	**2.1850**	**1.8681**	**2.9700e-003**		**0.1733**	**0.1733**		**0.1733**	**0.1733**		**281.4481**	**281.4481**	**0.0297**		**282.1909**

3.6 Architectural Coating - 2017

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0127	0.0135	0.1116	1.3000e-004	0.0128	1.4000e-004	0.0129	3.3900e-003	1.3000e-004	3.5200e-003		12.9828	12.9828	1.1300e-003		13.0110
Total	**0.0127**	**0.0135**	**0.1116**	**1.3000e-004**	**0.0128**	**1.4000e-004**	**0.0129**	**3.3900e-003**	**1.3000e-004**	**3.5200e-003**		**12.9828**	**12.9828**	**1.1300e-003**		**13.0110**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	80.7602					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.0594	1.3570	1.8324	2.9700e-003		0.0143	0.0143		0.0143	0.0143	0.0000	281.4481	281.4481	0.0297		282.1909
Total	**80.8197**	**1.3570**	**1.8324**	**2.9700e-003**		**0.0143**	**0.0143**		**0.0143**	**0.0143**	**0.0000**	**281.4481**	**281.4481**	**0.0297**		**282.1909**

3.6 Architectural Coating - 2017

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0127	0.0135	0.1116	1.3000e-004	0.0128	1.4000e-004	0.0129	3.3900e-003	1.3000e-004	3.5200e-003		12.9828	12.9828	1.1300e-003		13.0110
Total	**0.0127**	**0.0135**	**0.1116**	**1.3000e-004**	**0.0128**	**1.4000e-004**	**0.0129**	**3.3900e-003**	**1.3000e-004**	**3.5200e-003**		**12.9828**	**12.9828**	**1.1300e-003**		**13.0110**

3.7 Paving - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0532	9.9754	7.3425	0.0113		0.6087	0.6087		0.5636	0.5636		1,085.1071	1,085.1071	0.3018		1,092.6515
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.0532**	**9.9754**	**7.3425**	**0.0113**		**0.6087**	**0.6087**		**0.5636**	**0.5636**		**1,085.1071**	**1,085.1071**	**0.3018**		**1,092.6515**

3.7 Paving - 2017

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.2291	0.2437	2.0084	2.3700e-003	0.2299	2.5300e-003	0.2324	0.0610	2.3400e-003	0.0633		233.6899	233.6899	0.0203		234.1970
Total	**0.2291**	**0.2437**	**2.0084**	**2.3700e-003**	**0.2299**	**2.5300e-003**	**0.2324**	**0.0610**	**2.3400e-003**	**0.0633**		**233.6899**	**233.6899**	**0.0203**		**234.1970**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.2239	4.7579	6.9028	0.0113		0.0436	0.0436		0.0436	0.0436	0.0000	1,085.1071	1,085.1071	0.3018		1,092.6515
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.2239**	**4.7579**	**6.9028**	**0.0113**		**0.0436**	**0.0436**		**0.0436**	**0.0436**	**0.0000**	**1,085.1071**	**1,085.1071**	**0.3018**		**1,092.6515**

3.7 Paving - 2017

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.2291	0.2437	2.0084	2.3700e-003	0.2299	2.5300e-003	0.2324	0.0610	2.3400e-003	0.0633		233.6899	233.6899	0.0203		234.1970
Total	**0.2291**	**0.2437**	**2.0084**	**2.3700e-003**	**0.2299**	**2.5300e-003**	**0.2324**	**0.0610**	**2.3400e-003**	**0.0633**		**233.6899**	**233.6899**	**0.0203**		**234.1970**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	3.3509	21.7434	48.6571	0.0975	7.2338	0.2144	7.4481	1.9420	0.2034	2.1454		9,813.8772	9,813.8772	0.6002		9,828.8810
Unmitigated	3.3509	21.7434	48.6571	0.0975	7.2338	0.2144	7.4481	1.9420	0.2034	2.1454		9,813.8772	9,813.8772	0.6002		9,828.8810

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Hotel	572.00	573.00	417.00	3,244,041	3,244,041
Total	572.00	573.00	417.00	3,244,041	3,244,041

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Hotel	24.00	24.00	24.00	19.40	61.60	19.00	58	38	4

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Hotel	0.448795	0.060687	0.206149	0.145887	0.057916	0.009282	0.014626	0.042627	0.002929	0.001905	0.006409	0.001553	0.001236

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0107	0.0977	0.0821	5.9000e-004		7.4200e-003	7.4200e-003		7.4200e-003	7.4200e-003		117.2083	117.2083	2.2500e-003	2.1500e-003	117.9049
NaturalGas Unmitigated	0.0107	0.0977	0.0821	5.9000e-004		7.4200e-003	7.4200e-003		7.4200e-003	7.4200e-003		117.2083	117.2083	2.2500e-003	2.1500e-003	117.9049

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Hotel	996.271	0.0107	0.0977	0.0821	5.9000e-004		7.4200e-003	7.4200e-003		7.4200e-003	7.4200e-003		117.2083	117.2083	2.2500e-003	2.1500e-003	117.9049
Total		**0.0107**	**0.0977**	**0.0821**	**5.9000e-004**		**7.4200e-003**	**7.4200e-003**		**7.4200e-003**	**7.4200e-003**		**117.2083**	**117.2083**	**2.2500e-003**	**2.1500e-003**	**117.9049**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Hotel	0.996271	0.0107	0.0977	0.0821	5.9000e-004		7.4200e-003	7.4200e-003		7.4200e-003	7.4200e-003		117.2083	117.2083	2.2500e-003	2.1500e-003	117.9049
Total		**0.0107**	**0.0977**	**0.0821**	**5.9000e-004**		**7.4200e-003**	**7.4200e-003**		**7.4200e-003**	**7.4200e-003**		**117.2083**	**117.2083**	**2.2500e-003**	**2.1500e-003**	**117.9049**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.4845	1.0000e-004	0.0104	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005		0.0219	0.0219	6.0000e-005		0.0234
Unmitigated	0.4845	1.0000e-004	0.0104	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005		0.0219	0.0219	6.0000e-005		0.0234

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.1106					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.3729					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	9.9000e-004	1.0000e-004	0.0104	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005		0.0219	0.0219	6.0000e-005		0.0234
Total	**0.4845**	**1.0000e-004**	**0.0104**	**0.0000**		**4.0000e-005**	**4.0000e-005**		**4.0000e-005**	**4.0000e-005**		**0.0219**	**0.0219**	**6.0000e-005**		**0.0234**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.1106					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.3729					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	9.9000e-004	1.0000e-004	0.0104	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005		0.0219	0.0219	6.0000e-005		0.0234
Total	**0.4845**	**1.0000e-004**	**0.0104**	**0.0000**		**4.0000e-005**	**4.0000e-005**		**4.0000e-005**	**4.0000e-005**		**0.0219**	**0.0219**	**6.0000e-005**		**0.0234**

7.0 Water Detail

7.1 Mitigation Measures Water

Install Low Flow Bathroom Faucet

Install Low Flow Kitchen Faucet

Install Low Flow Toilet

Install Low Flow Shower

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

TREDC Hotel Project

Humboldt County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Hotel	100.00	Room	0.40	17,424.00	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	103
Climate Zone	1			**Operational Year**	2040
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Refer to Project Description

Construction Phase -

Demolition -

Vehicle Trips - Refer to CalEEMod input table

Construction Off-road Equipment Mitigation - Refer to CalEEMod tables

Water Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	40	15

tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	8.00
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3

tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblLandUse	BuildingSpaceSquareFeet	145,200.00	17,424.00
tblLandUse	LandUseSquareFeet	145,200.00	17,424.00
tblLandUse	LotAcreage	3.33	0.40
tblProjectCharacteristics	OperationalYear	2018	2040
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblVehicleTrips	CC_TL	6.60	24.00
tblVehicleTrips	CNW_TL	6.60	24.00
tblVehicleTrips	CW_TL	14.70	24.00
tblVehicleTrips	ST_TR	8.19	5.73
tblVehicleTrips	SU_TR	5.95	4.17
tblVehicleTrips	WD_TR	8.17	5.72

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2017	81.1053	24.6354	11.8194	0.0416	8.1808	0.8815	9.0623	1.3262	0.8410	2.1671	0.0000	4,273.6205	4,273.6205	0.3702	0.0000	4,282.2977
Maximum	**81.1053**	**24.6354**	**11.8194**	**0.0416**	**8.1808**	**0.8815**	**9.0623**	**1.3262**	**0.8410**	**2.1671**	**0.0000**	**4,273.6205**	**4,273.6205**	**0.3702**	**0.0000**	**4,282.2977**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2017	80.8324	20.1020	11.8392	0.0416	4.0803	0.2100	4.2903	0.7053	0.2035	0.9088	0.0000	4,273.6205	4,273.6205	0.3702	0.0000	4,282.2977
Maximum	**80.8324**	**20.1020**	**11.8392**	**0.0416**	**4.0803**	**0.2100**	**4.2903**	**0.7053**	**0.2035**	**0.9088**	**0.0000**	**4,273.6205**	**4,273.6205**	**0.3702**	**0.0000**	**4,282.2977**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.34**	**18.40**	**-0.17**	**0.00**	**50.12**	**76.18**	**52.66**	**46.82**	**75.81**	**58.06**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.4844	9.0000e-005	0.0101	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005		0.0219	0.0219	6.0000e-005		0.0233
Energy	0.0107	0.0977	0.0821	5.9000e-004		7.4200e-003	7.4200e-003		7.4200e-003	7.4200e-003		117.2083	117.2083	2.2500e-003	2.1500e-003	117.9049
Mobile	2.7193	17.5289	41.8999	0.0932	7.1760	0.1723	7.3483	1.9171	0.1632	2.0803		9,386.0600	9,386.0600	0.5076		9,398.7494
Total	**3.2145**	**17.6267**	**41.9921**	**0.0938**	**7.1760**	**0.1797**	**7.3558**	**1.9171**	**0.1707**	**2.0878**		**9,503.2902**	**9,503.2902**	**0.5099**	**2.1500e-003**	**9,516.6775**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.4844	9.0000e-005	0.0101	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005		0.0219	0.0219	6.0000e-005		0.0233
Energy	0.0107	0.0977	0.0821	5.9000e-004		7.4200e-003	7.4200e-003		7.4200e-003	7.4200e-003		117.2083	117.2083	2.2500e-003	2.1500e-003	117.9049
Mobile	2.7193	17.5289	41.8999	0.0932	7.1760	0.1723	7.3483	1.9171	0.1632	2.0803		9,386.0600	9,386.0600	0.5076		9,398.7494
Total	**3.2145**	**17.6267**	**41.9921**	**0.0938**	**7.1760**	**0.1797**	**7.3558**	**1.9171**	**0.1707**	**2.0878**		**9,503.2902**	**9,503.2902**	**0.5099**	**2.1500e-003**	**9,516.6775**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	6/1/2017	6/14/2017	5	10	
2	Site Preparation	Site Preparation	6/15/2017	6/15/2017	5	1	
3	Grading	Grading	6/16/2017	6/19/2017	5	2	
4	Building Construction	Building Construction	6/20/2017	11/6/2017	5	100	
5	Paving	Paving	11/7/2017	11/13/2017	5	5	
6	Architectural Coating	Architectural Coating	11/14/2017	11/20/2017	5	5	

Acres of Grading (Site Preparation Phase): 0.5

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 26,136; Non-Residential Outdoor: 8,712; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Rubber Tired Dozers	1	1.00	247	0.40
Demolition	Tractors/Loaders/Backhoes	2	6.00	97	0.37
Site Preparation	Graders	1	8.00	187	0.41
Site Preparation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Grading	Concrete/Industrial Saws	1	8.00	81	0.73
Grading	Rubber Tired Dozers	1	1.00	247	0.40
Grading	Tractors/Loaders/Backhoes	2	6.00	97	0.37
Building Construction	Cranes	1	4.00	231	0.29
Building Construction	Forklifts	2	6.00	89	0.20
Building Construction	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Architectural Coating	Air Compressors	1	6.00	78	0.48
Paving	Cement and Mortar Mixers	4	6.00	9	0.56
Paving	Pavers	1	7.00	130	0.42
Paving	Rollers	1	7.00	80	0.38
Paving	Tractors/Loaders/Backhoes	1	7.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	4	10.00	0.00	344.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	2	5.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Grading	4	10.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	5	7.00	3.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	1.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Paving	7	18.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Use DPF for Construction Equipment

Use Soil Stabilizer

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Demolition - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					7.4554	0.0000	7.4554	1.1288	0.0000	1.1288			0.0000			0.0000
Off-Road	1.2100	10.4978	7.9182	0.0120		0.7318	0.7318		0.6978	0.6978		1,179.3075	1,179.3075	0.2319		1,185.1047
Total	**1.2100**	**10.4978**	**7.9182**	**0.0120**	**7.4554**	**0.7318**	**8.1872**	**1.1288**	**0.6978**	**1.8266**		**1,179.3075**	**1,179.3075**	**0.2319**		**1,185.1047**

3.2 Demolition - 2017

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.5350	14.0022	2.7854	0.0283	0.5977	0.1483	0.7460	0.1635	0.1419	0.3054		2,964.4853	2,964.4853	0.1039		2,967.0835
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1273	0.1354	1.1158	1.3100e-003	0.1277	1.4000e-003	0.1291	0.0339	1.3000e-003	0.0352		129.8277	129.8277	0.0113		130.1095
Total	**0.6623**	**14.1376**	**3.9011**	**0.0296**	**0.7254**	**0.1497**	**0.8751**	**0.1974**	**0.1432**	**0.3406**		**3,094.3130**	**3,094.3130**	**0.1152**		**3,097.1929**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.3549	0.0000	3.3549	0.5080	0.0000	0.5080			0.0000			0.0000
Off-Road	0.2652	5.9644	7.9381	0.0120		0.0603	0.0603		0.0603	0.0603	0.0000	1,179.3075	1,179.3075	0.2319		1,185.1047
Total	**0.2652**	**5.9644**	**7.9381**	**0.0120**	**3.3549**	**0.0603**	**3.4152**	**0.5080**	**0.0603**	**0.5682**	**0.0000**	**1,179.3075**	**1,179.3075**	**0.2319**		**1,185.1047**

3.2 Demolition - 2017

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.5350	14.0022	2.7854	0.0283	0.5977	0.1483	0.7460	0.1635	0.1419	0.3054		2,964.4853	2,964.4853	0.1039		2,967.0835
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1273	0.1354	1.1158	1.3100e-003	0.1277	1.4000e-003	0.1291	0.0339	1.3000e-003	0.0352		129.8277	129.8277	0.0113		130.1095
Total	**0.6623**	**14.1376**	**3.9011**	**0.0296**	**0.7254**	**0.1497**	**0.8751**	**0.1974**	**0.1432**	**0.3406**		**3,094.3130**	**3,094.3130**	**0.1152**		**3,097.1929**

3.3 Site Preparation - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.5303	0.0000	0.5303	0.0573	0.0000	0.0573			0.0000			0.0000
Off-Road	0.8524	10.5148	4.3533	9.7700e-003		0.4726	0.4726		0.4347	0.4347		999.5201	999.5201	0.3063		1,007.1764
Total	**0.8524**	**10.5148**	**4.3533**	**9.7700e-003**	**0.5303**	**0.4726**	**1.0028**	**0.0573**	**0.4347**	**0.4920**		**999.5201**	**999.5201**	**0.3063**		**1,007.1764**

3.3 Site Preparation - 2017

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0637	0.0677	0.5579	6.6000e-004	0.0639	7.0000e-004	0.0646	0.0169	6.5000e-004	0.0176		64.9139	64.9139	5.6400e-003		65.0547
Total	**0.0637**	**0.0677**	**0.5579**	**6.6000e-004**	**0.0639**	**7.0000e-004**	**0.0646**	**0.0169**	**6.5000e-004**	**0.0176**		**64.9139**	**64.9139**	**5.6400e-003**		**65.0547**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.2386	0.0000	0.2386	0.0258	0.0000	0.0258			0.0000			0.0000
Off-Road	0.2382	4.8716	5.8579	9.7700e-003		0.0361	0.0361		0.0361	0.0361	0.0000	999.5201	999.5201	0.3063		1,007.1764
Total	**0.2382**	**4.8716**	**5.8579**	**9.7700e-003**	**0.2386**	**0.0361**	**0.2747**	**0.0258**	**0.0361**	**0.0618**	**0.0000**	**999.5201**	**999.5201**	**0.3063**		**1,007.1764**

3.3 Site Preparation - 2017

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0637	0.0677	0.5579	6.6000e-004	0.0639	7.0000e-004	0.0646	0.0169	6.5000e-004	0.0176		64.9139	64.9139	5.6400e-003		65.0547
Total	**0.0637**	**0.0677**	**0.5579**	**6.6000e-004**	**0.0639**	**7.0000e-004**	**0.0646**	**0.0169**	**6.5000e-004**	**0.0176**		**64.9139**	**64.9139**	**5.6400e-003**		**65.0547**

3.4 Grading - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.7528	0.0000	0.7528	0.4138	0.0000	0.4138			0.0000			0.0000
Off-Road	1.2100	10.4978	7.9182	0.0120		0.7318	0.7318		0.6978	0.6978		1,179.3075	1,179.3075	0.2319		1,185.1047
Total	**1.2100**	**10.4978**	**7.9182**	**0.0120**	**0.7528**	**0.7318**	**1.4845**	**0.4138**	**0.6978**	**1.1115**		**1,179.3075**	**1,179.3075**	**0.2319**		**1,185.1047**

3.4 Grading - 2017

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1273	0.1354	1.1158	1.3100e-003	0.1277	1.4000e-003	0.1291	0.0339	1.3000e-003	0.0352		129.8277	129.8277	0.0113		130.1095
Total	**0.1273**	**0.1354**	**1.1158**	**1.3100e-003**	**0.1277**	**1.4000e-003**	**0.1291**	**0.0339**	**1.3000e-003**	**0.0352**		**129.8277**	**129.8277**	**0.0113**		**130.1095**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.3387	0.0000	0.3387	0.1862	0.0000	0.1862			0.0000			0.0000
Off-Road	0.2652	5.9644	7.9381	0.0120		0.0603	0.0603		0.0603	0.0603	0.0000	1,179.3075	1,179.3075	0.2319		1,185.1047
Total	**0.2652**	**5.9644**	**7.9381**	**0.0120**	**0.3387**	**0.0603**	**0.3990**	**0.1862**	**0.0603**	**0.2465**	**0.0000**	**1,179.3075**	**1,179.3075**	**0.2319**		**1,185.1047**

3.4 Grading - 2017

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1273	0.1354	1.1158	1.3100e-003	0.1277	1.4000e-003	0.1291	0.0339	1.3000e-003	0.0352		129.8277	129.8277	0.0113		130.1095
Total	**0.1273**	**0.1354**	**1.1158**	**1.3100e-003**	**0.1277**	**1.4000e-003**	**0.1291**	**0.0339**	**1.3000e-003**	**0.0352**		**129.8277**	**129.8277**	**0.0113**		**130.1095**

3.5 Building Construction - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.2812	12.7589	8.0700	0.0114		0.8591	0.8591		0.7904	0.7904		1,165.9164	1,165.9164	0.3572		1,174.8473
Total	**1.2812**	**12.7589**	**8.0700**	**0.0114**		**0.8591**	**0.8591**		**0.7904**	**0.7904**		**1,165.9164**	**1,165.9164**	**0.3572**		**1,174.8473**

