

CLOVERDALE RANCHERIA OF POMO INDIANS FEE-TO-TRUST AND RESORT CASINO PROJECT

Final Environmental Impact Statement

Lead Agency
United States Bureau of Indian Affairs
Pacific Region

April 2014

Cooperating Agencies
National Indian Gaming Commission, Cloverdale Rancheria of Pomo Indians, United States
Environmental Protection Agency, California Department of Transportation, Sonoma County, and
City of Cloverdale



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2800 Cottage Way
Sacramento, CA 95825

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B.	Preliminary Drainage Study
C.	Air Quality Data
D.	Biological Assessment
E.	CNDDDB and USFWS Species List
F.	Cultural Resources Technical Report (Bound Under Separate Cover)
G.	Transportation Analysis
H.	Preliminary Utilities Study
I.	Water Supply Report
J.	Wastewater Treatment and Disposal Report
K.	Phase II Environmental Investigations Reports
L.	NHPA Section 106 and Tribal Consultation Correspondence
M.	Farmland Conversion Impact Rating Form and Site Assessment Criteria
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EXECUTIVE SUMMARY

Cloverdale Rancheria of Pomo Indians Fee-to-Trust and Resort Casino Project

ES.1 Introduction

This Final EIS has been prepared by the Bureau of Indian Affairs (BIA) to address the potential environmental effects of taking six parcels (containing approximately 64.52 gross acres) into federal trust for the Cloverdale Rancheria of Pomo Indians (Tribe) and the subsequent development of a destination resort casino. In addition to the trust acquisition for gaming purposes, the Proposed Action would include review by the National Indian Gaming Commission (NIGC) of the development and management contract between the Tribe and its management partners. The project site is located in northern Sonoma County, California within the sphere of influence of the City of Cloverdale. The project site is situated immediately east of Highway 101 and borders Asti Road. Regional access to the project site is provided by Highway 101, with local access provided by South Cloverdale Boulevard via Highway 101. The proposed trust parcels include land which overlaps and is adjacent to the Tribe's historic Rancheria location.

ES.2 Purpose and Need

Implementation of the Proposed Action would assist the Tribe in meeting the following objectives:

- Restoring the Tribe's trust land base
- Strengthening the Tribal government
- Achieving economic self sufficiency
- Improving the socioeconomic status of the Tribe
- Providing employment opportunities for Tribal members
- Providing funding for administrative, health and welfare, housing, educational, social and other Tribal services

ES.3 Alternatives

This document analyzes the potential environmental consequences associated with the Proposed Action, four development alternatives and the No Action Alternative. Alternative A is the Tribe's Proposed Action. The alternatives are described in detail in **Section 2.0** and are summarized below.

Alternative A – Proposed Action

Alternative A consists of the fee-to-trust transfer of the project site, federal review of the development and management contract, and development of a casino, hotel, convention center, entertainment center and other ancillary facilities. A tribal government building is proposed on the south end of the project site.

Alternative B – Reduced Hotel and Casino

Alternative B consists of the fee-to-trust transfer of the project site, federal review of the development and management contract, and development of a hotel, entertainment center, casino and other ancillary facilities. The casino and hotel facilities under Alternative B would be similar to those proposed for Alternative A, but would be reduced in scale. The entertainment center would be the same size as under Alternative A. Alternative B does not include a convention center component. A tribal government building is proposed on the south end of the project site.

Alternative C – Reduced Casino

Alternative C consists of the fee-to-trust transfer of the project site, federal review of the development and management contract, and development of a hotel, entertainment center, casino and other ancillary facilities. The facilities under Alternative C would be similar to those proposed for Alternative B, but the casino would be further reduced. The hotel and entertainment center would be the same size as under Alternative B. Alternative C does not include a convention center component. A tribal government building is proposed on the south end of the project site.

Alternative D – Casino Only

Alternative D consists of the fee-to-trust transfer of the project site, federal review of the development and management contract and development of a casino and ancillary facilities. This alternative only proposes a casino. No hotel, convention center, or entertainment center would be developed under this alternative. A tribal government building is proposed on the south end of the project site.

Alternative E – Commercial Retail-Office Space

Alternative E consists of the fee-to-trust transfer of the project site and development of a commercial retail and office center with light industrial warehouse space. Under this alternative, the NIGC would not be required to review a development and management contract as there is no gaming component. There would be no casino, hotel, convention center, entertainment center, or tribal government building.

Alternative F – No Action Alternative

Under the No Action Alternative, the project site would not be placed into federal trust for the benefit of the Tribe, and the project site would not be developed with uses described under any of the development alternatives in the near term. It is assumed that the project parcels would maintain their existing development densities and uses in the near term. In the cumulative scenario (by 2030), it is assumed the project site would be developed with business park and/or industrial uses west of the railroad tracks and public/quasi-public facilities east of the railroad tracks, consistent with local land use policies.

ES.4 Areas of Environmental Controversy

To date, areas of environmental controversy have been identified through the scoping process and comment period on the Draft EIS. The Scoping Report was published November 2008 (ESA, 2008). The Draft EIS was available for agency/public comment from August 6, 2010 to October 20, 2010. Specific comments were received in the following issue areas: Air Quality, Alternatives Analysis, Biological Resources, Cultural and Historic Resources, Cumulative and Indirect Effects, Environmental Justice, Flood Control and Drainage, Geology and Soils, Hazards and Hazardous Materials, Land Use and Agriculture, Mitigation Measures, National Environmental Policy Act and Regulatory Compliance, Noise, Public Health and Safety, Public Services, Quality of Life and Community Character, Recreation, Scoping Process, Socioeconomics, Transportation, Visual Resources, Wastewater Treatment and Disposal, and Water Resources. The issues that have contained the most comments include Socioeconomics, Transportation, Wastewater Treatment and Disposal and Water Resources.

ES.5 Environmental Consequences and Mitigation Summary

Table ES-1 summarizes the environmental consequences and mitigation for each alternative in the EIS. In addition, the significance for each impact is shown before and after implementation of the associated mitigation measures.

**TABLE ES-1
SUMMARY OF IMPACTS AND MITIGATION MEASURES**

Threshold of Significance	Mitigation Measures	Original Impact / Residual Impact with Mitigation					
		Alternative A	Alternative B	Alternative C	Alternative D	Alternative E	Alternative F
SECTION 4.2. Land Resources							
Impact 4.2-1: Changes to Existing Topography	No mitigation required	LS	LS	LS	LS	LS	LS
Impact 4.2-2: Potential for Soil Hazards	Mitigation Measure 5.2-1: Preparation of Design-Level Geotechnical Recommendations. A design-level geotechnical report shall be prepared along with construction drawings and the Tribe shall adhere to the recommendations of the report. See Mitigation Measure 5.5-3: Federally Listed Species.	PS/LS	PS/LS	PS/LS	PS/LS	PS/LS	LS
Impact 4.2-3: Potential for Seismic Hazards	See Mitigation Measure 5.2-1.	PS/LS	PS/LS	PS/LS	PS/LS	PS/LS	LS
Impact 4.2-4: Loss of Mineral Resources	No mitigation required	LS	LS	LS	LS	LS	LS
SECTION 4.3. Water Resources							
Impact 4.3-1: Changes to Existing Drainage Patterns	Mitigation Measure 5.3-1: Comprehensive Drainage and Flood Management Planning and Implementation. Prior to implementation of the selected alternative, the project proponent shall complete a comprehensive design-level Drainage Plan. This plan shall address drainage and flooding in the action area. The Drainage Plan will implement additional measures, including but not limited to additional pervious surfaces, stormwater retention ponds, additional underground stormwater retention capacity, and other measures to retain or infiltrate stormwater flows, such that no net increase in 100-year peak stormwater discharge occurs as a result of implementing the selected alternative.	PS/LS	PS/LS	PS/LS	PS/LS	PS/LS	PS/LS
Impact 4.3-2: Location in a Delineated Floodplain	Mitigation Measure 5.3-2a: Location of Facilities Above the 100-Year Flood Height. The project proponent will ensure that the proposed groundwater well is installed above the FEMA-defined 100-year flood height, plus an additional 1-foot allowance to account for potential increases in flood height that would result from installation of levees surrounding the wastewater treatment plant, water treatment plant, and wastewater storage pond, as relevant. Specifically, the pump house including all electric and mechanical components, shall be installed at a level equivalent to at least 3 feet above the FEMA-delineated 100-year flood height, plus an additional 1 foot to offset flood height increases from installing flood control levees, as relevant. Mitigation Measure 5.3-2b: In accordance with FEMA floodplain hydraulic modeling requirements, the Tribe shall develop a hydraulic model to quantify the impact of wastewater facilities and other related systems proposed for construction within the 100-year floodplain, and 500-year floodplain if required by FEMA, of the Russian River. Depending on the results of the hydraulic model (e.g. modeling indicates that flood height increases would exceed 1 foot), the Tribe shall complete a Conditional Letter of Map Revision (CLOMR) prior to implementation of a project and must submit a Letter of Map Revision (LOMR) request to FEMA within 6 months of completion of a project. Measure 5.3-2c: Under government to government consultation with FEMA, the Tribe shall seek participation in the National Flood Insurance Program (NFIP), which requires the Tribe to pass a resolution, adopt the effective Flood Insurance Rate Map that includes their lands, and	PS/LS	PS/LS	PS/LS	PS/LS	PS/LS	PS/LS

(Legend: NI = No Impact; BI = Beneficial Impact; LS = Less-Than-Significant -impact; PS = Potentially Significant; S = Significant;

**TABLE ES-1
SUMMARY OF IMPACTS AND MITIGATION MEASURES**

Threshold of Significance	Mitigation Measures	Original Impact / Residual Impact with Mitigation					
		Alternative A	Alternative B	Alternative C	Alternative D	Alternative E	Alternative F
	adopt and enforce a flood damage prevention ordinance that meets or exceeds the minimum requirements of the program. Measure 5.3-2d: The Tribe shall establish a Tribal Mitigation Plan in accordance with 44 CFR 201.7, which addresses flood hazards and mitigation of those hazards. The plan shall include mitigation goals and strategies and other NFIP or floodplain management activities as described in the latest version of FEMA's Tribal Multi-Hazard Mitigation Guidance.						
Impact 4.3-3: Water Quality during Construction	No mitigation required	LS	LS	LS	LS	LS	LS
Impact 4.3-4: Water Quality during Operation	No mitigation required	LS	LS	LS	LS	LS	LS
Impact 4.3-5: Groundwater Levels and Effects on the Russian River from Groundwater Pumping	No mitigation required	LS	LS	LS	LS	LS	LS
Impact 4.3-6: Treated Effluent Sprayfields and Water Quality	Mitigation Measure 5.3-3: Water Quality Mitigation for Proposed Sprayfields. The applicant shall take the following measures to ensure no significant reduction in the quality of surface water or groundwater used for potable water supply under the selected alternative: <ol style="list-style-type: none"> 1. Sprayfield operation shall be managed such that no runoff or other surface discharge of treated effluent occurs from the sprayfield site. Sprayfields shall be monitored on a daily basis for signs of treated effluent pooling or potential runoff. In the event that substantial pooling, runoff, or potential signs of runoff are found, sprayfield discharge rate or management shall be modified to ensure that no runoff occurs. All drainages shall be protected from receiving sprayfield runoff by berms, ditches, or other measures. In no instance shall sprayfields be operated during natural precipitation events, or when standing water is located on-site. This measure will thereby prevent the migration of treated effluent into surface waters, ensuring that comingling of treated effluent with surface waters does not occur. 2. If the private water supply option is selected, groundwater quality shall be monitored for nutrients and pathogens. The applicant shall install at least three groundwater quality monitoring wells in the vicinity of the proposed water supply well, and shall sample each well at least monthly. Monitoring wells shall be screened at or above the level of the water supply well. In the event that pollutants associated with the sprayfield are detected in the groundwater in the vicinity of the water supply well, measures shall be taken to alter the pattern or intensity of wastewater/sprayfield disposal, to ensure that the water supply well does not become contaminated. In the event that the water supply well becomes contaminated with nutrients or pathogens associated with the proposed sprayfield, additional water treatment shall be installed, or a new well shall be installed, in order to ensure that drinking water quality meets federal requirements. 	PS/LS	PS/LS	PS/LS	PS/LS	PS/LS	PS/LS

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**TABLE ES-1
SUMMARY OF IMPACTS AND MITIGATION MEASURES**

Threshold of Significance	Mitigation Measures	Original Impact / Residual Impact with Mitigation					
		Alternative A	Alternative B	Alternative C	Alternative D	Alternative E	Alternative F
SECTION 4.4. Air Quality							
Impact 4.4-1: Construction Emissions	<p>Mitigation Measure 5.4-1: Dust Abatement Program. The applicant shall require construction contractors to implement an appropriate dust abatement program at least as stringent as the recommendations of the most recent version of the Northern Sonoma County Air Pollution Control District Rule 430, Fugitive Dust Emissions. These would include, but not be limited to, the following measures:</p> <ul style="list-style-type: none"> • Covering open bodied trucks when used for transporting materials likely to give rise to airborne dust. • Installation and use of hoods, fans, and fabric filters to enclose and vent the handling of dusty materials. Containment methods can be employed during sandblasting and other similar operations. • Conduct agricultural practices in such a manner as to minimize the creation of airborne dust. • The use of water or chemicals for control of dust in the demolition of existing buildings or structures, construction operations, the grading of roads or the clearing of land. • The application of asphalt, oil, water or suitable chemicals on dirt roads, materials stockpiles, and other surfaces which can give rise to airborne dusts. • The paving of roadways and their maintenance in a clean condition. • The prompt removal of earth or other material from paved streets onto which earth or other material has been transported by trucking or earth moving equipment, erosion by water, or other means. • Water all active construction areas at least twice daily to the extent necessary. • Cover open bodied trucks when used for transporting materials (e.g., soil, sand, and other loose materials) likely to give rise to airborne dust. • Apply asphalt, oil, water or suitable chemicals on unpaved roads, parking areas, staging areas, materials stockpiles, and other surfaces at construction sites which can give rise to airborne dust. • Sweep daily (with water sweepers) all paved access roads, parking areas, and staging areas at construction sites so as to maintain them in a clean condition. • Sweep streets daily (with water sweepers) if visible soil material is carried onto adjacent public streets so as to maintain them in a clean condition. • Limit traffic speeds on unpaved roads to 15 miles per hour (mph). • Install sandbags or other erosion-control measures to prevent silt runoff to public roadways. <p>Mitigation Measure 5.4-2: All construction equipment shall be properly tuned and maintained in accordance with manufacturer's specifications.</p> <p>Mitigation Measure 5.4-3: General contractors shall maintain and operate construction equipment so as to minimize exhaust emissions. During construction, trucks and vehicles in loading and unloading queues shall turn their engines off when not in use to reduce vehicle emissions.</p>	PS/LS	PS/LS	PS/LS	PS/LS	PS/LS	LS

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	Mitigation Measure 5.4-4: Electricity from power poles rather than temporary diesel- or gasoline-powered generators shall be used to the extent feasible.						
Impact 4.4-2: Operation Emissions	<p>Mitigation Measure 5.4-5: Transportation and Motor Vehicle Measures. Implement the Transportation and Motor Vehicle Measures below:</p> <ul style="list-style-type: none"> • Incorporate public transit into project design • Limit idling time for commercial vehicles, including delivery and construction vehicles. • Use low or zero-emission vehicles, where feasible including construction vehicles and Tribal-fleet vehicles. • Promote ride sharing programs e.g., by designating a certain percentage of parking spaces for ride sharing vehicles, designating adequate passenger loading and unloading and waiting areas for ride sharing vehicles, and providing a web site or message board for coordinating rides. • Create car sharing programs. Accommodations for such programs include providing parking spaces for the car share vehicles at convenient locations accessible by public transportation. • If feasible, increase the cost of driving and parking private vehicles by, e.g., imposing tolls and parking fees. • Provide shuttle service to public transit. • Provide public transit incentives such as free or low-cost monthly transit passes. • Implement parking cash-out program for employees, e.g., non driving employees receive transportation allowance equivalent to value of subsidized parking. <p>See Mitigation Measure 5.4-5: Transportation and Motor Vehicle Measures.</p> <p>Mitigation Measure 5.4-6: The applicant shall require busses and diesel loading trucks to comply with the California Air Resource Board's Airborne Toxic Control Measure to Limit Diesel-Fueled Commercial Motor Vehicle Idling (California Code of Regulations, Title 13, Division 3, Article 1, Chapter 10, Section 2458) which requires that the driver shall not idle for more than 5 minutes at any location, except in the case of passenger boarding where a ten minute limit is imposed, or when passengers are onboard.</p>	PS/S	PS/S	PS/S	PS/S	PS/S	LS
Impact 4.4-3: Objectionable Odors	<p>Mitigation Measure 5.4-7: Odor Management Plan. The operator of the WWTP shall formulate a progressive Odor Management Plan. This plan will allow the operator to respond to odor complaints and revise operations as necessary. The operator shall coordinate with the NSCAPCD to ensure that the operator is notified of all odor complaints received regarding the facility. The Plan shall discuss this complaint response protocol and include progressive measures to be made in the event of repeated, verified complaints. When the operator or NSCAPCD staff verify strong odors at off-site receptors, the operator shall make changes in site operations to reduce the potential for odors. Odors may be reduced by installing additional odor control equipment, making process/treatment modifications, or other activities. Once complete, the Plan shall be submitted to the ICAPCD for a 30-day period for review and comment.</p>	PS/LS	PS/LS	PS/LS	PS/LS	PS/LS	LS

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Impact 4.4-4: Greenhouse Gas Emissions and Global Climate Change	<p>Mitigation Measure 5.4-8: Energy Efficient Measures. Implement the Energy Efficient Measures below:</p> <ul style="list-style-type: none"> • Install efficient lighting and lighting control systems. Site and design building to take advantage of daylight. • Install energy efficient heating and cooling systems, appliances and equipment, and control systems. • Use solar heating, automatic covers, and efficient pumps and motors for pools and spas. • Bus Shelter for Existing/Planned Transit Service • Parking Area Tree Cover (50% cover in 10 years) • Enhanced Recycling • Drought tolerant landscaping and shade trees • If financially feasible the Tribe could commit to construction of a facility that operates at a minimum level which is similar to the California Title 24 standards. <p>See Mitigation Measure 5.7-2 Employee Commuter Measure</p> <p>Mitigation Measure 5.4-10: The Tribe shall compensate for indirect greenhouse gas (GHG) emissions which exceed 25,000 metric tons CO₂e annually through the purchase of GHG credits offered at an approved GHG credit broker. The alternatives exceed 25,000 metric tons CO₂e by the following amounts:</p> <ul style="list-style-type: none"> • Alternative A – 27,211 CO₂e • Alternative B – 11,748 CO₂e • Alternative C – 8,928 CO₂e • Alternative D – 1,430 CO₂e • Alternative E – 18,758 CO₂e <p>Credits shall be purchased once operations begin, and purchases may be phased over the first 10 years of operation.</p>	PS/LS	PS/LS	PS/LS	PS/LS	PS/LS	LS
Impact 4.4-5: Climate Change Impacts on Project Site	No mitigation required	LS	LS	LS	LS	LS	LS
Impact 4.4-6: Indoor Air Quality	<p>Mitigation Measure 5.4.9: Indoor Air Quality Measures. The following measures are recommended:</p> <ul style="list-style-type: none"> • The Tribe shall ensure that ventilation of outdoor air is consistent with ASHRAE Standard 62-19991 under all operating conditions. • To limit public exposure to environmental tobacco smoke, the Tribe shall provide non-smoking areas, or “smoke-free zones” in the casino gaming area. • The Tribe shall provide non-smoking rooms in the hotel. • The Tribe shall post information regarding the deleterious effects of second-hand smoke 						

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Threshold of Significance	Mitigation Measures	Original Impact / Residual Impact with Mitigation					
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	<p>in employee break room.</p> <ul style="list-style-type: none"> The Tribe shall post signage at public entrances to buildings which allow indoor smoking, identifying these as areas where indoor smoking is permitted. 						
SECTION 4.5. Biological Resources							
Impact 4.5-1: Effects to Upland Habitats (Potentially Significant)	<p>Mitigation Measure 5.5-1: Upland Habitats. The project applicant shall compensate for the loss of coast live oak woodland and north coast riparian scrub habitat at a ratio no less than 1:1. Compensation will include on-site creation, restoration, or enhancement along the southern portion of the project area north of and parallel with Coyote Creek (channel I-2). On-site creation/restoration plans must be prepared by a qualified biologist prior to construction and be implemented within one year following construction. On-site creation/restoration sites shall be monitored for at least five (5) years to ensure their success.</p>	PS/LS	PS/LS	PS/LS	PS/LS	PS/LS	LS
	<p>Mitigation Measure 5.5-7: Upland Habitats. Landscaped areas associated with project layout design shall be planted with native trees, shrubs, and ground covers. Landscaped areas shall avoid direct impacts to jurisdictional waters of the U.S.</p>						
	<p>Mitigation Measure 5.5-9: Upland Habitats. No construction activities shall occur within the drip line of native trees that have been designated as avoided/protected from the project. If proposed construction activities are proposed within 50 feet of a protected tree, the project applicant shall clearly delineate the tree with appropriate fencing at the drip line.</p>						
Impact 4.5-2: Effects to Wetlands and Other Waters of the U.S. (Potentially Significant)	<p>Mitigation Measure 5.5-2: Wetlands and Other Waters of the U.S. The project applicant shall ensure that any loss of waters of the U.S. shall be compensated for by the preservation or creation of similar habitat at a ratio no less than 1:1, prior to construction. Permits secured for the project (Section 404 and Section 401) may require higher ratios. Compensation may include on-site creation, restoration, or enhancement, off-site creation, or payment into a Corps-approved mitigation bank for in-kind habitat credits. Mitigation bank credits must be obtained prior to construction. On-site or off-site creation/restoration plans must be prepared by a qualified biologist prior to construction and approved by the Corps. On- or off-site creation/restoration sites shall be monitored for at least five (5) years to ensure their success.</p>	PS/LS	PS/LS	PS/LS	PS/LS	PS/LS	LS
	<p>Mitigation Measure 5.5-6: Wetlands and Other Waters of the U.S. The project applicant shall incorporate into the project site drainage plan the flow and treatment BMPs and the accompanying recommended design parameters (i.e. locations, sizing factors, soil specifications and plant selection) proposed in the preliminary Stormwater Quality Management Plan (Appendix Q).</p>						
Impact 4.5-3: Effects to Federally Listed Species (Potentially Significant)	<p>Mitigation Measure 5.5-3: Federally Listed Species. Impacts to aquatic habitat for federally listed salmonids during construction shall be minimized by implementing Best Management Practices (BMP) to protect water quality. This may include installing temporary siltation barriers (such as silt fencing), straw waddles, covering exposed soils, protecting inlet structures with sand bags, and reseeding exposed soils immediately following construction. These BMPs shall</p>	PS/LS	PS/LS	PS/LS	PS/LS	PS/LS	LS

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	be fully described within the project's Storm Water Pollution Protection Plan (SWPPP), which shall be prepared prior to construction and implemented by the project applicant during construction. The project applicant shall also adhere to the measures provided under the EPA's NPDES General Construction Permit. Equipment and soil stock areas shall be placed at least 50 feet away from aquatic water sources.						
Impact 4.5-4: Effects to Migratory Birds (Potentially Significant)	<p>Mitigation Measure 5.5-4: Migratory Birds. The applicant shall make every effort to conduct any tree and shrub removal activities that are required for project construction outside of the migratory bird and raptor breeding season (March 1 through August 31). For construction activities that will occur between March 1 and August 31 of any given year, the applicant shall conduct preconstruction surveys in suitable nesting habitat within 500 feet of the project site for nesting raptors. Surveys shall be conducted by a qualified biologist. If nesting raptors are detected, the applicant will consult with a qualified biologist to develop suitable measures to avoid impacting breeding effort. Measures may include, but are not limited to:</p> <ol style="list-style-type: none"> I. Maintaining a 500 foot buffer around each active raptor nest; no construction activities shall be permitted within this buffer except as described in Mitigation Measure 5.5-4II. II. Depending on conditions specific to each nest, and the relative location and rate of construction activities, it may be feasible for construction to occur as planned within the buffer without impacting the breeding effort. In this case (to be determined on an individual basis), the nest(s) shall be monitored by a qualified biologist during construction within the buffer. If, in the professional opinion of the monitor, the project would impact the nest, the biologist shall immediately inform the construction manager. The construction manager shall stop construction activities within the buffer until the nest is no longer active. 	PS/LS	PS/LS	PS/LS	PS/LS	PS/LS	LS
Impact 4.5-5: Effects to State and Local Special-Status Species (Potentially Significant)	<p>See Mitigation Measure 5.5-3: Federally Listed Species.</p> <p>Mitigation Measure 5.5-5: State and Local Special-Status Species. The applicant shall conduct a survey for bat roosts within suitable habitat on the project site. The survey shall be conducted by a qualified biologist. This survey shall include, at a minimum, a visual inspection of potential bat roosting sites, and may include an evening or night survey to observe emergence and/or to detect presence using sonic detectors (to detect bat vocalizations). If occupied bat roosts are detected, the applicant shall consult with a qualified biologist to develop measures that avoid impacting roosts. Measures may include, but are not limited to:</p> <ol style="list-style-type: none"> I. Maintaining a 100-foot buffer around each roost; no construction activities shall be permitted within this buffer except as described in Mitigation Measure 5.5-5II. II. Exclusion of bats from roosts (ensuring that no bats are trapped in the roost). For maternity roosts, this measure may only be implemented once young have been reared and are able to freely leave the roost (typically before March and after August). 	PS/LS	PS/LS	PS/LS	PS/LS	PS/LS	LS

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		Alternative A	Alternative B	Alternative C	Alternative D	Alternative E	Alternative F
	Mitigation Measure 5.5-8: State and Local Special-Status Species. Prior to construction or grading activities a survey for the western pond turtle shall be performed by a qualified biologist within 48 hours of construction. Surveys shall focus on potential upland basking sites. Any pond turtles found during surveys shall be relocated by a qualified biologist to suitable aquatic habitat not proposed to be impacted within the study area. Upon clearance of the site of pond turtles, appropriate exclusionary fencing (associated with project site BMPs) shall be erected to prohibit potential turtle upland migration through, or basking within, the active construction site.						
SECTION 4.6. Cultural and Paleontological Resources							
Impact 4.6-1: Effects to Historic Properties (Potentially Significant)	No mitigation required.	LS	LS	LS	LS	LS	LS
Impact 4.6-2: Effects to Cultural and Paleontological Resources (Potentially Significant)	Mitigation Measures 5.6.1: Archaeological and Historical Resources. Due to the sensitivity of the general vicinity, appropriate recommendations consist of monitoring by a qualified archaeologist and Native American representative during ground-disturbing activities that occur within 150 feet of perennial water courses including Porterfield Creek at the north and central portions of the project area and the unnamed creek at the south of the project area. An archaeological monitoring program should be established that includes consultation between the consulting archaeologist, lead agency, and the project proponent. The program should clearly define the authority to temporarily halt/redirect construction should resources be encountered.	PS/LS	PS/LS	PS/LS	PS/LS	PS/LS	LS
	Mitigation Measures 5.6.2: Archaeological and Historical Resources. If previously unidentified cultural materials are unearthed during construction, work should be halted in that area until a qualified archaeologist can assess the significance of the find. Prehistoric materials might include obsidian and chert flaked-stone tools (e.g., projectile points, knives, scrapers) or toolmaking debris; culturally darkened soil ("midden") containing heat-affected rocks, artifacts, or shellfish remains; and stone milling equipment (e.g., mortars, pestles, handstones, or milling slabs); and battered stone tools, such as hammerstones and pitted stones. Historic-era materials might include stone, concrete, or adobe footings and walls; filled wells or privies; and deposits of metal, glass, and/or ceramic refuse. If any find is determined to be significant, the project proponent and a qualified archaeologist will meet to determine the appropriate avoidance measures or other appropriate mitigation.						
	Mitigation Measures 5.6.3: Human Remains. Mitigation Measure 5.6-3: The possibility of encountering human remains cannot be entirely discounted. Section 7050.5 of the California Health and Safety Code states that it is a misdemeanor to knowingly disturb a human grave. If human graves are encountered, work should halt in the vicinity and the County Coroner should be notified. At the same time, an archaeologist should be contacted to evaluate the situation. If the remains are determined to be of Native American descent, the Native American Heritage Commission (NAHC) shall be contacted within a reasonable timeframe. The NAHC will then identify the person(s) thought to be the Most Likely Descendent (MLD) of the deceased Native American. The MLD shall then make recommendations, and engage in consultations concerning the treatment of the remains as provided in PRC§ 5097.98.						

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SECTION 4.7. Socioeconomic Conditions							
Impact 4.7-1: Direct Economic Effects from Construction and Operation	No mitigation required.	BI	BI	BI	BI	BI	LS
Impact 4.7-2: Indirect Economic Effects from Construction and Operation	No mitigation required.	BI	BI	BI	BI	BI	LS
Impact 4.7.1-3: Effects to Housing Supply	No mitigation required however the following mitigation measure is recommended based on comments on the Draft EIS: Mitigation Measure 5.7-2: The Tribe shall create an employee Commuter Program that will provide a shuttle service for employee commuters from the Santa Rosa/Rohnert Park area.	LS	LS	LS	LS	LS	LS
Impact 4.7-4: Fiscal Effects to Sonoma County and the City of Cloverdale	No mitigation required.	LS	LS	LS	LS	LS	LS
Impact 4.7-5: Effects to Community Infrastructure	No mitigation required.	LS	LS	LS	LS	LS	LS
Impact 4.7-6: Social Costs Associated with Problem Gambling	Mitigation Measure 5.7-1: Problem Gambling. <ul style="list-style-type: none"> • The Tribe will adopt a policy statement on problem gambling. • The Tribe will contract with a gambling treatment professional to train management and staff to develop strategies for recognizing and addressing customers whose gambling behavior may strongly suggest they may be experiencing serious to severe difficulties. • The Tribe shall refuse service to any customer whose gambling behavior convincingly exhibits indications of problem or pathological gambling. • The Tribe shall respectively and confidentially provide the customer (as described above) with written information that includes a list of professional gambling treatment programs and self-help groups. • The Tribe shall prominently display materials describing the risks and signs of problem and pathological gambling behaviors. Materials shall also be prominently displayed that provide information on available programs for those seeking treatment for problem and pathological gambling disorders. • The Tribe shall implement procedures to allow for voluntary self-exclusion, enabling gamblers to ban themselves from a gambling establishment for a specific period of time. • The Tribe will enter into an agreement with Sonoma County for an annual contribution from the Tribe to local organizations that address problem gamblers in Sonoma County. Based on the previous calculation of the expected increase in problem gamblers in Sonoma County and trends in treatment of problem gamblers, the Tribe would compensate the county social services for a minimum of equivalent to 1.4 licensed counselor positions. If the County does not have a mechanism to provide these services then the Tribe shall contribute an equivalent amount to problem gambling treatment and prevention programs which serve Sonoma County. 	PS/LS	PS/LS	PS/LS	PS/LS	NI	LS

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Impact 4.7-7: Effects to the Cloverdale Rancheria of Pomo Indians	No mitigation required.	BI	BI	BI	BI	BI	LS
SECTION 4.8. Transportation¹							
Impact 4.8-1: Peak Hour Intersection Performance	Mitigation Measure 5.8-1: The project sponsor would pay 100% of the costs to install traffic signals at one central main entrance to the project site on Asti Road, and to construct a northbound right-turn lane and southbound left-turn lane on Asti Road at the site entrance. Supplementary driveways to the north and south of this signalized access would be configured to limit access to right-turn in/right-turn out only. The Tribe shall enter into an agreement with the County regarding maintenance of the traffic signal.	PS/S with signalization and LTS with roundabout	PS/S with signalization and LTS with roundabout	PS/S with signalization and LTS with roundabout	PS/S with signalization and LTS with roundabout	PS/S with signalization and LTS with roundabout	LS
	Mitigation Measure 5.8-2: The project sponsor would pay their fair share contribution towards the installation of traffic signals at the intersection of U.S. 101 Northbound Ramps / South Interchange.						
	Mitigation Measure 5.8-3: The project sponsor would pay their fair share contribution towards the installation of traffic signals at the intersection of Asti Road / South Interchange.						
	Mitigation Measure 5.8-4: The project sponsor would pay their fair share contribution towards the construction of a roundabout that encompasses the intersections of U.S. 101 Northbound Ramps / South Interchange and Asti Road / South Interchange. A Conceptual Approval Report would need to be completed as the first step of Caltrans' Project Initiation Document process.						
Impact 4.8-2: Freeway Segment Performance	No mitigation required.	LS	LS	LS	LS	LS	LS
Impact 4.8-3: Bicycle, Pedestrian and Public Transit Impacts	Mitigation Measure 5.8-5: The project would install either an off-street path or sidewalk along Asti Road between the SMART track/multi-use trail crossing of Asti Road and the project site entrance.	PS/LS	PS/LS	PS/LS	PS/LS	PS/LS	LS
Impact 4.8-4: Intersection Safety	See Mitigation Measure 5.8-1 through 5.8-4.	PS/S with signalization and LTS with roundabout	PS/S with signalization and LTS with roundabout	PS/S with signalization and LTS with roundabout	PS/S with signalization and LTS with roundabout	PS/S with signalization and LTS with roundabout	LS
Impact 4.8-5: Parking Capacity	Mitigation Measure 5.8-6: Prior to construction, the project applicant shall redesign the parking plan to provide an additional 135 parking spaces. These additional spaces shall be added so as not to substantially change the proposed site layout.	NI	NI	LS	PS/LS	NI	LS

¹ Table 5-1 provides a more specific summary of significance before and after mitigation for each mitigation measure.

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Impact 4.8-6: Construction Impacts	No mitigation required.	LS	LS	LS	LS	LS	LS
Cumulative-Only	Mitigation Measure 5.8-7: The project sponsor would pay their fair share contribution towards the installation of traffic signals at the intersection of Cloverdale Boulevard / South Interchange.	PS/S with signalization and LTS with roundabout	PS/S with signalization and LTS with roundabout	PS/S with signalization and LTS with roundabout	PS/S with signalization and LTS with roundabout	PS/S with signalization and LTS with roundabout	LS
	Mitigation Measure 5.8-8: The project sponsor would pay their fair share contribution towards the installation of traffic signals at the intersection of U.S. 101 Southbound Ramps / South Interchange.						
	Mitigation Measure 5.8-9: The project sponsor would pay their fair share contribution towards the construction of a roundabout that encompasses the intersections of Cloverdale Boulevard / South Interchange and the U.S. 101 Southbound Ramps / South Interchange.						
	Mitigation Measure 5.8-10: The project sponsor would pay their fair share contribution towards the installation of traffic signals at the intersection of U.S. 101 Northbound Ramps / Citrus Fair Drive.						
SECTION 4.9. Land Use							
Impact 4.9.1-1 Consistency with Existing Land Use Policies (Less Than Significant)	No mitigation required.	LS	LS	LS	LS	LS	LS
Impact 4.9.1-2 Compatibility with Surrounding Uses (Less Than Significant)	No mitigation required.	LS	LS	LS	LS	LS	LS
Impact 4.9.1-3 Consistency with the Airport Land Use Plans (Potentially Significant)	Mitigation Measure 5.9-1: In accordance with FAR Part 77.17 the project Applicant has submitted FAA form SF 7460-1, "Notice of Proposed Construction or Alteration" for FAA review. Pertinent information about the alteration and appropriate attachments showing the type and location of the alteration has been submitted. The Applicant will continue to consult with FAA and will adhere to the recommendations of the FAA, concerning lighting and construction activities, received in response to the Applicant's form SF7460-1 submission	PS/LS	PS/LS	PS/LS	PS/LS	PS/LS	LS
	Mitigation Measure 5.9-2: To ensure that the proposed wastewater ponds do not become an attractant to hazardous wildlife (such as ducks, geese, and other birds), the pond shall be monitored for one year following construction by a qualified biologist on a monthly basis to determine if hazardous wildlife are being attracted to it. Should it be determined that the pond is an attractant, it shall be covered to eliminate wildlife access. Acceptable materials that could be used to cover the pond include solid covers, grids, mesh, or netting. In addition, all lighting, storm water drainage, and landscaping plans at the WWTP site shall be designed to reduce or negate wildlife attractants. A wildlife hazard biologist shall review all plans.						

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Impact 4.9.1-4 Effect on Agriculture (Less Than Significant)	No mitigation required.	LS	LS	LS	LS	LS	LS
SECTION 4.10. Public Services							
Impact 4.10-1 Effects to Public Water Supply	Mitigation Measure 5.10-1: Municipal Water Agreement (If municipal option is chosen). The Tribe would enter into a service contract with the City of Cloverdale for water service. The service contract would address the proportionate share of costs for the construction of water distribution lines along Asti Road which would serve the project and other developments. If municipal water cannot be provided the Tribe would choose the private water supply option.	PS/LS	PS/LS	PS/LS	PS/LS	PS/LS	LS
Impact 4.10-2 Effects to Public Wastewater	Mitigation Measure 5.10-2: Municipal Wastewater Agreement (If municipal option is chosen). The Tribe would enter into a service contract with the City of Cloverdale for wastewater service. If municipal water cannot be provided the Tribe would choose the private wastewater option.	PS/LS	PS/LS	PS/LS	PS/LS	PS/LS	LS
Impact 4.10-3 Effects to Solid Waste Facilities	No mitigation required.	LS	LS	LS	LS	LS	LS
Impact 4.10-4 Effects to Electricity, Natural Gas and Telecommunications Services	No mitigation required.	LS	LS	LS	LS	LS	LS
Impact 4.10.1-5 Effects to Law Enforcement Services	Mitigation Measure 5.10-3: Law Enforcement Service Agreement. The Tribe would enter into a service contract with the City of Cloverdale Police Department or Sonoma County Sheriff's Office for the provision of primary law enforcement services to the project site. Alternatives A-D: It is anticipated that approximately 2.0 to 2.5 new sworn officer positions would be needed to adequately provide services to the project site and surrounding community. The actual number of sworn officer positions and other costs would be negotiated with the City or County. It is also recommended that the Tribe fund a fair share of the cost of a new police facility for the City of Cloverdale should the City propose this improvement. Alternative E: It is anticipated that approximately a 0.5 new sworn officer position would be needed to adequately provide services to the project site and surrounding community. The actual number of sworn officer positions and other costs would be negotiated with the City or County. It is also recommended that the Tribe fund a fair share of the cost of a new police facility for the City of Cloverdale should the City propose this improvement.	PS/LS	PS/LS	PS/LS	PS/LS	PS/LS	LS
Impact 4.10-6 Effects to Fire Protection Services	Mitigation Measure 5.10-4: Fire Protection Service Agreement. The Tribe would enter into a service contract with the Cloverdale Fire Protection District for the provision of primary fire protection services to the project site. Alternatives A-C:	PS/LS	PS/LS	PS/LS	PS/LS	PS/LS	LS

(Legend: NI = No Impact; BI = Beneficial Impact; LS = Less-Than-Significant -impact; PS = Potentially Significant; S = Significant;

**TABLE ES-1
SUMMARY OF IMPACTS AND MITIGATION MEASURES**

Threshold of Significance	Mitigation Measures	Original Impact / Residual Impact with Mitigation					
		Alternative A	Alternative B	Alternative C	Alternative D	Alternative E	Alternative F
	<p>It is anticipated that the Tribe would pay a fair share of the costs for (1) an aerial apparatus recommended for the Alexander Valley Resort, (2) regional training to fight multi-story structure fires, (3) other apparatus within the District's apparatus replacement program and (4) staffing needs.</p> <p>Alternative D and E: It is anticipated that the Tribe would pay a fair share of the costs for apparatus within the District's apparatus replacement program and staffing needs.</p>						
Impact 4.10-7 Effects to Emergency Medical Services	<p>Mitigation Measure 5.10-5: Ambulance Service Agreement. The Tribe would enter into a service contract with the Cloverdale Healthcare District for provision of ambulance services to the project site.</p>	PS/LS	PS/LS	PS/LS	PS/LS	PS/LS	LS
	<p>Mitigation Measure 5.10-6: Emergency Response Plan. The Tribe would develop an emergency response plan (emergency medical, pandemic, natural disaster, failure of private water/wastewater facilities if applicable) in coordination with the local fire protection and emergency medical service providers. The plan would address staff training and the necessity of an on-site defibrillator.</p>						
SECTION 4.11. Noise							
Impact 4.11-1: Construction Noise and Vibration (Potentially Significant)	<p>Mitigation Measure 5.11.1a: Construction activities shall be limited to the daytime hours of 7:00 a.m. to 6:00 p.m Monday through Friday, and shall be prohibited weekends and holidays.</p>	PS/LS	PS/LS	PS/LS	PS/LS	PS/LS	LS
	<p>Mitigation Measure 5.11.1b: To reduce daytime noise impacts due to construction, the applicant shall require construction contractors to implement the following measures:</p> <ul style="list-style-type: none"> • Equipment and trucks used for construction shall use the industry standard noise control techniques (e.g., standard mufflers, equipment redesign, use of intake silencers, ducts, engine enclosures, and acoustically-attenuating shields or shrouds). • Stationary noise sources shall be located as far from adjacent receptors, whenever feasible, and they shall be muffled and enclosed within temporary sheds and incorporate insulation barriers or other measures. 						
Impact 4.11-2: Operational Noise (Potentially Significant)	<p>Mitigation Measure 5.11.2: Rooftop air conditioners and other continuously operated 24-hour equipment (i.e., rooftop chillers, refrigeration systems, and exhaust fans) shall be located at the furthest away point from the nearest residential receptor and/or include additional noise attenuation (i.e., rooftop barriers or parapets between the equipment and the nearest sensitive receptor to absorb or deflect the noise) as necessary to reduce noise levels from the equipment to below 50 dBA at the nearest off-site sensitive receptors.</p>	PS/LS	PS/LS	PS/LS	PS/LS	PS/LS	LS
Impact 4.11-3: Operational noise associated with near-and long-term development of the proposed action in combination with other development would result in cumulatively considerable increases in the ambient noise environment.	No mitigation is required	LS	LS	LS	LS	LS	LS

(Legend: NI = No Impact; BI = Beneficial Impact; LS = Less-Than-Significant -impact; PS = Potentially Significant; S = Significant;

**TABLE ES-1
SUMMARY OF IMPACTS AND MITIGATION MEASURES**

Threshold of Significance	Mitigation Measures	Original Impact / Residual Impact with Mitigation					
		Alternative A	Alternative B	Alternative C	Alternative D	Alternative E	Alternative F
SECTION 4.12. Hazardous Materials							
Impact 4.12-1: Effects from Existing Sources of Hazardous Materials (Less than Significant)	No mitigation required.	LS	LS	LS	LS	LS	LS
Impact 4.12-2: Hazardous Materials during Construction (Potentially Significant)	Mitigation Measure 5.12-1: Construction Reporting. In the event that contaminated soil and/or groundwater or other unknown hazardous materials are encountered during construction-related earthmoving activities, all work shall be halted until a qualified individual can assess the extent of contamination. If contamination is determined to be significant, representatives of the Tribe shall consult with the USEPA to determine the appropriate course of action, including the development of a sampling plan and remediation plan if necessary.	PS/LS	PS/LS	PS/LS	PS/LS	PS/LS	LS
Impact 4.12-3: Hazardous Materials during Operation (Less than Significant)	No mitigation required.	LS	LS	LS	LS	LS	LS
SECTION 4.13. Visual Resources							
Impact 4.13.1-1: Changes to Scenic Character (Potentially Significant)	Mitigation Measure 5.13-1: Visual Resources. The external appearance of the proposed project facilities, including the choice of color and materials, shall seek to reduce the visual impact of the proposed facilities. Bright reflective materials and colors shall be avoided in favor of colors that blend into the natural environment, mimic an agricultural scale structure or nearby residential structures.	PS/LS	PS/LS	PS/LS	PS/LS	PS/LS	LS
Impact 4.13.1-2: Night Lighting (Potentially Significant)	Mitigation Measure 5.13-2: Light and Glare. All outdoor light sources shall be properly shielded and installed to prevent light trespass on adjacent properties. Any flood or spot lamps must be aimed no higher than 45 degrees above straight down (half-way between straight down and straight to the side) when the source is visible from any offsite residential property or public roadway. Dark sky lighting techniques, including light shielding to prevent spill and fixtures for parking and walkways that direct all light to the ground, will be incorporated into the project.	PS/LS	PS/LS	PS/LS	PS/LS	PS/LS	LS
	Mitigation Measure 5.13-3: Light and Glare. All new outdoor roadway lights within the project site should consist of high-pressure sodium or low-wattage metal halide or comparable sources. As well, the intensity of the lights should be kept to a minimum necessary for safety and commerce as determined by the Tribe.						
	Mitigation Measure 5.13-4: Light and Glare. The proposed project facilities shall be painted with flat colors to reduce or eliminate glare						
SECTION 4.14. Environmental Justice							
Impact 4.14-1: Effects to Minority or Low-Income Populations	No mitigation required.	NI	NI	NI	NI	NI	NI

(Legend: NI = No Impact; BI = Beneficial Impact; LS = Less-Than-Significant -impact; PS = Potentially Significant; S = Significant;

SECTION 1.0

Purpose and Need

1.1 Introduction

The National Environmental Policy Act (NEPA) requires the preparation of an Environmental Impact Statement (EIS) for major federal actions that may significantly affect the quality of the human environment. This Final EIS has been prepared by the Bureau of Indian Affairs (BIA) to address the potential environmental effects of transferring six parcels (containing approximately 64.52 gross acres) to federal trust status for the benefit of the Cloverdale Rancheria of Pomo Indians (Tribe), as well as the subsequent development of a destination resort casino on some of the parcels.

This document has been completed in accordance with the requirements set forth in NEPA (42 U.S.C § 4321 et seq.); the Council on Environmental Quality (CEQ) Regulations for implementing NEPA (40 C.F.R. Parts 1500-1508); and BIA's NEPA Handbook (59 IAM 3-H). This document analyzes the potential environmental consequences associated with five development alternatives and a No Action Alternative. Mitigation measures are provided to prevent or reduce the magnitude of environmental consequences.

For the purpose of this EIS, the BIA serves as the Lead Agency for compliance with NEPA. The BIA is the federal agency charged with reviewing and approving tribal applications pursuant to 25 C.F.R. Part 151, which sets forth the policies and procedures governing the acquisition of land by the United States in trust status for individual Indians and tribes. The Proposed Action also includes the approval by the National Indian Gaming Commission (NIGC) of a gaming management contract. The NIGC is the federal agency charged with regulating gaming on Native American lands pursuant to the Indian Gaming Regulatory Act (IGRA; 25 U.S.C § 2701 et seq.). The NIGC serves as a Cooperating Agency along with the Tribe, Environmental Protection Agency (EPA), California Department of Transportation (Caltrans), Sonoma County, and City of Cloverdale.

Pursuant to IGRA, parcels acquired by the Secretary of the Interior and in trust after October 17, 1988 are only eligible for gaming if they meet one of the exceptions within 25 U.S.C § 2719. For this project, the Secretary has determined that the proposed trust parcels (which constitute the project site) are eligible for gaming pursuant to 25 U.S.C. § 2719(b)(1)(B)(iii)¹ if they are taken into trust by the Secretary. This exception applies to “the restoration of lands for an Indian tribe that is restored to Federal recognition.”

¹ The Secretary's determination is documented in the letter from George Skibine (Acting Deputy Assistant Secretary - U.S. Department of the Interior) to Patricia Hermosillo (Chairperson of the Cloverdale Rancheria of Pomo Indians) on December 12, 2008.

1.2 Project Location

The project site includes the six parcels listed in **Table 1-1**, which were analyzed in the Draft EIS. These parcels contain a gross acreage of approximately 64.52 acres. The gross acreage includes right-of-way and easements. The term “project site” throughout the EIS refers to the gross acreage of 64.52 and is where Tribal development, and thus environmental impacts, would occur. Subsequent to the release of the Draft EIS one of the six parcels was removed from the fee-to-trust application (Assessor’s Parcel Number 116-310-020). As the removal of this parcel would not appreciably change the level of significance for the issues analyzed in this EIS, the Final EIS has not been altered to remove this parcel from the impact analysis. In November 2009, the County of Sonoma approved a minor subdivision of APN 116-310-044 (25.53 acres) which created a 5.26 acre City parcel (APN 116-310-080) not included as part of the proposed trust transfer, and a 20.28 acre parcel (APN 116-310-079) with the designated remainder to be included as part of the trust land transfer. The Final EIS reflects the change of APN 116-310-044 (25.53 acres) to APN 116-310-079 (20.28 acres).

**TABLE 1-1
PROJECT PARCELS**

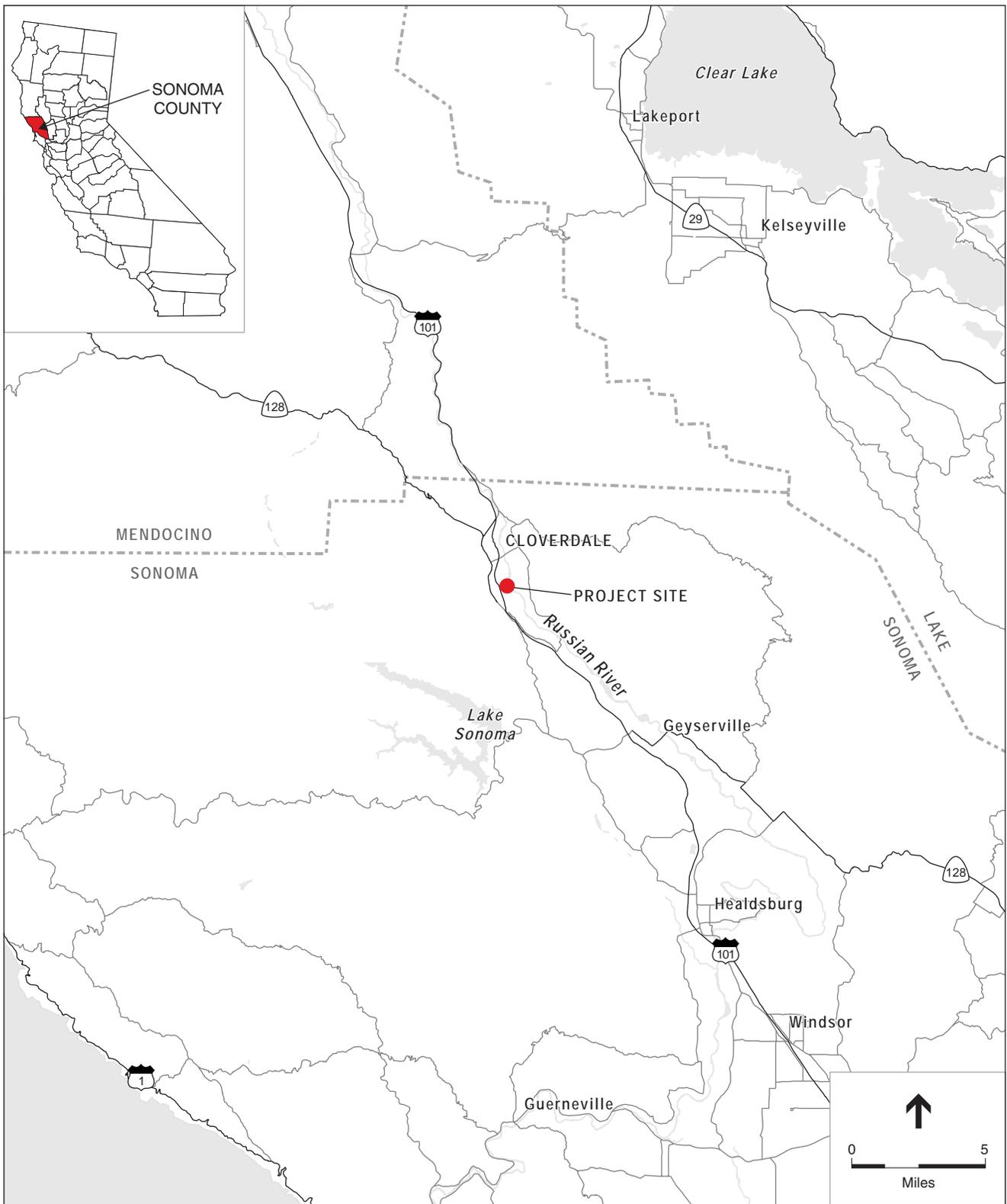
Assessor’s Parcel Number	Acreage	Jurisdiction
116-310-020	2.05	City of Cloverdale
116-310-005	12.22	Sonoma County
116-310-035	16.44	Sonoma County
116-310-039	5.00	Sonoma County
116-310-040	8.53	Sonoma County
116-310-079*	20.28	Sonoma County
Total	64.52	

SOURCE: Adobe Associates, Inc., 2009 and ESA, 2009

* Previously APN 116-310-044

The project site is located in northern Sonoma County, California within the sphere of influence of the City of Cloverdale. **Figure 1-1** shows the regional location of the project site. The location corresponds to Township 11 North, Range 10 West, Sections 19 and 20 of the Cloverdale USGS 7.5-minute topographic quadrangle map (1980). The project site is situated immediately east of Highway 101 and borders Asti Road. A site and vicinity map is provided as **Figure 1-2**. An aerial photograph of the project site is included as **Figure 1-3**. **Figure 1-4** provides a historic topographic map.