3.5 Building Construction - 2017

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0261	0.4675	0.1585	7.9000e-004	0.0183	5.7400e-003	0.0241	5.2700e-003	5.5000e-003	0.0108		81.9745	81.9745	5.1100e-003		82.1023
Worker	0.0891	0.0948	0.7811	9.2000e-004	0.0894	9.8000e-004	0.0904	0.0237	9.1000e-004	0.0246		90.8794	90.8794	7.8900e-003		91.0766
Total	**0.1152**	**0.5622**	**0.9396**	**1.7100e-003**	**0.1077**	**6.7200e-003**	**0.1145**	**0.0290**	**6.4100e-003**	**0.0354**		**172.8539**	**172.8539**	**0.0130**		**173.1789**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.2793	6.1296	7.9624	0.0114		0.0578	0.0578		0.0578	0.0578	0.0000	1,165.9164	1,165.9164	0.3572		1,174.8473
Total	**0.2793**	**6.1296**	**7.9624**	**0.0114**		**0.0578**	**0.0578**		**0.0578**	**0.0578**	**0.0000**	**1,165.9164**	**1,165.9164**	**0.3572**		**1,174.8473**

3.5 Building Construction - 2017

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0261	0.4675	0.1585	7.9000e-004	0.0183	5.7400e-003	0.0241	5.2700e-003	5.5000e-003	0.0108		81.9745	81.9745	5.1100e-003		82.1023
Worker	0.0891	0.0948	0.7811	9.2000e-004	0.0894	9.8000e-004	0.0904	0.0237	9.1000e-004	0.0246		90.8794	90.8794	7.8900e-003		91.0766
Total	**0.1152**	**0.5622**	**0.9396**	**1.7100e-003**	**0.1077**	**6.7200e-003**	**0.1145**	**0.0290**	**6.4100e-003**	**0.0354**		**172.8539**	**172.8539**	**0.0130**		**173.1789**

3.6 Paving - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0532	9.9754	7.3425	0.0113		0.6087	0.6087		0.5636	0.5636		1,085.1071	1,085.1071	0.3018		1,092.6515
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.0532**	**9.9754**	**7.3425**	**0.0113**		**0.6087**	**0.6087**		**0.5636**	**0.5636**		**1,085.1071**	**1,085.1071**	**0.3018**		**1,092.6515**

3.6 Paving - 2017

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.2291	0.2437	2.0084	2.3700e-003	0.2299	2.5300e-003	0.2324	0.0610	2.3400e-003	0.0633		233.6899	233.6899	0.0203		234.1970
Total	**0.2291**	**0.2437**	**2.0084**	**2.3700e-003**	**0.2299**	**2.5300e-003**	**0.2324**	**0.0610**	**2.3400e-003**	**0.0633**		**233.6899**	**233.6899**	**0.0203**		**234.1970**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.2239	4.7579	6.9028	0.0113		0.0436	0.0436		0.0436	0.0436	0.0000	1,085.1071	1,085.1071	0.3018		1,092.6515
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.2239**	**4.7579**	**6.9028**	**0.0113**		**0.0436**	**0.0436**		**0.0436**	**0.0436**	**0.0000**	**1,085.1071**	**1,085.1071**	**0.3018**		**1,092.6515**

3.6 Paving - 2017

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.2291	0.2437	2.0084	2.3700e-003	0.2299	2.5300e-003	0.2324	0.0610	2.3400e-003	0.0633		233.6899	233.6899	0.0203		234.1970
Total	**0.2291**	**0.2437**	**2.0084**	**2.3700e-003**	**0.2299**	**2.5300e-003**	**0.2324**	**0.0610**	**2.3400e-003**	**0.0633**		**233.6899**	**233.6899**	**0.0203**		**234.1970**

3.7 Architectural Coating - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	80.7602					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.3323	2.1850	1.8681	2.9700e-003		0.1733	0.1733		0.1733	0.1733		281.4481	281.4481	0.0297		282.1909
Total	**81.0926**	**2.1850**	**1.8681**	**2.9700e-003**		**0.1733**	**0.1733**		**0.1733**	**0.1733**		**281.4481**	**281.4481**	**0.0297**		**282.1909**

3.7 Architectural Coating - 2017

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0127	0.0135	0.1116	1.3000e-004	0.0128	1.4000e-004	0.0129	3.3900e-003	1.3000e-004	3.5200e-003		12.9828	12.9828	1.1300e-003		13.0110
Total	**0.0127**	**0.0135**	**0.1116**	**1.3000e-004**	**0.0128**	**1.4000e-004**	**0.0129**	**3.3900e-003**	**1.3000e-004**	**3.5200e-003**		**12.9828**	**12.9828**	**1.1300e-003**		**13.0110**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	80.7602					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.0594	1.3570	1.8324	2.9700e-003		0.0143	0.0143		0.0143	0.0143	0.0000	281.4481	281.4481	0.0297		282.1909
Total	**80.8197**	**1.3570**	**1.8324**	**2.9700e-003**		**0.0143**	**0.0143**		**0.0143**	**0.0143**	**0.0000**	**281.4481**	**281.4481**	**0.0297**		**282.1909**

3.7 Architectural Coating - 2017

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0127	0.0135	0.1116	1.3000e-004	0.0128	1.4000e-004	0.0129	3.3900e-003	1.3000e-004	3.5200e-003		12.9828	12.9828	1.1300e-003		13.0110
Total	**0.0127**	**0.0135**	**0.1116**	**1.3000e-004**	**0.0128**	**1.4000e-004**	**0.0129**	**3.3900e-003**	**1.3000e-004**	**3.5200e-003**		**12.9828**	**12.9828**	**1.1300e-003**		**13.0110**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	2.7193	17.5289	41.8999	0.0932	7.1760	0.1723	7.3483	1.9171	0.1632	2.0803		9,386.0600	9,386.0600	0.5076		9,398.7494
Unmitigated	2.7193	17.5289	41.8999	0.0932	7.1760	0.1723	7.3483	1.9171	0.1632	2.0803		9,386.0600	9,386.0600	0.5076		9,398.7494

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Hotel	572.00	573.00	417.00	3,244,041	3,244,041
Total	572.00	573.00	417.00	3,244,041	3,244,041

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Hotel	24.00	24.00	24.00	19.40	61.60	19.00	58	38	4

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Hotel	0.555197	0.027252	0.217244	0.114264	0.010253	0.002787	0.012651	0.049427	0.004514	0.000798	0.003917	0.001338	0.000357

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0107	0.0977	0.0821	5.9000e-004		7.4200e-003	7.4200e-003		7.4200e-003	7.4200e-003		117.2083	117.2083	2.2500e-003	2.1500e-003	117.9049
NaturalGas Unmitigated	0.0107	0.0977	0.0821	5.9000e-004		7.4200e-003	7.4200e-003		7.4200e-003	7.4200e-003		117.2083	117.2083	2.2500e-003	2.1500e-003	117.9049

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Hotel	996.271	0.0107	0.0977	0.0821	5.9000e-004		7.4200e-003	7.4200e-003		7.4200e-003	7.4200e-003		117.2083	117.2083	2.2500e-003	2.1500e-003	117.9049
Total		**0.0107**	**0.0977**	**0.0821**	**5.9000e-004**		**7.4200e-003**	**7.4200e-003**		**7.4200e-003**	**7.4200e-003**		**117.2083**	**117.2083**	**2.2500e-003**	**2.1500e-003**	**117.9049**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Hotel	0.996271	0.0107	0.0977	0.0821	5.9000e-004		7.4200e-003	7.4200e-003		7.4200e-003	7.4200e-003		117.2083	117.2083	2.2500e-003	2.1500e-003	117.9049
Total		**0.0107**	**0.0977**	**0.0821**	**5.9000e-004**		**7.4200e-003**	**7.4200e-003**		**7.4200e-003**	**7.4200e-003**		**117.2083**	**117.2083**	**2.2500e-003**	**2.1500e-003**	**117.9049**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.4844	9.0000e-005	0.0101	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005		0.0219	0.0219	6.0000e-005		0.0233
Unmitigated	0.4844	9.0000e-005	0.0101	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005		0.0219	0.0219	6.0000e-005		0.0233

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.1106					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.3729					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	9.3000e-004	9.0000e-005	0.0101	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005		0.0219	0.0219	6.0000e-005		0.0233
Total	**0.4844**	**9.0000e-005**	**0.0101**	**0.0000**		**4.0000e-005**	**4.0000e-005**		**4.0000e-005**	**4.0000e-005**		**0.0219**	**0.0219**	**6.0000e-005**		**0.0233**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.1106					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.3729					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	9.3000e-004	9.0000e-005	0.0101	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005		0.0219	0.0219	6.0000e-005		0.0233
Total	**0.4844**	**9.0000e-005**	**0.0101**	**0.0000**		**4.0000e-005**	**4.0000e-005**		**4.0000e-005**	**4.0000e-005**		**0.0219**	**0.0219**	**6.0000e-005**		**0.0233**

7.0 Water Detail

7.1 Mitigation Measures Water

Install Low Flow Bathroom Faucet

Install Low Flow Kitchen Faucet

Install Low Flow Toilet

Install Low Flow Shower

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

TREDC Hotel Project

Humboldt County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Hotel	100.00	Room	0.40	17,424.00	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	103
Climate Zone	1			**Operational Year**	2018
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Refer to Project Description

Construction Phase -

Vehicle Trips - Refer to CalEEMod input table

Demolition -

Construction Off-road Equipment Mitigation - Refer to CalEEMod tables

Water Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	40	15

tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	8.00
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3

tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblLandUse	BuildingSpaceSquareFeet	145,200.00	17,424.00
tblLandUse	LandUseSquareFeet	145,200.00	17,424.00
tblLandUse	LotAcreage	3.33	0.40
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblVehicleTrips	CC_TL	6.60	24.00
tblVehicleTrips	CNW_TL	6.60	24.00
tblVehicleTrips	CW_TL	14.70	24.00
tblVehicleTrips	ST_TR	8.19	5.73
tblVehicleTrips	SU_TR	5.95	4.17
tblVehicleTrips	WD_TR	8.17	5.72

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2017	81.1082	24.9368	12.1834	0.0412	8.1808	0.8839	9.0647	1.3262	0.8433	2.1695	0.0000	4,225.9986	4,225.9986	0.3709	0.0000	4,234.9302
Maximum	**81.1082**	**24.9368**	**12.1834**	**0.0412**	**8.1808**	**0.8839**	**9.0647**	**1.3262**	**0.8433**	**2.1695**	**0.0000**	**4,225.9986**	**4,225.9986**	**0.3709**	**0.0000**	**4,234.9302**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2017	80.8353	20.4034	12.2032	0.0412	4.0803	0.2124	4.2928	0.7053	0.2058	0.9111	0.0000	4,225.9986	4,225.9986	0.3709	0.0000	4,234.9302
Maximum	**80.8353**	**20.4034**	**12.2032**	**0.0412**	**4.0803**	**0.2124**	**4.2928**	**0.7053**	**0.2058**	**0.9111**	**0.0000**	**4,225.9986**	**4,225.9986**	**0.3709**	**0.0000**	**4,234.9302**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.34**	**18.18**	**-0.16**	**0.00**	**50.12**	**75.97**	**52.64**	**46.82**	**75.60**	**58.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.4845	1.0000e-004	0.0104	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005		0.0219	0.0219	6.0000e-005		0.0234
Energy	0.0107	0.0977	0.0821	5.9000e-004		7.4200e-003	7.4200e-003		7.4200e-003	7.4200e-003		117.2083	117.2083	2.2500e-003	2.1500e-003	117.9049
Mobile	3.4454	23.3454	52.2040	0.0970	7.2338	0.2160	7.4497	1.9420	0.2050	2.1469		9,757.3816	9,757.3816	0.6165		9,772.7950
Total	**3.9406**	**23.4431**	**52.2964**	**0.0976**	**7.2338**	**0.2234**	**7.4572**	**1.9420**	**0.2124**	**2.1544**		**9,874.6119**	**9,874.6119**	**0.6189**	**2.1500e-003**	**9,890.7232**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.4845	1.0000e-004	0.0104	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005		0.0219	0.0219	6.0000e-005		0.0234
Energy	0.0107	0.0977	0.0821	5.9000e-004		7.4200e-003	7.4200e-003		7.4200e-003	7.4200e-003		117.2083	117.2083	2.2500e-003	2.1500e-003	117.9049
Mobile	3.4454	23.3454	52.2040	0.0970	7.2338	0.2160	7.4497	1.9420	0.2050	2.1469		9,757.3816	9,757.3816	0.6165		9,772.7950
Total	**3.9406**	**23.4431**	**52.2964**	**0.0976**	**7.2338**	**0.2234**	**7.4572**	**1.9420**	**0.2124**	**2.1544**		**9,874.6119**	**9,874.6119**	**0.6189**	**2.1500e-003**	**9,890.7232**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	6/1/2017	6/14/2017	5	10	
2	Site Preparation	Site Preparation	6/15/2017	6/15/2017	5	1	
3	Grading	Grading	6/16/2017	6/19/2017	5	2	
4	Building Construction	Building Construction	6/20/2017	11/6/2017	5	100	
5	Architectural Coating	Architectural Coating	11/14/2017	11/20/2017	5	5	
6	Paving	Paving	11/7/2017	11/13/2017	5	5	

Acres of Grading (Site Preparation Phase): 0.5

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 26,136; Non-Residential Outdoor: 8,712; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Rubber Tired Dozers	1	1.00	247	0.40
Demolition	Tractors/Loaders/Backhoes	2	6.00	97	0.37
Site Preparation	Graders	1	8.00	187	0.41
Site Preparation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Grading	Concrete/Industrial Saws	1	8.00	81	0.73
Grading	Rubber Tired Dozers	1	1.00	247	0.40
Grading	Tractors/Loaders/Backhoes	2	6.00	97	0.37
Building Construction	Cranes	1	4.00	231	0.29
Building Construction	Forklifts	2	6.00	89	0.20
Building Construction	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Paving	Cement and Mortar Mixers	4	6.00	9	0.56
Paving	Pavers	1	7.00	130	0.42
Paving	Rollers	1	7.00	80	0.38
Paving	Tractors/Loaders/Backhoes	1	7.00	97	0.37
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	4	10.00	0.00	344.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	2	5.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Grading	4	10.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	5	7.00	3.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Paving	7	18.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	1.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Use DPF for Construction Equipment

Use Soil Stabilizer

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

Clean Paved Roads

3.2 Demolition - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					7.4554	0.0000	7.4554	1.1288	0.0000	1.1288			0.0000			0.0000
Off-Road	1.2100	10.4978	7.9182	0.0120		0.7318	0.7318		0.6978	0.6978		1,179.3075	1,179.3075	0.2319		1,185.1047
Total	**1.2100**	**10.4978**	**7.9182**	**0.0120**	**7.4554**	**0.7318**	**8.1872**	**1.1288**	**0.6978**	**1.8266**		**1,179.3075**	**1,179.3075**	**0.2319**		**1,185.1047**

3.2 Demolition - 2017

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.5511	14.2759	3.0651	0.0279	0.5977	0.1508	0.7484	0.1635	0.1442	0.3077		2,917.2656	2,917.2656	0.1138		2,920.1108
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1561	0.1632	1.2000	1.3100e-003	0.1277	1.4000e-003	0.1291	0.0339	1.3000e-003	0.0352		129.4255	129.4255	0.0116		129.7147
Total	**0.7072**	**14.4390**	**4.2652**	**0.0292**	**0.7254**	**0.1522**	**0.8776**	**0.1974**	**0.1455**	**0.3429**		**3,046.6911**	**3,046.6911**	**0.1254**		**3,049.8255**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.3549	0.0000	3.3549	0.5080	0.0000	0.5080			0.0000			0.0000
Off-Road	0.2652	5.9644	7.9381	0.0120		0.0603	0.0603		0.0603	0.0603	0.0000	1,179.3075	1,179.3075	0.2319		1,185.1047
Total	**0.2652**	**5.9644**	**7.9381**	**0.0120**	**3.3549**	**0.0603**	**3.4152**	**0.5080**	**0.0603**	**0.5682**	**0.0000**	**1,179.3075**	**1,179.3075**	**0.2319**		**1,185.1047**

3.2 Demolition - 2017

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.5511	14.2759	3.0651	0.0279	0.5977	0.1508	0.7484	0.1635	0.1442	0.3077		2,917.2656	2,917.2656	0.1138		2,920.1108
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1561	0.1632	1.2000	1.3100e-003	0.1277	1.4000e-003	0.1291	0.0339	1.3000e-003	0.0352		129.4255	129.4255	0.0116		129.7147
Total	**0.7072**	**14.4390**	**4.2652**	**0.0292**	**0.7254**	**0.1522**	**0.8776**	**0.1974**	**0.1455**	**0.3429**		**3,046.6911**	**3,046.6911**	**0.1254**		**3,049.8255**

3.3 Site Preparation - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.5303	0.0000	0.5303	0.0573	0.0000	0.0573			0.0000			0.0000
Off-Road	0.8524	10.5148	4.3533	9.7700e-003		0.4726	0.4726		0.4347	0.4347		999.5201	999.5201	0.3063		1,007.1764
Total	**0.8524**	**10.5148**	**4.3533**	**9.7700e-003**	**0.5303**	**0.4726**	**1.0028**	**0.0573**	**0.4347**	**0.4920**		**999.5201**	**999.5201**	**0.3063**		**1,007.1764**

3.3 Site Preparation - 2017

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0780	0.0816	0.6000	6.6000e-004	0.0639	7.0000e-004	0.0646	0.0169	6.5000e-004	0.0176		64.7127	64.7127	5.7800e-003		64.8574
Total	**0.0780**	**0.0816**	**0.6000**	**6.6000e-004**	**0.0639**	**7.0000e-004**	**0.0646**	**0.0169**	**6.5000e-004**	**0.0176**		**64.7127**	**64.7127**	**5.7800e-003**		**64.8574**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.2386	0.0000	0.2386	0.0258	0.0000	0.0258			0.0000			0.0000
Off-Road	0.2382	4.8716	5.8579	9.7700e-003		0.0361	0.0361		0.0361	0.0361	0.0000	999.5201	999.5201	0.3063		1,007.1764
Total	**0.2382**	**4.8716**	**5.8579**	**9.7700e-003**	**0.2386**	**0.0361**	**0.2747**	**0.0258**	**0.0361**	**0.0618**	**0.0000**	**999.5201**	**999.5201**	**0.3063**		**1,007.1764**

3.3 Site Preparation - 2017

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0780	0.0816	0.6000	6.6000e-004	0.0639	7.0000e-004	0.0646	0.0169	6.5000e-004	0.0176		64.7127	64.7127	5.7800e-003		64.8574
Total	**0.0780**	**0.0816**	**0.6000**	**6.6000e-004**	**0.0639**	**7.0000e-004**	**0.0646**	**0.0169**	**6.5000e-004**	**0.0176**		**64.7127**	**64.7127**	**5.7800e-003**		**64.8574**

3.4 Grading - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.7528	0.0000	0.7528	0.4138	0.0000	0.4138			0.0000			0.0000
Off-Road	1.2100	10.4978	7.9182	0.0120		0.7318	0.7318		0.6978	0.6978		1,179.3075	1,179.3075	0.2319		1,185.1047
Total	**1.2100**	**10.4978**	**7.9182**	**0.0120**	**0.7528**	**0.7318**	**1.4845**	**0.4138**	**0.6978**	**1.1115**		**1,179.3075**	**1,179.3075**	**0.2319**		**1,185.1047**