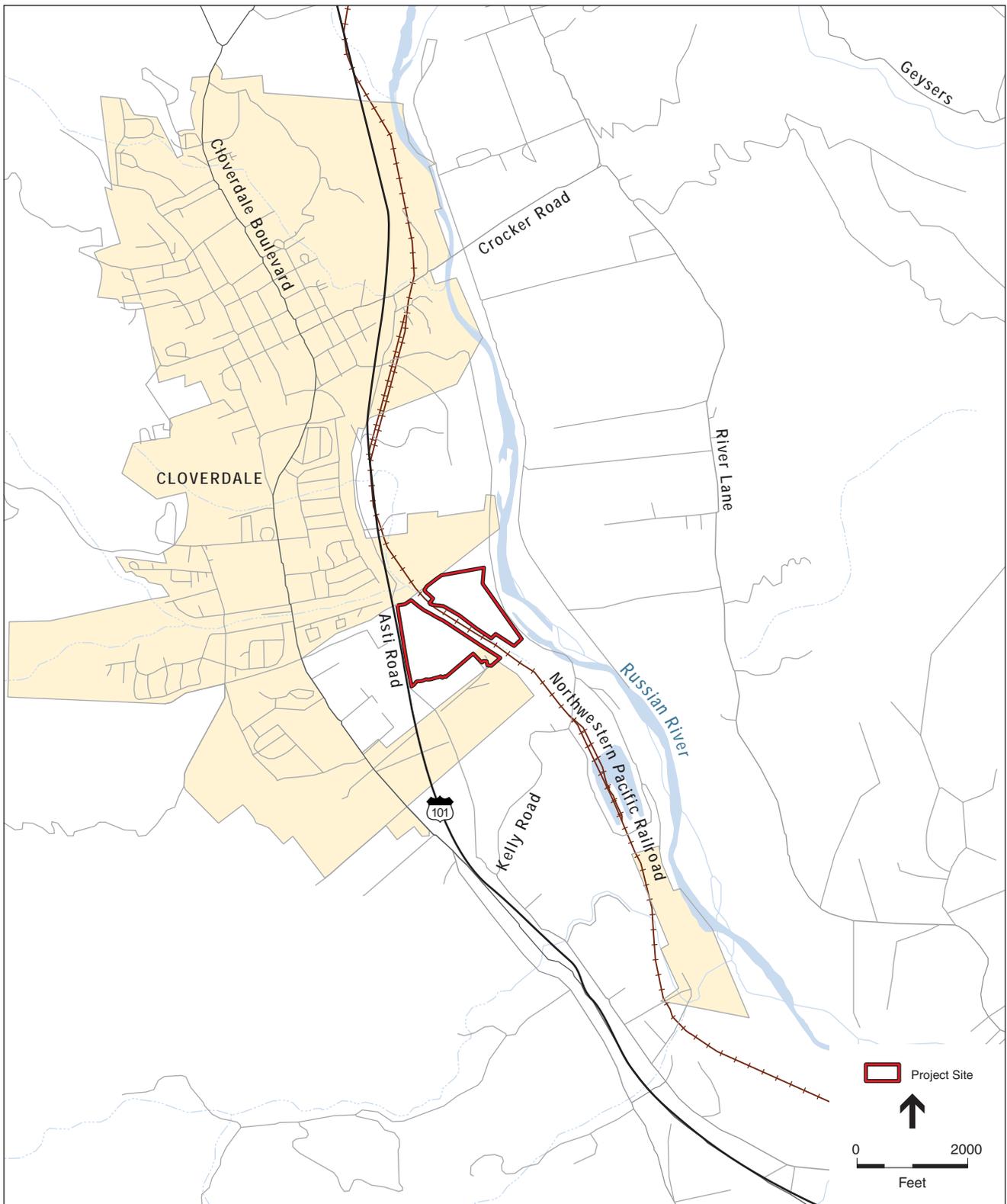
There are six rural residences and associated outbuildings on the project site, including barns, horse paddocks, and corrals. The eastern portion of the project site is used as vineyards. Surrounding land uses include the City of Cloverdale wastewater treatment plant and associated treatment ponds to the north, industrial warehouses and storage facilities to the south, Highway 101 and residential neighborhoods to the west, and the Russian River and agriculture to the east. Regional access to the project site is provided by Highway 101, with local access provided by South Cloverdale Boulevard via Highway 101.



SOURCE: ESRI, 2006; and ESA, 2008

Cloverdale Rancheria Resort Casino Project EIS . 207737

Figure 1-1
Regional Location



SOURCE: ESRI, 2006; and ESA, 2011

Cloverdale Rancheria Resort Casino Project EIS . 207737

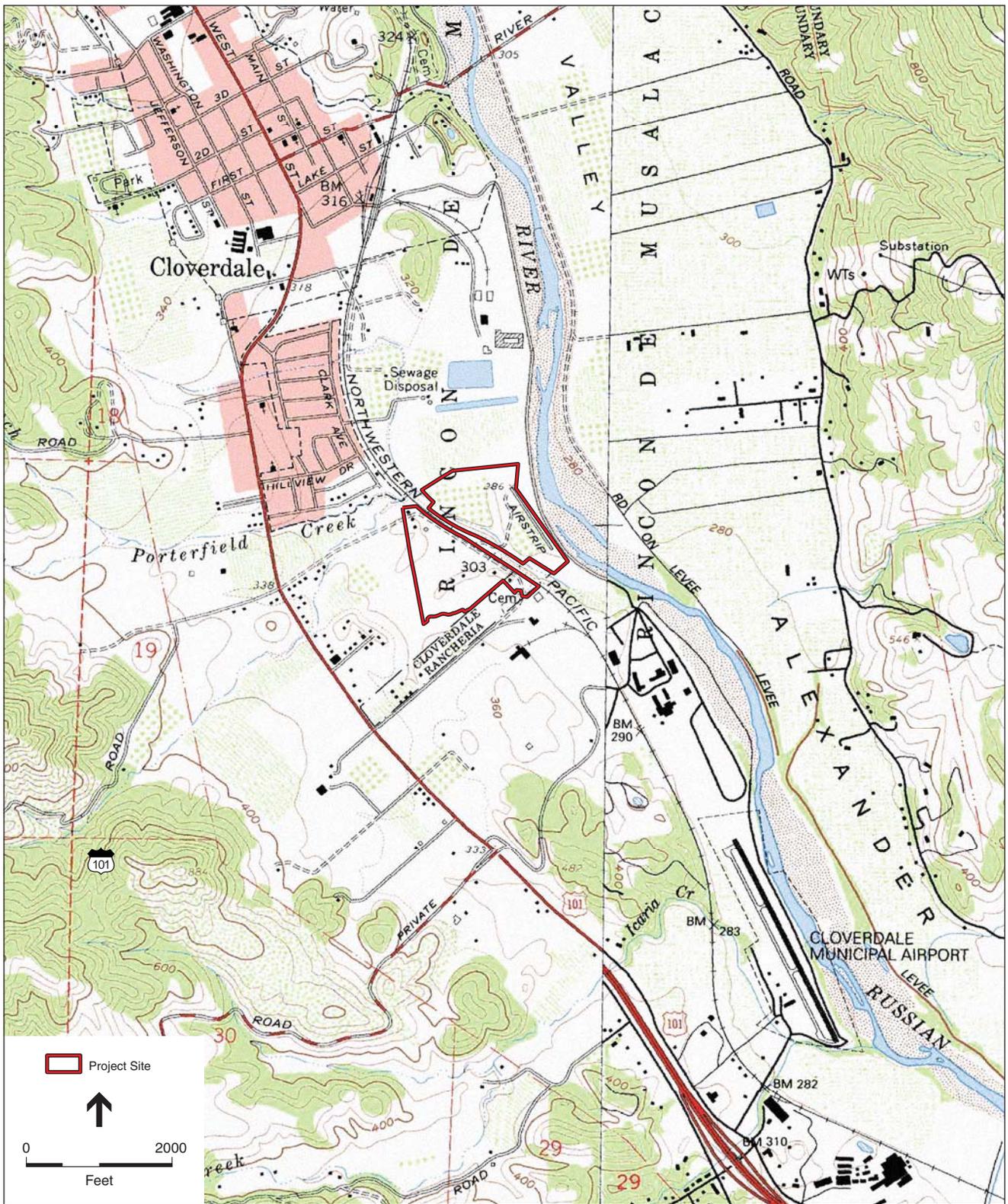
Figure 1-2
Project Site and Vicinity



SOURCE: NAIP, 2006; GlobeExplorer, 2007; and ESA, 2011

Cloverdale Rancheria Resort Casino Project EIS . 207737

Figure 1-3
Aerial Photograph



SOURCE: USGS Topographic Quadrangles, 1960; Sonoma County, 2001; and ESA, 2011

Cloverdale Rancheria Resort Casino Project EIS . 207737

Figure 1-4
Historical Topographic Map

1.3 Purpose and Need for the Proposed Action

Implementation of the Proposed Action would assist the Tribe in meeting the following objectives:

- Restoring the Tribe's trust land base
- Strengthening the Tribal government
- Achieving economic self sufficiency
- Improving the socioeconomic status of the Tribe
- Providing employment opportunities for Tribal members
- Providing funding for administrative, health and welfare, housing, educational, social and other Tribal services

The following discussion summarizes the history of the Tribe's Rancheria, which is adjacent to the project site. The Tribe is composed of descendants of the indigenous Pomo people of the Cloverdale area. The Tribe was displaced from their traditional lands during the 1800s with the Gold Rush and increasing number of settlers in Northern California. In 1921, the Tribe was federally-recognized and 27.5 acres of land were taken into trust by the U.S. government on behalf of the Tribe. This land comprised the original reservation, known as the Cloverdale Rancheria.

In 1958, Congress enacted the California Rancheria Act (Act of August 18, 1958, 72 Stat. 619, as amended by the Act of August 11, 1964, 78 State. 390) which implemented the United States' termination policy and eliminated the United States' trust relationship with the Cloverdale Rancheria. On September 3, 1959, the Plan for the Distribution of the Assets of the Cloverdale Rancheria provided for the allotment of the former Cloverdale Rancheria into five parcels for individual distributees, and two parcels to be held in common for the Tribal cemetery and community well. As a result of termination, almost all of the Tribe's lands passed into non-Indian or State ownership. Soon after the distribution was effected, a portion of the western side of the former Cloverdale Rancheria was sold to the State of California for the construction of State Highway 101. In 1991, the State acquired an additional portion on the eastern side of the former reservation for a bypass to Highway 101. In 1983, the Cloverdale Rancheria was restored to federally-recognized status pursuant to a stipulated judgment entered in *Hardwick vs. United States* (No. C-79-1710-SW; N.D. Calif. Dec. 22, 1983). The U.S. District Court for the Northern District of California determined that the Cloverdale Rancheria was illegally terminated in 1965 pursuant to the terms of the California Rancheria Act. The United States has acquired no land for the benefit of the Cloverdale Rancheria of Pomo Indians since termination, thus the Tribe remains a "landless" Indian tribe. Bringing the project site into trust would restore this lost trust land base in addition to fulfilling several other needs of the Tribe.

One of the Tribe's objectives is to generate income that will enable the Tribal government to better address the needs of the Tribal membership and those of future generations. A sustained revenue base would provide funding for Tribal government operations and programs, thereby strengthening the self-sufficiency of the Tribe.

There are currently 498 Tribal members of the Cloverdale Rancheria and most reside within a 50-mile radius of the City of Cloverdale. In 2005, the Tribe had an unemployment rate of 28 percent and the percentage of employed Tribal members below poverty guidelines was 47 percent (BIA, 2005). Increased revenue and job opportunities from the project would improve the socioeconomic condition of Tribal members and reduce dependence on public assistance programs.

In addition to the trust application, the Tribe has requested approval of a gaming management contract with a development/management company. The management contract is needed as the Tribe alone cannot secure the necessary financing to develop a resort and casino project and lacks the necessary expertise to manage a resort and casino project. Management contracts are consistent with the IGRA and reviewed by the NIGC prior to approval.

1.4 Overview of the Environmental Review Process

The CEQ regulations for implementing NEPA require a process referred to as “scoping” for determining the range of issues to be addressed during the environmental review of a proposed action (40 C.F.R § 1501.7). The BIA published a Notice of Intent (NOI) in the Federal Register on July 7, 2008. The NOI provided a thirty-day comment period for which comments and concerns on the scope and implementation of the Draft EIS could be submitted. The NOI was also published in two local newspapers, the Press Democrat² and Cloverdale Reveille³. The NOI was published in the Press Democrat on July 11, 19, and 27, 2008 and in the Cloverdale Reveille on July 16, 23, and 30, 2008. These notices summarized the Proposed Action and project location and provided details on the public comment period and public scoping meeting. A public scoping meeting was held at the Cloverdale Citrus Fairgrounds on July 30, 2008. The Scoping Report was published November 2008 (ESA, 2008). The Draft EIS incorporated the issues and concerns summarized within the Scoping Report. The Tribe, NIGC, EPA, Caltrans, Sonoma County, and City of Cloverdale were identified as cooperating agencies during the scoping process.

The Draft EIS was distributed to federal, tribal, state, and local agencies and other interested parties for a 75-day review and comment period. The review and comment period began after the Notice of Filing with the EPA in the Federal Register on August 6, 2010. The review and comment period, time and location of the public hearing(s), and contact details for additional information from the lead agency were included on the Notice of Availability (NOA), which was printed in two local newspapers, the Press Democrat and Cloverdale Reveille. The NOA was published in the Press Democrat on August 11, September 5, and October 9, 2010 and in the Cloverdale Reveille on August 18 and October 6, 2010.

Comments received on the Draft EIS and the transcript from the Draft EIS public hearing are included in **Appendix R**. The responses to comments are included in **Appendix S**. The response to comments notes where changes have been made to the text of the Final EIS. Subsequent to the Draft EIS review and comment period a Notice of (Gaming) Land Acquisition Application pursuant to 24 CFR §151.10, was published by BIA which gave notice of the application filed by the Tribe to

² Daily circulation in City of Santa Rosa, California and County of Sonoma, California.

³ Weekly circulation in City of Cloverdale, California.

have the project site accepted into trust by the U.S. government. The notice was published on April 12, 2012 and included an invitation to interested parties to comment within 30 days. Two comments were included within the letters which concern environmental issues which were not previously raised in comments on the Draft EIS. Response to these comments and the applicable comments letters are provided in **Appendix T**.

As with the Draft EIS, the Final EIS was filed with the EPA and distributed upon completion. An NOA was printed in local papers and the Final EIS has a public review period for 30 days. After the 30-day review period, the BIA may decide on the Proposed Action and publish a Record of Decision (ROD). The ROD will state what decision was made, identify the alternatives considered in reaching the decision and discuss preferences among alternatives based on relevant factors including economic and technical considerations and the BIA's statutory mission. The ROD also identifies and discusses all such factors that were considered in making the decision and discusses all practicable mitigation measures have been adopted to minimize environmental effects.

1.5 References

- Adobe Associates, Inc., 2009. ALTA/ACSM Land Title Survey. Santa Rosa, California.
- ESA, 2008. *Cloverdale Rancheria of Pomo Indians Fee-to-Trust and Resort Casino Project Scoping Report*. Sacramento, California. November 2008.
- BIA, 2005. *American Indian Population and Labor Force Report*. United States Department of the Interior Bureau of Indian Affairs, Office of Indian Services. Available online at: <<http://www.doi.gov/bia/labor.html>>.

SECTION 2.0

Alternatives

2.1 Introduction

Consistent with Council on Environmental Quality guidelines (40 C.F.R §1502.14), this section includes a detailed discussion of the alternatives analyzed in this Environmental Impact Statement (EIS). Alternatives include the Proposed Action, four development alternatives, and the No Action Alternative. All five development alternatives include the fee-to-trust transfer of the project site (the project site is described in **Section 1.2**). Alternatives with a gaming component include federal review of the gaming management contract. As discussed in **Section 1.1**, the proposed parcels which make up the project site are eligible for gaming pursuant to the Indian Gaming Regulatory Act (IGRA). All five development alternatives would occur on the same proposed trust parcels.

Subsequent to the release of the Draft EIS one of the six parcels was removed from the fee-to-trust application (Assessor's Parcel Number 116-310-020). Under Alternatives A through D, this parcel was proposed to include a Tribal government building with workspace and offices and an associated parking area. Upon review of the environmental impacts for the alternatives, it was determined that the removal of this parcel would not appreciably change the level of significance for the issues analyzed in this EIS, and thus the Final EIS has not been altered to remove this parcel from the project site or impact analysis. However, it should be noted that this parcel, including the proposed Tribal government building and parking area, are not included within the current fee-to-trust application.

2.2 Alternatives

2.2.1 Alternative A – Proposed Action

Alternative A consists of the placement of six parcels of land totaling approximately 64.52 acres into federal trust for the Tribe, federal review of the development and management contract, and development of a casino, hotel, convention center, entertainment center and other ancillary facilities.

Land Trust Action

The proposed land trust action would be made in accordance with the procedures set forth in 25 C.F.R. Part 151 for the six parcels of land that make up the project site. The fee-to-trust process includes an application which provides detailed information on the land being taken into trust, an

effects analysis which details the potential effects on the surrounding community, and consultation to determine the costs and benefits the fee-to-trust transfer would have for the Tribal Government and the affected local jurisdiction(s). If the BIA finds that the fee-to-trust proposal meets all statutory requirements and the benefits outweigh any potential negative effects, the BIA may approve the Tribal Government's application and take the proposed lands into trust for the Tribal Government.

Development and Management Contract

The National Indian Gaming Regulatory Commission (NIGC), established in 1988 by IGRA, is the federal agency charged with the oversight of tribal gaming enterprises. The Tribe and its management partners have entered into a development and management contract for the construction and operation of the Alternative A. This agreement will be reviewed by the NIGC to ensure consistency with IGRA, NIGC regulations, and other Tribal ordinances and policies.

Development

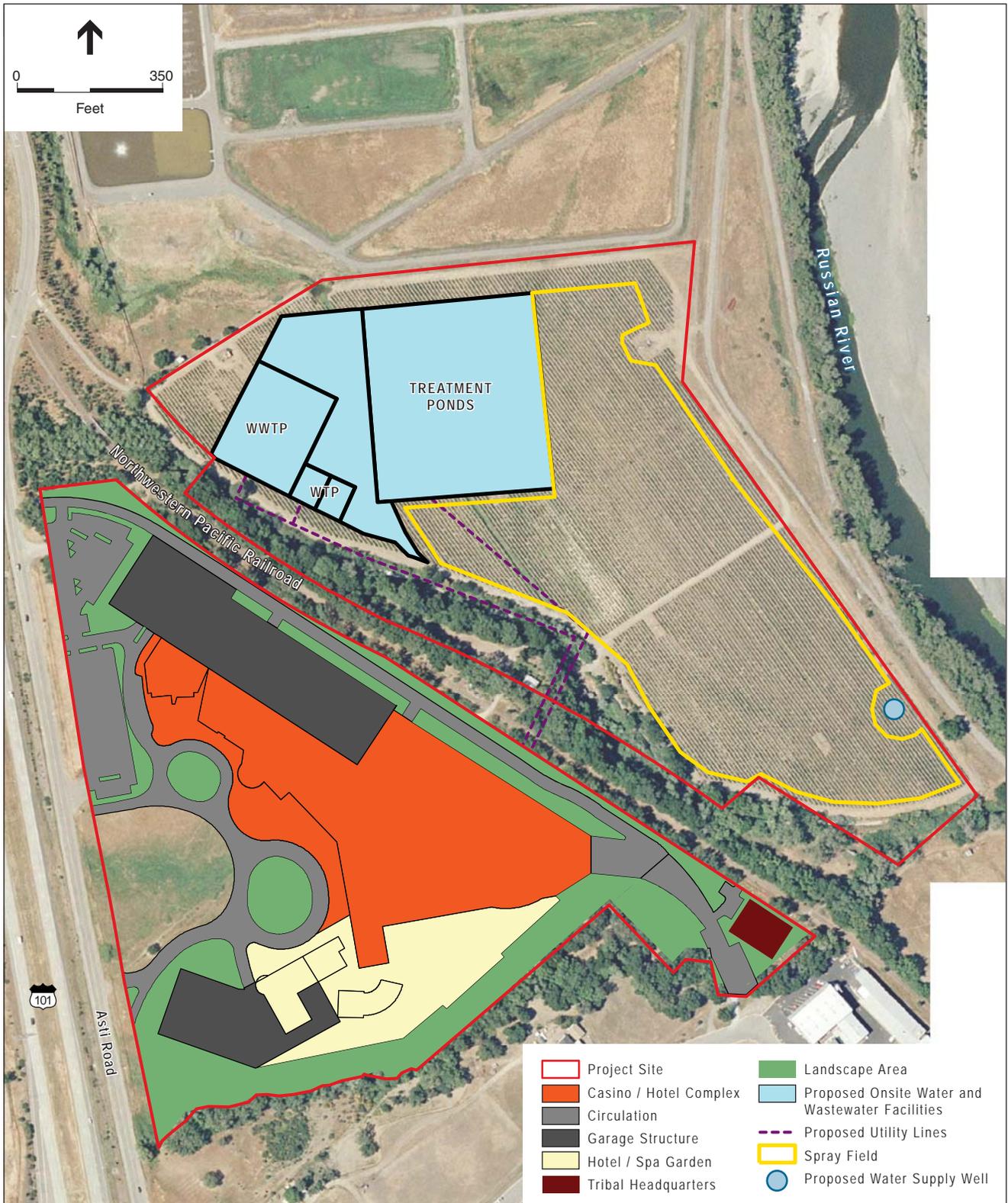
The proposed facilities under Alternative A are summarized in **Table 2-1**. **Figure 2-1** shows a project-level site plan for Alternative A. **Figure 2-2** shows an architectural rendering of the proposed facilities.

**TABLE 2-1
PROPOSED ACTION FACILITIES**

Facility Component	Number	Size (Sq Ft)
Casino (2,000 slots, 45 tables)	2,270 Seats	80,000
Hotel	244 Rooms	287,000
Convention Center	984 Seats	48,600
Entertainment Center	1,300 Seats	28,100
Food & Beverage	984 Seats	52,445
Resort Support Facilities		79,455
Tribal Government Building		20,000
Total		595,600
Parking Spaces		
Surface Parking	+/- 100 Spaces	
Garage Parking	+/- 3,300 Spaces	
Total	3,400 Spaces	

SOURCE: JCJ Architecture, 2008; ESA, 2008

The Tribal Government will adopt the development standards prescribed by the California Building Code (CBC), including all fire, plumbing, electrical, mechanical, and seismic standards. All electrical systems and equipment will be grounded in compliance with the National Electric Code (NEC) and lighting will be at levels suggested in the Illumination Engineering Society handbook and in accordance with the California Title 24 Energy Code. In addition, the Proposed Action will comply with the Federal Americans with Disabilities Act (ADA; P.L. 101-336, as amended, 42 U.S.C. § 12101 et seq.).



SOURCE: JCJ Architects, 2008; Adobe Associates, Inc., 2009; and ESA, 2011

Cloverdale Rancheria Resort Casino Project EIS . 207737

Figure 2-1
Alternative A Site Plan



NOT TO SCALE

SOURCE: FORMA/Visuart, 2009; JCJ Architects, 2009; and ESA, 2009

Cloverdale Rancheria Resort Casino Project EIS . 207737

Figure 2-2
Alternative A – Architectural Rendering

The project will be constructed in a single phase, beginning in the spring of 2012. Project construction is expected to be completed late spring to early summer 2014 for a total construction length of 24-28 months. Infrastructure improvements would be constructed first, followed by construction of the main gaming hall, parking structure, hotel, convention center, entertainment center, and tribal administration building. Construction would occur daily between 7 a.m. and 6 p.m. The construction period may vary slightly depending on the weather. Construction and related activities would directly employ 75-85 people continuously over the 24-28 month construction period. On-site construction storage space for equipment and materials will be required during the construction period. Staging areas for construction activities will be appropriately designated onsite. Project construction involves grading and excavation for building pads, parking lots, and utility lines. A preliminary grading plan is included in **Appendix A**.

Typical construction activities would include:

- Site preparation – tree and brush removal, structure demolition, and off-site disposal and recycling of non-reusable demolished material
- Earthwork – grading, excavation, soils processing, backfill
- Paving – delivery, placement, and compaction of base material; asphalt material delivery, placement, and paving
- Concrete – forming, rebar placement, finishing, concrete delivery, and placement
- Pipelines – trenching and field welding
- Structural steel work – assembly and welding
- Mechanical equipment and piping installation
- Electrical/instrumentation work
- Steel and/or wood framing
- Stucco and/or fiber cement siding
- Masonry construction

Construction Equipment may include, but is not limited to the following:

- Earthmovers
- Fork lifts
- Cranes
- Concrete trucks and pumping equipment
- Dump trucks and flat bed delivery trucks
- Water trucks
- Paving, stucco, and concrete equipment
- Equipment necessary for wood and steel construction
- Power generators

Casino

The proposed two-story casino would consist of a mixture of uses including a gaming area, food and beverage facilities, retail shopping, administrative space and secure back-of-house facilities. The gaming area would include 80,000 square-feet of gaming with approximately 2,000 slot machines and 45 gaming tables. A non-smoking area is included within the main gaming hall. Food and beverage facilities would compose 52,445 square feet of the casino area and include a casual dining restaurant, noodle restaurant, pub/sports bar, buffet, food court, casino lounge, casino bar, and VIP lounge. The combined dining areas could accommodate up to 984 seats. Support facilities compose 79,455 square feet; the main components of this area include building support, casino support, administrative offices, public spaces, security, surveillance and employee dining and services. The casino would be open 24 hours a day, 7 days a week.

The Tribe would obtain a license to serve alcohol from the State of California Department of Alcoholic Beverage Control. Casino patrons would be required to be 21 years of age or older in areas where alcohol is served and a “Responsible Alcoholic Beverage Policy” would be adopted to include provisions related to I.D. verification and refusal of service to individuals who are visibly intoxicated.

Hotel

The 287,000 square-foot hotel would be located south of the casino. The hotel would be up to five stories above grade and provide for 244 guest rooms distributed between floors. The hotel area also includes food and beverage facilities, reception and lobby areas, retail, recreation, back-of-house and building support. Food and beverage facilities include a coffee shop, wine-experience restaurant, and lobby lounge. The recreation areas include a spa, salon, health club, pool and kids’ entertainment area. The hotel would be open 24 hours a day, 7 days a week.

Convention Center

The proposed 48,600 square-foot convention center would be located east of the casino and food and beverage facilities. The two-story convention center would provide space for both large events and smaller meetings. The facility could accommodate up to 984 seats in the events hall for large events. Four meeting rooms provide space for smaller meetings. Each meeting room could accommodate up to 60 seats or 240 seats total. The meeting rooms are not intended to be in use during larger events in the events hall.

Entertainment Center

The 28,100 square-foot entertainment center would be located northwest of the casino. The two-story entertainment center would feature a showroom and stage for non-gaming related activities such as local and regional theater and musical performances. The facility could accommodate up to 1,300 seats.

Parking and Circulation

The Proposed Action would include approximately 3,400 parking spaces for patrons and employees through garage and surface parking. A breakdown of the spaces is provided in **Table 2-1**. The parking garage structures would be up to four to five stories above grade. One parking garage is adjacent to and north of the casino and the other is adjacent to and west of the hotel. On-site roads would be constructed to provide access from site entrances to proposed parking areas.

Tribal Government Building

An approximately 20,000 square-foot building on the southeastern end of the project site would be dedicated to a tribal government workspace and offices.

Ancillary Components

The major ancillary components to the proposed developments include the drainage system, water supply, wastewater service, fire protection, and law enforcement for the project site. A preliminary utilities plan is included in **Appendix H**. The Tribe has begun discussions with the City of Cloverdale on the provision of public services by the City to the project site. The proposed project does not assume or rely upon the provision of public services from the City; however, it is discussed as a viable option under applicable ancillary components.

Drainage

A preliminary drainage plan was prepared and is included in **Appendix B**. The proposed development includes features to reduce the level of stormwater runoff to pre-construction flows for up to a 10-year storm event. Pervious concrete surfaces (surfaces that would allow for the infiltration of stormwater into the groundwater basin) are proposed for most driveways and surface parking areas. Sump pumps would be located on the bottom floors of the garage structures to provide drainage for seepage and garage floor cleaning. Sump pump discharges will be treated with a sand/oil separator.

On-site drainage improvements west of the railroad tracks include a subterranean detention system and three upland drainage release systems. The development would route concentrated flows to the southern project boundary where existing sheet flow discharges occur. The subterranean detention system would include a network of large diameter pipes for temporary storage and an outlet structure which restricts discharge from the detention system to pre-development flow rates. One of the pipes is a 30-inch storm drain that would collect overflow from the existing central seasonal wetland on site during large storm events. The seasonal wetland is located near the outfall of an existing off-site culvert which transports runoff from the west side of Highway 101. The on-site drainage system would be designed to accommodate flows from at least a 10-year storm event, which requires a volume of 60,100 cubic feet. Excess flows from greater storm events would bypass, via culverts, the detention facility and discharge into the upland drainage release system. The upland drainage release system would consist of a field of large diameter rocks placed near the existing grade surface to spread concentrated flows to a sheet flow condition prior to being discharged on the surface to Coyote Creek. Existing drainage exits the western portion of the property from four existing culvert outfalls. These culverts would not be modified.

Two existing culverts which cross under the railroad tracks would be improved. The northern culvert is an 18-inch culvert, which drains to Porterfield Creek. This culvert would be extended past highly erodible areas and energy dissipation will be provided at the end of the culvert. The southern culvert is a 24-inch culvert with two water lines within the culvert. The water lines would be removed and relocated during construction to increase the capacity of the culvert.

Stormwater drainage east of the railroad tracks exits the property at two locations. These existing drainage systems would not be altered by the project. The project proposes to construct a new surface drainage channel along the northern and eastern boundary to route stormwater run-on to Porterfield Creek. This would replace an existing agricultural ditch that runs through the vineyard, and would move stormwater around proposed water and wastewater facilities. The re-routing of the existing agricultural ditch would only occur if wastewater treatment facilities are constructed on-site (see below).

Proposed stormwater source treatment controls for the project site include the following:

- Implementation of Best Management Practices during construction as detailed within a Storm Water Pollution Prevention Plan and erosion and sediment control plan
- Use of slope protection practices, including hydro-seeding, planting, soil reinforcement mats, and retaining walls to prevent erosion and sediment transport
- Design landscaping to prevent sediment transport to storm drain systems
- Design landscaping to mosquito vector control requirements, thereby avoiding water ponding
- Use of porous concrete surfacing in driveways and parking areas
- Treat runoff in landscaping or porous concrete prior to storing in stormwater detention facility
- Use of upland drainage release system to release water to existing creeks (instead of a direct discharge into creeks)
- Discharge roof drainage directly to landscape or porous concrete surfaces, thereby allowing treatment prior to entering storm drain system
- Incorporate Integrated Pest Management principles and techniques for design and maintenance of landscaping
- Use of bioswales to channel and treat surface water

Water Facilities

A water supply report was prepared for the project and is included as **Appendix I**. Water supply for Alternative A would be obtained from either on-site wells (private option) or the City of Cloverdale (municipal option). Under either option an existing 8-inch onsite water line would be relocated along the southern project boundary. The water demand for the project is presented with and without the use of reclaimed water. Use of reclaimed water would be dependent on whether the private or municipal wastewater option is selected. If wastewater service is provided privately, the project would use tertiary treated wastewater for toilet flushing, fire protection, and irrigation uses to the extent practicable.

Water Demand. The annual water demand for Alternative A is estimated to be 33.6 million gallons. The average daily demand is estimated to be approximately 92,023 gallons with a constant withdrawal rate of 64 gallons per minute (gpm). The peak daily flow is estimated to be 171,500 gallons with a required pump rate of 119 gpm.

Water Demand with Use of Reclaimed Water. The annual water demand for Alternative A with use of reclaimed water is estimated to be 24.3 million gallons. The associated average daily demand is estimated to be approximately 66,639 gallons with a constant withdrawal rate of 46 gpm. The associated peak daily flow is estimated to be 126,147 gallons with a required pump rate of 88 gpm. It is assumed that reclaimed water would be used for toilet flushing, fire protection, and irrigation uses. Fire protection uses include fire sprinkler systems and fire hydrants on the project site. Reclaimed water would be supplied through a 12-inch pipe originating at the pump house at the wastewater treatment storage pond. An estimated volume of 500,000 gallons of reclaimed water will be retained in an above ground storage pond. Fire pumps would be used to elevate pressure in the reclaimed water main during actual fire events. When pressure in the reclaimed water main exceeds 70 pounds per square inch, pressure-reducing devices on irrigation lines will be utilized. Irrigation use includes landscape plantings and water features. Reclaimed water for irrigation purposes would be stored near wastewater facilities in an above-ground storage tank with a volume of approximately 40,000 gallons. Anticipated peak landscape irrigation demand is 20,000 gallons per day. Treated wastewater for toilet flushing purposes would be initially stored with landscape irrigation water. A separate and redundant pumping and plumbing system would be required to allow the use of recycled wastewater for toilet flushing. As with potable water, reclaimed water would be transported via a pipe crossing over Porterfield Creek with support structures built outside of the creek banks.

Private Option

Under the private option, the Tribe would construct and maintain water supply facilities on the project site. The proposed location of private water facilities are shown on **Figure 2-1**. Facilities would include a groundwater well, water treatment plant, water storage tanks, a pumping system (including pressurized storage) and a piped delivery system. The water facilities would be constructed above anticipated flood elevations.

An on-site well would be constructed on the project site, east of the railroad tracks. The well would be sealed to at least 50 feet. The distribution system would provide domestic water demands while irrigation and fire flows would be provided by the reclaimed water supply. A separate and redundant pump and piping system would be required for emergency fire flows (fire sprinklers and fire hydrants). The distribution system would include approximately 2,500 linear feet of 6-inch water main. The distribution lines would cross the railroad easement between the project parcels. A suspended domestic water pipe crossing over Porterfield Creek is proposed with support structures built outside of the creek banks.

Municipal Option

Under the municipal option, the Tribe would contract with the City of Cloverdale for water service. A 12-inch or 16-inch public water main would need to be constructed along Asti Road to connect the project to the City's water supply. Under the municipal option, the eastern portion of the project site would not be developed for water supplies, and those areas would remain in agricultural use.

Wastewater Facilities

A wastewater treatment and disposal report was prepared for the project and is included as **Appendix J**. The annual wastewater flow for Alternative A is estimated to be 33.6 million gallons with a daily average of 92,023 gallons. The peak daily flow is estimated at approximately 171,500 gallons. Wastewater service would be provided either by facilities on the project site (private option) or by the City of Cloverdale (municipal option).

Private Option

Under this option, wastewater services for Alternative A would be privately provided by a new on-site collection system, wastewater treatment plant (WWTP), and sprayfields. The proposed location of private wastewater facilities are shown on **Figure 2-1**.

The collection system would include the construction of approximately 2,500 linear feet of 8-inch pipe. Flows would be conveyed from the project facilities through the railroad easement to the WWTP located east of the railroad tracks. The sewer crossing would require an encroachment permit from the railroad to install pipe within the railroad right-of-way and under the tracks. Pipe construction under the tracks would utilize directional drilling or jack and bore drilling for installation. Crossing over Porterfield Creek is proposed via a suspended pipe over the creek, with support structures constructed outside of the creek banks.

The WWTP would treat wastewater to a tertiary level for reuse and disposal. The WWTP would consist of initial screening and transfer to an equalization tank, treatment in a constant flow membrane bioreactor, chlorination and transfer to an effluent pump station. Treated effluent would be transferred to either the aerated storage pond or recycling storage for landscape irrigation and fire suppression. Sludge would be collected in the bioreactor periodically and stored prior to off-site transfer to an approved disposal facility.

Treated wastewater would be stored in an above ground storage pond sized to accommodate approximately 73 acre-feet. This volume does not account for the use of reclaimed water; a smaller detention basin may be constructed dependent upon the final design of recycled water reuse facilities. The wastewater storage pond is sized to account for project wastewater generation, a 100-year rainfall event, and evaporation and discharge of treated wastewater onsite (**Appendix J**). The storage pond will be enclosed by an earthen embankment, the top of which will be at least 2 feet above anticipated flood levels. The pond will be lined to prevent infiltration into the ground with either a natural soil liner or artificial welded seam plastic liner. The pond will be fitted with an aeration system designed to maintain an aerobic condition in the pond. A wet well and fire pump system would be located at the pond for fire flows. A floating intake system will be installed to permit withdrawal of stored water to be filtered and discharged to the wastewater disposal field.

Treated effluent would be filtered and discharged to a spray irrigation disposal field on the eastern portion of the project site and landscape area on the western portion of the project site. The sprayfield area would be an alfalfa field or similar crop with high evapotranspiration capabilities of approximately 14.6 acres. There would be a protective no-spray buffer of not less than 50 feet surrounding all onsite and neighboring groundwater wells. No spraying of treated wastewater would occur during the period from October 1 to May 14 to ensure that runoff is avoided.

Municipal Option

Under the municipal option, the Tribe would contract with the City of Cloverdale for wastewater service. The City of Cloverdale has an existing 18-inch sewer main which runs along the southern and northeastern project boundary. As stated for water, under the municipal option the eastern portion of the project site would remain in agricultural use and the wastewater facilities discussed under the private option would not be constructed.

Fire Protection and Emergency Medical Services

The Tribe would contract with local service providers for fire protection and emergency medical services. The Tribe and Cloverdale Fire Protection District intend to enter into a Memorandum of Understanding for fire and emergency services as noted in a Letter of Intent (**Appendix N**). It is anticipated that the Tribe would contract with Cloverdale Health Care District for ambulance transport. On-site defibrillators would be located onsite and staff would be trained to operate defibrillator equipment prior to emergency service provider arrival. Structures will include sprinkler systems and other fire prevention components as required by the Fire Code.

Security and Law Enforcement

The Tribe would provide 24-hour security surveillance of proposed facilities and parking areas through the use of private security guard patrols and security surveillance equipment typical of casino gaming facilities. The Tribe would also work cooperatively with area law enforcement agencies such as the Sonoma County Sheriff's Office, City of Cloverdale Police Department, and the California Highway Patrol. Either the City of Cloverdale Police Department or Sonoma County Sheriff's Office would provide primary law enforcement services. As noted previously, the Tribe and City have been in discussions regarding the provision for public services for the project site. It is anticipated that the Tribe will contract with the City of Cloverdale Police Department; however, without an agreement in place enforcement authority would defer to the Sheriff's Office under Public Law 280.

2.2.2 Alternative B – Reduced Hotel and Casino

Alternative B consists of the placement of six parcels of land totaling approximately 64.52 acres into federal trust for the Tribe, federal review of the development and management contract, and development of a hotel, entertainment center, casino and other ancillary facilities. The casino and hotel facilities under Alternative B would be similar to those proposed for Alternative A, but would be reduced in scale. The entertainment center would be the same size as under Alternative A. Alternative B does not include a convention center component. As with Alternative A, a tribal government building is proposed on the south end of the project site.

Land Trust Action

The land trust action for Alternative B would be the same as that described under Alternative A.

Development and Management Contract

As with Alternative A, Alternative B would require NIGC approval of a management agreement between the Tribe and its management partners before the commencement of gaming operations.

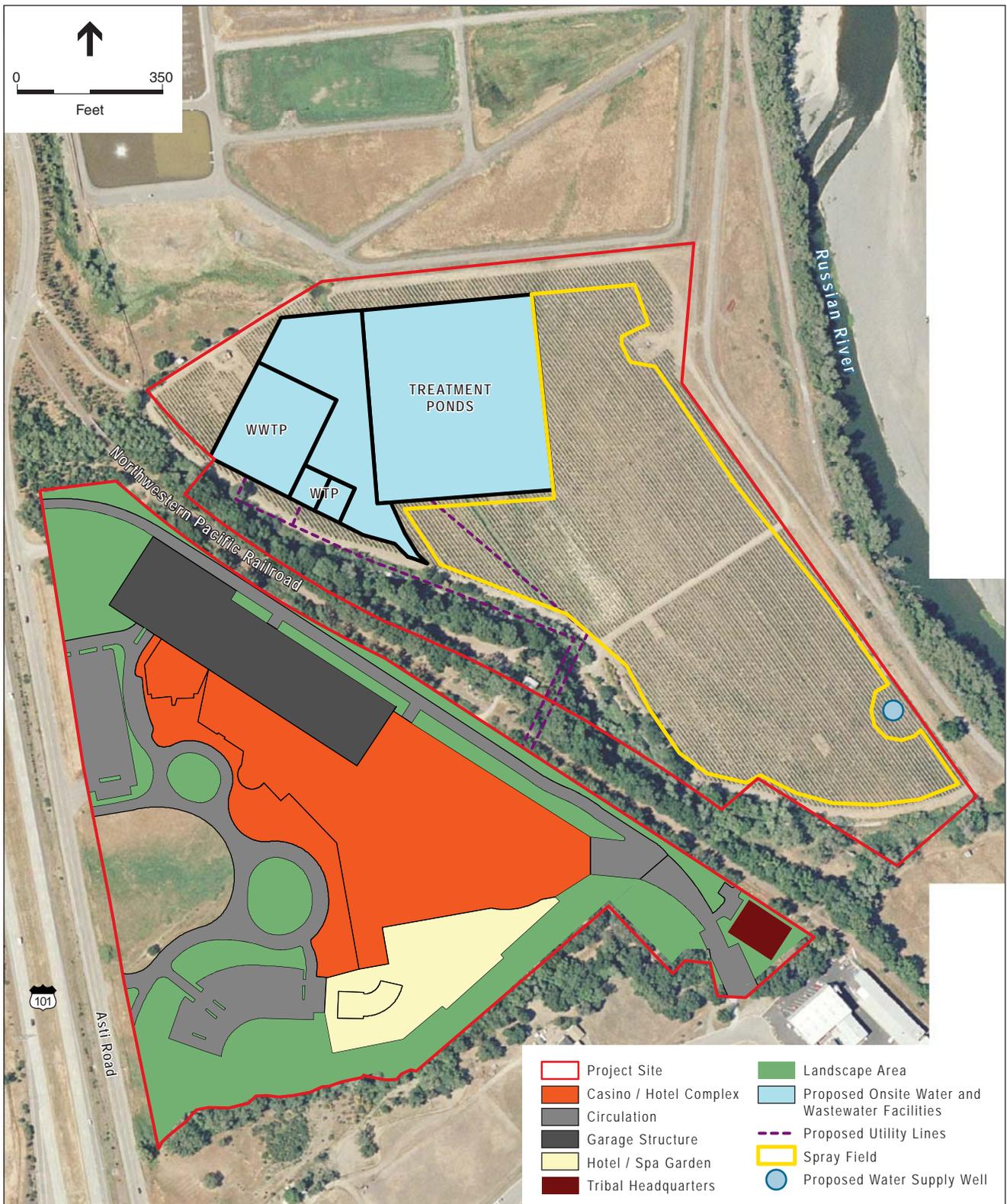
Development

Table 2-2 provides a summary of the proposed uses for Alternative B. **Figure 2-3** shows a project-level site plan for Alternative B. **Figure 2-4** shows an architectural rendering of the proposed facilities. As with Alternative A, the Tribe would adopt the development standards prescribed by the CBC, NEC and ADA.

**TABLE 2-2
ALTERNATIVE B FACILITIES**

Facility Component	Number	Size (Sq Ft)
Casino (1,700 slots, 40 tables)	1,940 Positions	67,525
Hotel	141 Rooms	204,850
Entertainment Center	1,300 Seats	28,100
Food & Beverage	700 Seats	37,800
Resort Support Facilities		67,895
Tribal Government Building		20,000
Total		426,170
Parking Spaces		
Garage/Surface Parking	2,900 Spaces	
SOURCE: JCY Architecture, 2008; ESA, 2008		

The project will be constructed in a single phase, beginning in the spring of 2012. Project construction is expected to be completed late 2013 to early spring 2014 for a total construction length of 18-24 months. Infrastructure improvements would be constructed first, followed by construction of the main gaming hall, parking structure, hotel, entertainment center, and tribal administration building. Construction would occur daily between 7 a.m. and 6 p.m. The construction period may vary slightly depending on the weather. Construction and related activities would directly employ 50-60 people continuously over the 18-24 month construction period. On-site construction storage space for equipment and materials will be required during the construction period. Staging areas for construction activities will be appropriately designated onsite. Project construction involves grading and excavation for building pads, parking lots, and utility lines. A preliminary grading plan is included in **Appendix A**. Typical construction activities and equipment are the same as those listed under Alternative A.



SOURCE: JCJ Architects, 2008; Adobe Associates, Inc., 2009; and ESA, 2011

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Figure 2-3
Alternative B Site Plan



NOT TO SCALE

SOURCE: FORMA/Visuart, 2009; JCJ Architects, 2009; and ESA, 2009

Cloverdale Rancheria Resort Casino Project EIS . 207737

Figure 2-4
Alternative B – Architectural Rendering

Casino

The proposed two-story casino would consist of a mixture of uses including a gaming area, food and beverage facilities, retail shopping, administrative space and secure back-of-house facilities. The gaming area would include 67,525 square-feet of gaming with approximately 1,700 slot machines and 40 gaming tables. A non-smoking area is included within the main gaming hall. Food and beverage facilities would compose 37,800 square feet of the casino area and include a casual dining restaurant, noodle restaurant, pub/sports bar, buffet, food court, casino lounge, casino bar, and VIP lounge. The combined dining areas could accommodate up to 700 seats. Support facilities compose 67,895 square feet; the main components of this area include building support, casino support, administrative offices, public spaces, security, surveillance and employee dining and services. The casino would be open 24 hours a day, 7 days a week.

As with Alternative A, the Tribe would obtain a license to serve alcohol from the State. Casino patrons would be required to be 21 years of age or older in areas where alcohol is served and a “Responsible Alcoholic Beverage Policy” would be adopted.

Hotel

The 204,850 square-foot hotel would be located south of the casino and would include other hotel amenities such as a spa and pool area. The hotel would be up to five stories above grade and provide for 141 guest rooms distributed between floors. The hotel area also includes food and beverage facilities, reception and lobby areas, retail, recreation, back-of-house and building support. Food and beverage facilities include a coffee shop, wine-experience restaurant, and lobby lounge. The recreation areas include a spa, salon, health club, pool and kids’ entertainment area. The hotel would be open 24 hours a day, 7 days a week.

Entertainment Center

The design and components of the proposed 28,100 square-foot entertainment center would be identical to those described under Alternative A.

Parking and Circulation

Alternative B would include approximately 2,900 parking spaces for patrons and employees through garage and surface parking. Under this alternative there would be one parking garage adjacent to and north of the casino which would be up to four to five stories above grade. On-site roads would be constructed to provide access from site entrances to proposed parking areas.

Tribal Government Building

An approximately 20,000 square-foot building on the southeastern end of the project site would be dedicated to a tribal government workspace and offices.

Ancillary Components

The major ancillary components include the drainage system, water supply, wastewater service, fire protection, and law enforcement for the project site. A preliminary utilities plan is included in **Appendix H**. The Tribe has begun discussions with the City of Cloverdale on the provision of public services by the City to the project site. This alternative does not assume or rely upon the provision of public services from the City; however, it is discussed as a viable option under applicable ancillary components.

Drainage

A preliminary drainage plan was prepared and is included in **Appendix B**. The layout of the development is similar to Alternative A but there would be less impervious surfaces under Alternative B. The drainage system would reduce the level of stormwater runoff to pre-construction flows for up to a 10-year storm event. The proposed stormwater facilities, improvements, and source treatment controls for Alternative B are the same as those listed for Alternative A.

Water Facilities

A water supply report was prepared and is included as **Appendix I**. As with Alternative A, water supply for Alternative B would be obtained from either on-site wells or the City of Cloverdale. Under either option an existing 8-inch onsite water line would be relocated along the southern project boundary. The water demand for Alternative B is presented with and without the use of reclaimed water. Use of reclaimed water would be dependent on whether the private or municipal wastewater option is selected. If wastewater service is provided privately, the project would use tertiary treated wastewater to the extent practicable.

Water Demand. The annual water demand for Alternative B is estimated to be 24.9 million gallons. The average daily demand is estimated to be approximately 68,303 gallons with a constant withdrawal rate of 47 gallons per minute (gpm). The peak daily flow is estimated to be 126,700 gallons with a required pump rate of 88 gpm.

Water Demand with Use of Reclaimed Water. The annual water demand for Alternative B with use of reclaimed water is estimated to be 17.8 million gallons. The associated average daily demand is estimated to be approximately 48,697 gallons with a constant withdrawal rate of 34 gpm. The associated peak daily flow is estimated to be 92,101 gallons with a required pump rate of 64 gpm. If wastewater service is provided privately, the project would use tertiary treated wastewater for toilet flushing, fire protection and irrigation uses. The onsite improvements and storage requirements for reclaimed water use would be the same as those discussed for Alternative A.

Private Option

Under the private option, the Tribe would construct and maintain water supply facilities on the project site. The proposed location of private water facilities are shown on **Figure 2-3**. The improvements needed under this option, including well construction, treatment and distribution, would be the same as those discussed for Alternative A.

Municipal Option

Under the municipal option, the Tribe would contract with the City of Cloverdale for water service. Improvements needed for the municipal option are the same as those discussed for Alternative A. The eastern portion of the project site would remain in agricultural use and would not include the facilities discussed under the private option.

Wastewater Facilities

The annual wastewater flow for Alternative B is estimated to be 24.9 million gallons with a daily average of approximately 68,303 gallons. The peak daily flow is estimated at 126,700 gallons. A wastewater treatment and disposal report was prepared for the project and is included as **Appendix J**. As with Alternative A, wastewater service would be provided by on-site facilities or by the City of Cloverdale.

Private Option

Under the private option, the Tribe would construct and maintain wastewater collection, treatment and disposal facilities on the project site. The proposed location of private wastewater facilities are shown on **Figure 2-3**. The improvements needed under this option would be the same as those discussed for Alternative A. The sizing of the WWTP and sprayfields may be slightly reduced from Alternative A to account for reduced flows under this alternative. Under this alternative, a wastewater pond volume of 57.9 acre-feet would be required, with corresponding less volume depending on the extent reclaimed water is utilized.