3.4 Grading - 2017

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1561	0.1632	1.2000	1.3100e-003	0.1277	1.4000e-003	0.1291	0.0339	1.3000e-003	0.0352		129.4255	129.4255	0.0116		129.7147
Total	**0.1561**	**0.1632**	**1.2000**	**1.3100e-003**	**0.1277**	**1.4000e-003**	**0.1291**	**0.0339**	**1.3000e-003**	**0.0352**		**129.4255**	**129.4255**	**0.0116**		**129.7147**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.3387	0.0000	0.3387	0.1862	0.0000	0.1862			0.0000			0.0000
Off-Road	0.2652	5.9644	7.9381	0.0120		0.0603	0.0603		0.0603	0.0603	0.0000	1,179.3075	1,179.3075	0.2319		1,185.1047
Total	**0.2652**	**5.9644**	**7.9381**	**0.0120**	**0.3387**	**0.0603**	**0.3990**	**0.1862**	**0.0603**	**0.2465**	**0.0000**	**1,179.3075**	**1,179.3075**	**0.2319**		**1,185.1047**

3.4 Grading - 2017

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1561	0.1632	1.2000	1.3100e-003	0.1277	1.4000e-003	0.1291	0.0339	1.3000e-003	0.0352		129.4255	129.4255	0.0116		129.7147
Total	**0.1561**	**0.1632**	**1.2000**	**1.3100e-003**	**0.1277**	**1.4000e-003**	**0.1291**	**0.0339**	**1.3000e-003**	**0.0352**		**129.4255**	**129.4255**	**0.0116**		**129.7147**

3.5 Building Construction - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.2812	12.7589	8.0700	0.0114		0.8591	0.8591		0.7904	0.7904		1,165.9164	1,165.9164	0.3572		1,174.8473
Total	**1.2812**	**12.7589**	**8.0700**	**0.0114**		**0.8591**	**0.8591**		**0.7904**	**0.7904**		**1,165.9164**	**1,165.9164**	**0.3572**		**1,174.8473**

3.5 Building Construction - 2017

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0277	0.4726	0.1805	7.7000e-004	0.0183	5.8700e-003	0.0242	5.2700e-003	5.6100e-003	0.0109		79.8455	79.8455	5.6000e-003		79.9856
Worker	0.1093	0.1142	0.8400	9.2000e-004	0.0894	9.8000e-004	0.0904	0.0237	9.1000e-004	0.0246		90.5978	90.5978	8.1000e-003		90.8003
Total	**0.1369**	**0.5868**	**1.0205**	**1.6900e-003**	**0.1077**	**6.8500e-003**	**0.1146**	**0.0290**	**6.5200e-003**	**0.0355**		**170.4434**	**170.4434**	**0.0137**		**170.7859**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.2793	6.1296	7.9624	0.0114		0.0578	0.0578		0.0578	0.0578	0.0000	1,165.9164	1,165.9164	0.3572		1,174.8473
Total	**0.2793**	**6.1296**	**7.9624**	**0.0114**		**0.0578**	**0.0578**		**0.0578**	**0.0578**	**0.0000**	**1,165.9164**	**1,165.9164**	**0.3572**		**1,174.8473**

3.5 Building Construction - 2017

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0277	0.4726	0.1805	7.7000e-004	0.0183	5.8700e-003	0.0242	5.2700e-003	5.6100e-003	0.0109		79.8455	79.8455	5.6000e-003		79.9856
Worker	0.1093	0.1142	0.8400	9.2000e-004	0.0894	9.8000e-004	0.0904	0.0237	9.1000e-004	0.0246		90.5978	90.5978	8.1000e-003		90.8003
Total	**0.1369**	**0.5868**	**1.0205**	**1.6900e-003**	**0.1077**	**6.8500e-003**	**0.1146**	**0.0290**	**6.5200e-003**	**0.0355**		**170.4434**	**170.4434**	**0.0137**		**170.7859**

3.6 Architectural Coating - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	80.7602					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.3323	2.1850	1.8681	2.9700e-003		0.1733	0.1733		0.1733	0.1733		281.4481	281.4481	0.0297		282.1909
Total	**81.0926**	**2.1850**	**1.8681**	**2.9700e-003**		**0.1733**	**0.1733**		**0.1733**	**0.1733**		**281.4481**	**281.4481**	**0.0297**		**282.1909**

3.6 Architectural Coating - 2017

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0156	0.0163	0.1200	1.3000e-004	0.0128	1.4000e-004	0.0129	3.3900e-003	1.3000e-004	3.5200e-003		12.9426	12.9426	1.1600e-003		12.9715
Total	**0.0156**	**0.0163**	**0.1200**	**1.3000e-004**	**0.0128**	**1.4000e-004**	**0.0129**	**3.3900e-003**	**1.3000e-004**	**3.5200e-003**		**12.9426**	**12.9426**	**1.1600e-003**		**12.9715**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	80.7602					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.0594	1.3570	1.8324	2.9700e-003		0.0143	0.0143		0.0143	0.0143	0.0000	281.4481	281.4481	0.0297		282.1909
Total	**80.8197**	**1.3570**	**1.8324**	**2.9700e-003**		**0.0143**	**0.0143**		**0.0143**	**0.0143**	**0.0000**	**281.4481**	**281.4481**	**0.0297**		**282.1909**

3.6 Architectural Coating - 2017

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0156	0.0163	0.1200	1.3000e-004	0.0128	1.4000e-004	0.0129	3.3900e-003	1.3000e-004	3.5200e-003		12.9426	12.9426	1.1600e-003		12.9715
Total	**0.0156**	**0.0163**	**0.1200**	**1.3000e-004**	**0.0128**	**1.4000e-004**	**0.0129**	**3.3900e-003**	**1.3000e-004**	**3.5200e-003**		**12.9426**	**12.9426**	**1.1600e-003**		**12.9715**

3.7 Paving - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0532	9.9754	7.3425	0.0113		0.6087	0.6087		0.5636	0.5636		1,085.1071	1,085.1071	0.3018		1,092.6515
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.0532**	**9.9754**	**7.3425**	**0.0113**		**0.6087**	**0.6087**		**0.5636**	**0.5636**		**1,085.1071**	**1,085.1071**	**0.3018**		**1,092.6515**

3.7 Paving - 2017

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.2809	0.2937	2.1600	2.3600e-003	0.2299	2.5300e-003	0.2324	0.0610	2.3400e-003	0.0633		232.9659	232.9659	0.0208		233.4865
Total	**0.2809**	**0.2937**	**2.1600**	**2.3600e-003**	**0.2299**	**2.5300e-003**	**0.2324**	**0.0610**	**2.3400e-003**	**0.0633**		**232.9659**	**232.9659**	**0.0208**		**233.4865**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.2239	4.7579	6.9028	0.0113		0.0436	0.0436		0.0436	0.0436	0.0000	1,085.1071	1,085.1071	0.3018		1,092.6515
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.2239**	**4.7579**	**6.9028**	**0.0113**		**0.0436**	**0.0436**		**0.0436**	**0.0436**	**0.0000**	**1,085.1071**	**1,085.1071**	**0.3018**		**1,092.6515**

3.7 Paving - 2017

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.2809	0.2937	2.1600	2.3600e-003	0.2299	2.5300e-003	0.2324	0.0610	2.3400e-003	0.0633		232.9659	232.9659	0.0208		233.4865
Total	**0.2809**	**0.2937**	**2.1600**	**2.3600e-003**	**0.2299**	**2.5300e-003**	**0.2324**	**0.0610**	**2.3400e-003**	**0.0633**		**232.9659**	**232.9659**	**0.0208**		**233.4865**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	3.4454	23.3454	52.2040	0.0970	7.2338	0.2160	7.4497	1.9420	0.2050	2.1469		9,757.3816	9,757.3816	0.6165		9,772.7950
Unmitigated	3.4454	23.3454	52.2040	0.0970	7.2338	0.2160	7.4497	1.9420	0.2050	2.1469		9,757.3816	9,757.3816	0.6165		9,772.7950

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Hotel	572.00	573.00	417.00	3,244,041	3,244,041
Total	572.00	573.00	417.00	3,244,041	3,244,041

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Hotel	24.00	24.00	24.00	19.40	61.60	19.00	58	38	4

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Hotel	0.448795	0.060687	0.206149	0.145887	0.057916	0.009282	0.014626	0.042627	0.002929	0.001905	0.006409	0.001553	0.001236

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0107	0.0977	0.0821	5.9000e-004		7.4200e-003	7.4200e-003		7.4200e-003	7.4200e-003		117.2083	117.2083	2.2500e-003	2.1500e-003	117.9049
NaturalGas Unmitigated	0.0107	0.0977	0.0821	5.9000e-004		7.4200e-003	7.4200e-003		7.4200e-003	7.4200e-003		117.2083	117.2083	2.2500e-003	2.1500e-003	117.9049

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Hotel	996.271	0.0107	0.0977	0.0821	5.9000e-004		7.4200e-003	7.4200e-003		7.4200e-003	7.4200e-003		117.2083	117.2083	2.2500e-003	2.1500e-003	117.9049
Total		**0.0107**	**0.0977**	**0.0821**	**5.9000e-004**		**7.4200e-003**	**7.4200e-003**		**7.4200e-003**	**7.4200e-003**		**117.2083**	**117.2083**	**2.2500e-003**	**2.1500e-003**	**117.9049**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Hotel	0.996271	0.0107	0.0977	0.0821	5.9000e-004		7.4200e-003	7.4200e-003		7.4200e-003	7.4200e-003		117.2083	117.2083	2.2500e-003	2.1500e-003	117.9049
Total		**0.0107**	**0.0977**	**0.0821**	**5.9000e-004**		**7.4200e-003**	**7.4200e-003**		**7.4200e-003**	**7.4200e-003**		**117.2083**	**117.2083**	**2.2500e-003**	**2.1500e-003**	**117.9049**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.4845	1.0000e-004	0.0104	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005		0.0219	0.0219	6.0000e-005		0.0234
Unmitigated	0.4845	1.0000e-004	0.0104	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005		0.0219	0.0219	6.0000e-005		0.0234

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.1106					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.3729					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	9.9000e-004	1.0000e-004	0.0104	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005		0.0219	0.0219	6.0000e-005		0.0234
Total	**0.4845**	**1.0000e-004**	**0.0104**	**0.0000**		**4.0000e-005**	**4.0000e-005**		**4.0000e-005**	**4.0000e-005**		**0.0219**	**0.0219**	**6.0000e-005**		**0.0234**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.1106					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.3729					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	9.9000e-004	1.0000e-004	0.0104	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005		0.0219	0.0219	6.0000e-005		0.0234
Total	**0.4845**	**1.0000e-004**	**0.0104**	**0.0000**		**4.0000e-005**	**4.0000e-005**		**4.0000e-005**	**4.0000e-005**		**0.0219**	**0.0219**	**6.0000e-005**		**0.0234**

7.0 Water Detail

7.1 Mitigation Measures Water

Install Low Flow Bathroom Faucet

Install Low Flow Kitchen Faucet

Install Low Flow Toilet

Install Low Flow Shower

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

TREDC Hotel Project

Humboldt County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Hotel	100.00	Room	0.40	17,424.00	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	103
Climate Zone	1			**Operational Year**	2040
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Refer to Project Description

Construction Phase -

Demolition -

Vehicle Trips - Refer to CalEEMod input table

Construction Off-road Equipment Mitigation - Refer to CalEEMod tables

Water Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	40	15

tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	8.00
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3

tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblLandUse	BuildingSpaceSquareFeet	145,200.00	17,424.00
tblLandUse	LandUseSquareFeet	145,200.00	17,424.00
tblLandUse	LotAcreage	3.33	0.40
tblProjectCharacteristics	OperationalYear	2018	2040
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblVehicleTrips	CC_TL	6.60	24.00
tblVehicleTrips	CNW_TL	6.60	24.00
tblVehicleTrips	CW_TL	14.70	24.00
tblVehicleTrips	ST_TR	8.19	5.73
tblVehicleTrips	SU_TR	5.95	4.17
tblVehicleTrips	WD_TR	8.17	5.72

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2017	81.1082	24.9368	12.1834	0.0412	8.1808	0.8839	9.0647	1.3262	0.8433	2.1695	0.0000	4,225.9986	4,225.9986	0.3709	0.0000	4,234.9302
Maximum	**81.1082**	**24.9368**	**12.1834**	**0.0412**	**8.1808**	**0.8839**	**9.0647**	**1.3262**	**0.8433**	**2.1695**	**0.0000**	**4,225.9986**	**4,225.9986**	**0.3709**	**0.0000**	**4,234.9302**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2017	80.8353	20.4034	12.2032	0.0412	4.0803	0.2124	4.2928	0.7053	0.2058	0.9111	0.0000	4,225.9986	4,225.9986	0.3709	0.0000	4,234.9302
Maximum	**80.8353**	**20.4034**	**12.2032**	**0.0412**	**4.0803**	**0.2124**	**4.2928**	**0.7053**	**0.2058**	**0.9111**	**0.0000**	**4,225.9986**	**4,225.9986**	**0.3709**	**0.0000**	**4,234.9302**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.34**	**18.18**	**-0.16**	**0.00**	**50.12**	**75.97**	**52.64**	**46.82**	**75.60**	**58.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.4844	9.0000e-005	0.0101	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005		0.0219	0.0219	6.0000e-005		0.0233
Energy	0.0107	0.0977	0.0821	5.9000e-004		7.4200e-003	7.4200e-003		7.4200e-003	7.4200e-003		117.2083	117.2083	2.2500e-003	2.1500e-003	117.9049
Mobile	2.7847	18.8207	45.0027	0.0927	7.1760	0.1741	7.3501	1.9171	0.1650	2.0821		9,323.4077	9,323.4077	0.5235		9,336.4963
Total	**3.2798**	**18.9184**	**45.0949**	**0.0933**	**7.1760**	**0.1816**	**7.3576**	**1.9171**	**0.1725**	**2.0896**		**9,440.6379**	**9,440.6379**	**0.5259**	**2.1500e-003**	**9,454.4244**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.4844	9.0000e-005	0.0101	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005		0.0219	0.0219	6.0000e-005		0.0233
Energy	0.0107	0.0977	0.0821	5.9000e-004		7.4200e-003	7.4200e-003		7.4200e-003	7.4200e-003		117.2083	117.2083	2.2500e-003	2.1500e-003	117.9049
Mobile	2.7847	18.8207	45.0027	0.0927	7.1760	0.1741	7.3501	1.9171	0.1650	2.0821		9,323.4077	9,323.4077	0.5235		9,336.4963
Total	**3.2798**	**18.9184**	**45.0949**	**0.0933**	**7.1760**	**0.1816**	**7.3576**	**1.9171**	**0.1725**	**2.0896**		**9,440.6379**	**9,440.6379**	**0.5259**	**2.1500e-003**	**9,454.4244**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	6/1/2017	6/14/2017	5	10	
2	Site Preparation	Site Preparation	6/15/2017	6/15/2017	5	1	
3	Grading	Grading	6/16/2017	6/19/2017	5	2	
4	Building Construction	Building Construction	6/20/2017	11/6/2017	5	100	
5	Paving	Paving	11/7/2017	11/13/2017	5	5	
6	Architectural Coating	Architectural Coating	11/14/2017	11/20/2017	5	5	

Acres of Grading (Site Preparation Phase): 0.5

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 26,136; Non-Residential Outdoor: 8,712; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

TREDC Hotel Project - Humboldt County, Winter

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Rubber Tired Dozers	1	1.00	247	0.40
Demolition	Tractors/Loaders/Backhoes	2	6.00	97	0.37
Site Preparation	Graders	1	8.00	187	0.41
Site Preparation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Grading	Concrete/Industrial Saws	1	8.00	81	0.73
Grading	Rubber Tired Dozers	1	1.00	247	0.40
Grading	Tractors/Loaders/Backhoes	2	6.00	97	0.37
Building Construction	Cranes	1	4.00	231	0.29
Building Construction	Forklifts	2	6.00	89	0.20
Building Construction	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Architectural Coating	Air Compressors	1	6.00	78	0.48
Paving	Cement and Mortar Mixers	4	6.00	9	0.56
Paving	Pavers	1	7.00	130	0.42
Paving	Rollers	1	7.00	80	0.38
Paving	Tractors/Loaders/Backhoes	1	7.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	4	10.00	0.00	344.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	2	5.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Grading	4	10.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	5	7.00	3.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	1.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Paving	7	18.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Use DPF for Construction Equipment

Use Soil Stabilizer

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Demolition - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					7.4554	0.0000	7.4554	1.1288	0.0000	1.1288			0.0000			0.0000
Off-Road	1.2100	10.4978	7.9182	0.0120		0.7318	0.7318		0.6978	0.6978		1,179.3075	1,179.3075	0.2319		1,185.1047
Total	**1.2100**	**10.4978**	**7.9182**	**0.0120**	**7.4554**	**0.7318**	**8.1872**	**1.1288**	**0.6978**	**1.8266**		**1,179.3075**	**1,179.3075**	**0.2319**		**1,185.1047**

3.2 Demolition - 2017

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.5511	14.2759	3.0651	0.0279	0.5977	0.1508	0.7484	0.1635	0.1442	0.3077		2,917.2656	2,917.2656	0.1138		2,920.1108
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1561	0.1632	1.2000	1.3100e-003	0.1277	1.4000e-003	0.1291	0.0339	1.3000e-003	0.0352		129.4255	129.4255	0.0116		129.7147
Total	**0.7072**	**14.4390**	**4.2652**	**0.0292**	**0.7254**	**0.1522**	**0.8776**	**0.1974**	**0.1455**	**0.3429**		**3,046.6911**	**3,046.6911**	**0.1254**		**3,049.8255**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.3549	0.0000	3.3549	0.5080	0.0000	0.5080			0.0000			0.0000
Off-Road	0.2652	5.9644	7.9381	0.0120		0.0603	0.0603		0.0603	0.0603	0.0000	1,179.3075	1,179.3075	0.2319		1,185.1047
Total	**0.2652**	**5.9644**	**7.9381**	**0.0120**	**3.3549**	**0.0603**	**3.4152**	**0.5080**	**0.0603**	**0.5682**	**0.0000**	**1,179.3075**	**1,179.3075**	**0.2319**		**1,185.1047**

3.2 Demolition - 2017

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.5511	14.2759	3.0651	0.0279	0.5977	0.1508	0.7484	0.1635	0.1442	0.3077		2,917.2656	2,917.2656	0.1138		2,920.1108
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1561	0.1632	1.2000	1.3100e-003	0.1277	1.4000e-003	0.1291	0.0339	1.3000e-003	0.0352		129.4255	129.4255	0.0116		129.7147
Total	**0.7072**	**14.4390**	**4.2652**	**0.0292**	**0.7254**	**0.1522**	**0.8776**	**0.1974**	**0.1455**	**0.3429**		**3,046.6911**	**3,046.6911**	**0.1254**		**3,049.8255**

3.3 Site Preparation - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.5303	0.0000	0.5303	0.0573	0.0000	0.0573			0.0000			0.0000
Off-Road	0.8524	10.5148	4.3533	9.7700e-003		0.4726	0.4726		0.4347	0.4347		999.5201	999.5201	0.3063		1,007.1764
Total	**0.8524**	**10.5148**	**4.3533**	**9.7700e-003**	**0.5303**	**0.4726**	**1.0028**	**0.0573**	**0.4347**	**0.4920**		**999.5201**	**999.5201**	**0.3063**		**1,007.1764**