Municipal Option

Under the municipal option, the Tribe would contract with the City of Cloverdale for wastewater service. The City of Cloverdale has an existing 18-inch sewer main which runs along the southern and northeastern project boundary. The eastern portion of the project site would remain in agricultural use and would not include the facilities discussed under the private option.

Fire Protection and Emergency Medical Services

As with Alternative A, the Tribe would contract with local service providers for fire protection and emergency medical services. The Tribe and Cloverdale Fire Protection District intend to enter into a Memorandum of Understanding for fire and emergency services as noted in a Letter of Intent (**Appendix N**). It is anticipated that the Tribe would contract with Cloverdale Health Care District for ambulance transport. On-site defibrillators would be located onsite and staff would be trained to operate defibrillator equipment prior to emergency service provider arrival. Structures will include sprinkler systems and other fire prevention components as required by the Fire Code.

Security and Law Enforcement

As with Alternative A, the Tribe would provide 24-hour security surveillance of proposed facilities and parking areas through the use of private security guard patrols and security surveillance equipment typical of casino gaming facilities. It is anticipated that the Tribe will contract with the

City of Cloverdale Police Department; however, without an agreement in place enforcement authority would defer to the Sheriff's Office under Public Law 280.

2.2.3 Alternative C – Reduced Casino

Alternative C consists of the placement of six parcels of land totaling approximately 64.52 acres into federal trust for the Tribe, federal review of the development and management contract, and development of a hotel, entertainment center, casino and other ancillary facilities. The facilities under Alternative C would be similar to those proposed for Alternative B, but the casino would be further reduced. The hotel and entertainment center would be the same size as under Alternative B. Alternative C also does not include a convention center component. A tribal government building is proposed on the south end of the project site.

Land Trust Action

The land trust action for Alternative C would be the same as that described under Alternative A.

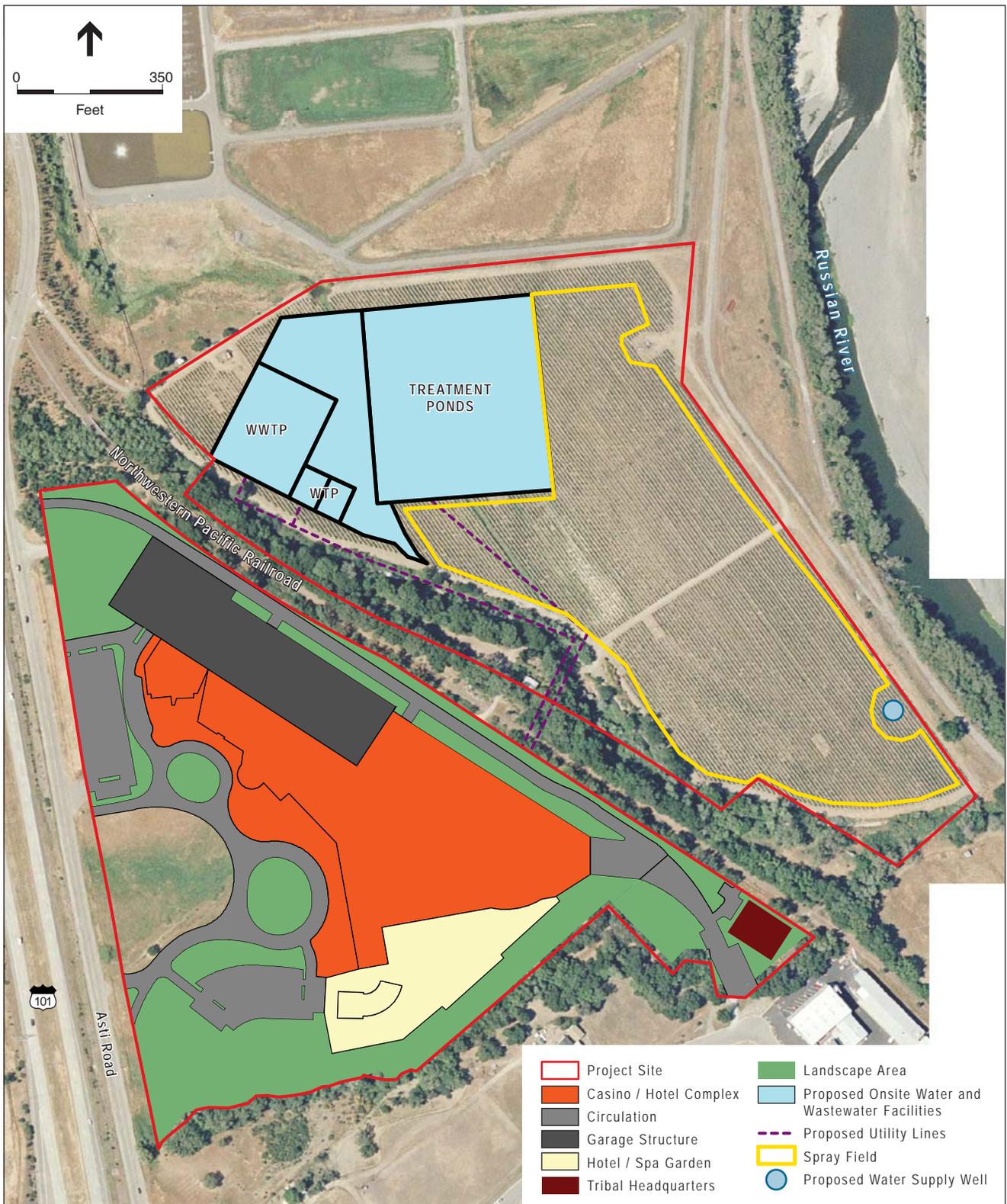
Development and Management Contract

As with Alternative A, Alternative C would require NIGC approval of a management agreement between the Tribe and its management partners before the commencement of gaming operations.

Development

Table 2-3 provides a summary of the proposed uses for Alternative C. **Figure 2-5** shows a project-level site plan for Alternative C. **Figure 2-6** shows an architectural rendering of the proposed facilities. As with Alternative A, the Tribe would adopt the development standards prescribed by the CBC, NEC and ADA.

The project will be constructed in a single phase, beginning in the spring of 2012. Project construction is expected to be completed late 2013 to early spring 2014 for a total construction length of 18-24 months. Infrastructure improvements would be constructed first, followed by construction of the main gaming hall, parking structure, hotel, entertainment center, and tribal administration building. Construction would occur daily between 7 a.m. and 6 p.m. The construction period may vary slightly depending on the weather. Construction and related activities would directly employ 50-60 people continuously over the 18-24 month construction period. On-site construction storage space for equipment and materials will be required during the construction period. Staging areas for construction activities will be appropriately designated onsite. Project construction involves grading and excavation for building pads, parking lots, and utility lines. A preliminary grading plan is included in **Appendix A**. Typical construction activities and equipment are the same as those listed under Alternative A.



SOURCE: JCJ Architects, 2008; Adobe Associates, Inc., 2009; and ESA, 2011

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Figure 2-5
Alternative C Site Plan



NOT TO SCALE

SOURCE: FORMA/Visuart, 2009; JCJ Architects, 2009; and ESA, 2009

Cloverdale Rancheria Resort Casino Project EIS . 207737

Figure 2-6
Alternative C – Architectural Rendering

Casino

The proposed two-story casino would consist of a mixture of uses including a gaming area, food and beverage facilities, retail shopping, administrative space and secure back-of-house facilities. The gaming area would include 57,708 square-feet of gaming with approximately 1,450 slot machines and 35 gaming tables. A non-smoking area is included within the main gaming hall. Food and beverage facilities would compose 37,800 square feet of the casino area and include a casual dining restaurant, noodle restaurant, pub/sports bar, buffet, food court, casino lounge, casino bar, and VIP lounge. The combined dining areas could accommodate up to 700 seats. Support facilities compose 58,096 square feet; the main components of this area include building support, casino support, administrative offices, public spaces, security, surveillance and employee dining and services. The casino would be open 24 hours a day, 7 days a week.

As with Alternative A, the Tribe would obtain a license to serve alcohol from the State. Casino patrons would be required to be 21 years of age or older in areas where alcohol is served and a “Responsible Alcoholic Beverage Policy” would be adopted.

**TABLE 2-3
ALTERNATIVE C FACILITIES**

Facility Component	Number	Size (Sq Ft)
Casino (1,450 slots, 35 tables)	1,660 Positions	57,708
Hotel	141 Rooms	204,850
Entertainment Center	1,300 Seats	28,100
Food & Beverage	700 Seats	37,800
Resort Support Facilities		58,096
Tribal Government Building		20,000
	Total	406,554
Parking Spaces		
Garage/Surface Parking	2,400 Spaces	
SOURCE: JCJ Architecture, 2008; ESA, 2008		

Hotel

The design and components of the proposed 204,850 square-foot hotel would be to the same as those described under Alternative B.

Entertainment Center

The design and components of the proposed 28,100 square-foot entertainment center would be to the same as those described under Alternative A.

Parking

Alternative C would include approximately 2,400 parking spaces for patrons and employees through garage and surface parking. Under this alternative there would be one parking garage adjacent to and north of the casino. On-site roads would be constructed to provide access from site entrances to proposed parking areas.

Tribal Government Building

An approximately 20,000 square-foot building on the southeastern end of the project site would be dedicated to a tribal government workspace and offices.

Ancillary Components

The major ancillary components include the drainage system, water supply, wastewater service, fire protection, and law enforcement for the project site. A preliminary utilities plan is included in **Appendix H**. The Tribe has begun discussions with the City of Cloverdale on the provision of public services by the City to the proposed project and alternatives. This alternative does not assume or rely upon the provision of public services from the City; however, it is discussed as a viable option under applicable ancillary components.

Drainage

A preliminary drainage plan was prepared and is included in **Appendix B**. The layout of the development is similar to Alternative A but there would be less impervious surfaces under Alternative C. The drainage system would reduce the level of stormwater runoff to pre-construction flows for up to a 10-year storm event. The proposed stormwater facilities, improvements, and source treatment controls for Alternative C are the same as those listed for Alternative A.

Water Facilities

A water supply report was prepared and is included as **Appendix I**. As with Alternative A, water supply for Alternative C would be obtained from either on-site wells or the City of Cloverdale. Under either option an existing 8-inch onsite water line would be relocated along the southern project boundary. The water demand for Alternative C is presented with and without the use of reclaimed water. Use of reclaimed water would be dependent on whether the private or municipal wastewater option is selected. If wastewater service is provided privately, the project would use tertiary treated wastewater to the extent practicable.

Water Demand. The annual water demand for Alternative C is estimated to be 22.3 million gallons. The average daily demand is estimated to be approximately 61,194 gallons with a constant withdrawal rate of 42 gallons per minute (gpm). The peak daily flow is estimated to be 114,500 gallons with a required pump rate of 79 gpm.

Water Demand with Use of Reclaimed Water. The annual water demand for Alternative C with use of reclaimed water is estimated to be 16.0 million gallons. The associated average daily demand is estimated to be 43,849 gallons with a constant withdrawal rate of 30 gpm. The associated peak daily flow is estimated to be approximately 82,691 gallons with a required pump rate of 57 gpm. If wastewater service is provided privately, the project would use tertiary treated wastewater for toilet flushing, fire protection and irrigation uses. The onsite improvements and storage requirements for reclaimed water use would be the same as those discussed for Alternative A.

Private Option

Under the private option, the Tribe would construct and maintain water supply facilities on the project site. The proposed location of private water facilities are shown on **Figure 2-5**. The

improvements needed under this option, including well construction, treatment and distribution, would be the same as those discussed for Alternative A.

Municipal Option

Under the municipal option, the Tribe would contract with the City of Cloverdale for water service. Improvements needed for the municipal option are the same as those discussed for Alternative A. The eastern portion of the project site would remain in agricultural use and would not include the facilities discussed under the private option.

Wastewater Facilities

The annual wastewater flow for Alternative C is estimated to be 22.3 million gallons with a daily average of approximately 61,194 gallons. The peak daily flow is estimated at 114,500 gallons. A wastewater treatment and disposal report was prepared for the project and is included as **Appendix J**.

As with Alternative A, wastewater service would be provided by on-site facilities or by the City of Cloverdale.

Private Option

Under the private option, the Tribe would construct and maintain wastewater collection, treatment and disposal facilities on the project site. The proposed location of private wastewater facilities are shown on **Figure 2-5**. The improvements needed under this option would be the same as those discussed for Alternative A. The sizing of the WWTP and sprayfields may be slightly reduced from Alternative A to account for reduced flows under this alternative. Under this alternative, a wastewater pond volume of up to 52.3 acre-feet would be required, with final sizing dependent upon the amount of reuse utilized.

Municipal Option

Under the municipal option, the Tribe would contract with the City of Cloverdale for wastewater service. The City of Cloverdale has an existing 18-inch sewer main which runs along the southern and northeastern project boundary. The eastern portion of the project site would remain in agricultural use and would not include the facilities discussed under the private option.

Fire Protection and Emergency Medical Services

As with Alternative A, the Tribe would contract with local service providers for fire protection and emergency medical services. The Tribe and Cloverdale Fire Protection District intend to enter into a Memorandum of Understanding for fire and emergency services as noted in a Letter of Intent (**Appendix N**). It is anticipated that the Tribe would contract with Cloverdale Health Care District for ambulance transport. On-site defibrillators would be located onsite and staff would be trained to operate defibrillator equipment prior to emergency service provider arrival. Structures will include sprinkler systems and other fire prevention components as required by the Fire Code.

Security and Law Enforcement

As with Alternative A, the Tribe would provide 24-hour security surveillance of proposed facilities and parking areas through the use of private security guard patrols and security surveillance equipment typical of casino gaming facilities. Either the City of Cloverdale Police Department

or Sonoma County Sheriff's Office would provide primary law enforcement services. It is anticipated that the Tribe will contract with the City of Cloverdale Police Department; however, without an agreement in place enforcement authority would defer to the Sheriff's Office under Public Law 280.

2.2.4 Alternative D – Casino Only

Alternative D consists of the placement of six parcels of land totaling approximately 64.52 acres into federal trust for the Tribe, federal review of the development and management contract and development of a casino and ancillary facilities. This alternative only proposes a casino. No hotel, convention center, or entertainment center would be developed under this alternative. A tribal government building is proposed on the south end of the project site.

Land Trust Action

The land trust action for Alternative D would be to the same as that described under Alternative A.

Development and Management Contract

As with Alternative A, Alternative D would require NIGC approval of a management agreement between the Tribe and its management partners before the commencement of gaming operations.

Development

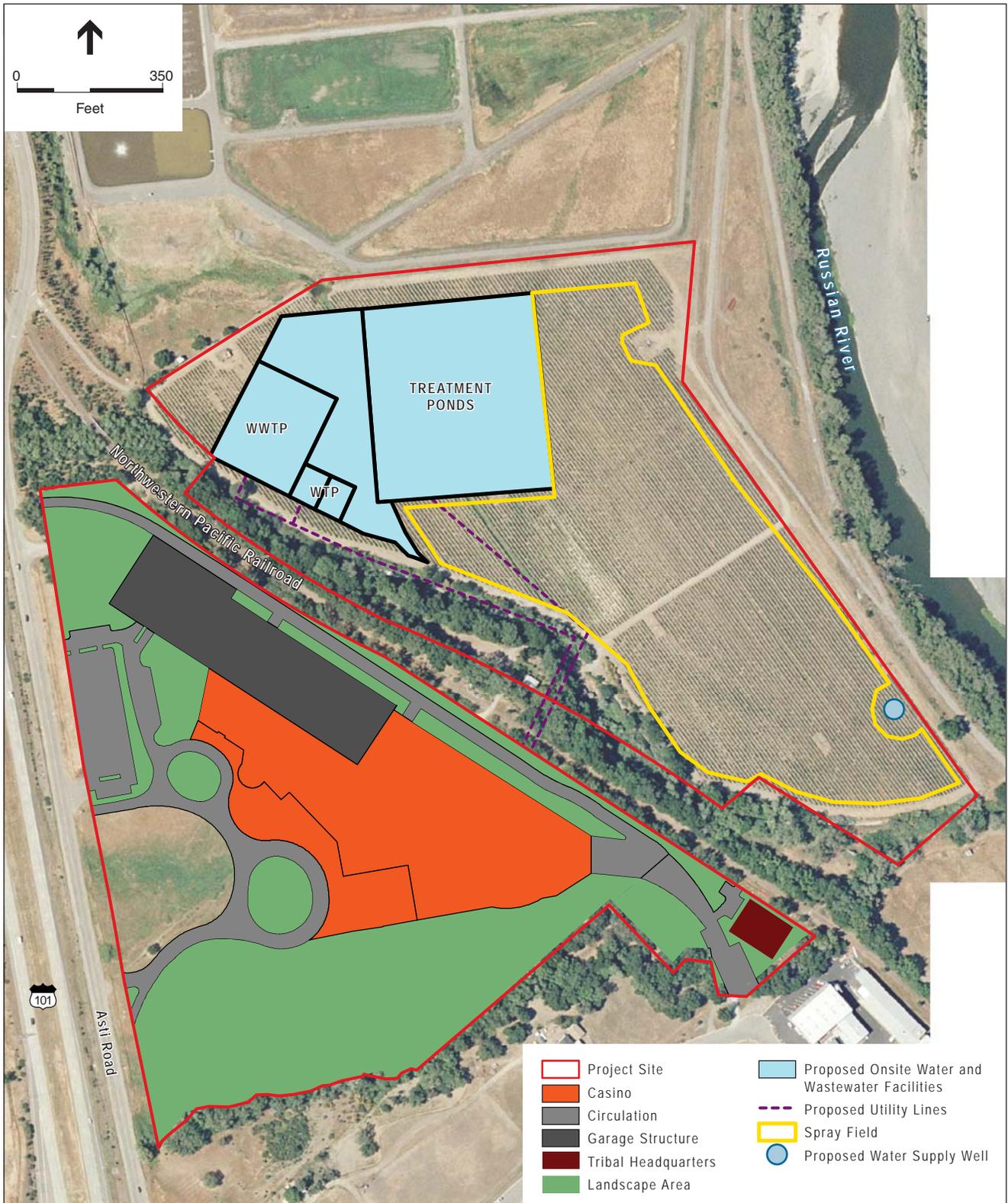
Table 2-4 provides a summary of the proposed uses for Alternative D. **Figure 2-7** shows a project-level site plan for Alternative D. **Figure 2-8** shows an architectural rendering of the proposed facilities. As with Alternative A, the Tribe would adopt the development standards prescribed by the CBC, NEC and ADA.

**TABLE 2-4
ALTERNATIVE D FACILITIES**

Facility Component	Number	Size (Sq Ft)
Casino (1,270 slots, 30 tables)	1,450 Positions	57,708
Food & Beverage	700 Seats	37,800
Resort Support Facilities		53,264
Tribal Government Building		20,000
	Total	168,772
Parking Spaces		
Garage/Surface Parking	1,900 Spaces	

SOURCE: JcJ Architecture, 2008; ESA, 2008

The project will be constructed in a single phase, beginning in the spring of 2012. Project construction is expected to be completed early to mid 2013 for a total construction length of 12-18 months. Infrastructure improvements would be constructed first, followed by construction of the main gaming hall, parking structure, and tribal administration building. Construction would occur daily between 7 a.m. and 6 p.m. The construction period may vary slightly depending on the weather.



SOURCE: JCJ Architects, 2008; Adobe Associates, Inc., 2009; and ESA, 2011

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Figure 2-7
Alternative D Site Plan



NOT TO SCALE

SOURCE: FORMA/Visuart, 2009; JCJ Architects, 2009; and ESA, 2009

Cloverdale Rancheria Resort Casino Project EIS . 207737

Figure 2-8
Alternative D – Architectural Rendering

Construction and related activities would directly employ 35-45 people continuously over the 12-18 month construction period. On-site construction storage space for equipment and materials will be required during the construction period. Staging areas for construction activities will be appropriately designated onsite. Project construction involves grading and excavation for building pads, parking lots, and utility lines. A preliminary grading plan is included in **Appendix A**. Typical construction activities and equipment are the same as those listed under Alternative A.

Casino

The proposed two-story casino would consist of a mixture of uses including a gaming area, food and beverage facilities, retail shopping, administrative space and secure back-of-house facilities. The gaming area would include 57,708 square-feet of gaming with approximately 1,270 slot machines and 30 gaming tables. A non-smoking area is included within the main gaming hall. Food and beverage facilities would compose 37,800 square feet of the casino area and include a casual dining restaurant, noodle restaurant, pub/sports bar, buffet, food court, casino lounge, casino bar, and VIP lounge. The combined dining areas could accommodate up to 700 seats. Support facilities compose 53,264 square feet; the main components of this area include building support, casino support, administrative offices, public spaces, security, surveillance and employee dining and services. The casino would be open 24 hours a day, 7 days a week.

As with Alternative A, the Tribe would obtain a license to serve alcohol from the State. Casino patrons would be required to be 21 years of age or older in areas where alcohol is served and a “Responsible Alcoholic Beverage Policy” would be adopted.

Parking

Alternative D would include approximately 1,900 parking spaces for patrons and employees through garage and surface parking. Under this alternative there would be one parking garage adjacent to and north of the casino. On-site roads would be constructed to provide access from site entrances to proposed parking areas.

Tribal Government Building

An approximately 20,000 square-foot building on the southeastern end of the project site would be dedicated to a tribal government workspace and offices.

Ancillary Components

The major ancillary components include the drainage system, water supply, wastewater service, fire protection, and law enforcement for the project site. A preliminary utilities plan is included in **Appendix H**. The Tribe has begun discussions with the City of Cloverdale on the provision of public services by the City to the proposed project and alternatives. This alternative does not assume or rely upon the provision of public services from the City; however, it is discussed as a viable option under applicable ancillary components.

Site Drainage

A preliminary drainage plan was prepared and is included in **Appendix B**. The layout of the development is similar to Alternative A but there would be less impervious surfaces under Alternative D. The drainage system would reduce the level of stormwater runoff to pre-construction flows for up to a 10-year storm event. The proposed stormwater facilities, improvements, and source treatment controls for Alternative D are the same as those listed for Alternative A. The only exception is that this alternative would not require the northern upland drainage release system.

Water Facilities

A water supply report was prepared and is included as **Appendix I**. As with Alternative A, water supply for Alternative D would be obtained from either on-site wells or the City of Cloverdale. Under either option an existing 8-inch onsite water line would be relocated along the southern project boundary. The water demand for Alternative D is presented with and without the use of reclaimed water. Use of reclaimed water would be dependent on whether the private or municipal wastewater option is selected. If wastewater service is provided privately, the project would use tertiary treated wastewater to the extent practicable.

Water Demand. The annual water demand for Alternative D is estimated to be 13.5 million gallons. The average daily demand is estimated to be approximately 36,968 gallons with a constant withdrawal rate of 26 gallons per minute (gpm). The peak daily flow is estimated to be 63,900 gallons with a required pump rate of 44 gpm.

Water Demand with Use of Reclaimed Water. The annual water demand for Alternative D with use of reclaimed water is estimated to be 9.3 million gallons. The associated average daily demand is estimated to be approximately 25,369 gallons with a constant withdrawal rate of 18 gpm. The associated peak daily flow is estimated to be 44,495 gallons with a required pump rate of 31 gpm. If wastewater service is provided privately, the project would use tertiary treated wastewater for toilet flushing, fire protection and irrigation uses. The onsite improvements and storage requirements for reclaimed water use would be the same as those discussed for Alternative A.

Private Option

Under the private option, the Tribe would construct and maintain water supply facilities on the project site. The proposed location of private water facilities are shown on **Figure 2-7**. The improvements needed under this option, including well construction, treatment and distribution, would be the same as those discussed for Alternative A.

Municipal Option

Under the municipal option, the Tribe would contract with the City of Cloverdale for water service. Improvements needed for the municipal option are the same as those discussed for Alternative A. The eastern portion of the project site would remain in agricultural use and would not include the facilities discussed under the private option.

Wastewater Facilities

The annual wastewater flow for Alternative D is estimated to be 13.5 million gallons with a daily average of approximately 36,968 gallons. The peak daily flow is estimated at 63,900 gallons. A wastewater treatment and disposal report was prepared for the project and is included as **Appendix J**.

As with Alternative A, wastewater service would be provided by on-site facilities or by the City of Cloverdale.

Private Option

Under the private option, the Tribe would construct and maintain wastewater collection, treatment and disposal facilities on the project site. The proposed location of private wastewater facilities are shown on **Figure 2-7**. The improvements needed under this option would be the same as those discussed for Alternative A. The sizing of the WWTP and sprayfields may be slightly reduced from Alternative A to account for reduced flows under this alternative. Under this alternative, a wastewater pond volume of up to 30.4 acre-feet would be required, with final sizing dependent upon the amount of reuse utilized.

Municipal Option

Under the municipal option, the Tribe would contract with the City of Cloverdale for wastewater service. The City of Cloverdale has an existing 18-inch sewer main which runs along the southern and northeastern project boundary. The eastern portion of the project site would remain in agricultural use and would not include the facilities discussed under the private option.

Fire Protection and Emergency Medical Services

The Tribe would contract with local service providers for fire protection and emergency medical services. The Tribe and Cloverdale Fire Protection District intend to enter into a Memorandum of Understanding for fire and emergency services as noted in a Letter of Intent (**Appendix N**). It is anticipated that the Tribe would contract with Cloverdale Health Care District for ambulance transport. On-site defibrillators would be located onsite and staff would be trained to operate defibrillator equipment prior to emergency service provider arrival. Structures will include sprinkler systems and other fire prevention components as required by the Fire Code.

Security and Law Enforcement

The Tribe would provide 24-hour security surveillance of proposed facilities and parking areas through the use of private security guard patrols and security surveillance equipment typical of casino gaming facilities. It is anticipated that the Tribe will contract with the City of Cloverdale Police Department; however, without an agreement in place enforcement authority would defer to the Sheriff's Office under Public Law 280.

2.2.5 Alternative E – Commercial Retail-Office Space

Alternative E consists of the placement of six parcels of land totaling approximately 64.52 acres into federal trust for the Tribe and development of a commercial retail and office center with light industrial warehouse space. Under this alternative, the NIGC would not be required to review a

development and management contract as there is no gaming component. There would be no casino, hotel, convention center, entertainment center, or tribal government building.