3.3 Site Preparation - 2017

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0780	0.0816	0.6000	6.6000e-004	0.0639	7.0000e-004	0.0646	0.0169	6.5000e-004	0.0176		64.7127	64.7127	5.7800e-003		64.8574
Total	**0.0780**	**0.0816**	**0.6000**	**6.6000e-004**	**0.0639**	**7.0000e-004**	**0.0646**	**0.0169**	**6.5000e-004**	**0.0176**		**64.7127**	**64.7127**	**5.7800e-003**		**64.8574**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.2386	0.0000	0.2386	0.0258	0.0000	0.0258			0.0000			0.0000
Off-Road	0.2382	4.8716	5.8579	9.7700e-003		0.0361	0.0361		0.0361	0.0361	0.0000	999.5201	999.5201	0.3063		1,007.1764
Total	**0.2382**	**4.8716**	**5.8579**	**9.7700e-003**	**0.2386**	**0.0361**	**0.2747**	**0.0258**	**0.0361**	**0.0618**	**0.0000**	**999.5201**	**999.5201**	**0.3063**		**1,007.1764**

3.3 Site Preparation - 2017

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0780	0.0816	0.6000	6.6000e-004	0.0639	7.0000e-004	0.0646	0.0169	6.5000e-004	0.0176		64.7127	64.7127	5.7800e-003		64.8574
Total	**0.0780**	**0.0816**	**0.6000**	**6.6000e-004**	**0.0639**	**7.0000e-004**	**0.0646**	**0.0169**	**6.5000e-004**	**0.0176**		**64.7127**	**64.7127**	**5.7800e-003**		**64.8574**

3.4 Grading - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.7528	0.0000	0.7528	0.4138	0.0000	0.4138			0.0000			0.0000
Off-Road	1.2100	10.4978	7.9182	0.0120		0.7318	0.7318		0.6978	0.6978		1,179.3075	1,179.3075	0.2319		1,185.1047
Total	**1.2100**	**10.4978**	**7.9182**	**0.0120**	**0.7528**	**0.7318**	**1.4845**	**0.4138**	**0.6978**	**1.1115**		**1,179.3075**	**1,179.3075**	**0.2319**		**1,185.1047**

3.4 Grading - 2017

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category						lb/day								lb/day		
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1561	0.1632	1.2000	1.3100e-003	0.1277	1.4000e-003	0.1291	0.0339	1.3000e-003	0.0352		129.4255	129.4255	0.0116		129.7147
Total	**0.1561**	**0.1632**	**1.2000**	**1.3100e-003**	**0.1277**	**1.4000e-003**	**0.1291**	**0.0339**	**1.3000e-003**	**0.0352**		**129.4255**	**129.4255**	**0.0116**		**129.7147**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category						lb/day								lb/day		
Fugitive Dust					0.3387	0.0000	0.3387	0.1862	0.0000	0.1862			0.0000			0.0000
Off-Road	0.2652	5.9644	7.9381	0.0120		0.0603	0.0603		0.0603	0.0603	0.0000	1,179.3075	1,179.3075	0.2319		1,185.1047
Total	**0.2652**	**5.9644**	**7.9381**	**0.0120**	**0.3387**	**0.0603**	**0.3990**	**0.1862**	**0.0603**	**0.2465**	**0.0000**	**1,179.3075**	**1,179.3075**	**0.2319**		**1,185.1047**

3.4 Grading - 2017

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1561	0.1632	1.2000	1.3100e-003	0.1277	1.4000e-003	0.1291	0.0339	1.3000e-003	0.0352		129.4255	129.4255	0.0116		129.7147
Total	**0.1561**	**0.1632**	**1.2000**	**1.3100e-003**	**0.1277**	**1.4000e-003**	**0.1291**	**0.0339**	**1.3000e-003**	**0.0352**		**129.4255**	**129.4255**	**0.0116**		**129.7147**

3.5 Building Construction - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.2812	12.7589	8.0700	0.0114		0.8591	0.8591		0.7904	0.7904		1,165.916 4	1,165.916 4	0.3572		1,174.847 3
Total	**1.2812**	**12.7589**	**8.0700**	**0.0114**		**0.8591**	**0.8591**		**0.7904**	**0.7904**		**1,165.916 4**	**1,165.916 4**	**0.3572**		**1,174.847 3**

3.5 Building Construction - 2017

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0277	0.4726	0.1805	7.7000e-004	0.0183	5.8700e-003	0.0242	5.2700e-003	5.6100e-003	0.0109		79.8455	79.8455	5.6000e-003		79.9856
Worker	0.1093	0.1142	0.8400	9.2000e-004	0.0894	9.8000e-004	0.0904	0.0237	9.1000e-004	0.0246		90.5978	90.5978	8.1000e-003		90.8003
Total	**0.1369**	**0.5868**	**1.0205**	**1.6900e-003**	**0.1077**	**6.8500e-003**	**0.1146**	**0.0290**	**6.5200e-003**	**0.0355**		**170.4434**	**170.4434**	**0.0137**		**170.7859**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.2793	6.1296	7.9624	0.0114		0.0578	0.0578		0.0578	0.0578	0.0000	1,165.916 4	1,165.916 4	0.3572		1,174.847 3
Total	**0.2793**	**6.1296**	**7.9624**	**0.0114**		**0.0578**	**0.0578**		**0.0578**	**0.0578**	**0.0000**	**1,165.916 4**	**1,165.916 4**	**0.3572**		**1,174.847 3**

3.5 Building Construction - 2017

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0277	0.4726	0.1805	7.7000e-004	0.0183	5.8700e-003	0.0242	5.2700e-003	5.6100e-003	0.0109		79.8455	79.8455	5.6000e-003		79.9856
Worker	0.1093	0.1142	0.8400	9.2000e-004	0.0894	9.8000e-004	0.0904	0.0237	9.1000e-004	0.0246		90.5978	90.5978	8.1000e-003		90.8003
Total	**0.1369**	**0.5868**	**1.0205**	**1.6900e-003**	**0.1077**	**6.8500e-003**	**0.1146**	**0.0290**	**6.5200e-003**	**0.0355**		**170.4434**	**170.4434**	**0.0137**		**170.7859**

3.6 Paving - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0532	9.9754	7.3425	0.0113		0.6087	0.6087		0.5636	0.5636		1,085.1071	1,085.1071	0.3018		1,092.6515
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.0532**	**9.9754**	**7.3425**	**0.0113**		**0.6087**	**0.6087**		**0.5636**	**0.5636**		**1,085.1071**	**1,085.1071**	**0.3018**		**1,092.6515**

3.6 Paving - 2017

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.2809	0.2937	2.1600	2.3600e-003	0.2299	2.5300e-003	0.2324	0.0610	2.3400e-003	0.0633		232.9659	232.9659	0.0208		233.4865
Total	**0.2809**	**0.2937**	**2.1600**	**2.3600e-003**	**0.2299**	**2.5300e-003**	**0.2324**	**0.0610**	**2.3400e-003**	**0.0633**		**232.9659**	**232.9659**	**0.0208**		**233.4865**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.2239	4.7579	6.9028	0.0113		0.0436	0.0436		0.0436	0.0436	0.0000	1,085.1071	1,085.1071	0.3018		1,092.6515
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.2239**	**4.7579**	**6.9028**	**0.0113**		**0.0436**	**0.0436**		**0.0436**	**0.0436**	**0.0000**	**1,085.1071**	**1,085.1071**	**0.3018**		**1,092.6515**

3.6 Paving - 2017

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.2809	0.2937	2.1600	2.3600e-003	0.2299	2.5300e-003	0.2324	0.0610	2.3400e-003	0.0633		232.9659	232.9659	0.0208		233.4865
Total	**0.2809**	**0.2937**	**2.1600**	**2.3600e-003**	**0.2299**	**2.5300e-003**	**0.2324**	**0.0610**	**2.3400e-003**	**0.0633**		**232.9659**	**232.9659**	**0.0208**		**233.4865**

3.7 Architectural Coating - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	80.7602					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.3323	2.1850	1.8681	2.9700e-003		0.1733	0.1733		0.1733	0.1733		281.4481	281.4481	0.0297		282.1909
Total	**81.0926**	**2.1850**	**1.8681**	**2.9700e-003**		**0.1733**	**0.1733**		**0.1733**	**0.1733**		**281.4481**	**281.4481**	**0.0297**		**282.1909**

3.7 Architectural Coating - 2017

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0156	0.0163	0.1200	1.3000e-004	0.0128	1.4000e-004	0.0129	3.3900e-003	1.3000e-004	3.5200e-003		12.9426	12.9426	1.1600e-003		12.9715
Total	**0.0156**	**0.0163**	**0.1200**	**1.3000e-004**	**0.0128**	**1.4000e-004**	**0.0129**	**3.3900e-003**	**1.3000e-004**	**3.5200e-003**		**12.9426**	**12.9426**	**1.1600e-003**		**12.9715**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	80.7602					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.0594	1.3570	1.8324	2.9700e-003		0.0143	0.0143		0.0143	0.0143	0.0000	281.4481	281.4481	0.0297		282.1909
Total	**80.8197**	**1.3570**	**1.8324**	**2.9700e-003**		**0.0143**	**0.0143**		**0.0143**	**0.0143**	**0.0000**	**281.4481**	**281.4481**	**0.0297**		**282.1909**

3.7 Architectural Coating - 2017

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0156	0.0163	0.1200	1.3000e-004	0.0128	1.4000e-004	0.0129	3.3900e-003	1.3000e-004	3.5200e-003		12.9426	12.9426	1.1600e-003		12.9715
Total	**0.0156**	**0.0163**	**0.1200**	**1.3000e-004**	**0.0128**	**1.4000e-004**	**0.0129**	**3.3900e-003**	**1.3000e-004**	**3.5200e-003**		**12.9426**	**12.9426**	**1.1600e-003**		**12.9715**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	2.7847	18.8207	45.0027	0.0927	7.1760	0.1741	7.3501	1.9171	0.1650	2.0821		9,323.4077	9,323.4077	0.5235		9,336.4963
Unmitigated	2.7847	18.8207	45.0027	0.0927	7.1760	0.1741	7.3501	1.9171	0.1650	2.0821		9,323.4077	9,323.4077	0.5235		9,336.4963

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Hotel	572.00	573.00	417.00	3,244,041	3,244,041
Total	572.00	573.00	417.00	3,244,041	3,244,041

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Hotel	24.00	24.00	24.00	19.40	61.60	19.00	58	38	4

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Hotel	0.555197	0.027252	0.217244	0.114264	0.010253	0.002787	0.012651	0.049427	0.004514	0.000798	0.003917	0.001338	0.000357

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0107	0.0977	0.0821	5.9000e-004		7.4200e-003	7.4200e-003		7.4200e-003	7.4200e-003		117.2083	117.2083	2.2500e-003	2.1500e-003	117.9049
NaturalGas Unmitigated	0.0107	0.0977	0.0821	5.9000e-004		7.4200e-003	7.4200e-003		7.4200e-003	7.4200e-003		117.2083	117.2083	2.2500e-003	2.1500e-003	117.9049

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Hotel	996.271	0.0107	0.0977	0.0821	5.9000e-004		7.4200e-003	7.4200e-003		7.4200e-003	7.4200e-003		117.2083	117.2083	2.2500e-003	2.1500e-003	117.9049
Total		**0.0107**	**0.0977**	**0.0821**	**5.9000e-004**		**7.4200e-003**	**7.4200e-003**		**7.4200e-003**	**7.4200e-003**		**117.2083**	**117.2083**	**2.2500e-003**	**2.1500e-003**	**117.9049**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Hotel	0.996271	0.0107	0.0977	0.0821	5.9000e-004		7.4200e-003	7.4200e-003		7.4200e-003	7.4200e-003		117.2083	117.2083	2.2500e-003	2.1500e-003	117.9049
Total		**0.0107**	**0.0977**	**0.0821**	**5.9000e-004**		**7.4200e-003**	**7.4200e-003**		**7.4200e-003**	**7.4200e-003**		**117.2083**	**117.2083**	**2.2500e-003**	**2.1500e-003**	**117.9049**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.4844	9.0000e-005	0.0101	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005		0.0219	0.0219	6.0000e-005		0.0233
Unmitigated	0.4844	9.0000e-005	0.0101	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005		0.0219	0.0219	6.0000e-005		0.0233

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.1106					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.3729					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	9.3000e-004	9.0000e-005	0.0101	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005		0.0219	0.0219	6.0000e-005		0.0233
Total	**0.4844**	**9.0000e-005**	**0.0101**	**0.0000**		**4.0000e-005**	**4.0000e-005**		**4.0000e-005**	**4.0000e-005**		**0.0219**	**0.0219**	**6.0000e-005**		**0.0233**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.1106					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.3729					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	9.3000e-004	9.0000e-005	0.0101	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005		0.0219	0.0219	6.0000e-005		0.0233
Total	**0.4844**	**9.0000e-005**	**0.0101**	**0.0000**		**4.0000e-005**	**4.0000e-005**		**4.0000e-005**	**4.0000e-005**		**0.0219**	**0.0219**	**6.0000e-005**		**0.0233**

7.0 Water Detail

7.1 Mitigation Measures Water

Install Low Flow Bathroom Faucet

Install Low Flow Kitchen Faucet

Install Low Flow Toilet

Install Low Flow Shower

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

APPENDIX F

SPECIAL STATUS SPECIES

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Arcata Fish and Wildlife Office
1655 HEINDON ROAD
ARCATA, CA 95521
PHONE: (707)822-7201 FAX: (707)822-8411

Consultation Code: 08EACT00-2017-SLI-0047
Event Code: 08EACT00-2017-E-00070
Project Name: 216561

December 29, 2016

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at:
http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm;
http://www.towerkill.com; and
http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment

United States Department of Interior
Fish and Wildlife Service

Project name: 216561

Official Species List

Provided by:

Arcata Fish and Wildlife Office
1655 HEINDON ROAD
ARCATA, CA 95521
(707) 822-7201

Consultation Code: 08EACT00-2017-SLI-0047
Event Code: 08EACT00-2017-E-00070

Project Type: DEVELOPMENT

Project Name: 216561
Project Description: Trinidad Hotel EA

Please Note: The FWS office may have modified the Project Name and/or Project Description, so it may be different from what was submitted in your previous request. If the Consultation Code matches, the FWS considers this to be the same project. Contact the office in the 'Provided by' section of your previous Official Species list if you have any questions or concerns.

Project Location Map:

Project Coordinates: MULTIPOLYGON (((-124.1292804479599 41.05361425219491, -124.1295328437627 41.05328545080284, -124.12954775692013 41.05319556410634, -124.12950602175442 41.05312812884963, -124.128862291509 41.052730351993844, -124.12861791548495 41.05267416230282, -124.12852253613893 41.05272808661494, -124.12859407077121 41.05289665565274, -124.12870731355724 41.052919127409616, -124.12878777982769 41.05287642901565, -124.128901049462 41.052892165275665, -124.12944642306684 41.053251733229196, -124.12920564127488 41.0535958259594, -124.1292804479599 41.05361425219491)))

Project Counties: Humboldt, CA

Endangered Species Act Species List

There are a total of 6 threatened or endangered species on your species list. Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species. Critical habitats listed under the **Has Critical Habitat** column may or may not lie within your project area. See the **Critical habitats within your project area** section further below for critical habitat that lies within your project. Please contact the designated FWS office if you have questions.

Birds	**Status**	**Has Critical Habitat**	**Condition(s)**
Marbled murrelet *(Brachyramphus marmoratus)* Population: U.S.A. (CA, OR, WA)	Threatened	Final designated	
Northern Spotted owl *(Strix occidentalis caurina)* Population: Wherever found	Threatened	Final designated	
Short-Tailed albatross *(Phoebastria (=diomedea) albatrus)* Population: Wherever found	Endangered		
western snowy plover *(Charadrius nivosus ssp. nivosus)* Population: Pacific Coast population DPS-U.S.A. (CA, OR, WA), Mexico (within 50 miles of Pacific coast)	Threatened	Final designated	
Yellow-Billed Cuckoo *(Coccyzus americanus)* Population: Western U.S. DPS	Threatened	Proposed	
Fishes			
Tidewater goby *(Eucyclogobius*	Endangered	Final designated	

newberryi) Population: Wherever found			

Critical habitats that lie within your project area

There are no critical habitats within your project area.

Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Taxonomic Group IS (Dune OR Scrub OR Herbaceous OR Marsh OR Riparian OR Woodland OR Forest OR Alpine OR Inland Waters OR Marine OR Estuarine OR Riverine OR Palustrine OR Fish OR Amphibians OR Reptiles OR Birds OR Mammals OR Mollusks OR Arachnids OR Crustaceans OR Insects OR Ferns OR Gymnosperms OR Monocots OR Dicots OR Lichens OR Bryophytes OR Fungi)
 AND (Federal Listing Status IS (Endangered OR Threatened) OR State Listing Status IS (Endangered OR Threatened))
 AND County IS (Humboldt)
 AND Quad IS (Trinidad (4112412))

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Charadrius alexandrinus nivosus western snowy plover	ABNNB03031	Threatened	None	G3T3	S2S3	SSC
Eucyclogobius newberryi tidewater goby	AFCQN04010	Endangered	None	G3	S3	SSC
Spirinchus thaleichthys longfin smelt	AFCHB03010	Candidate	Threatened	G5	S1	SSC

Record Count: 3

FEDERAL SPECIAL-STATUS SPECIES

SCIENTIFIC NAME COMMON NAME	**FEDERAL STATUS**	**DISTRIBUTION**	**HABITAT REQUIREMENTS**	**PERIOD OF IDENTIFICATION**
ANIMALS				
BIRDS				
Brachyramphus Marmoratus Marbled Murrelet	FT	CA, OR, WA	Outside of the breeding season, found in coastal areas, mainly in salt water within 2 km of shore, including bays and sounds. Nests in trees in terrestrial habitat including alpine, conifer forest, and tundra.	Year-Round
Strix Occidentalis Caurina Northern Spotted Owl	FT	CA, OR, WA into BC and Cascade Mountains, forests and Sierra Nevada old growth forests.	Resides in mixed conifer, redwood, and Douglas fir habitats, from sea level up to approximately 2,300 meters. Appear to prefer old-growth forests, but use of managed (previously logged) lands is not uncommon. Owls do not appear to use logged habitat until approximately 60 years after logging unless some larger trees or snags remain after logging. Nesting habitat is a tree or snag cavity, or the broken top of a large tree. Requires a nearby, permanent source of water. Foraging habitat consists of any forest habitat with sufficient prey (e.g. flying squirrels, mice, and voles).	Year-Round
Phoebastria Albatrus Short-Tailed Albatross	FE	Nests on islands off southern Japan and very rare visitor along western coast California.	Requires remote islands for breeding habitat; nests in open, treeless areas with low, or no, vegetation. Spend much of their time feeding in shelf-break areas of the Bering Sea, Aleutian chain and in other Alaskan, Japanese, and Russian waters, as they require nutrient-rich areas of ocean upwelling for their foraging habitat.	December Through July
Charadrius Nivosus Western Snowy Plover	FT	CA, OR, WA, Pacific Coast	Snowy plovers (pacific coast population) breed primarily above the high tide line on coastal beaches, sand spits, dune-backed beaches, sparsely vegetated dunes, beaches at creek and river mouths, and saltpans at lagoons and estuaries. In winter, snowy plovers are found on many of the beaches used for nesting as well as on beaches where they do not nest, in manmade salt ponds, and on estuarine sand and mud flats.	May Through October

SCIENTIFIC NAME COMMON NAME	FEDERAL STATUS	DISTRIBUTION	HABITAT REQUIREMENTS	PERIOD OF IDENTIFICATION
Cooccyzus Americanus Yellow-Billed Cuckoo	FT	AZ, CA, CO, ID, MT, NM, NV, OR, TX, UT, WA, WY, Canada, Mexico	wooded habitat with dense cover and water nearby, including woodlands with low, scrubby, vegetation, overgrown orchards, abandoned farmland, and dense thickets along streams and marshes. Nests are often placed in willows along streams and rivers, with nearby cottonwoods serving as foraging sites.	Year-Round
fishes				
Eucyclogobius Newberryi Tidewater Goby	FE	CA Coast	Found in shallow lagoons and lower stream reaches, they need fairly still but not stagnant water & high oxygen levels	Consult Agency
Spirinchus Thaleichthys Longfin Smelt	Candidate	CA Coast	Occurs in benthic habitat within medium and large low-grade river systems. Found in open waters of estuaries, mostly in middle or bottom of water column. Prefer salinities of 15-30 ppt, but can be found in completely freshwater to almost pure seawater.	Consult Agency

Notes:

Federal Status Codes (U.S. Fish And Wildlife Service Or National Marine Fisheries Service)

Fe = Listed As Endangered By The Federal Government

Ft = Listed As Threatened By The Federal Government

Source: USFWS, 2016

APPENDIX G

TRINIDAD AREA FREEWAY MASTER PLAN STUDY

Trinidad Area Freeway Master Plan Study Report

Prepared for:

The Trinidad Rancheria

Prepared by:

omni · means
ENGINEERS · PLANNERS

SHN Consulting Engineers
& Geologists, Inc.

TRINIDAD AREA FREEWAY MASTER PLAN STUDY

PREPARED FOR:
THE TRINIDAD RANCHERIA
1 CHER-AE LANE
TRINIDAD, CA 95570

PREPARED JOINTLY BY:

OMNI-MEANS, LTD.
ENGINEERS & PLANNERS
943 RESERVE DRIVE
SACRAMENTO CA 95678
(916) 782-8688

AND

SHN CONSULTING ENGINEERS & GEOLOGISTS, INC
812 W. WABASH
EUREKA, CA 95501-2138

FEBRUARY 2014

45-6108-01
R1721RPT003.DOCX

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INTRODUCTION

The Trinidad Rancheria (Rancheria) retained the team of SHN Consulting Engineers & Geologist Inc, (SHN) and OMNI-MEANS to complete a roadway improvement needs traffic study, in the vicinity of City of Trinidad in Humboldt County. **Figure 1** (in the appendix) shows the study area. With the planned growth of the Rancheria (per the Master Plan), City of Trinidad (per the General Plan) and other background growth in the County, planning an efficient transportation system is essential to support this growth. The focus of this study is to determine the circulation improvements on US 101 and the interchanges that provide access to the City of Trinidad and the Rancheria to support the future growth. Traffic operations have been quantified based upon weekday peak month AM and PM peak hour traffic operations at critical study intersections, and along US 101 freeway mainline segments, and at mainline/ramp junctions.

STUDY AREA ROADWAY

Roadways that provide the primary vehicle circulation within the study area include US 101, Main Street, Scenic Drive, and Westhaven Drive. Following is a brief description of the primary roadways within the study area:

US 101 is a major north-south freeway facility that provides regional connections to the cities on the north coast and Sacramento/ Los Angeles urban basin to the south. Within Humboldt County, US 101 serves as a vital north-south circulator, and is a general four lane divided freeway with a 65 mph posted speed limit in the immediate vicinity of the study area. Just south of the Main Street interchange (@ PM 98.067), US 101 currently carries an Annual Average Daily Traffic (AADT) of 10,600 vehicles. (Source: 2011 Caltrans Traffic Volumes.) Truck traffic on US 101 in the project area (@ PM 98.067) represents approximately 22% of the daily traffic. (Source: 2010 Caltrans Annual Average Daily Truck Traffic on the California State Highway System.)

Main Street is an east-west two lane primary collector street that extends west of US 101 SB ramps and continues through the City of Trinidad as Trinity Street and Edwards Street. Per the City of Trinidad draft General Plan Circulation Element, the Average Daily Traffic (ADT) on Main Street is 3,170 vehicles.

Scenic Drive is a north-south two lane secondary collector street that extends south of Main Street and provides access to the Rancheria. Per the City of Trinidad draft General Plan Circulation Element, the ADT on Scenic Drive is 870 vehicles.

Westhaven Drive is a north-south two lane primary collector street that extends east of US 101 SB ramps and provides a connection between the City of Trinidad and the unincorporated community of Westhaven in the county. Per the City of Trinidad draft General Plan Circulation Element, the ADT on Westhaven Drive east of US 101 is 865 vehicles.

STUDY LOCATIONS

Intersections

Based on consultation with Caltrans, weekday AM & PM traffic counts were collected for the following study intersections:

1. 6th Avenue/Kay Avenue
2. 6th Avenue/Kahlstrom Avenue
3. Kay Avenue/US101 SB Ramps
4. Kahlstrom Avenue/7th Avenue
5. Main Street/Patricks Point Drive/Trinidad Scenic Drive
6. Main Street/US101 SB Ramps
7. Westhaven Drive/US101 NB Ramps
8. Westhaven Drive/Trinidad Frontage Road
9. Scenic Drive/Baker Ranch Road
10. Scenic Drive/Cher-Ae Heights Casino Driveway
11. Scenic Drive/Cher-Ae Lane
12. Scenic Drive/Lanford Road

The weekday AM and PM peak hour traffic counts were collected in May 2013. The AM peak hour is defined as one-hour of peak traffic flow counted between 7:00 AM and 9:00 AM and the PM peak hour is defined as one-hour of peak traffic flow counted between 4:00 PM and 6:00 PM.

Based on the data obtained from Caltrans continuous count station located at PM 98.067 on US 101, August counts were observed to be 25% higher than the May counts. Therefore, the May counts were adjusted to reflect the peak August month counts. Although, it is unlikely that the local street intersections will experience this same growth, for the purposes of this study, this growth was utilized to reflect August peak month counts.

Figure 2 (in the Appendix) shows the existing lane geometrics and control at the study intersections. **Figure 3** (in the Appendix) shows the existing peak hour volumes at these locations and **Figure 4** (in the appendix) shows the existing ramp volumes.

US101 Mainline Segments

The following mainline segments have been analyzed in the study:

1. US101 Mainline NB – north of Main Street Interchange
2. US101 Mainline SB – north of Main Street Interchange
3. US101 Mainline NB – south of Main Street Interchange
4. US101 Mainline SB – south of Main Street Interchange

US101 Merge/Diverge

The following merge/diverge junctions have been analyzed in the study:

1) NB US101/Kahlstrom Avenue Ramp Diverge
2) SB US101/Kay Avenue Ramp Merge
3) NB US101/Kahlstrom Avenue Ramp Merge
4) SB US101/Kay Avenue Ramp Diverge
5) NB US101/Westhaven Drive Ramp Diverge
6) SB US101/Main Street Ramp Merge
7) NB US101/Westhaven Drive Ramp Merge
8) SB US101/Main Street Ramp Diverge

ANALYSIS METHODOLOGIES AND PARAMETERS

Level-of-Service Methodologies

Traffic operations will be quantified through the determination of "Level of Service" (LOS). Level of Service is a qualitative measure of traffic operating conditions, whereby a letter grade "A" through "F" is assigned to an intersection or roadway segment representing progressively worsening traffic conditions. Levels of Service have been calculated for all intersection control types using the methods documented in the Transportation Research Board Publication *Highway Capacity Manual, Fourth Edition*, *2010 (HCM-2010)*. For signalized intersections and all-way-stop-controlled (AWSC) intersections, the intersection delays and levels of service are average values for all intersection movements. For two-way-stop-controlled (TWSC) intersections, the intersection delays and levels of service are representative of those for the worst-case movement.

LOS Policies

The Caltrans published *Guide for the Preparation of Traffic Impact Studies* (dated December 2002) states the following:

> *"Caltrans endeavors to maintain a target LOS at the transition between LOS "C" and LOS "D" on State highway facilities."*

LOS Threshold

Based on the above policy, LOS 'C' has been assumed as the minimum acceptable for all study intersections, mainline segments and ramp merge diverge and weave junctions.

Warrant Analysis

A supplemental traffic signal "warrant" analysis has been completed on unsignalized intersections determined to be operating at unacceptable LOS. The term "signal warrants" refers to the list of established criteria used by Caltrans and other public agencies to quantitatively justify or ascertain the need for installation of a traffic signal at an unsignalized intersection. The signal warrant criteria are based upon several factors, including the volume of vehicular and pedestrian traffic, frequency of accidents, and location of school areas. The criteria is published in the California Manual of Traffic Control Devices (MUTCD).

This study utilizes the peak hour volume-based Warrant 3 as one representative type of traffic signal warrant analysis. It should be noted that the Peak-Hour-Volume Warrant was only applied when the intersection was found to be operating at unacceptable LOS. Therefore, there may be instances when the unsignalized intersection operates at acceptable LOS conditions or better but still meets the Peak-Hour-Volume Warrant.

Technical Analysis Parameters - Intersections

The traffic study would generally provide a "preliminary operational level" evaluation of traffic operating conditions, which is considered sufficient for California Environmental Quality Act (CEQA) and National Environmental Quality Act (NEPA) purposes. The Synchro 8.0 (Trafficware) integrated computer software program has been used to implement the HCM-2010 analysis methodologies at intersections. The specific intersections related technical analysis parameters that have been used for this study are presented below.

Parameters	Existing Conditions	Future Conditions
Peak Hour factor (PHF)	from data collection	0.88
Heavy Vehicle Percentage	5%	5%
# of Conflicting Pedestrian/Hour	5	5
Ideal Saturated Flow[1]	1500 vphpl	1500 vphpl
1. Ideal Saturated Flow assumed as per Caltrans District 1 recommedation.		

Technical Analysis Parameters – Mainline and Ramps

The *Highway Capacity Software* integrated computer software program has been used to implement the HCM-2010 analysis methodologies at freeways and ramps. The specific mainline, ramp related technical analysis parameters that have been used for this study are presented below.

Parameters	Existing Conditions	Future Conditions
Free Flow Speed	55 MPH	55 MPH
Mainline Peak Hour Factor (PHF)	0.88	0.88
Ramp Peak Hour Factor (PHF)	from existing counts	0.88
Mainline Heavy Vehicle Percentage[1]	22%	22%
Ramp Heavy Vehicle Percentage	5%	5%
Terrain	Level	Level
Driver Population	0.86	0.86
Mainline AM peak Hour Volume (Northbound)[2]	317 vph	1% growth rate
Mainline AM peak Hour Volume (Southbound)[2]	287 vph	1% growth rate
Mainline PM peak Hour Volume (Northbound)[2]	541 vph	1% growth rate
Mainline PM peak Hour Volume (Southbound)[2]	486 vph	1% growth rate
Ramp Volumes	from data collection	1% growth rate
1. Mainline Heavy Vehicle Percentage obtained from Caltrans Published 2011 Data.		
2. Data abtained from Caltrans' Performance Measurement System (PEMS) database for Thursday in August 2012 (peak month and day).		

EXISTING CONDITIONS

This section provides a summary of intersection, mainline and ramp merge/diverge analysis for Existing conditions. **Figure 3** (in the appendix) depicts the intersection volumes and **Figure 4** (in the appendix) depicts the freeway mainline and ramp volumes.

Intersections

"Existing" peak-hour traffic operations were quantified for the study intersections. **Table 1A** summarizes Existing AM and PM peak hour intersection LOS values with existing traffic volumes (shown on **Figure 3**) and lane geometrics and control (shown on **Figure 2**).

TABLE 1A
EXISTING CONDITIONS: INTERSECTIONS LEVEL OF SERVICE

#	Intersection	Control Type[1,2]	Target LOS	AM Peak Hour			PM Peak Hour		
				Delay	LOS	Warrant Met?[3]	Delay	LOS	Warrant Met?[3]
1	6th Avenue & Kay Avenue	TWSC	C	8.9	A	-	8.9	A	-
2	6th Avenue & Kahlstrom Avenue	TWSC	C	9.0	A	-	8.8	A	-
3	Kay Avenue & US 101 SB Ramps	TWSC	C	9.5	A	-	9.1	A	-
4	Kahlstrom Avenue & 7th Avenue	TWSC	C	9.0	A	-	0.4	A	-
5	Scenic Drive & Main Street	TWSC	C	12.4	B	-	13.6	B	-
6	Westhaven Drive & US 101 SB Ramps	TWSC	C	9.6	A	-	10.0	A	-
7	Westhaven Drive & US 101 NB Ramps	TWSC	C	10.7	B	-	11.2	B	-
8	Westhaven Drive & Frontage Road	TWSC	C	9.2	A	-	9.0	A	-
9	Scenic Drive & Baker Ranch Drive	TWSC	C	0.7	A	-	8.5	A	-
10	Scenic Drive & Cher-Ae Lane	TWSC	C	8.6	A	-	9.1	A	-
11	Scenic Drive & Cher-Ae Heights Casino	TWSC	C	8.6	A	-	8.6	A	-
12	Scenic Drive & Landford Road	TWSC	C	8.7	A	-	8.9	A	-

Notes:
1. TWSC = Two Way Stop Control
2. LOS = Delay based on worst minor street approach for TWSC intersections
3. Warrant = Based on California MUTCD Warrant 3

As indicated in **Table 1A**, all of the study intersections are found to be operating at acceptable LOS under Existing conditions based on the intersection delay and the corresponding LOS.

Existing Freeway and Ramp Junction Operating Conditions

US 101 freeway mainline and ramp junction peak-hour traffic operations were also quantified applying methods documented in the *HCM-2010* with the existing conditions LOS presented in **Table 1B**. As shown in **Table 1B**, all freeway mainline segments and ramp junctions within the study area currently operate at LOS "C" or better for "Existing" AM and PM peak hour periods.

TABLE 1B
EXISTING CONDITIONS:
US 101 MAINLINE AND RAMP JUNCTION LEVEL OF SERVICE

Freeway Mainline Segment	No. Lanes	Target LOS	AM Peak Hour Volume	AM Peak Hour Density, (pc/mi/ln)	AM Peak Hour LOS	PM Peak Hour Volume	PM Peak Hour Density, (pc/mi/ln)	PM Peak Hour LOS
US 101 NB north of Main Street	2	C	204	2.7	A	368	4.9	A
US 101 NB south of Main Street	2	C	343	5.1	A	539	7.2	A
US 101 SB north of Main Street	2	C	164	2.2	A	366	4.9	A
US 101 SB south of Main Street	2	C	282	3.8	A	496	6.6	A

TABLE 1B (CONTINUED)
EXISTING CONDITIONS:
US 101 MAINLINE AND RAMP JUNCTION LEVEL OF SERVICE

Interchange Location	Target LOS	Junction Type	AM Peak Hour Density (pc/mi/ln)	AM Peak Hour LOS	PM Peak Hour Density (pc/mi/ln)	PM Peak Hour LOS
US 101 Ramps @ 6th Avenue I/C						
U.S. Route 101 Northbound On-Ramp	C	Merge	7.8	A	9.9	A
U.S. Route 101 Northbound Off-Ramp	C	Diverge	6.1	A	9.2	A
U.S. Route 101 Southbound On-Ramp	C	Merge	7.4	A	9.8	A
U.S. Route 101 Southbound Off-Ramp	C	Diverge	5.8	A	8.8	A
US 101 Ramps @ Main Street I/C						
U.S. Route 101 Northbound On-Ramp	C	Merge	5.9	A	7.8	A
U.S. Route 101 Northbound Off-Ramp	C	Diverge	6.8	A	9.3	A
U.S. Route 101 Southbound On-Ramp	C	Merge	7.0	A	9.6	A
U.S. Route 101 Southbound Off-Ramp	C	Diverge	4.1	A	7.2	A

DESIGN YEAR CONDITIONS

General

The Highway Design Manual (HDM) states that the geometric design of new facilities and reconstruction projects should normally be based on estimated traffic 20 years after completion of construction. As such, Caltrans has established that the cumulative year of analysis should be 2040. This is consistent with the Humboldt County Regional Planning efforts and the Humboldt County Regional Travel Demand model.

Year 2040 Traffic Volumes

The following sources of data were reviewed to establish background annual growth rate that will be applied to the study area facilities to derive Year 2040 Base traffic volumes:

1) Humboldt County Travel Demand Model Roadway volumes for Year 2010 and Year 2040 were compared on US 101. In the vicinity of the study area, the model projects approximately 6,100 ADT for Year 2010 and 7,000 ADT for Year 2040. This yields an annual growth rate of approximately 0.5% per year.
2) Historic ADT data available from Caltrans was reviewed for the Year 1992 and Year 2012. In the vicinity of the study area, the 1992 ADT was found to be 8,000 and the peak ADT was found to be 11,300. In 2012, the ADT was found to be 8,900 and the peak ADT was found to be 12,300. This yields an annual growth rate of approximately 0.6% per year.
3) California Department of Finance (DOF) projections for population in Humboldt County were reviewed for Year 2010 and Year 2040 conditions. The DOF estimate for population in Year 2010 was 134,663 and Year 2040 is 147,873. This yields an annual growth rate of approximately 0.6% per year.

Per direction from Caltrans District 1 Long Range Planning, a background growth rate of 1.3% per year has been utilized to derive Year 2040 Base traffic volumes.

Year 2020 Traffic Forecasts

Based on the planned development of the Rancheria and input from Caltrans, Year 2020 was established as the interim analysis year. A background growth rate of 1.3% per year has been utilized to derive Year 2020 Base traffic volumes.

YEAR 2020 BASE TRAFFIC OPERATIONS

This section provides a summary of intersection, mainline and ramp merge/diverge analysis for Year 2020 Base conditions. **Figure 5** (in the appendix) depicts the intersection volumes and **Figure 6** (in the appendix) depicts the freeway mainline and ramp volumes.

Intersections

Year 2020 Base peak-hour traffic operations were quantified for the study intersections. **Table 2A** summarizes Year 2020 Base AM and PM peak hour intersection LOS values with Year 2020 volumes (shown on **Figure 5**) and lane geometrics and control (shown on **Figure 2**).

TABLE 2A
YEAR 2020 BASE CONDITIONS: INTERSECTIONS LEVEL OF SERVICE

#	Intersection	Control Type[1,2]	Target LOS	AM Peak Hour			PM Peak Hour		
				Delay	LOS	Warrant Met?[3]	Delay	LOS	Warrant Met?[3]
1	6th Avenue & Kay Avenue	TWSC	C	9.1	A	-	9.2	A	-
2	6th Avenue & Kahlstrom Avenue	TWSC	C	9.3	A	-	8.9	A	-
3	Kay Avenue & US 101 SB Ramps	TWSC	C	9.7	A	-	9.2	A	-
4	Kahlstrom Avenue & 7th Avenue	TWSC	C	9.4	A	-	1.9	A	-
5	Scenic Drive & Main Street	TWSC	C	14.5	B	-	16.0	C	-
6	Westhaven Drive & US 101 SB Ramps	TWSC	C	9.8	A	-	10.8	B	-
7	Westhaven Drive & US 101 NB Ramps	TWSC	C	11.2	B	-	12.1	B	-
8	Westhaven Drive & Frontage Road	TWSC	C	9.7	A	-	9.5	A	-
9	Scenic Drive & Baker Ranch Drive	TWSC	C	2.5	A	-	8.6	A	-
10	Scenic Drive & Cher-Ae Heights Casino	TWSC	C	8.7	A	-	9.0	A	-
11	Scenic Drive & Cher-Ae Lane	TWSC	C	8.7	A	-	9.5	A	-
12	Scenic Drive & Landford Road	TWSC	C	9.2	A	-	9.5	A	-

Notes:

1. TWSC = Two Way Stop Control

2. LOS = Delay based on worst minor street approach for TWSC intersections

3. Warrant = Based on California MUTCD Warrant 3

As indicated in **Table 2A**, all of the study intersections are found to be operating at acceptable LOS under Year 2020 Base conditions based on the intersection delay and the corresponding LOS.