Land Trust Action

The land trust action for Alternative E would be the same as that described under Alternative A.

Development

Table 2-5 provides a summary of the proposed uses for Alternative E. **Figure 2-9** shows a project-level site plan for Alternative E. **Figure 2-10** shows an architectural rendering of the proposed facilities. As with Alternative A, the Tribe would adopt the development standards prescribed by the CBC, NEC and ADA.

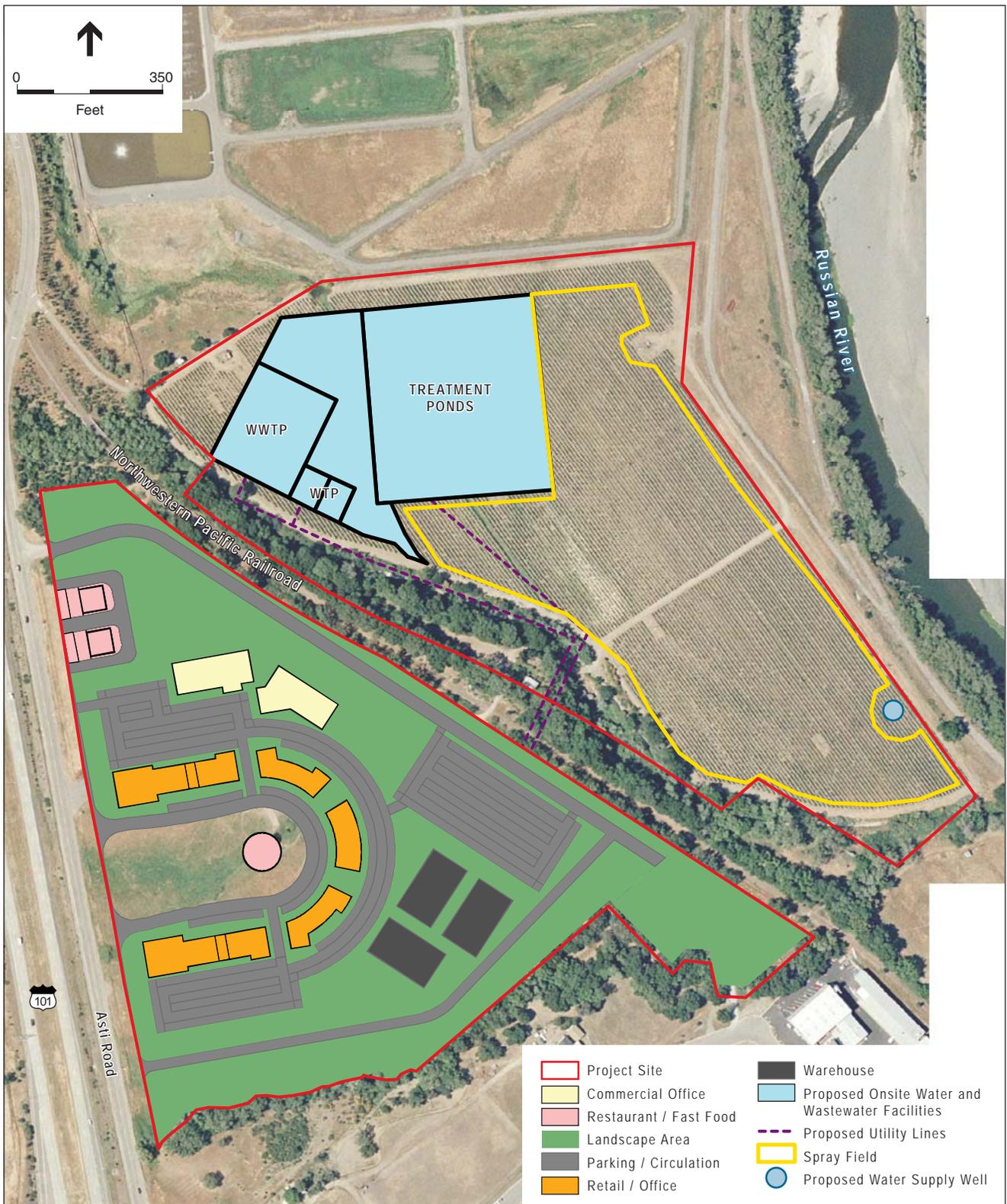
**TABLE 2-5
ALTERNATIVE E FACILITIES**

Land Use	Size (Sq Ft)
Commercial/Industrial Warehouse	150,000
Commercial Office	125,000
Retail	75,000
Restaurants	
Fast Food	7,000
Sit Down	7,000
Total	364,000
Parking Spaces	
Surface Parking	1,600 spaces

SOURCE: JCJ Architecture, 2008; ESA, 2008

The project will be constructed in a single phase, beginning in the spring of 2012. Project construction is expected to be completed early to mid 2013 for a total construction length of 12-18 months.

Infrastructure improvements would be constructed first, followed by construction of the main structures. Construction would occur daily between 7 a.m. and 6 p.m. The construction period may vary slightly depending on the weather. Construction and related activities would directly employ 35-45 people continuously over the 12-18 month construction period. On-site construction storage space for equipment and materials will be required during the construction period. Staging areas for construction activities will be appropriately designated onsite. Project construction involves grading and excavation for building pads, parking lots, and utility lines. A preliminary grading plan is included in **Appendix A**. Typical construction activities and equipment are the same as those listed under Alternative A.



SOURCE: JCJ Architects, 2008; Adobe Associates, Inc., 2009; and ESA, 2011

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Figure 2-9
Alternative E Site Plan



NOT TO SCALE

SOURCE: FORMA/Visuart, 2009; JCJ Architects, 2009; and ESA, 2009

Cloverdale Rancheria Resort Casino Project EIS . 207737

Figure 2-10
Alternative E – Architectural Rendering

Retail Commercial, Commercial Office, and Industrial Warehouse Uses

Alternative E consists of the development of approximately 364,000 square feet of retail commercial, commercial office, and industrial warehouse space. Individual office and retail space would be divided into individual build-to-suit tenant spaces.

Approximately 150,000 square-feet of commercial/industrial warehouse space would be developed for multiple tenants. There would be several build-to-suit commercial office spaces ranging in size from 2,000 to 10,000 square feet. Similarly there would be several build-to-suit retail shops ranging in size from 1,000 to 4,000 square feet each. Two major retail shops would anchor the retail portion of the development and be approximately 15,000 and 30,000 square feet in size, respectively. Three eating establishments would be developed on-site including two “fast-food” restaurants and one “sit down” restaurant, totaling approximately 14,000 square feet.

Ground level commercial/retail uses would be located on the western edge of the site and storefronts would be oriented inwards toward the parking area located in the central portion of the site. The two major retail facilities would “anchor” the proposed retail complex and be located on the northern and southern end of the development. The retail buildings would range from 30 to 35 feet in height (2 to 3 floors). The commercial office development would be located within the interior of project site and would also range in height from 30 to 35 feet. Warehousing facilities would be located along the eastern boundary of the project site, adjacent to the existing railroad tracks. It is anticipated that multiple tenants would occupy the warehouse space.

The proposed commercial and industrial tenants may include high tech research and development, software design, manufacturing, and agriculture distribution. Retail establishments occupying the project may include businesses that would sell items including but not limited to, clothing and accessories, house wares, sporting goods, craft accessories, music and entertainment media, electronics, and appliances.

Parking

Alternative E would include approximately 1,600 surface parking spaces for patrons and employees. On-site roads would be constructed to provide access from site entrances to proposed parking areas.

Ancillary Components

The major ancillary components include the drainage system, water supply, wastewater service, fire protection, and law enforcement for the project site. A preliminary utilities plan is included in **Appendix H**. The Tribe has begun discussions with the City of Cloverdale on the provision of public services by the City to the proposed project and alternatives. This alternative does not assume or rely upon the provision of public services from the City; however, it is discussed as a viable option under applicable ancillary components.

Site Drainage

A preliminary drainage plan was prepared and is included in **Appendix B**. The drainage system would reduce the level of stormwater runoff to pre-construction flows for up to a 10-year storm

event which requires a volume of 31,800 cubic feet. Pervious concrete surfaces are proposed for most driveway and surface parking areas.

The stormwater facilities and improvements under Alternative E are similar to Alternative A but their location has been configured to account for the changes in footprint. Improvements include a subterranean detention system and two upland drainage release systems. The development would route concentrated flows to the southern project boundary where existing sheet flow discharges occur. One of the pipes in the subterranean detention system is a 30-inch storm drain which would collect overflow from the central wetland on site during large storm events.

The two existing culverts which cross under the railroad tracks would be improved and a surface drainage channel along the northern and eastern boundary would be constructed as discussed for Alternative A. The proposed source treatment controls for Alternative E are the same as those listed for Alternative A.

Water Facilities

A water supply report was prepared for the project and is included as **Appendix I**. Water supply for Alternative E would be obtained from either on-site wells or the City of Cloverdale. Under either option an existing 8-inch onsite water line would be relocated along the southern project boundary. The water demand for Alternative E is presented with and without the use of reclaimed water. Use of reclaimed water would be dependent on whether the private or municipal wastewater option is selected. If wastewater service is provided privately, the project would use tertiary treated wastewater to the extent practicable.

Water Demand. The annual water demand for Alternative E is estimated to be 11.7 million gallons. The average daily demand is estimated to be approximately 32,028 gallons with a constant withdrawal rate of 22 gallons per minute (gpm). The peak daily flow is estimated to be 42,400 gallons with a required pump rate of 29 gpm.

Water Demand with Use of Reclaimed Water. The annual water demand for Alternative E with use of reclaimed water is estimated to be 9.3 million gallons. The associated average daily demand is estimated to be approximately 25,428 gallons with a constant withdrawal rate of 18 gpm. The associated peak daily flow is estimated to be 33,313 gallons with a required pump rate of 23 gpm. If wastewater service is provided privately, the project would use tertiary treated wastewater for toilet flushing, fire protection and irrigation uses. The onsite improvements and storage requirements for reclaimed water use would be the same as those discussed for Alternative A; however, the location of distribution lines would be reconfigured due to the difference in footprint.

Private Option

Under the private option, the Tribe would construct and maintain water supply facilities on the project site. The proposed location of private water facilities are shown on **Figure 2-9**. The improvements needed under this option, including well construction and treatment would be the same as those discussed for Alternative A. The distribution improvements would be similar; however, the location of distribution lines would be reconfigured due to the difference in footprint. The distribution line under Alternative E would also be larger, including a primary 8-inch water main.

Municipal Option

Under the municipal option, the Tribe would contract with the City of Cloverdale for water service. Improvements needed for the municipal option are the same as those discussed for Alternative A. On-site distribution lines would be reconfigured due to the difference in footprint. The eastern portion of the project site would remain in agricultural use and would not include the facilities discussed under the private option.

Wastewater Facilities

The annual wastewater flow for Alternative E is estimated to be 11.7 million gallons with a daily average of 32,028 gallons. The peak daily flow is estimated at 42,400 gallons. A wastewater treatment and disposal report was prepared for the project and is included as **Appendix J**. Wastewater service would be provided by on-site facilities (private option) or by the City of Cloverdale (municipal option).

Private Option

Under the private option, the Tribe would construct and maintain wastewater collection, treatment and disposal facilities on the project site. The proposed location of private wastewater facilities are shown on **Figure 2-9**. The improvements needed under this option, including the WWTP and sprayfields, would be similar to those discussed for Alternative A. The sizing of the WWTP and sprayfields may be slightly reduced from Alternative A to account for reduced flows under this alternative. Under this alternative, a wastewater pond volume of up to 33.5 acre-feet would be required, with final sizing dependent upon the amount of reuse utilized. The collection system would include 6-inch and 8-inch sewer lines and the location of collection lines would be reconfigured in comparison to Alternative A, due to the difference in footprint.

Municipal Option

Under the municipal option, the Tribe would contract with the City of Cloverdale for wastewater service. The City of Cloverdale has an existing 18-inch sewer main which runs along the southern and northeastern project boundary. The eastern portion of the project site would remain in agricultural use and would not include the facilities discussed under the private option.

Fire Protection and Emergency Medical Services

The Tribe would contract with local service providers for fire protection and emergency medical services. It is anticipated that the Tribe would contract with the CFPD and Cloverdale Health Care District for fire protection and emergency medical services, including ambulance transport. Structures will include sprinkler systems and other fire prevention components as required by the Fire Code.

Security and Law Enforcement

The Tribe would provide security surveillance of proposed facilities and parking areas through the use of private security guard patrols and security surveillance equipment typical of retail, commercial and industrial development. It is anticipated that the Tribe will contract with the City of Cloverdale Police Department; however, without an agreement in place enforcement authority would defer to the Sheriff's Office under Public Law 280.

2.2.6 Alternative F – No Action Alternative

Under the No-Action Alternative, the six project parcels would not be placed into federal trust for the benefit of the Tribe, and the project site would not be developed with uses described under any of the development alternatives in the near term. It is assumed that the project parcels would maintain their existing development densities and uses in the near term. In the cumulative scenario (by 2030) and consistent with local zoning, it is assumed the project site could be developed with business park and/or industrial uses west of the railroad tracks, and that east of the railroad tracks the project site would be used for agriculture or would be left open space.

2.2.7 Preferred Alternative

Consistent with the BIA NEPA Handbook, Department of the Interior Departmental Manual (516 DM 4), CEQ NEPA Regulations (40 CFR §1502.14), and CEQ NEPA Forty Most Asked Questions guidance document (46 Fed. Reg. 18026 (1981)), the BIA considers an alternative's ability to meet the purpose and need of the agency's proposed action and the overall impact on the environment when selecting a Preferred Alternative. In this case, Alternative A would best meet the purpose and need by maximizing long-term Tribal revenues that would be used for strengthening Tribal government and achieving economic self-sufficiency. These purposes are consistent with the purpose of IGRA to promote "tribal economic development, self-sufficiency, and strong tribal governments (25 U.S.C. Section 2702)." Alternative A would also provide the most revenue for meeting the need of improving the socioeconomic status of the Tribe and providing funding for administrative, health and welfare, housing, educational, social and other Tribal services. Alternative A would also provide the most opportunity for Tribal employment which is another component of the purpose and need. The development of Alternative A would meet this purpose better than the other development alternatives, due to the reduced revenues that would be expected from the operation of Alternatives B-E. The No Action Alternative (Alternative F) would not result in a restored trust land base or revenues to the Tribe and would therefore not meet the purpose and need.

Of the action alternatives considered, Alternative E (Commercial Retail-Office Space) would result in the lowest overall impact on the human environment before mitigation given that the reduced footprint compared to other alternatives. This alternative would also have the lowest water and wastewater demands. As explained above, of the alternatives, Alternative A would best meet the purpose and need. Alternatives B through E would generally result in slightly lower environmental impacts before mitigation, due to the reduced intensity of development. After the implementation of all mitigation measures, however, impacts of Alternative A would be similar to the post-mitigation impacts of Alternatives B through E. Thus, Alternative A is judged by the BIA to best meet the purpose and need while minimizing impacts on the human environment. Therefore, the BIA has selected Alternative A as its Preferred Alternative.

2.3 Regulatory Requirements, Permits, and Approvals

Implementation of the Proposed Action may require tribal, federal, and state permits and approvals. **Table 2-6** identifies each responsible agency and the potential permit approval for each alternative.

**TABLE 2-6
POTENTIAL PERMITS AND APPROVALS REQUIRED**

Agency	Permit or Approval	Alternative	Applicant
Tribal			
Cloverdale Band of Pomo Indians	Adoption and compliance with Tribal State Compact	A, B, C, D	N/A
Federal			
Secretary of the Interior	Fee-to-trust transfer	A, B, C, D, E	Tribe
National Indian Gaming Commission	Approval of tribal gaming ordinance	A, B, C, D	Tribe
U.S. Environmental Protection Agency	National Pollutant Discharge Elimination System (NPDES) General Permit for stormwater discharges from construction activities as required by the Clean Water Act.	A, B, C, D, E	Tribe
U.S. Environmental Protection Agency	Water Quality Certification (or waiver) under Section 401 of the Clean Water Act if fill is required of jurisdictional waters of the U.S.	A, B, C, D, E	Tribe
U.S. Fish and Wildlife Service	Section 7 Consultation under the federal Endangered Species Act if listed species may be affected	A, B, C, D, E	BIA
National Oceanic and Atmospheric Administration National Marine Fisheries Service	Section 7 Consultation under the federal Endangered Species Act if listed species may be affected	A, B, C, D, E	BIA
U.S. Army Corps of Engineers	Department of the Army Permit under Section 404 of the Clean Water Act if fill is required of jurisdictional waters of the U.S.	A, B, C, D, E	Tribe
State			
California State Historic Preservation Office	Consultation under Section 106 of the National Historic Preservation Act.	A, B, C, D, E	BIA
California Department of Transportation	Encroachment Permits for roadway improvements.	A, B, C, D, E	Tribe
Local			
Sonoma County	Encroachment Permits for roadways and utilities	A, B, C, D, E	Tribe
City of Cloverdale	Encroachment Permits for roadways and utilities	A, B, C, D, E	Tribe

SOURCE: ESA, 2009

SECTION 3.0

Description of Affected Environment

3.1 Introduction

Per 59 IAM 3-H and 40 CFR §1502.15, an EIS shall include a description of the existing conditions of resources in the area in which the proposed action would occur. This section describes the existing environment which may be affected by the Proposed Action or project alternatives. Issues that are discussed include Land Resources, Water Resources, Air Quality, Biological Resources, Cultural and Paleontological Resources, Socioeconomic Conditions, Transportation, Land Use and Agriculture, Public Services, Noise, Hazardous Materials, Visual Resources, and Environmental Justice.

3.2 Land Resources

3.2.1 Geologic Setting

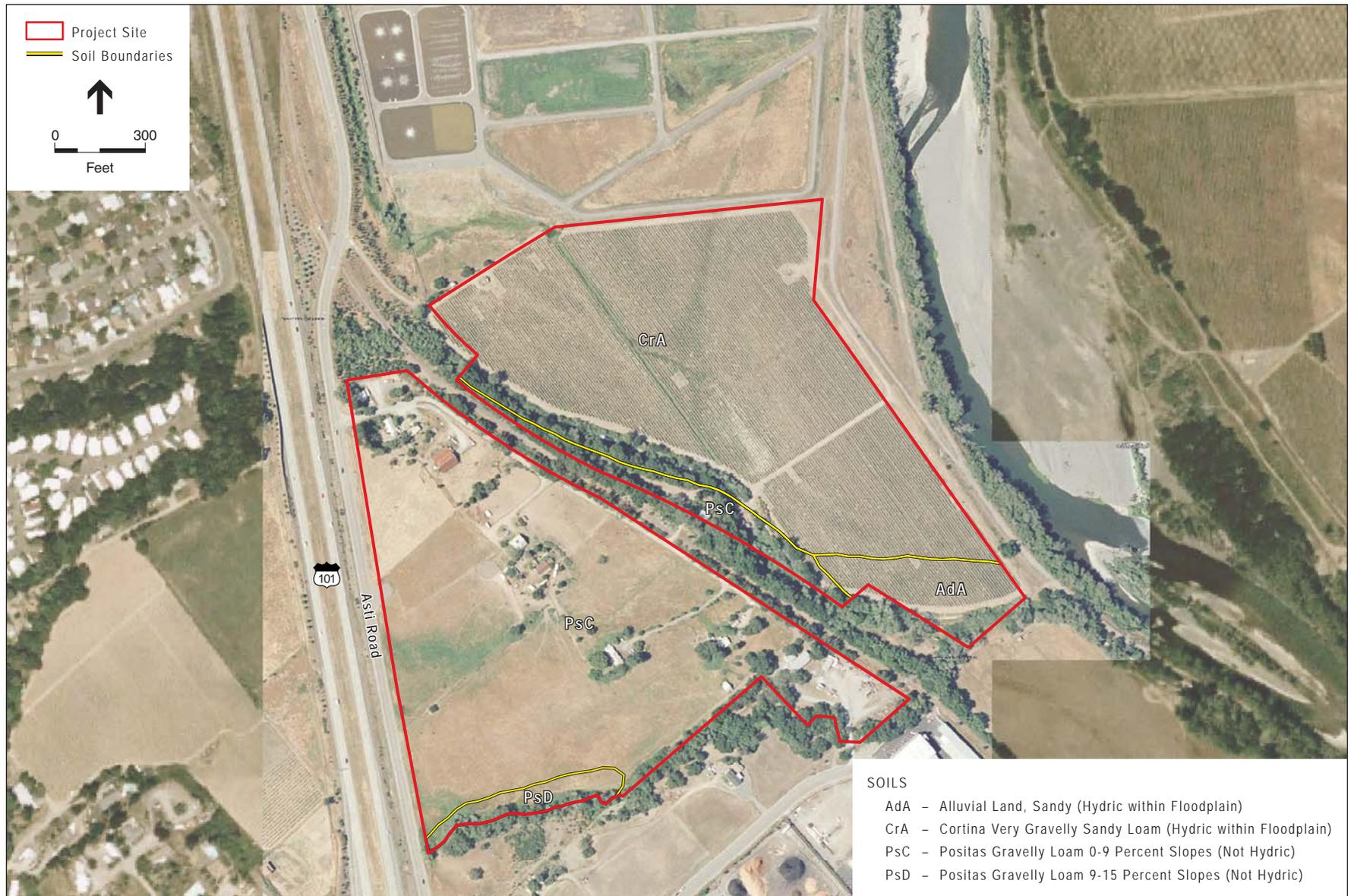
The project site is located within the Coast Range Geomorphic Province of California. The topography of the province is characterized by mountain ranges with intervening valleys trending to the northwest, roughly paralleling the Pacific coastline. The project site is located in the northern portion of the Alexander Valley, which in the area is also referred to locally as the Cloverdale Valley. The Alexander Valley is likely a sediment-filled valley that has been pulled apart by the Maacama and the Healdsburg Fault Zones. Elevation of the project site ranges from approximately 302 to 332 feet above mean sea level, sloping in a southeasterly direction.

The project site lies within the eastern flank of the northern Coast Ranges, which is underlain by the Franciscan Complex, an assemblage of igneous, sedimentary, and metamorphic rocks. Bedrock underlying the project area is about 50 feet to 60 feet deep and consists of fractured dark greenish-gray shale of the Franciscan Formation. Overlying the bedrock assemblages in the project region are younger (10,000 to 1.6 million years old) alluvium and river channel deposits consisting of various clay, silt, sand, and gravel mixtures. Boring logs revealed that these alluvial sediments occur generally as alternating sandy clay mixtures and gravels from the surface to the interface with the bedrock. The sediment transport and depositional history of the Russian River has controlled the placement of the alluvial sediments and the horizontal and vertical distribution of these materials (**Appendix K**).

3.2.2 Soils

Figure 3.2-1 provides a map of soils on the project site. The Sonoma County Soil Survey identifies detailed information for only one soil type on the project site, Positas Gravelly Loam, 0 to 9 percent slopes. The Positas Series consists of well-drained gravelly loams that have clay subsoil. They are underlain by old alluvium of mixed sedimentary and basic igneous material. Vegetation supported by these soils is chiefly annual grasses, forbs, small shrubs, and scattered oak trees. Permeability is very slow and runoff is slow to medium. Erosion hazard is slight to moderate. The shrink-swell and corrosivity of the soils is moderate (U.S. Department of Agriculture, Soil Conservation Service, 1972).

Borings on the site provide a preliminary characterization of the subsurface conditions. The first layer consists of a thin surficial layer of fill or loose soil which may also include gravel and/or sand. Alluvial sand, clay and silty soils were generally encountered within one to two feet of the ground surface and may extend as deep as 18-23 feet. Borings penetrated strata of stiff to very hard clay that may be classified as rock-like soils or bedrock consisting of weak sheared shale (Geomatrix, 2007).