Year 2020 Base Freeway and Ramp Junction Operating Conditions

US 101 freeway mainline and ramp junction peak-hour traffic operations were also quantified applying methods documented in the *HCM-2010* with the existing conditions LOS presented in **Table 2B**. As shown in **Table 2B**, all freeway mainline segments and ramp junctions within the study area currently operate at LOS "C" or better for Year 2020 Base AM and PM peak hour periods.

TABLE 2B
YEAR 2020 BASE CONDITIONS:
US 101 MAINLINE AND RAMP JUNCTION LEVEL OF SERVICE

Freeway Mainline Segment	No. Lanes	Target LOS	AM Peak Hour			PM Peak Hour		
			Volume	Density, (pc/mi/ln)	LOS	Volume	Density, (pc/mi/ln)	LOS
US 101 NB north of Main Street	2	C	230	3.1	A	400	5.3	A
US 101 NB south of Main Street	2	C	380	5.1	A	580	7.7	A
US 101 SB north of Main Street	2	C	170	2.3	A	410	5.5	A
US 101 SB south of Main Street	2	C	300	4.0	A	540	7.2	A

TABLE 2B (CONTINUED)
YEAR 2020 BASE CONDITIONS:
US 101 MAINLINE AND RAMP JUNCTION LEVEL OF SERVICE

Interchange Location	Target LOS	Junction Type	AM Peak Hour Density (pc/mi/ln)	AM Peak Hour LOS	PM Peak Hour Density (pc/mi/ln)	PM Peak Hour LOS
US 101 Ramps @ 6th Avenue I/C						
U.S. Route 101 Northbound On-Ramp	C	Merge	8.3	A	10.4	B
U.S. Route 101 Northbound Off-Ramp	C	Diverge	5.6	A	8.5	A
U.S. Route 101 Southbound On-Ramp	C	Merge	6.9	A	9.2	A
U.S. Route 101 Southbound Off-Ramp	C	Diverge	5.6	A	8.3	A
US 101 Ramps @ Main Street I/C						
U.S. Route 101 Northbound On-Ramp	C	Merge	6.2	A	8.1	A
U.S. Route 101 Northbound Off-Ramp	C	Diverge	6.3	A	8.8	A
U.S. Route 101 Southbound On-Ramp	C	Merge	6.8	A	9.2	A
U.S. Route 101 Southbound Off-Ramp	C	Diverge	4.1	A	6.6	A

YEAR 2040 BASE TRAFFIC OPERATIONS

This section provides a summary of intersection, mainline and ramp merge/diverge analysis for Year 2040 Base conditions. **Figure 7** (in the appendix) depicts the intersection volumes and **Figure 8** (in the appendix) depicts the freeway mainline and ramp volumes.

Intersections

Year 2040 Base peak-hour traffic operations were quantified for the study intersections. **Table 3A** summarizes Year 2040 Base AM and PM peak hour intersection LOS values with Year 2040 traffic volumes (shown on **Figure 7**) and lane geometrics and control (shown on **Figure 2**).

TABLE 3A
YEAR 2040 BASE CONDITIONS: INTERSECTIONS LEVEL OF SERVICE

#	Intersection	Control Type[1,2]	Target LOS	AM Peak Hour Delay	AM Peak Hour LOS	AM Peak Hour Warrant Met?[3]	PM Peak Hour Delay	PM Peak Hour LOS	PM Peak Hour Warrant Met?[3]
1	6th Avenue & Kay Avenue	TWSC	C	9.1	A	-	9.1	A	-
2	6th Avenue & Kahlstrom Avenue	TWSC	C	9.1	A	-	8.9	A	-
3	Kay Avenue & US 101 SB Ramps	TWSC	C	9.8	A	-	9.3	A	-
4	Kahlstrom Avenue & 7th Avenue	TWSC	C	9.1	A	-	1.9	A	-
5	Scenic Drive & Main Street	TWSC	C	17.1	C	-	21.1	C	-
6	Westhaven Drive & US 101 SB Ramps	TWSC	C	11.3	B	-	11.8	B	-
7	Westhaven Drive & US 101 NB Ramps	TWSC	C	12.8	B	-	14.5	B	-
8	Westhaven Drive & Frontage Road	TWSC	C	10.0	A	-	9.6	A	-
9	Scenic Drive & Baker Ranch Drive	TWSC	C	2.5	A	-	8.6	A	-
10	Scenic Drive & Cher-Ae Heights Casino	TWSC	C	8.7	A	-	8.9	A	-
11	Scenic Drive & Cher-Ae Lane	TWSC	C	8.7	A	-	9.4	A	-
12	Scenic Drive & Landford Road	TWSC	C	9.1	A	-	9.6	A	-

Notes:
1. TWSC = Two Way Stop Control
2. LOS = Delay based on worst minor street approach for TWSC intersections
3. Warrant = Based on California MUTCD Warrant 3

As indicated in **Table 3A**, all of the study intersections are found to be operating at acceptable LOS under Year 2040 Base conditions based on the intersection delay and the corresponding LOS.

Year 2040 Base Freeway and Ramp Junction Operating Conditions

US 101 freeway mainline and ramp junction peak-hour traffic operations were also quantified applying methods documented in the *HCM-2010* with the Year 2040 conditions LOS presented in **Table 3B**. As shown in **Table 3B**, all freeway mainline segments and ramp junctions within the study area currently operate at LOS "C" or better for Year 2040 Base AM and PM peak hour periods.

TABLE 3B
YEAR 2040 BASE CONDITIONS:
US 101 MAINLINE AND RAMP JUNCTION LEVEL OF SERVICE

			AM Peak Hour			PM Peak Hour		
Freeway Mainline Segment	**No. Lanes**	**Target LOS**	**Volume**	**Density, (pc/mi/ln)**	**LOS**	**Volume**	**Density, (pc/mi/ln)**	**LOS**
US 101 NB north of Main Street	2	C	290	3.9	A	520	6.9	A
US 101 NB south of Main Street	2	C	490	6.5	A	760	10.1	B
US 101 SB north of Main Street	2	C	230	3.1	A	500	6.7	A
US 101 SB south of Main Street	2	C	390	5.2	A	690	9.2	A

TABLE 3B (CONTINUED)
YEAR 2040 BASE CONDITIONS:
US 101 MAINLINE AND RAMP JUNCTION LEVEL OF SERVICE

			AM Peak Hour		PM Peak Hour	
Interchange Location	**Target LOS**	**Junction Type**	**Density (pc/mi/ln)**	**LOS**	**Density (pc/mi/ln)**	**LOS**
US 101 Ramps @ 6th Avenue I/C						
U.S. Route 101 Northbound On-Ramp	C	Merge	7.8	A	9.9	A
U.S. Route 101 Northbound Off-Ramp	C	Diverge	6.1	A	9.2	A
U.S. Route 101 Southbound On-Ramp	C	Merge	7.4	A	9.8	A
U.S. Route 101 Southbound Off-Ramp	C	Diverge	5.8	A	8.8	A
US 101 Ramps @ Main Street I/C						
U.S. Route 101 Northbound On-Ramp	C	Merge	5.9	A	7.8	A
U.S. Route 101 Northbound Off-Ramp	C	Diverge	6.8	A	9.3	A
U.S. Route 101 Southbound On-Ramp	C	Merge	7.0	A	9.6	A
U.S. Route 101 Southbound Off-Ramp	C	Diverge	4.1	A	7.2	A

RANCHERIA MASTER PLAN DEVELOPMENT

The Trinidad Rancheria provided long range plans for development of the Rancheria (Master Plan Development). To assess the roadways improvements needs associated with the Master Plan Development, trips expected from the Master Plan Development will be added to the Base year traffic volumes. The general land use assumptions for the proposed Rancheria Master Plan development are presented below:

Uses	Existing	Master Plan
Casino	50,000 sq.ft.	150,000 sq.ft.
RV Spaces	22	50
Hotel	None	100 Rooms
Office Space	Minimal	100,000 sq.ft.
Retail	None	25,000 sq.ft.
Community Space	Minimal	50,000 sq.ft.
Gas Station	None	6 Pumps

Rancheria Master Plan Development Trip Generation

Table 4A provides the trip generation associated with the proposed Rancheria Master Plan development. Trip Generation estimates for other uses were obtained from the data published in the 9th edition of Institute of Transportation Engineers (ITE). Although the retail uses associated with the proposed Rancheria Master Plan development are expected to be “Specialty Retail” (ITE Use Code 814), a “Shopping Center” (ITE use code 820) was used to estimate trips for this land use. The data is limited for the Specialty Retail type uses and therefore, Shopping Center was used.

Traffic counts conducted at the entrance to the existing Trinidad Rancheria indicated that the existing Rancheria generates 67 trips during the AM peak period and 107 trips during the PM peak period. Based on the 50,000 square feet existing casino establishment, these trips translate to 1.34 trips/1,000 sq.ft. during the AM peak period and 2.14 trips/1,000 sq.ft. during the PM peak period. This data along with data from other Casino/Rancheria’s was utilized in deriving trips for the proposed 150,000 square feet casino expansion.

Table 4B provides the trip generation associated with the proposed Rancheria Master Plan development for Year 2020 conditions.

TABLE 4A
RANCHERIA MASTER PLAN DEVELOPMENT - BUILT-OUT TRIP GENERATION

"Unadjusted" Project Trip Generation[1]

Land Use Category (ITE Code)	Rate Unit		AM Pk Hr Trip Rate Total	In %	Out %	PM Pk Hr Trip Rate Total	In %	Out %
Casino Trip Generation Rates[2]	per	ksf	2.01	69%	31%	3.94	53%	47%
Hotel (310)[3]	per	room	0.56	61%	39%	0.59	53%	47%
General Office (710)[3]	per	ksf	1.92	88%	12%	1.91	17%	83%
Shopping Center (820)[3]	per	ksf	0.96	62%	38%	3.71	48%	52%
Recreational Community Center (495)[3]	per	ksf	2.05	66%	34%	2.74	49%	51%
Gas Station with Convenience Market (945)[3]	per	FS	10.16	50%	50%	13.51	50%	50%

Land Use Description	Quantity		AM Pk Hr Trips Total	In	Out	PM Pk Hr Trips Total	In	Out
Proposed Casino Expansion	150.0	ksf	302	208	94	591	313	278
Hotel	100	rooms	56	34	22	59	31	28
Office	100	ksf	192	169	23	191	32	159
Retail	25	ksf	24	15	9	93	45	48
Recreational	50	ksf	103	68	35	137	67	70
Mini-Mart	6	FS	61	31	30	82	41	41
TOTAL "UNADJUSTED" PROPOSED PROJECT TRIPS			**738**	**525**	**213**	**1,153**	**529**	**624**

Notes: ksf = 1,000 square feet, FS - Fueling Stations

1) Unadjusted Trips include Internal Trips.

2) Trip generation volumes estimated using other sources, which are attached.

3) Trip generation volumes estimated using the ITE Trip Generation (9th Edition) .

4) Based on professional engineering judgement.

Internal Trip Reductions[4]

Land Use Description	AM Peak Hour Internal %	PM Peak Hour Internal %
Hotel	30%	30%
Office, Retail, Recreational and Mini-Mart	20%	20%

Land Use Description	AM Peak Hour Trips Total	In	Out	PM Peak Hour Trips Total	In	Out
100 Room Hotel	*16*	*10*	6	*17*	*9*	8
Office, Retail, Recreational and Mini-Mart	*76*	*56*	*19*	*100*	*37*	*63*
TOTAL PROPOSED PROJECT INTERNAL TRIPS	***92***	***66***	***26***	***117***	***46***	***71***

"Unadjusted" External Trip Generation

Land Use Description	AM Peak Hour Trips Total	In	Out	PM Peak Hour Trips Total	In	Out
TOTAL "UNADJUSTED" PROJECT TRIPS	738	525	213	1,153	529	624
- Internal trips	-92	-66	-26	-117	-46	-71
TOTAL "UNADJUSTED" PROPOSED PROJECT EXTERNAL TRIPS	**646**	**459**	**187**	**1,036**	**483**	**553**

Full development of the proposed Rancheria Master Plan development is expected to generate 646 AM peak hour trips and 1,036 PM peak hour trips. Note that these are all net “new” trips that will be added to the study intersection in the analysis under Year 2040 Master Plan conditions.

The study includes analysis of proposed Rancheria Master Plan development conditions under Year 2020 conditions. It is not expected that full build-out of the proposed Rancheria Master Plan development will occur by Year 2020 conditions. Therefore, for trip generation purposes under Year 2020 conditions, it is assumed that the 100 room hotel and the 150,000 square feet casino expansion will be constructed.

TABLE 4B
YEAR 2020 MASTER PLAN TRIP GENERATION

"Unadjusted" Project Trip Generation[1]

Land Use Category (ITE Code)	**Rate Unit**		**AM Pk Hr Trip Rate**			**PM Pk Hr Trip Rate**		
			Total	**In %**	**Out %**	**Total**	**In %**	**Out %**
Casino Trip Generation Rates[2]	per	ksf	2.01	69%	31%	3.94	53%	47%
Hotel (310)[3]	per	room	0.56	61%	39%	0.59	53%	47%
			AM Pk Hr Trips			**PM Pk Hr Trips**		
Land Use Description	**Quantity**		**Total**	**In**	**Out**	**Total**	**In**	**Out**
Proposed Casino Expansion	150.0	ksf	302	208	94	591	313	278
Hotel	100	rooms	56	34	22	59	31	28
TOTAL "UNADJUSTED" PROPOSED PROJECT TRIPS			**358**	**242**	**116**	**650**	**344**	**306**

Notes: ksf = 1,000 square feet, FS - Fueling Stations

1) Unadjusted Trips include Internal Trips.

2) Trip generation volumes estimated using other sources, which are attached.

3) Trip generation volumes estimated using the ITE Trip Generation (9th Edition) .

4) Based on professional engineering judgement.

Internal Trip Reductions[4]

Land Use Description			**AM Peak Hour Internal %**			**PM Peak Hour Internal %**		
Hotel				30%			30%	
			AM Peak Hour Trips			**PM Peak Hour Trips**		
Land Use Description			**Total**	**In**	**Out**	**Total**	**In**	**Out**
100 Room Hotel			*16*	*10*	6	*17*	*9*	8
TOTAL PROPOSED PROJECT INTERNAL TRIPS			***16***	***10***	***6***	***17***	***9***	***8***

"Unadjusted" External Trip Generation

			AM Peak Hour Trips			**PM Peak Hour Trips**		
Land Use Description			**Total**	**In**	**Out**	**Total**	**In**	**Out**
TOTAL "UNADJUSTED" PROJECT TRIPS			358	242	116	650	344	306
- Internal trips			-16	-10	-6	-17	-9	-8
TOTAL "UNADJUSTED" PROPOSED PROJECT EXTERNAL TRIPS			**342**	**232**	**110**	**633**	**335**	**298**

Year 2020 development of the proposed Rancheria Master Plan development is expected to generate 342 AM peak hour trips and 633 PM peak hour trips. Note that these are all net “new” trips that will be added to the study intersection in the analysis under Year 2020 Master Plan conditions.

Rancheria Master Plan development Trip Distribution and Assignment

The directional trip distribution and assignment of proposed Rancheria Master Plan development trips was largely based on the type of uses, demographics of the study area, travel patterns from the existing Rancheria derived thru traffic counts. The directional trip distribution for the proposed Rancheria Master Plan development is depicted graphically in **Figure 9 (**in the Appendix**).**

YEAR 2020 RANCHERIA MASTER PLAN TRAFFIC OPERATIONS

This section provides a summary of intersection, mainline and ramp merge/diverge analysis for Year 2020 Rancheria Master Plan conditions. **Figure 10** (in the appendix) depicts the intersection volumes and **Figure 11** (in the appendix) depicts the freeway mainline and ramp volumes.

Intersections

2020 Rancheria Master Plan peak-hour traffic operations were quantified for the study intersections. **Table 5A** summarizes Year 2020 Rancheria Master Plan AM and PM peak hour intersection LOS values with Year 2020 traffic volumes (shown on **Figure 10**) and lane geometrics and control (shown on **Figure 2**).

TABLE 5A
YEAR 2020 RANCHERIA MASTER PLAN CONDITIONS: INTERSECTIONS LEVEL OF SERVICE

#	Intersection	Control Type[1,2]	Target LOS	AM Peak Hour			PM Peak Hour		
				Delay	LOS	Warrant Met?[3]	Delay	LOS	Warrant Met?[3]
1	6th Avenue & Kay Avenue	TWSC	C	9.2	A	-	9.4	A	-
2	6th Avenue & Kahlstrom Avenue	TWSC	C	9.4	A	-	9.1	A	-
3	Kay Avenue & US 101 SB Ramps	TWSC	C	9.7	A	-	9.3	A	-
4	Kahlstrom Avenue & 7th Avenue	TWSC	C	9.4	A	-	1.9	A	-
5	**Scenic Drive & Main Street**	**TWSC**	**C**	**54.3**	**F**	**No**	**OVR**	**F**	**Yes**
6	Westhaven Drive & US 101 SB Ramps	TWSC	C	11.8	B	-	15.3	C	-
7	**Westhaven Drive & US 101 NB Ramps**	**TWSC**	**C**	16.3	C	-	**39.0**	**E**	**Yes**
8	Westhaven Drive & Frontage Road	TWSC	C	9.9	A	-	9.9	A	-
9	Scenic Drive & Baker Ranch Drive	TWSC	C	2.5	A	-	8.7	A	-
10	Scenic Drive & Cher-Ae Heights Casino	TWSC	C	9.1	A	-	9.5	A	-
11	Scenic Drive & Cher-Ae Lane	TWSC	C	10.2	B	-	24.1	C	-
12	Scenic Drive & Landford Road	TWSC	C	11.2	B	-	15.6	C	-

Notes:
1. TWSC = Two Way Stop Control
2. LOS = Delay based on worst minor street approach for TWSC intersections
3. Warrant = Based on California MUTCD Warrant 3

As indicated in **Table 5A**, all of the study intersections with the exception of Scenic Drive and Main Street and Westhaven Drive and US 101 NB Ramps intersections are found to be operating at acceptable LOS under Year 2020 Rancheria Master Plan conditions based on the intersection delay and the corresponding LOS. Furthermore, the Scenic Drive/Main Street and Westhaven Drive/US 101 NB Ramps intersections are projected to meet the peak hour warrant criteria during the PM peak period.

Year 2020 Rancheria Master Plan Freeway and Ramp Junction Operating Conditions

US 101 freeway mainline and ramp junction peak-hour traffic operations were also quantified applying methods documented in the HCM-*2010* with the existing conditions LOS presented in **Table 5B**. As shown in **Table 5B**, all freeway mainline segments and ramp junctions within the study area currently operate at LOS "C" or better for Year 2020 Rancheria Master Plan AM and PM peak hour periods.

TABLE 5B
YEAR 2020 RANCHERIA MASTER PLAN CONDITIONS:
US 101 MAINLINE AND RAMP JUNCTION LEVEL OF SERVICE

			AM Peak Hour			PM Peak Hour		
Freeway Mainline Segment	No. Lanes	Target LOS	Volume	Density, (pc/mi/ln)	LOS	Volume	Density, (pc/mi/ln)	LOS
US 101 NB north of Main Street	2	C	254	3.4	A	464	6.2	A
US 101 NB south of Main Street	2	C	515	6.9	A	774	10.3	A
US 101 SB north of Main Street	2	C	221	2.9	A	484	6.5	A
US 101 SB south of Main Street	2	C	364	4.9	A	713	9.5	A

TABLE 5B (CONTINUED)
YEAR 2020 RANCHERIA MASTER PLAN CONDITIONS:
US 101 MAINLINE AND RAMP JUNCTION LEVEL OF SERVICE

			AM Peak Hour		PM Peak Hour	
Interchange Location	Target LOS	Junction Type	Density (pc/mi/ln)	LOS	Density (pc/mi/ln)	LOS
US 101 Ramps @ 6th Avenue I/C						
U.S. Route 101 Northbound On-Ramp	C	Merge	9.9	A	12.6	B
U.S. Route 101 Northbound Off-Ramp	C	Diverge	7.5	A	11.3	B
U.S. Route 101 Southbound On-Ramp	C	Merge	8.0	A	11.5	B
U.S. Route 101 Southbound Off-Ramp	C	Diverge	6.6	A	11.0	B
US 101 Ramps @ Main Street I/C						
U.S. Route 101 Northbound On-Ramp	C	Merge	6.4	A	8.7	A
U.S. Route 101 Northbound Off-Ramp	C	Diverge	8.5	A	11.8	B
U.S. Route 101 Southbound On-Ramp	C	Merge	7.6	A	11.3	B
U.S. Route 101 Southbound Off-Ramp	C	Diverge	4.8	A	8.1	A

YEAR 2040 RANCHERIA MASTER PLAN TRAFFIC OPERATIONS

This section provides a summary of intersection, mainline and ramp merge/diverge analysis for Year 2040 Rancheria Master Plan conditions. **Figure 12** (in the appendix) depicts the intersection volumes and **Figure 13** (in the appendix) depicts the freeway mainline and ramp volumes.

Intersections

Year 2040 Rancheria Master Plan peak-hour traffic operations were quantified for the study intersections. **Table 6A** summarizes Year 2040 Rancheria Master Plan AM and PM peak hour intersection LOS values with Year 2040 traffic volumes (shown on **Figure 12**) and lane geometrics and control (shown on **Figure 2**).

TABLE 6A
YEAR 2040 RANCHERIA MASTER PLAN CONDITIONS: INTERSECTIONS LEVEL OF SERVICE

#	Intersection	Control Type[1,2]	Target LOS	AM Peak Hour Delay	AM Peak Hour LOS	AM Peak Hour Warrant Met?[3]	PM Peak Hour Delay	PM Peak Hour LOS	PM Peak Hour Warrant Met?[3]
1	6th Avenue & Kay Avenue	TWSC	C	9.3	A	-	9.4	A	-
2	6th Avenue & Kahlstrom Avenue	TWSC	C	9.3	A	-	9.2	A	-
3	Kay Avenue & US 101 SB Ramps	TWSC	C	9.9	A	-	9.5	A	-
4	Kahlstrom Avenue & 7th Avenue	TWSC	C	9.4	A	-	1.9	A	-
5	**Scenic Drive & Main Street**	**TWSC**	**C**	**OVR**	**F**	**Yes**	**OVR**	**F**	**Yes**
6	Westhaven Drive & US 101 SB Ramps	TWSC	C	18.6	C	-	23.7	C	-
7	**Westhaven Drive & US 101 NB Ramps**	**TWSC**	**C**	**71.7**	**F**	**Yes**	**OVR**	**F**	**Yes**
8	Westhaven Drive & Frontage Road	TWSC	C	10.5	B	-	10.4	B	-
9	Scenic Drive & Baker Ranch Drive	TWSC	C	2.5	A	-	8.7	A	-
10	Scenic Drive & Cher-Ae Heights Casino	TWSC	C	9.2	A	-	10.4	B	-
11	**Scenic Drive & Cher-Ae Lane**	**TWSC**	**C**	13.6	B	-	**235.1**	**F**	**Yes**
12	Scenic Drive & Landford Road	TWSC	C	13.4	B	-	22.7	C	-

Notes:
1. TWSC = Two Way Stop Control
2. LOS = Delay based on worst minor street approach for TWSC intersections
3. Warrant = Based on California MUTCD Warrant 3

As indicated in **Table 6A**, the following study intersections are found to be operating at unacceptable LOS D or worse conditions under Year 2040 Rancheria Master Plan conditions based on the intersection delay and the corresponding LOS:

- Scenic Drive and Main Street (meets the peak hour warrant criteria during both peak periods)
- Westhaven Drive and US 101 NB Ramps (meets the peak hour warrant criteria during both peak periods)
- Scenic Drive and Cher-Ae Lane (meets the peak hour warrant criteria during the PM peak period)

Year 2040 Rancheria Master Plan Freeway and Ramp Junction Operating Conditions

US 101 freeway mainline and ramp junction peak-hour traffic operations were also quantified applying methods documented in the HCM-*2010* with the existing conditions LOS presented in **Table 6B**. As shown in **Table 6B**, all freeway mainline segments and ramp junctions within the study area currently operate at LOS "C" or better for Year 2040 Rancheria Master Plan AM and PM peak hour periods.

TABLE 6B
YEAR 2040 RANCHERIA MASTER PLAN CONDITIONS:
US 101 MAINLINE AND RAMP JUNCTION LEVEL OF SERVICE

Freeway Mainline Segment	No. Lanes	Target LOS	AM Peak Hour Volume	AM Peak Hour Density, (pc/mi/ln)	AM Peak Hour LOS	PM Peak Hour Volume	PM Peak Hour Density, (pc/mi/ln)	PM Peak Hour LOS
US 101 NB north of Main Street	2	C	331	4.4	A	642	8.6	A
US 101 NB south of Main Street	2	C	756	10.1	A	1,040	13.9	B
US 101 SB north of Main Street	2	C	331	4.4	A	606	8.1	A
US 101 SB south of Main Street	2	C	498	6.6	A	1,011	13.5	B

TABLE 6B (CONTINUED)
YEAR 2040 RANCHERIA MASTER PLAN CONDITIONS:
US 101 MAINLINE AND RAMP JUNCTION LEVEL OF SERVICE

Interchange Location	Target LOS	Junction Type	AM Peak Hour Density (pc/mi/ln)	AM Peak Hour LOS	PM Peak Hour Density (pc/mi/ln)	PM Peak Hour LOS
US 101 Ramps @ 6th Avenue I/C						
U.S. Route 101 Northbound On-Ramp	C	Merge	12.2	B	15.5	B
U.S. Route 101 Northbound Off-Ramp	C	Diverge	10.2	B	14.4	B
U.S. Route 101 Southbound On-Ramp	C	Merge	9.4	A	14.7	B
U.S. Route 101 Southbound Off-Ramp	C	Diverge	8.3	A	14.8	B
US 101 Ramps @ Main Street I/C						
U.S. Route 101 Northbound On-Ramp	C	Merge	7.3	A	10.6	B
U.S. Route 101 Northbound Off-Ramp	C	Diverge	11.5	A	15.1	B
U.S. Route 101 Southbound On-Ramp	C	Merge	9.0	A	14.4	B
U.S. Route 101 Southbound Off-Ramp	C	Diverge	6.2	A	9.6	A

CHER-AE LANE INTERCHANGE

As noted in the previous analysis, with the addition of trips associated with the Rancheria Master Plan, the intersections on Main Street interchange are forecasted to operate at unacceptable LOS E or worse conditions under both Year 2020 and Year 2040 conditions. Without the Rancheria Master Plan trips, all of the study locations are projected to operate at acceptable LOS. Therefore, within this study, traffic operations analysis is evaluated with an interchange that provides direct access to the Rancheria and Westhaven Drive. This new interchange will be located approximately 0.7 miles south of the Main Street interchange.

For the purposes of the analysis a tight diamond interchange is assumed at the new interchange, which is referred to as the Cher-Ae Lane interchange. A two lane overcrossing is assumed with all-way stops at the two ramp locations. Easterly extension of Cher-Ae Lane past the interchange to intersect at a “T” intersection with Westhaven Drive is also assumed.

It should be noted that the spacing between the existing Main Street interchange and the proposed Cher-Ae Lane interchange does not meet the spacing requirements and a design exception would be necessary. However, the objective of this study is to analyze transportation operations associated with the new interchange and the design details and exceptions will be prepared in a Project Study Report, which will be prepared at a later time.

Weaving Analysis

Caltrans District 1 Traffic Operations performed a weaving analysis for the proposed Cher-Ae Lane Interchange on U.S. 101, approximately 0.7 miles south of the Trinidad interchange. The Leisch Method, referred to in Index 504.7 of the Caltrans Highway Design Manual (HDM), 6th Edition, was used in this analysis. Figure 504.7A from the HDM, which demonstrates this method, is provided in the appendix. The results of this analysis provided by Caltrans District 1 Traffic Operations are summarized below.

The overall conclusion from this analysis is that there is adequate distance on U.S. 101 between the proposed interchange ramps and the existing Trinidad interchange ramps to accommodate the interaction of entering and exiting traffic (current and projected) on U.S. 101 in both the north and south directions while maintaining acceptable Level of Service (LOS) on the freeway. Auxiliary lanes will not be needed on U.S. 101 if a new interchange is constructed near PM 100.2.

Using the post mile locations for the ramp connections of the Trinidad interchange and proposed Cher-Ae Lane interchange, the on and off ramps would be separated by approximately 2,600 feet (0.49 miles) and 2,500 feet (0.47 miles) for the northbound and southbound portions of the freeway, respectively. According to Index 504.5, Paragraph 2, of the HDM, "auxiliary lanes should be provided in all cases when the weaving distance is less than 2000 feet." Under these criteria, auxiliary lanes would not be required for northbound (NB) and southbound (SB) U.S. 101 between the Trinidad interchange and the proposed interchange.

The weaving analysis prepared by Caltrans District 1 Traffic Operations was based on the Year 2020 and 2040 volume information presented in the appendix. The data used was in the units of vehicles per hour (vph) and was taken from the afternoon PM peak hour. Year 2020 plus interchange northbound weaving volumes was calculated at 233 vph (80 vph NB onramp + 153 vph NB off ramp). Southbound weaving was calculated at 244 vph PM peak (151 vph SB onramp + 93 vph SB off ramp). Year 2040 plus interchange northbound weaving volumes was calculated at 292 vph (139 NB onramp + 153 vph NB off ramp). Southbound weaving was calculated at 339 vph (212 vph SB onramp + 127 vph SB off ramp).

HDM Section 504.7, Paragraph 3, gives a rough approximation for length of a weaving section, "one foot of length per weaving vehicle per hour (vph)." The largest weaving volume, 339 vph for Year 2040 in the southbound direction, would only require a 339 foot weaving section, which is much less than the 2500 and 2600 feet distances that exist between on and off ramps in the NB and SB directions, respectively. The distances between the ramps are more than adequate to accommodate the interaction of through traffic, traffic entering the freeway, and traffic exiting the freeway between the proposed and existing interchanges; therefore, auxiliary lanes would not be necessary.

The Leisch Method was used to determine Level of Service (LOS). The results from the method nomograph (HDM Figure 504.7A, provided in the appendix) show that the Year 2040 southbound weaving volume of 339 vph, or 401 passenger cars per hour (pcph), would result in LOS A. Being that the Year 2040 northbound weaving volume and the Year 2020 volumes are all less than 339 vph (401 pcph), LOS A would exist in both directions for the weaving section lengths between the interchanges for Year 2020 and 2040 conditions.

Design Exceptions

To promote uniform practice on a statewide basis, the Caltrans HDM identifies standards that shall be considered during project planning. When design features or elements deviate from HDM mandatory standards, approval from the appropriate Caltrans Design Coordinator shall be obtained. The authority to approve exceptions to advisory standards rests with the District Director (District 1).

Design exception approval must be obtained prior to Caltrans approval of a Project Study Report (PSR). When project development is initiated with approval of a Project Study Report – Project Development Support (PSR-PDS) document, approval of applicable design exceptions can be deferred to the Project Report (PR) phase.

Table 82.1A of the HDM lists mandatory standards subject to the above approval requirements. A screening-level review of the standards resulted in development of the below list of potential exceptions to mandatory standards for this project:

HDM Index	Standard	Comment
101.1	Selection of Design Speed	Local roads at interchanges may not meet standards.
201.1	Sight Distance Standards	Local roads at interchanges may not meet standards.
202.2	Superelevation	Local roads and ramp termini may not meet standards.
203.1	Horizontal Alignment	Local roads may not meet standards.
204.1	Local Facility Grades	Local road grades may not meet standards.
309.1	Clear Recovery Zone	Existing topographic features may not meet standards.
501.3	Interchange Spacing	A new interchange will require an exception.
504.3	Distance Between Ramp & Frontage Roads	Not met at existing interchanges. May not be met at new interchange.

Table 82.1B of the HDM lists advisory standards subject to the above approval requirements. A screening-level review of the standards resulted in development of the below list of potential exceptions to advisory standards for this project:

HDM Index	Standard	Comment
101.1	Selection of Design Speed	Local roads at interchanges may not meet standards.
105.4	Two ADA Ramp Design	One access ramp is often appropriate at signalized freeway ramps.
203.1	Horizontal Alignment	Local roads may not meet standards.
204.1	Local Facility Grades	Local road grades may not meet standards.

304.1	Side Slopes 1:4 or Flatter	Existing and proposed slopes may exceed 1:4.
309.1	Clear Recovery Zone	Existing topographic features may not meet standards.
504.3	Distance Between Ramp & Frontage Roads	Not met at existing interchanges. May not be met at new interchange.

YEAR 2020 RANCHERIA MASTER PLAN WITH CHER-AE LANE INTERCHANGE CONDITIONS (YEAR 2020 RANCHERIA MP WITH IC CONDITIONS)

Year 2020 proposed Rancheria Master Plan development trips identified in **Table 4B** have been added to Year 2020 Base traffic volumes based on the trip distribution presented in **Figure 9** to derive Year 2020 Rancheria Master Plan with Cher-Ae Lane Interchange Conditions (Year 2020 Rancheria Master Plan with IC conditions). Traffic volumes will be redistributed based on the addition of a new freeway interchange at the Trinidad Rancheria. **Figure 15** (in the appendix) depicts the intersection volumes and **Figure 16** (in the appendix) depicts the freeway mainline and ramp volumes.

Intersections

Year 2020 Rancheria MP with IC conditions peak-hour traffic operations were quantified for the study intersections. **Table 7A** summarizes Year 2020 Rancheria Master Plan with IC conditions AM and PM peak hour intersection LOS values with Year 2020 traffic volumes (shown on **Figure 15**) and lane geometrics and control (shown on **Figure 14**).

TABLE 7A
YEAR 2020 RANCHERIA MASTER PLAN WITH IC CONDITIONS: INTERSECTIONS LEVEL OF SERVICE

#	Intersection	Control Type^{1,2}	Target LOS	AM Peak Hour			PM Peak Hour		
				Delay	LOS	Warrant Met?^{3}	Delay	LOS	Warrant Met?^{3}
1	6th Avenue & Kay Avenue	TWSC	C	9.2	A	-	9.5	A	-
2	6th Avenue & Kahlstrom Avenue	TWSC	C	9.6	A	-	9.1	A	-
3	Kay Avenue & US 101 SB Ramps	TWSC	C	9.8	A	-	9.3	A	-
4	Kahlstrom Avenue & 7th Avenue	TWSC	C	9.6	A	-	1.9	A	-
5	Scenic Drive & Main Street	TWSC	C	13.2	B	-	14.4	B	-
6	Westhaven Drive & US 101 SB Ramps	TWSC	C	9.7	A	-	9.8	A	-
7	Westhaven Drive & US 101 NB Ramps	TWSC	C	10.9	B	-	11.5	B	-
8	Westhaven Drive & Frontage Road	TWSC	C	9.8	A	-	9.7	A	-
9	Scenic Drive & Baker Ranch Drive	TWSC	C	2.1	A	-	8.7	A	-
10	Scenic Drive & Cheer-Ae Hieght Casino	TWSC	C	9.1	A	-	8.8	A	-
11	Scenic Drive & Cher-AE Lane	TWSC	C	9.1	A	-	9.5	A	-
12	Scenic Drive & Landford Road	TWSC	C	8.9	A	-	9.3	A	-
13	Cher AE Lane & US 101 NB Ramps	AWSC	C	8.4	A	-	9.5	A	-
14	Cher AE Lane & US 101 SB Ramps	AWSC	C	8.2	A	-	10.1	B	-
15	Cher AE Lane & Westhaven Drive	TWSC	C	9.0	A	-	9.2	A	-

Notes:
1. TWSC = Two Way Stop Control
2. LOS = Delay based on worst minor street approach for TWSC intersections
3. Warrant = Based on California MUTCD Warrant 3

As indicated in **Table 7A**, all of the following study intersections are found to be operating at acceptable LOS C or better conditions under Year 2020 Rancheria MP with IC conditions based on the intersection delay and the corresponding LOS.

Year 2020 Rancheria Master Plan Freeway and Ramp Junction Operating Conditions

US 101 freeway mainline and ramp junction peak-hour traffic operations were also quantified applying methods documented in the HCM-*2010* with the existing conditions LOS presented in **Table 7B**. As shown in **Table 7B**, all freeway mainline segments and ramp junctions within the study area currently operate at LOS "C" or better for Year 2020 Rancheria MP with IC conditions AM and PM peak hour periods.