SOURCE: USDA, 1997; GlobeExplorer, 2006; NAIP, 2006; and ESA, 2011

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Figure 3.2-1
Soils Map

3.2.3 Seismicity

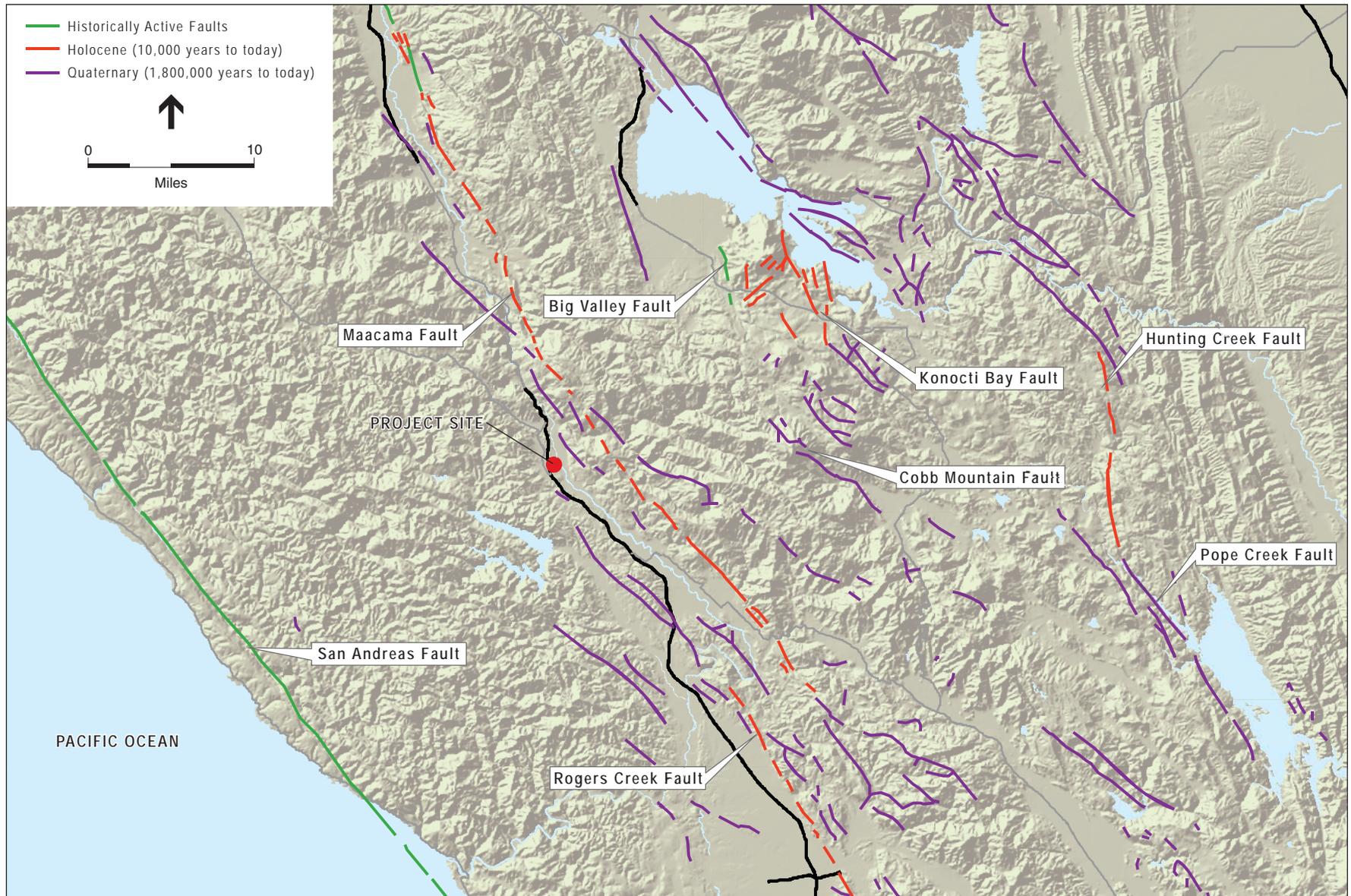
The San Francisco Bay Area is located within the San Andreas Fault Zone (SAFZ), a complex of active faults forming the boundary between the North American and Pacific lithospheric plates. Movement of the plates relative to one another results in the accumulation of strain along the faults, which is released during earthquakes. The SAFZ has generated numerous moderate to strong historic earthquakes. The area is within Seismic Zone 4 of the California Building Code (the highest risk category). The SAFZ includes numerous faults found by the California Geological Survey under the Alquist-Priolo Earthquake Fault Zoning Act (A-PEFZA) to be "active" (i.e., to have evidence of fault rupture in the past 11,000 years). Regional faults are shown on **Figure 3.2-2**.

The U.S. Geological Survey's Working Group on California Earthquake Probabilities estimated that there is a 62 percent probability that one or more Moment Magnitude 10 (MW) 6.7 or greater earthquakes will occur in the San Francisco Bay Area between 2002 and 2031 (U.S. Geological Survey, 2003). The Group estimated the probability of a MW6.7 magnitude or greater earthquake to be 21 percent along the San Andreas Fault, 27 percent along the Hayward-Rodgers Creek Fault, 11 percent along the Calaveras Fault, four percent along the Concord-Green Valley Fault, 10 percent along the San Gregorio Fault, three percent along the Greenville Fault, and three percent along the Mt. Diablo Thrust Fault. In addition, there is a cumulative 14 percent chance of a background (other earthquake source, either mapped or undiscovered) event occurring. It is estimated that about three MW6.7 or greater events could occur in the next 100 years. Thus the probability of at least one MW6.7 or greater magnitude earthquake rises to the near certainty of about 96 percent when calculated for a 100-year span.

The project site is not within an A-PEFZA fault zone (Hart and Bryant, 1997); however, the project site is approximately 4.5 miles west of the Rodgers Creek A-PEFZA fault zone, approximately 14.5 mile east of the San Andreas Fault, and approximately 3.1 miles northeast of the potentially active Burdell Mountain Fault. Both the San Andreas and Hayward-Rodgers Creek faults are right lateral strike-slip faults with a northwest-southeast axis. The project is in an area that is subject to shaking damage from earthquakes generated on these faults.

3.2.4 Mineral Resources

California Geological Survey Special Report 175, delineated the locations of aggregate resources within Sonoma County. According to the report, compatible uses with aggregate resources include non urban uses such as low-density residential (one unit per 10 acres), agriculture, silviculture, grazing and open space. In the report, the eastern portion of the project site is included within Mineral Resource Zone (MRZ) – 2b which is defined as “areas where geologic data indicate that significant inferred mineral resources are present.” The potential resource in this area is Portland Cement Concrete aggregate (PCC-grade), which is a high quality aggregate. The inclusion within a MRZ does not guarantee that minerals are present or that extraction is economically feasible (City of Cloverdale, 2008).



SOURCE: USGS, 1993; ESRI, 2007; and ESA, 2009

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Figure 3.2-2
Regional Fault Map

3.2.5 References

City of Cloverdale, 2008. General Plan Update Draft Environmental Impact Report, SCH No: 2007082143. Prepared by PMC: Davis, CA. October 2008. Available online at: <<http://www.cloverdale.net/pdf/GPDEIR.pdf>>.

Geomatrix, 2007. Report for Preliminary Geotechnical Investigation. 250 Lile Lane, Cloverdale, Sonoma County, California. Oakland, CA. September 14, 2007.

Hart, Earl W., Bryant, William A., Revised 1997. Supplements 1 and 2 added 1999, Special Publication 42 Fault-Rupture Hazard Zones in California. California Department of Conservation, Division of Mines and Geology. Sacramento, CA. Available online at: <<http://www.lib.berkeley.edu/EART/UONLY/CDMG/north/sp42.pdf>>.

U.S. Department of Agriculture, Soil Conservation Service, 1972. Soil Survey of Sonoma County, California.

U.S. Geological Survey, 2003. Earthquake Probabilities in the San Francisco Bay Region: 2002 to 2031 – A Summary of Findings, Open File Report 03-214.

3.3 Water Resources

This section provides a review of existing surface water and groundwater hydrology and water quality on and in the vicinity of the project site. This section also includes a review of drainage resources and flood-related hazard potential in the vicinity of the project site.

3.3.1 Setting

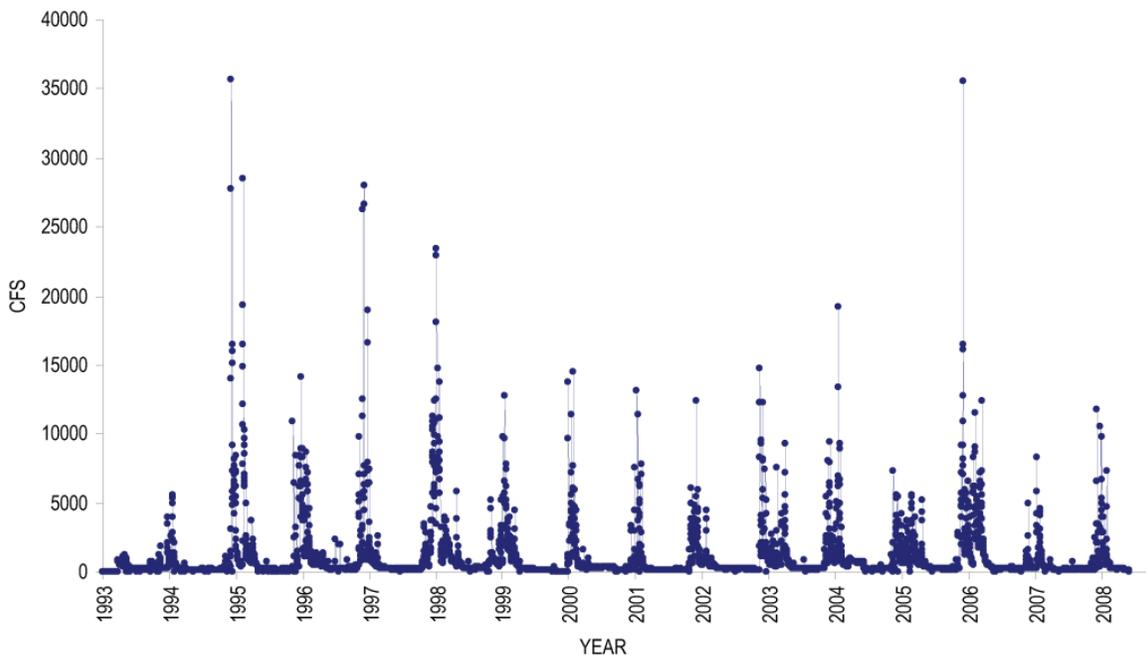
The project site is situated in the north end of the Alexander Valley (Cloverdale Valley), a narrow, north-south trending valley located within California's northern Coastal Ranges. Annual precipitation in the vicinity of the project area ranges from 40 to 44 inches (DWR, 2004). Water and drainage resources applicable to the project include surface waters of the Russian River and Porterfield Creek, and groundwater from an underlying groundwater basin. The Russian River and its tributaries are the primary surface water features in the vicinity of the project site. The following text provides a review of the existing hydrology and water quality, as relevant to the Russian River system and the project site.

Surface Water Hydrology

The Russian River and its tributaries drain an area that is approximately 100 miles long, 12 to 32 miles wide, and 1,485 square miles in area. The Russian River flows from its source (about 15 miles north of Ukiah) in a southerly direction through the Redwood, Ukiah, Hopland, and Alexander Valleys, and into the northwestern Santa Rosa Plain. From that point, the river turns westward and flows an additional 22 miles before discharging to the Pacific Ocean at Jenner. Big Sulfur Creek is the primary tributary in the vicinity of the project site; it merges with the Russian River just northeast of the City of Cloverdale. Other nearby tributaries include Oat Valley Creek, Icaria Creek, Barrelli Creek, and Porterfield Creek. Porterfield Creek, which flows between the east and west parcels of the project site, is an intermittent stream that carries storm runoff and limited spring baseflow from the uplands to the west.

Approximately 93 percent of the annual runoff within the Russian River system occurs from November to April (USACE, 1982), associated with Pacific frontal storms. Runoff during June through October is negligible, and ranged from about 0 to 20 cubic feet per second (cfs) prior to water development and management along the Russian River (e.g., before 1908); flows during this period were sustained by groundwater (Steiner Consulting, 1996). Installation of reservoirs in the Russian River basin, including Lake Mendocino (upstream of the project area along the East Fork of the Russian River) and Lake Sonoma (downstream and southwest of the project area), has substantially modified the natural flow regime of the Russian River, by decreasing the intensity of winter runoff and increasing flows during the summer months. Additionally, Pacific Gas and Electric (PG&E) has historically transferred about 150,000 acre-feet per year (af/yr) of water from the Eel River basin to the upper Russian River basin to support power generation and water supply. However, diversions from the Eel River into the upper Russian River basin have declined since 2004, due to Federal Energy Regulatory Commission revisions to the license for the interbasin transfer.

Today, flows in the Russian River are heavily managed, and include diversions from the Eel River, upstream dams for water supply, flood control, and power supply, as well as downstream diversions to aqueducts and other water supply infrastructure. Even under this substantial level of water management, flows in the Russian River remain highly variable. About 80 percent of the annual discharge occurs during winter (Entrix, 2002) and damaging floods have occurred relatively frequently along the river. The Russian River basin is characterized by a rapid hydrologic response to rain events, and flash floods are relatively common. **Figure 3.3-1** provides a summary of flows in the Russian River near Cloverdale, upstream of the confluence of the Russian River with Sulfur Creek (DWR, 2008). As shown, winter flows range up to several orders of magnitude greater than summer flows. Additionally, **Figure 3.3-2** shows average November through April flows in comparison to average May through October flows, for 1997 through 2008.



Source: DWR (2008).

Cloverdale Rancheria Casino Project. 207737

Figure 3.3-1
Russian River Near Cloverdale, Average Daily Flow
1993-2008 (Cubic Feet per Second)

Supplemented by PG&E's conveyances from the Eel River and dry-season reservoir releases, the Russian River flows year-round in the vicinity of the project site. The river provides agricultural water to users in Sonoma County, and also provides recharge water to underlying groundwater aquifers. River water is also supplied to Sonoma County Water Agency, municipalities, small domestic, and industrial water users.

National Marine Fisheries Services (NMFS) recently completed a review of operations along the Russian River watershed, which are implemented by the US Army Corps of Engineers (USACE) and undertaken by Sonoma County Water Agency and Mendocino County Russian River Flood Control and Water Conservation Improvement District (NMFS, 2008). The Biological Opinion

completed by NMFS addresses the status of fisheries along the Russian River, in response to operational changes that have resulted from past and ongoing implementation of the Russian River Water Supply and Flood Control Project (RRWSFC Project). The Biological Opinion analyzes the implementation current operations of the RRWSFC Project over the ensuing 15 years, including as relevant to analysis of hydrologic effects for the proposed action, (1) non-flood water supply releases; (2) estuary management procedures; (3) channel maintenance procedures; (4) reservoir flood control operations at Coyote Valley Dam and Warm Springs Dam; and (5) hydroelectric power generation at Coyote Valley Dam and Warm Springs Dam. Note that the Biological Opinion included an assessment of present operating conditions for 15 years; the hydrologic regime shown in **Figure 3.3-1** reflects these operations as implemented to date.

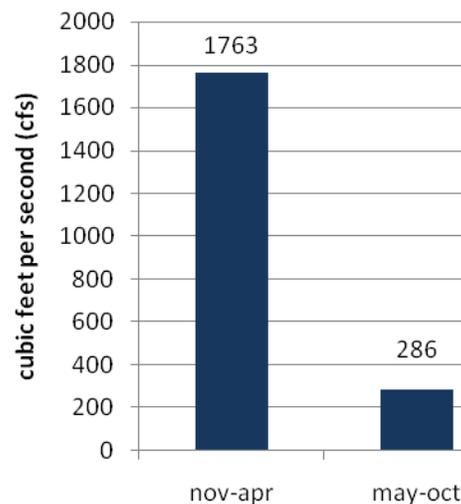
Surface Water Quality

Surface water quality in the Russian River in the vicinity of the project area depends on upstream reservoir releases, surface water diversions, return flows/discharges to the river, stormwater inflow, and other factors. Of particular importance in protecting fisheries resources in the river are temperature and dissolved oxygen (DO). These two constituents are interdependent, in that increased temperatures can substantially reduce DO concentration. Temperature is in turn influenced by releases from upstream reservoirs, both by the temperature of the water released and the volume of water in the river. As in-stream water volumes decrease, water temperature becomes more readily influenced by ambient air temperatures, and may warm substantially. This warming can, in turn, result in a reduction in DO concentration. In general, low DO conditions occur during warm months of dry or critically dry years, when flow is low and ambient temperature is high (Entrix, 2002).

The Russian River is considered a sensitive water body, and is listed on the State 303(d) list of impaired water bodies. Listed impairments relevant to the Proposed Action and alternatives include nutrients, pathogens, and sedimentation/siltation.

Groundwater Hydrology

The project site is located in the Cloverdale Area Subbasin of the Alexander Valley Groundwater Basin. The subbasin has a total surface area of approximately 10 square miles, and occupies a structural depression in the Coast Ranges near the northern end of Sonoma County. The subbasin boundary extends from Alderglen Springs and Preston in the north, to about one mile south of Asti, concurrent with a reduced section of water bearing sediments (DWR, 2003). The Russian River flows in a southerly direction along the entire length of the subbasin, and is joined by Big Sulphur



Cloverdale Rancheria Casino Project. 207737
Figure 3.3-2
 Average November-April and May-October
 Russian River Flows, 1997-2008

Creek at the north end of the Cloverdale Valley. DWR (1983) estimated the groundwater storage capacity of the subbasin to be approximately 71,000 acre-feet (af); however, no reliable estimate of the subbasin's groundwater budget is available (DWR, 2003; USGS, 2006). A study completed by US Geological Survey indicated that approximately 20 to 30 known wells were drilled in the vicinity of the City of Cloverdale and the project between 1950 and 2004 (USGS, 2006).

Available groundwater in the Cloverdale Area Subbasin is primarily associated with Quaternary Alluvial formations. This geologic unit which consists of unconsolidated sand, silt, clay, and gravel underlies the Russian River and its tributaries. The thickness of Quaternary Alluvium ranges from less than 10 to more than 80 feet; groundwater yields from specific wells may be dependent upon a well's intersection with prehistoric (buried) Russian River channels, as wells located away from the river generally have lower yields. Irrigation wells screened in these alluvial formations typically yield production rates of 50 to 200 gallons per minute (gpm; DWR, 2003).

The Franciscan Complex is the other primary geologic formation in the vicinity of the project, and consists of weakly to strongly metamorphosed rocks, including mainly of sandstone and shale, with some serpentinite, greenstone, chert, and schist layers. Generally speaking, Franciscan rocks are commonly considered to be non-water bearing within California's Coastal Range (USGS, 2006 and references therein). However, some areas of the Franciscan Complex contain limited water-bearing layers, which are characterized by many fractures. Well yields in the Franciscan Complex are generally low, although production rates may be sufficient to sustain small domestic uses (DWR, 2003). Drill logs of wells on site indicate that the Franciscan Complex lies below approximately 50 to 70 feet of alluvium.

Groundwater level in the subbasin appears to be relatively stable. A survey of three wells in the area indicates substantial annual variation in groundwater levels, but do not indicate a significant long term change in water levels (DWR, 2003, 1983). The City of Cloverdale relies on groundwater to supply its annual usage, and as of 2000, pumped approximately 2.4 million gallons per day (mgd) (DWR, 2003). DWR records indicate that domestic wells in the subbasin typically range from 20 to 420 feet depth below ground surface (bgs), while municipal and irrigation wells typically range from 30 to 220 feet bgs (DWR, 2003). A review of groundwater data available from 1967 through 2004 by the US Geological Survey indicated seasonal fluctuation in groundwater levels in the vicinity of the project on the order of 1 to 10 feet. Overall, groundwater levels appear to be stable over this period, and no substantial increasing or decreasing trend was observed (USGS, 2006).

Groundwater beneath the project site is present in the alluvium and underlying bedrock. The only formation capable of providing significant quantities of groundwater is the younger alluvium and river channel deposits. The Franciscan Bedrock in this area tends to have a low specific yield. Although depths and thicknesses of the alluvium and bedrock vary beneath the site, especially east of Porterfield Creek where alluvial thicknesses are greater and bedrock is deeper, a generalized lithology can be described as topsoil (approximately 4 to 12 feet deep) underlain by an unsaturated zone of clay and gravel mixtures (3 to 11 feet thick), overlying a unit of river sands, gravels and cobbles (8 to 70 feet thick) underlain by a clay unit (12 to 36 feet thick) overlying a sandstone/siltstone bedrock. Groundwater occurs under unconfined conditions in the alluvial coarse-

grained materials. Groundwater levels fluctuate seasonally and are controlled by seasonal rainfall, runoff from up-gradient, adjacent upland areas to the west and east of the property, and the surface flow in the Russian River. Based on review of groundwater elevation data provided during previous investigations, groundwater depths range from about 6 feet below ground (bgs) surface to 23 feet bgs (measurements taken in May 2008). Groundwater flow beneath the project site follows the general surface topography and flows in an east-northeasterly direction towards the Russian River. The Russian River in this area is a gaining stream meaning that groundwater from adjacent land areas flows into the river from adjacent upland areas.

There are eight groundwater production wells on the project site, all located on the vineyard parcel east of Porterfield Creek. Three of these wells are owned and operated by the South Cloverdale Water District (SCWD). Currently, only one of the three SCWD wells is operating. There are four irrigation wells, including one that serves the Lile Vineyard on the west side of Highway 101. Two of these irrigation wells are currently operating and are providing irrigation water for the existing vineyards. One well, the “6-acre Water Company” well serves about 24 residences located adjacent to the project site. The existing wells on-site have perforated screens placed at various intervals above the alluvial/bedrock interface, no deeper than 80 feet bgs.

A Water Supply Report (**Appendix I**) was completed for the Proposed Action and alternatives, and included an assessment of utilizing groundwater from the project site for a potable water supply. As discussed in further detail in **Chapter 2.0**, the proposed water supply well would be located on the southeastern parcel (APN 116-310-005), approximately 200 feet southwest of the western bank of the Russian River, and within the 100-year floodplain of the Russian River. A study completed in support of the Water Supply Report included testing of an existing irrigation well, the Tyris Company Well, which is located in the area of the proposed water supply well. As required by the Sonoma County Permit and Resource Management Department (SCPMRD), the Tyris Company Well was pumped for eight-hours at 100 gallons per minute (gpm) during a dry weather pump test on December 8, 2008. This well is screened in the alluvial layer above the underlying Franciscan complex to a depth of approximately 70 feet. Results indicated a total and constant drawdown of 1.7 feet during the test period, and a 100 percent recovery within minutes of the cessation of pumping. The specific capacity of the well was calculated to be 59 gpm per foot of drawdown (County of Sonoma, 2008).

Groundwater Quality

The groundwater of the Cloverdale Area Subbasin of the Alexander Valley Groundwater Basin is generally characterized as moderately hard to hard¹. Based on data from four wells, total dissolved solids (TDS) ranges from 130 to about 300 mg/L, with electrical conductivity ranging from about 180 to 454 micromhos/cm (DWR, 1983). While groundwater in the area is generally suitable for all uses, relatively high boron levels, exceeding 0.5 mg/L, may contribute to reduced crop yields (DWR, 1983). A Phase II assessment included a review of groundwater sampling data completed on site. Results from these samples are compiled in **Table 3.3-1**, along with the relevant USEPA

¹ Hardness is a measure of the content of specific minerals in water, including primarily calcium and magnesium. Elevated hardness can cause the formation of scales, calcification on pipes, and reduced generation of suds in soapy water.

maximum contaminant level (MCL) for drinking water. As shown, none of the measured constituents exceeded an applicable MCL. Note that **Table 3.3-1** provides a summary of the maximum detected values for the indicated water quality constituents on site, as well as a review of relevant MCLs. The reader is referred to the Phase II report for the project for additional detail (**Appendix K**).

**TABLE 3.3-1
US EPA MAXIMUM CONTAMINANT LEVELS FOR DRINKING WATER**

Constituent	Highest Detection	Primary MCL	Secondary MCL	Units
Primary Inorganics				
Antimony	<0.006	0.006		mg/L
Arsenic	<0.002	0.01		mg/L
Barium	0.2	2		mg/L
Beryllium	<0.001	0.004		mg/L
Cadmium	<0.001	0.005		mg/L
Chromium (total)	<0.001	0.1		mg/L
Copper	0.0058	1.3		mg/L
Mercury	<0.001	0.002		mg/L
Nitrate (as N)	7.8 ^a	10		mg/L
Nitrite (as N)	n/m	1		mg/L
Selenium	<0.005	0.05		mg/L
Thallium	<0.001	0.002		mg/L
Secondary Inorganics^b				
Aluminum	n/m		0.05 to 0.2	mg/L
Chloride	29		250	mg/L
Color	n/m		15	color units
Copper	0.0058		1	mg/L
Corrosivity	n/m		non-corrosive	n/a
Fluoride	0.16		2	mg/L
Foaming agents	n/m		0.5	mg/L
Iron	n/m		0.3	mg/L
Manganese	<0.02		0.05	mg/L
Odor	n/m		3	threshold odor number
pH	7.05		6.5-8.5	pH units
Silver	<0.01		0.1	mg/L
Sulfate	39		250	mg/L
Total Dissolved Solids (TDS)	320		500	mg/L
Zinc	0.0096		5	mg/L
Bacteriological Constituents				
Total Coliform ^c	110 ^d			MPN/100mL

**TABLE 3.3-1
US EPA MAXIMUM CONTAMINANT LEVELS FOR DRINKING WATER**

Constituent	Highest Detection	Primary MCL	Secondary MCL	Units
Radiological Constituents				
Alpha Particles	n/m	15		picocuries per Liter
Beta Particles and Photon Emitters	n/m	4		millirems per year
Radium 226 and 228	n/m	5		picocuries per Liter
Uranium	n/m	0.03		mg/L
Pesticides and Volatile Organic Compounds (VOCs)				
Alachlor	n/m	0.002		mg/L
Atrazine	n/m	0.003		mg/L
Benzene	n/m	0.005		mg/L
Benzo(a)pyrene	n/m	0.0002		mg/L
Carbon tetrachloride	n/m	0.005		mg/L
Diquat	n/m	0.02		mg/L
Vinyl chloride	n/m	0.002		mg/L
Xylenes	n/m	10		mg/L

KEY: n/m: not measured; n/a: not applicable; mg/L: milligrams per Liter; MPN: most probable number; ESA, 2009; USEPA, 2003

^a Data representative of highest onsite nitrate detection in groundwater. Sampling performed by Weiss Associates in 2008.

^b Data obtained from testing samples from existing onsite supply wells, Sampling performed by Weiss Associates in 2008.

^c E.Coli was not detected in any of the 12 groundwater samples tested for Total Coliform.

^d Total Coliform result represents highest onsite groundwater detection. Sample obtained from an onsite agricultural supply well.