TABLE 7B
YEAR 2020 RANCHERIA MASTER PLAN WITH IC CONDITIONS:
US 101 MAINLINE AND RAMP JUNCTION LEVEL OF SERVICE

			AM Peak Hour			PM Peak Hour		
Freeway Mainline Segment	No. Lanes	Target LOS	Volume	Density, (pc/mi/ln)	LOS	Volume	Density, (pc/mi/ln)	LOS
US 101 NB north of Main Street	2	C	254	3.4	A	464	6.2	A
US 101 NB south of Main Street	2	C	379	5.1	A	618	8.2	A
US 101 SB north of Main Street	2	C	221	2.9	A	484	6.5	A
US 101 SB south of Main Street	2	C	348	4.6	A	600	8.0	A
US 101 NB south of Cher-Ae Lane	2	C	518	6.9	A	779	10.4	B
US 101 SB south of Cher-Ae Lane	2	C	372	5.0	A	715	9.5	A

TABLE 7B (CONTINUED)
YEAR 2020 RANCHERIA MASTER PLAN WITH IC CONDITIONS:
US 101 MAINLINE AND RAMP JUNCTION LEVEL OF SERVICE

			AM Peak Hour		PM Peak Hour	
Interchange Location	Target LOS	Junction Type	Density (pc/mi/ln)	LOS	Density (pc/mi/ln)	LOS
US 101 Ramps @ 6th Avenue I/C						
U.S. Route 101 Northbound On-Ramp	C	Merge	10.0	A	12.6	B
U.S. Route 101 Northbound Off-Ramp	C	Diverge	7.5	A	11.3	B
U.S. Route 101 Southbound On-Ramp	C	Merge	8.0	A	11.5	B
U.S. Route 101 Southbound Off-Ramp	C	Diverge	6.7	A	11.0	B
US 101 Ramps @ Cher-Ae Lane I/C						
U.S. Route 101 Northbound On-Ramp	C	Merge	8.2	A	10.9	B
U.S. Route 101 Northbound Off-Ramp	C	Diverge	8.5	A	11.8	A
U.S. Route 101 Southbound On-Ramp	C	Merge	8.0	A	10.3	B
U.S. Route 101 Southbound Off-Ramp	C	Diverge	6.4	A	9.6	A
US 101 Ramps @ Main Street I/C						
U.S. Route 101 Northbound On-Ramp	C	Merge	6.5	A	8.9	A
U.S. Route 101 Northbound Off-Ramp	C	Diverge	6.8	A	9.8	A
U.S. Route 101 Southbound On-Ramp	C	Merge	7.2	A	10.4	B
U.S. Route 101 Southbound Off-Ramp	C	Diverge	4.8	A	8.1	A

YEAR 2040 RANCHERIA MASTER PLAN WITH CHER-AE LANE INTERCHANGE CONDITIONS (YEAR 2040 RANCHERIA MASTER PLAN WITH IC CONDITIONS)

Year 2040 proposed Rancheria Master Plan development trips identified in **Table 4A** have been added to Year 2040 Base traffic volumes based on the trip distribution presented in **Figure 9** (in the Appendix) to derive Year 2040 Rancheria Master Plan with Cher-Ae Lane Interchange Conditions (Year 2040 Rancheria Master Plan with IC conditions). Traffic volumes will be redistributed based on the addition of a new freeway interchange at the Trinidad Rancheria. **Figure 17** (in the appendix) depicts the intersection volumes and **Figure 18** (in the appendix) depicts the freeway mainline and ramp volumes.

Intersections

Year 2040 Rancheria MP with IC conditions peak-hour traffic operations were quantified for the study intersections. **Table 8A** summarizes Year 2040 Rancheria MP with IC conditions AM and PM peak hour intersection LOS values with Year 2040 traffic volumes (shown on **Figure 17**) and lane geometrics and control (shown on **Figure 14**).

TABLE 8A
YEAR 2040 RANCHERIA MASTER PLAN WITH IC CONDITIONS: INTERSECTIONS LEVEL OF SERVICE

				AM Peak Hour			PM Peak Hour		
#	**Intersection**	**Control Type^{1,2}**	**Target LOS**	**Delay**	**LOS**	**Warrant Met?^{3}**	**Delay**	**LOS**	**Warrant Met?^{3}**
1	6th Avenue & Kay Avenue	TWSC	C	9.3	A	-	9.5	A	-
2	6th Avenue & Kahlstrom Avenue	TWSC	C	9.3	A	-	9.2	A	-
3	Kay Avenue & US 101 SB Ramps	TWSC	C	9.9	A	-	9.6	A	-
4	Kahlstrom Avenue & 7th Avenue	TWSC	C	9.4	A	-	1.9	A	-
5	Scenic Drive & Main Street	TWSC	C	16.7	C	-	18.7	C	-
6	Westhaven Drive & US 101 SB Ramps	TWSC	C	10.1	B	-	10.4	B	-
7	Westhaven Drive & US 101 NB Ramps	TWSC	C	12.6	B	-	13.2	B	-
8	Westhaven Drive & Frontage Road	TWSC	C	10.2	B	-	10.1	B	-
9	Scenic Drive & Baker Ranch Drive	TWSC	C	2.1	A	-	8.8	A	-
10	Scenic Drive & Cheer-Ae Hieght Casino	TWSC	C	9.1	A	-	8.9	A	-
11	Scenic Drive & Cher-AE Lane	TWSC	C	9.5	A	-	10.0	A	-
12	Scenic Drive & Landford Road	TWSC	C	9.0	A	-	9.5	A	-
13	Cher AE Lane & US 101 NB Ramps	AWSC	C	10.3	B	-	11.6	B	-
14	Cher AE Lane & US 101 SB Ramps	AWSC	C	9.5	A	-	10.1	B	-
15	Cher AE Lane & Westhaven Drive	TWSC	C	9.3	A	-	9.5	A	-

Notes:
1. TWSC = Two Way Stop Control
2. LOS = Delay based on worst minor street approach for TWSC intersections
3. Warrant = Based on California MUTCD Warrant 3

As indicated in **Table 8A**, all of the study intersections are found to be operating at acceptable LOS C or better conditions under Year 2040 Rancheria MP with IC conditions based on the intersection delay and the corresponding LOS. :

Year 2040 Rancheria Master Plan Freeway and Ramp Junction Operating Conditions

US 101 freeway mainline and ramp junction peak-hour traffic operations were also quantified applying methods documented in the HCM-*2010 w*ith the existing conditions LOS presented in **Table 8B**. As shown in **Table 8B**, all freeway mainline segments and ramp junctions within the study area currently operate at LOS “C” or better for Year 2040 Rancheria MP with IC conditions AM and PM peak hour periods.

TABLE 8B
YEAR 2040 RANCHERIA MASTER PLAN WITH IC CONDITIONS: US 101 MAINLINE AND RAMP JUNCTION LEVEL OF SERVICE

Freeway Mainline Segment	No. Lanes	Target LOS	AM Peak Hour Volume	AM Peak Hour Density, (pc/mi/ln)	AM Peak Hour LOS	PM Peak Hour Volume	PM Peak Hour Density, (pc/mi/ln)	PM Peak Hour LOS
US 101 NB north of Main Street	2	C	331	4.4	A	642	8.6	A
US 101 NB south of Main Street	2	C	494	6.6	A	850	11.3	B
US 101 SB north of Main Street	2	C	331	4.4	A	606	8.1	A
US 101 SB south of Main Street	2	C	488	6.5	A	783	10.4	A
US 101 NB south of Cher-Ae Lane	2	C	759	10.1	B	1,045	13.9	B
US 101 SB south of Cher-Ae Lane	2	C	501	6.7	A	1,015	13.5	B

TABLE 8B (CONTINUED)
YEAR 2040 RANCHERIA MASTER PLAN WITH IC CONDITIONS: US 101 MAINLINE AND RAMP JUNCTION LEVEL OF SERVICE

Interchange Location	Target LOS	Junction Type	AM Peak Hour Density (pc/mi/ln)	AM Peak Hour LOS	PM Peak Hour Density (pc/mi/ln)	PM Peak Hour LOS
US 101 Ramps @ 6th Avenue I/C						
U.S. Route 101 Northbound On-Ramp	C	Merge	12.2	B	15.6	B
U.S. Route 101 Northbound Off-Ramp	C	Diverge	10.2	B	14.4	B
U.S. Route 101 Southbound On-Ramp	C	Merge	9.4	A	14.7	B
U.S. Route 101 Southbound Off-Ramp	C	Diverge	8.3	A	14.8	B
US 101 Ramps @ Cher-Ae Lane I/C						
U.S. Route 101 Northbound On-Ramp	C	Merge	9.6	A	13.5	B
U.S. Route 101 Northbound Off-Ramp	C	Diverge	11.6	B	15.2	B
U.S. Route 101 Southbound On-Ramp	C	Merge	9.5	A	14.6	B
U.S. Route 101 Southbound Off-Ramp	C	Diverge	8.2	A	11.9	B
US 101 Ramps @ Main Street I/C						
U.S. Route 101 Northbound On-Ramp	C	Merge	7.3	A	10.9	B
U.S. Route 101 Northbound Off-Ramp	C	Diverge	8.2	A	12.7	B
U.S. Route 101 Southbound On-Ramp	C	Merge	9.5	A	12.4	B
U.S. Route 101 Southbound Off-Ramp	C	Diverge	6.2	A	9.6	A

MAIN STREET INTERCHANGE IMPROVEMENTS WITHOUT CHER-AE LANE INTERCHANGE

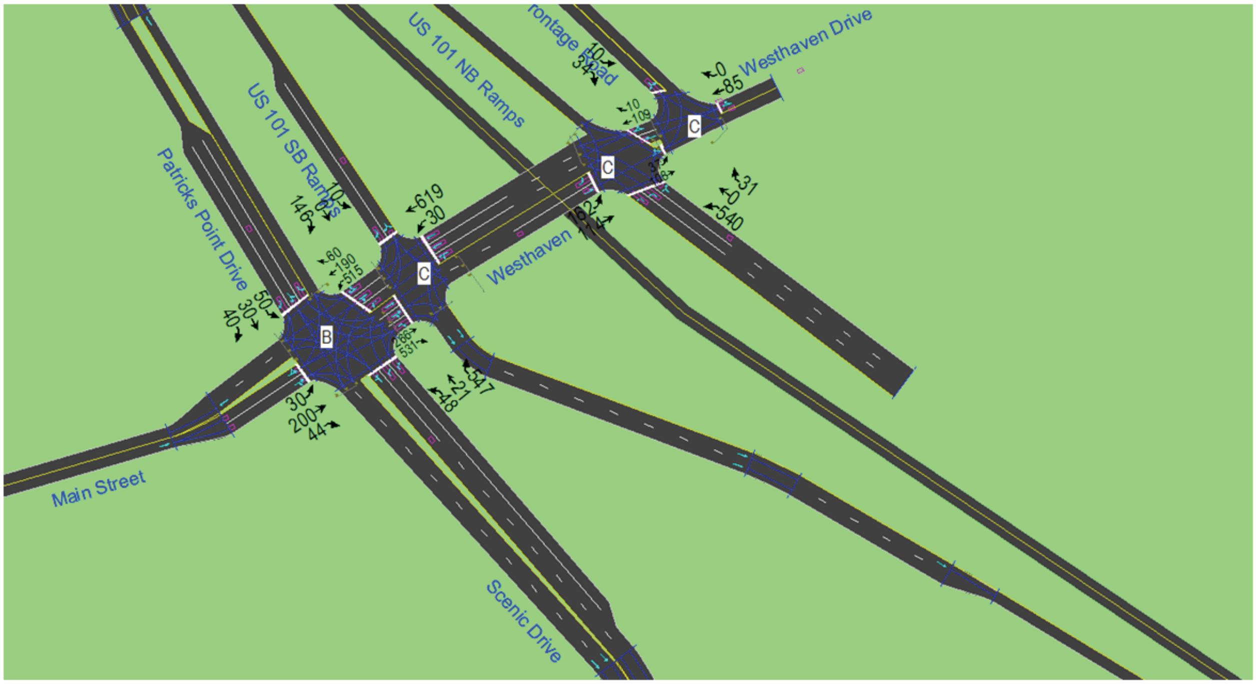
As noted previously (*Year 2020 and 2040 Rancheria Master Plan Conditions)*, with the addition of trips from the proposed Rancheria Master Plan, intersections on the Main Street corridor and the project entrance on Scenic Drive are forecasted to operate at unacceptable LOS. This section identifies intersection improvements that will provide acceptable operations through Year 2040 Rancheria Master Plan conditions.

While intersection delay, on which LOS is derived, is a valid measure of delay and congestion, the proposed improvements are unique. Due to the closely spaced nature of the intersections and signalization proposed on the Main Street Corridor intersections, operations at one intersection significantly impacts operations at adjacent intersections. Furthermore, the close proximity of the intersections within this area and short turn pocket lengths greatly increases the likelihood that a critical movement at an intersection will block adjacent intersections. This behavior is not captured within the isolated intersection analysis in Synchro and needs to be documented using microsimualtion analysis.

Synchro is bundled with microsimulation software, SimTraffic, which uses the Synchro network as the direct input data. The intersection operations for Main Street corridor intersections was performed in SimTraffic.

When compared to AM peak hour volumes, the PM peak hour volumes were significantly higher on the Main Street Corridor. Therefore, the analysis was performed for PM peak hour conditions. The proposed intersection improvements on the Main Street corridor are shown on **Figure 19** and the intersection LOS for Year 2020 and Year 2040 PM Peak hour conditions are provided in Table 9.

Figure 19 – Main Street Interchange Improvements to accommodate Year 2020 and 2040 Rancheria Master Plan Conditions Traffic Volumes



Main Street/Scenic Drive

- Signalize and coordinate the intersection with other Main Street corridor intersections

- Provide dual northbound right turns and one shared left-thru lane
- Provide left turn and right turn lanes and a shared left-thru lane in the southbound direction
- Provide a shared left-thru lane and a thru-right lane in the eastbound direction
- Provide dual left turn lanes and a thru-right lane in the westbound direction

Main Street/US 101 SB Ramps

- Signalize and coordinate the intersection with other Main Street corridor intersections
- Provide a left-right lane and right turn lanes in the southbound direction
- Provide a thru lane ,a thru-right lane and an exclusive right turn lane in the eastbound direction
- Provide a shared left-thru lane, and dual thru lanes westbound direction

Main Street/US 101 NB Ramps

- Signalize and coordinate the intersection with other Main Street corridor intersections
- Provide dual left lanes and a shared left-right lane in the southbound direction
- Provide a left turn lane and a thru lane in the eastbound direction
- Provide a thru lane and a shared thru-right lane in the westbound direction

Westhaven Drive/Frontage Road

- Signalize and coordinate the intersection with other Main Street corridor intersections

Scenic Drive/Cher-Ae Lane

- Signalize the intersection
- Provide a 350 feet left turn lane and a left-thru lane in the southbound direction
- Provide a left turn and a right turn lane in the westbound direction

TABLE 9
RANCHERIA MASTER PLAN WITH MAIN STREET CORRIDOR IMPROVEMENTS: INTERSECTIONS LEVEL OF SERVICE

#	Intersection	Control Type[1,2]	Target LOS	2020 PM Peak Hour			2040 PM Peak Hour		
				Delay	LOS	Warrant Met?[3]	Delay	LOS	Warrant Met?[3]
5	Scenic Drive & Main Street	Signal	C	12.3	B	-	21.8	C	-
6	Westhaven Drive & US 101 SB Ramps	Signal	C	14.2	B	-	15.7	B	-
7	Westhaven Drive & US 101 NB Ramps	Signal	C	15.8	B	-	18.6	B	-
8	Westhaven Drive & Frontage Road	Signal	C	13.3	B	-	13.6	B	-
11	Scenic Drive & Cher-Ae Lane	Signal	C	17.8	B	-	29.9	C	-

As indicated in **Table 9**, all of the study intersections are found to be operating at acceptable LOS C or better conditions with the proposed Main Street corridor improvements based on the intersection delay and the corresponding LOS. All of the other intersections are projected to operate acceptable LOS under both Year 2030 and 2040 conditions. Please refer to Tables 5A and 6A for the intersection delay and the corresponding LOS for the other study intersections.

CHER-AE LANE INTERCHANGE IMPROVEMENTS

The analysis of Year 2020 and 2040 Rancheria Master Plan Conditions with the Cher-Ae Lane interchange has been documented in Tables **7A**, **7B**, **8A** and **8B**. This section reiterates the intersection improvements that were assumed for the Year 2020 and 2040 Rancheria Master Plan Conditions with the Cher-Ae Lane interchange and Figure **20** provides a schematic of these improvements. A modern roundabout at these two locations will provide superior LOS compared to all-way stop. No additional improvements beyond those identified in Figure **20** are required for Cher-Ae Lane.

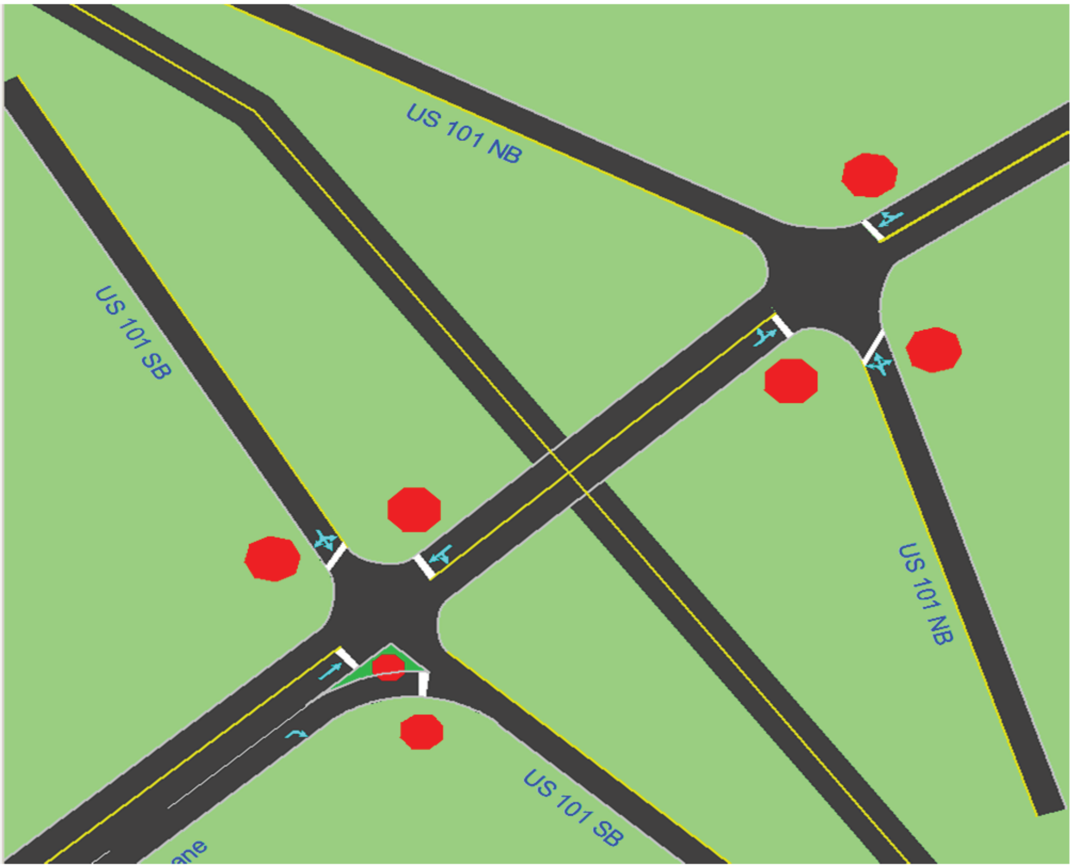
Cher-Ae Lane/US 101 NB Ramps

- All-way Stop Control at the intersection

Cher-Ae Lane/US 101 SB Ramps

- All-way Stop Control at the intersection
- Channelized eastbound right pocket

Figure 20 – Cher-Ae Lane Interchange Improvements to accommodate Year 2020 and 2040 Rancheria Master Plan Conditions Traffic Volumes



RECOMMENDATION

A Project Study Report - Project Development Support (PSR-PDS) should be prepared to define the cost, schedule, scope, impacts and benefits of the alternatives identified in this study.

Although improvements to Main Street corridor (as noted within the *Main Street Interchange Improvements Without Cher-Ae Lane Interchange* section*)* provide acceptable operations with the buildout of the area including the Rancheria Master Plan, we recommend the implementation of the Cher-Ae Lane interchange improvements for the following reasons:

(1) Improving the Main Street Interchange will require significant right of way acquisition and change the character of the gateway to the coastal community of Trinidad
(2) Geometry (Close spacing) of intersections on Main Street is undesirable
(3) Cher-Ae Lane interchange improvements provide *superior operations* when compared to the Main Street Interchange Improvements
(4) A new Cher-Ae Lane interchange will reduce travel times by providing a more efficient connection between the Trinidad Rancheria and the US101 corridor

APPENDIX

FIGURES

SYNCHRO REPORTS

WARRANT WORKSHEETS

WEAVING ANALYSIS

APPENDIX H

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