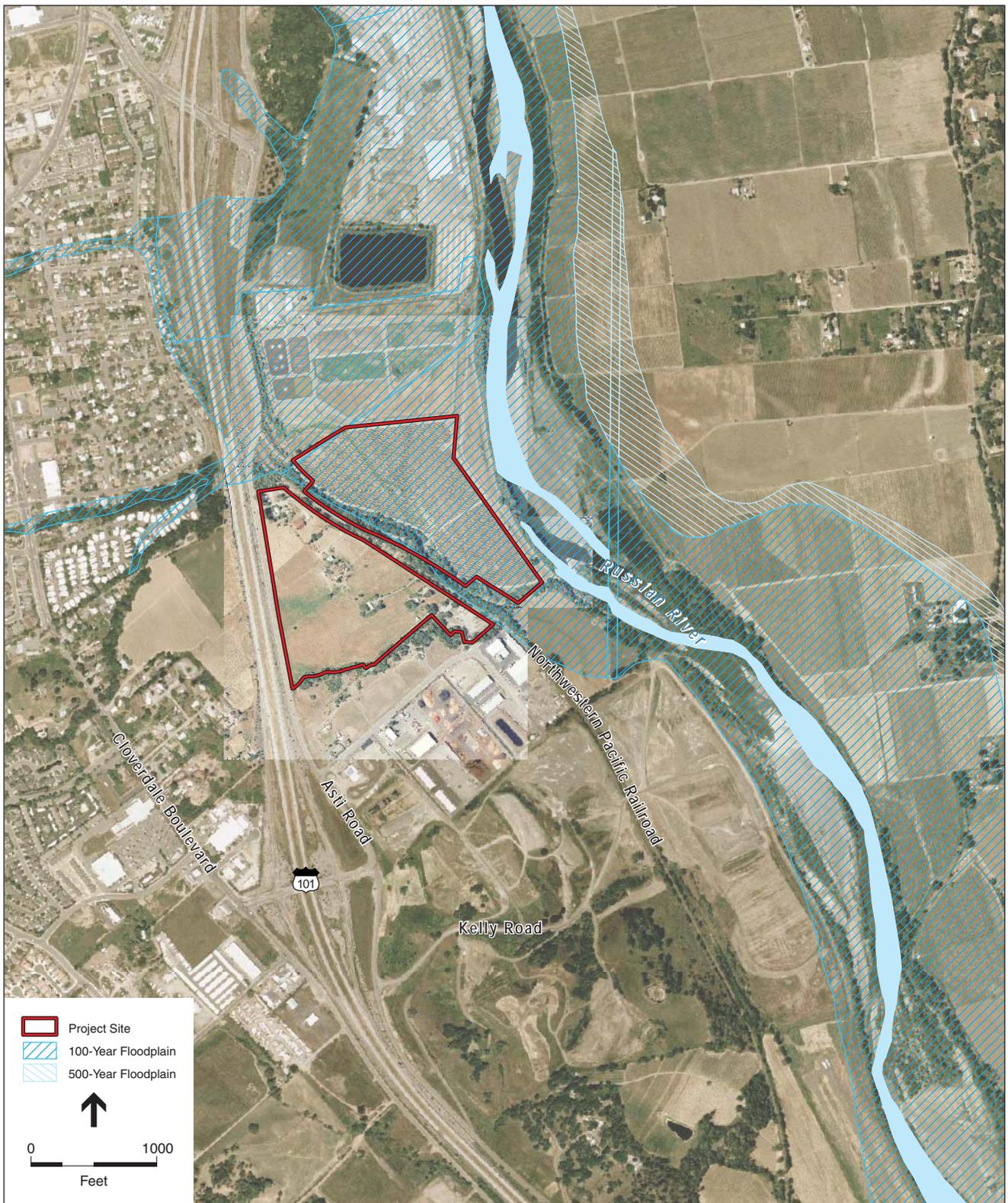
Flooding and Drainage

Flooding of the Russian River

Periodic flooding along the Russian River has, in the past, caused substantial damage to Sonoma County economic resources since the mid-1930s (SCWA, 1999). To prevent flooding, Sonoma County Water Agency and the U.S. Army Corps of Engineers have installed several flood control devices along the Russian River and its tributaries. These include Coyote Dam, Spring Lake Park, Warm Springs Dam, and various storm channeling and drainage systems in the Sonoma Valley.

The Federal Emergency Management Agency (FEMA) provides information of flood hazard and flooding frequency on its Flood Insurance Rate Maps (FIRMs), and identifies designated zones of flood hazard potential. FEMA-delineated flood zones for the project site are shown on **Figure 3.3-3**. As shown, approximately half of the project site (the area located to the northeast of the railroad line), is located within a delineated 100-year flood zone². The indicated 100-year flood results primarily from run-on to the site from the Russian River, to the south of the project site. While some stormwater run-on to the site from the vicinity of US 101 and other areas to the north of the project site would be anticipated to occur, flooding associated with the Russian River is anticipated to be the primary driver of flooding on-site.

² The 100-year flood zone, as defined by FEMA, consists of the land area that has a one percent annual chance of being inundated by floodwaters.



SOURCE: FEMA, 2005; ESRI, 2006; and ESA, 2011

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Figure 3.3-3
Flood Zones

Drainage Patterns of the Project Site

The northeastern parcels of the project site are presently under agricultural use (vineyards), while the southwestern parcels are primarily agricultural and rural residential. Drainage on both the northeastern and southwestern parcels is provided by existing agricultural ditches, as well as Porterfield Creek, which flows in a southeasterly direction along the western boundary of the northeastern parcel. Coyote Creek flows in an easterly direction along the southern edge of the southwestern parcels, crosses under the railroad via an existing culvert, and joins with Porterfield Creek before discharging into the Russian River near Kelly Road.

Drainage from the northeastern parcel, which is currently planted as a vineyard, generally flows from north to south. Surface runoff from the northern half of the vineyard either infiltrates into the groundwater basin or flows into Porterfield Creek and/or the Russian River (depending on location and volume of flows). Runoff from the southern half of the vineyard is channeled via natural low points into Porterfield Creek near the southeast corner of the vineyard.

Stormwater drainage from the southwestern parcels flow off-site via four culverts. Sheet-flow runoff occurs along the northwestern end of the parcels, the easternmost portion of the parcels, and along the southern boundary of the parcels, adjacent to Coyote Creek. Two of the existing culverts, located along the northeastern boundary of the parcels, pass under the railroad tracks and discharge indirectly to Porterfield Creek. The northern culvert is 18 inches in diameter and discharges into an area showing highly erodible soil conditions.

Stormwater

Drainage from areas located off-site is channeled onto or across the project site at several places, but primarily along its northern and western boundaries. These include areas where stormwater run-on (e.g., the flow of stormwater onto the project site) occurs associated with Heron Creek, as well as stormwater discharges from US 101 and the foothill areas to the west.

Substantial stormwater run-on occurs along the northern end of the site associated with Heron Creek, which has a watershed area of over 1,000 acres. Prior to the construction of US 101, this creek flowed along the west side of the City's WWTP and joined Porterfield Creek near the northwest corner of the site. However, during construction of US 101, Porterfield Creek was altered and caused flooding north of the site (specifically, north and west of the City's WWTP).

In addition to run-on associated with Heron Creek, additional stormwater flows are channeled onto the site via two existing, 30-inch culverts that discharge runoff from US 101 and the foothill areas to the west of US 101. The culverts discharge water at the west boundary of the project site, and the tributary area for each is approximately 20 acres.

3.3.2 Regulatory Setting

Executive Order 11988

Under Executive Order 11988, FEMA is responsible for management of floodplain areas defined as the lowland and relatively flat areas adjoining inland and coastal waters subject to a one percent or greater chance of flooding in any given year (i.e., the 100-year floodplain). FEMA requires that local governments covered by federal flood insurance pass and enforce a floodplain management ordinance that specifies minimum requirements for any construction within the 100-year floodplain. FEMA 100-year and 500-year floodplains are shown in **Figure 3.3-3**.

EO 11988 establishes a decision-making process to avoid the long- and short-term adverse impacts on floodplains unless no practicable alternatives exist. The National Flood Insurance Program (NFIP), in combination with EO 11988, establishes the minimum standards for floodplain management. The NFIP is a voluntary partnership between the Federal Government and local communities. Communities that participate may purchase insurance to protect against flood loss. Communities are required to enforce regulations in identified flood hazard areas and adhere to the minimum NFIP criteria (44CFR Section 60.3). The flood hazard areas and base flood elevations (100-year flood elevations) are identified on the Flood Insurance Rate Maps (FIRM). Under 44CFR Section 60.3, the community is prohibited from raising the water surface elevation of the 100-year flood by more than one foot at any point within the community. If a community proposes to permit development which will cause a base flood elevation increase of more than one foot in the 100-year floodplain, more than 0 feet in the floodway (channel of a river and adjacent land areas that must be reserved in order to discharge the base flood), or revisions of the floodway boundary, then a Conditional Letter of Map Revision (CLOMR) must be obtained prior to implementation of a project. A Letter of Map Revision (LOMR) request must be submitted to FEMA within 6 months of completion of a project.

Clean Water Act

The Clean Water Act (CWA) (CWA, 33 USC 1251-1376) 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.” Important applicable sections of the act are:

- Sections 303 and 304, which provide for water quality standards, criteria, and guidelines.
- Section 401, which requires an applicant for any federal permit that proposes an activity that may result in a discharge to “waters of the United States” to obtain certification from the state that the discharge will comply with other provisions of the Act. In California, certification is provided by the State Water Resources Control Board (SWRCB), but would fall under EPA jurisdiction (Region IX) for the Proposed Action and alternatives.
- Section 402, which establishes the National Pollutant Discharge Elimination System (NPDES), a permitting system for the discharge of any pollutant (except for dredge or fill material) into waters of the United States. In California, this permit program

is administered by the Regional Water Quality Control Boards, but would fall under EPA jurisdiction (Region IX) for the Proposed Action and alternatives.

- Section 404, which establishes a permit program for the discharge of dredged or fill material into waters of the United States. This permit program is administered by the Army Corps of Engineers (Corps).

Federal Safe Drinking Water Act

The Safe Drinking Water Act was established to protect the quality of waters actually or potentially designated for drinking use, whether from above ground or underground sources. Contaminants of concern in a domestic water supply are those that either pose a health threat or in some way alter the aesthetic acceptability of the water. Primary and secondary maximum contaminant levels (MCLs) are established for numerous constituents of concern including turbidity, total dissolved solids (TDS), chloride, fluoride, nitrate, priority pollutant metals and organic compounds, selenium, bromate, trihalomethane and haloacetic acid precursors, radioactive compounds, and gross radioactivity.

The law was amended in 1986 and 1996, and its implementation is overseen by the EPA. As such, the EPA is authorized to set national health-based standards for drinking water to protect against natural and man-made contaminants in drinking water (EPA, 2006). Any groundwater wells developed on the site would be subject to regulation under the Safe Drinking Water Act and oversight by the EPA.

State and Local

While the following state and local regulations would not be directly applicable to the project site (as the site would become lands held in trust by the Federal government subject to EPA oversight), a discussion is provided to summarize the current off-site (and downstream) regulatory setting.

Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act, as revised in December, 2007, provides for protection of the quality of all waters of the state for use and enjoyment by the people of California. It further provides for regulation of all activities that may affect the quality of waters of the state, in order to obtain the highest water quality that is reasonable, considering all demands on those waters. The Act also establishes provisions for a statewide program for the control of water quality, recognizing that waters of the state are increasingly influenced by inter-basin water development projects and other statewide considerations, and that factors such as precipitation, topography, population, recreation, agriculture, industry, and economic development vary regionally within the state. Within this framework, the Act authorizes the State Water Resources Control Board and regional boards to oversee responsibility for the coordination and control of water quality within California. Only water quality effects to lands outside of the project site would be subject to regulation under the Porter-Cologne Water Quality Control Act.

North Coast Regional Water Quality Control Board and Basin Plan

The Porter-Cologne Act provides for development of Water Quality Control Plans (Basin plans) that designate beneficial uses of California's major rivers and groundwater basins, and establish water quality objectives for those waters. Beneficial uses represent the services and qualities of a water body (e.g. the reasons why it is considered valuable), while water quality objectives represent the standards necessary to protect and support those beneficial uses. Basin plans provide the technical basis for determining waste discharge requirements and taking regulatory enforcement actions if deemed necessary. Note that, because the project site would be taken into trust by the Tribe, the North Coast Regional Water Quality Control Board's (NCRWQCB) jurisdiction would be limited to lands that are located outside of the project site.

The NCRWQCB, which is one of nine regional water quality control boards overseen by the State Water Resources Control Board, is the state agency that oversees these operations in the North Coast Region. The NCRWQCB has adopted the Water Quality Control Plan for the North Coast Region (Basin Plan; NCRWQCB, 2007), which establishes surface water quality objectives and parameters for color, tastes and odors, floating material, suspended material, settleable material, oil and grease, biostimulatory substances, sediment, turbidity, pH, dissolved oxygen, bacteria, temperature, toxicity, pesticides, chemical constituents, and radioactivity for all surface waters within its region. The Basin Plan also specifies groundwater quality objectives for tastes and odors, bacteria, radioactivity, and chemical constituents. **Table 3.3-2** shows additional specific surface water quality objectives for the Russian River Hydrologic Unit in the vicinity of the project area, as defined by the NCRWQCB (2007).

**TABLE 3.3-2
SURFACE WATER QUALITY OBJECTIVES FOR THE RUSSIAN RIVER
HYDROLOGIC UNIT IN THE VICINITY OF THE PROJECT SITE**

Constituent	Objective Type	Value
Specific Conductance	90 Percent Upper Limit ¹	320
(micromhos)	50 Percent Upper Limit ²	250
Total Dissolved Solids	90 Percent Upper Limit ¹	170
(mg/L)	50 Percent Upper Limit ²	150
Dissolved Oxygen	Minimum	7.0
(mg/L)	90 Percent Lower Limit ¹	7.5
	50 Percent Lower Limit ²	10.0
Hydrogen Ion	Maximum	8.5
(pH)	Minimum	6.5

1 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.

2 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.

SOURCE: NCRWQCB, 2007

As defined by the NCRWQCB, the project site is located in the Geyserville Hydrologic Subarea of the Middle Russian River Hydrologic Area, which is a portion of the Russian River Hydrologic Unit. As such, the Basin Plan identifies the following existing beneficial uses for the Russian River in the vicinity of the project site: Municipal and Domestic Supply, Agricultural Supply, Industrial Service Supply, Groundwater Recharge, Freshwater Replenishment, Navigation, Water Contact

Recreation, Non-Contact Recreation, Warm Freshwater Habitat, Cold Freshwater Habitat, Wildlife Habitat, Rare/Threatened/Endangered Species, Migration of Aquatic Organisms, and Spawning/Reproduction/Early Development. Additionally, the Basin Plan identifies the following potential beneficial uses for the Russian River in the vicinity of the project site:

- Industrial Process Supply,
- Hydropower Generation,
- Shellfish Harvesting,
- and Aquaculture.

Because the project site would be taken into trust, application of Basin Plan standards would only be considered only for those impacts that may occur off the project site.

Porter-Dolwig Ground Water Basin Protection Law

The Porter-Dolwig Ground Water Basin Protection Law (California Water Code §12920 et seq.) gives the DWR authority to initiate or participate in investigations, studies, plans and design criteria for projects to prevent degradation of groundwater throughout the State. The law authorizes the DWR to evaluate, review if necessary, and provide technical assistance to the local agency if necessary. Sections 12923 and 12924 state that DWR shall, in conjunction with other public agencies, conduct an investigation of the state's groundwater basins. The DWR shall identify the state's groundwater basins on the basis of geological and hydrological conditions and consideration of political boundary lines whenever practical. The DWR shall also investigate existing general patterns of groundwater pumping and groundwater recharge within such basins to the extent necessary to identify basins which are subject to critical conditions of overdraft. Because the project site would be taken into trust, this law would not be applicable to the project site. However, it provides a regulatory context for the surrounding area.

California Department of Health Services Drinking Water Regulations

California's Department of Health Services (DHS) serves as the primary responsible agency for drinking water regulations. DHS must adopt drinking water quality standards, for surface and groundwater, at least as stringent as Federal standards (as described above), and may also regulate contaminants to more stringent standards than the EPA, or develop additional standards. DHS regulations cover over 150 contaminants, including microorganisms, particulates, inorganics, natural organics, synthetic organics, radionuclides, and DBPs. The California DHS is responsible for enforcement of drinking water regulations in the State of California, and would have jurisdiction over activities located in the surrounding area. As described above, drinking water standards on the project site would be regulated by the EPA.

North Coast Integrated Regional Water Management Plan

Phase I of the North Coast Integrated Regional Water Management Plan (IRWMP; North Coast Regional Partnership, 2007) has been completed by a consortium of county and city agencies, Tribal representatives, and resources conservation and other private entities, located along the Northern California Coastal Range and southern Cascades, from Santa Rosa north to Crescent City, and

from Eureka east to Modoc County, including the project site. Primary objectives of the IRWMP include conservation and restoration of habitats to support native salmon; protection and enhancement of drinking water quality; assurance of water supply while protecting the environment; support for NCRWQCB programs and their implementation; address environmental justice and public health issues; and provide an ongoing, inclusive framework for intra-regional cooperation, planning, and project implementation. To this end, the IRWMP 1) identifies related existing conditions and issues concerning water resources, 2) describes a suite of projects that would facilitate realization of IRWMP objectives, and 3) provides an assessment of potential benefits and impacts associated with implementing projects in area surrounding the project site. The project site would not be subject to the provisions of the IRWMP, but it provides a regulatory context for the surrounding area.

3.3.3 References

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3.4 Air Quality

3.4.1 Setting

Climate and Meteorology

The project site is located in the north end of the Alexander Valley, or the Cloverdale Valley. The site lies within the boundaries of the North Coast Air Basin. This Basin includes Del Norte, Humboldt, Trinity, and Mendocino Counties, as well as, the northern portion of Sonoma County. The climate of Sonoma County is characterized by moderate temperature and precipitation.

Along the coast, temperatures remain cool throughout the summer and seldom drop below freezing during the winter. Inland areas have a wider temperature range, with high readings occasionally exceeding 100°F and lows sometimes falling several degrees below freezing. Even during the warm period of the year, however, night temperatures usually drop into the lower 50's. Dominant winds also exhibit a seasonal pattern. During the summer, frequently strong north to northwesterly winds are common. In the winter, storms from the South Pacific increase the percentage of days with winds from the south.

In the river canyons that empty into the Pacific, the winter pattern often exhibits a diurnal pattern. Specifically, in the morning hours, cool air from higher elevations flows down the valleys. Later in the day, as the lower elevation air heats up, this pattern is reversed and the air flow heads up the canyon. These air flows can frequently be very strong. Offshore and onshore flows are also common along the coast and are associated with pressure systems in the area. Onshore flows frequently bring foggy cool weather to the coast, while offshore flows often bring sunny, warm days.

Air Quality Standards

Regulation of air quality is achieved through implementation of national and state ambient air quality (concentration) standards and enforcement of emissions limits for individual sources of air pollutants. The federal Clean Air Act required the U.S. Environmental Protection Agency (EPA) to identify National Ambient Air Quality Standards (national standards) to protect public health and welfare. National standards have been established for ozone, carbon monoxide, nitrogen dioxide, sulfur oxide, suspended particulate matter (PM10 and PM2.5), and lead. These pollutants are called "criteria" air pollutants because the corresponding ambient standards satisfy criteria specified under the Clean Air Act. The State of California has established its own ambient air quality standards (state standards) which are generally more stringent, or health protective, than their national counterparts. **Table 3.4-1** presents both sets of ambient air quality standards (i.e., national and state) and provides a brief discussion of the related health effects and principal sources for each pollutant.

**TABLE 3.4-1
STATE AND NATIONAL CRITERIA AIR POLLUTANT STANDARDS, EFFECTS, AND SOURCES**

Pollutant	Averaging Time	State Standard	National Standard	Pollutant Health and Atmospheric Effects	Major Pollutant Sources
Ozone	1 hour	0.09 ppm	---	High concentrations can directly affect lungs, causing irritation. Long-term exposure may cause damage to lung tissue.	Formed when reactive organic gases (ROG) and nitrogen oxides (NO _x) react in the presence of sunlight. Major sources include on-road motor vehicles, solvent evaporation, and commercial / industrial mobile equipment.
	8 hours	0.07 ppm ¹	0.075 ppm		
Carbon Monoxide	1 hour	20 ppm	35 ppm	Classified as a chemical asphyxiant, carbon monoxide interferes with the transfer of fresh oxygen to the blood and deprives sensitive tissues of oxygen.	Internal combustion engines, primarily gasoline-powered motor vehicles.
	8 hours	9.0 ppm	9 ppm		
Nitrogen Dioxide	1 hour	0.18 ppm	0.100 ppm	Irritating to eyes and respiratory tract. Colors atmosphere reddish-brown.	Motor vehicles, petroleum refining operations, industrial sources, aircraft, ships, and railroads.
	Annual Avg.	0.030 ppm	0.053 ppm		
Sulfur Dioxide	1 hour	0.25 ppm	75 ppb	Irritates upper respiratory tract; injurious to lung tissue. Can yellow the leaves of plants, destructive to marble, iron, and steel. Limits visibility and reduces sunlight.	Fuel combustion, chemical plants, sulfur recovery plants, and metal processing.
	3 hours	---	0.5 ppm		
	24 hours	0.04 ppm	0.14 ppm		
	Annual Avg.	---	0.03 ppm		
Respirable Particulate Matter (PM-10)	24 hours	50 $\mu\text{g}/\text{m}^3$	150 g/m^3	May irritate eyes and respiratory tract, decreases in lung capacity, cancer and increased mortality. Produces haze and limits visibility.	Dust and fume-producing industrial and agricultural operations, combustion, atmospheric photochemical reactions, and natural activities (e.g., wind-raised dust and ocean sprays).
	Annual Avg.	20 $\mu\text{g}/\text{m}^3$	---		
Fine Particulate Matter (PM-2.5)	24 hours	---	35 g/m^3	Increases respiratory disease, lung damage, cancer, and premature death. Reduces visibility and results in surface soiling.	Fuel combustion in motor vehicles, equipment, and industrial sources; residential and agricultural burning; Also, formed from photochemical reactions of other pollutants, including NO _x , sulfur oxides, and organics.
	Annual Avg.	12 $\mu\text{g}/\text{m}^3$	15 g/m^3		
Lead	Monthly Ave.	1.5 $\mu\text{g}/\text{m}^3$	---	Disturbs gastrointestinal system, and causes anemia, kidney disease, and neuromuscular and neurological dysfunction.	Present source: lead smelters, battery manufacturing & recycling facilities. Past source: combustion of leaded gasoline.
	Quarterly	---	1.5 g/m^3		
Hydrogen Sulfide	1 hour	0.03 ppm	No National Standard	Geothermal Power Plants, Petroleum Production and refining	Nuisance odor (rotten egg smell), headache and breathing difficulties (higher concentrations)
Sulfates	24 hour	25 $\mu\text{g}/\text{m}^3$	No National Standard	Produced by the reaction in the air of SO ₂ .	Breathing difficulties, aggravates asthma, reduced visibility
Visibility Reducing Particles	8 hour	Extinction of 0.23/km; visibility of 10 miles or more	No National Standard	Reduces visibility, reduced airport safety, lower real estate value, and discourages tourism.	See PM2.5.

NOTE: ppm = parts per million; g/m^3 = micrograms per cubic meter.

1 This concentration was approved by the Air Resources Board on April 28, 2005 and became effective May 17, 2006.

SOURCE: CARB, 2001 and CARB, 2010

The federal Clean Air Act required the EPA to designate air basins, or portions thereof, as either “attainment” or “nonattainment” for each criteria air pollutant, based on whether or not the national standards have been achieved. The California Clean Air Act, patterned after the federal Clean Air Act, also required that areas be designated as “attainment” or “nonattainment”, but with respect to the state standards rather than the national standards. A table summarizing federal and state attainment status for criteria air pollutants is included as **Table 3.4-2**.

**TABLE 3.4-2
ATTAINMENT STATUS**

Pollutant	Designation/Classification	
	Federal Standards	State Standards
NCAB¹		
Ozone – one hour	No Federal Standard ²	Attainment
Ozone – eight hour ³	Unclassified/Attainment	Attainment
PM10	Unclassified	Non-attainment
PM2.5	Unclassified/Attainment	Unclassified
CO	Attainment	Attainment
Nitrogen Dioxide	Attainment	Attainment
Sulfur Dioxide	Attainment	Attainment
Lead	No Designation	Attainment
Hydrogen Sulfide	No Federal Standard	Attainment
BAAQMD		
Ozone – one hour	No Federal Standard	Nonattainment
Ozone – eight hour	Nonattainment	Nonattainment
PM10	Unclassified	Nonattainment
PM2.5	Non-Attainment	Nonattainment
CO	Attainment	Attainment
Nitrogen Dioxide	Attainment	Attainment
Sulfur Dioxide	Attainment	Attainment
Lead	No Designation	Attainment
Hydrogen Sulfide	No Federal Standard	Unclassified

1 The North Coast Air Basin includes both the Mendocino County Air Quality Management District (MCAQMD) and the Northern Sonoma County Air Pollution Control District (NSCAPCD)

2 Federal One Hour Ozone National Ambient Air Quality Standard was revoked on June 15, 2005

3 The State 8-hour ozone standard was approved by the ARB on April 28, 2005, and became effective May 17, 2006.

SOURCE: BAAQMD, 2011. *Ambient Air Quality Standards and Bay Area Attainment Status*, http://hank.baaqmd.gov/pln/air_quality/ambient_air_quality.htm, accessed March 9, 2011.
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Regulatory Framework

General Conformity Rule

Federal projects are subject to either the Transportation Conformity Rule (40 CFR, Part 51, Subpart T), which applies to federal highway and transit projects, or the General Conformity Rule (40 CFR, Part 51, Subpart W), which applies to all other federal projects. Since the Tribe has not adopted their own air quality program, the thresholds of significance established in the federal General Conformity Rule would apply to the Proposed Action and alternatives. The General Conformity

Rule implements Section 176(c) of the federal Clean Air Act, which requires that a federal agency ensure conformity with an approved state implementation plan (SIP) for those air emissions that would be generated by an agency action. The Proposed Action is located in the Northern Sonoma County APCD. Project operation would generate criteria pollutant emissions in that district and also in two others, the Mendocino County APCD and the BAAQMD. Pollutant emissions generated in the Northern Sonoma County APCD and the Mendocino County APCD would not require review under the federal General Conformity Rule because both districts are designated attainment or unclassified for all criteria pollutants. However, the BAAQMD is currently designated nonattainment for Ozone and PM 2.5. To ensure compliance with the General Conformity Rule, emissions generated by the project within the BAAQMD have been evaluated to determine whether they would exceed applicable thresholds or be regionally significant.

Council on Environmental Quality Draft Guidance

On February 18, 2010, the Council on Environmental Quality issued a Memorandum to Federal Agencies regarding Draft National Environmental Policy Act (NEPA) Guidance on Consideration of the Effects of Climate Change and Greenhouse Gas Emissions. The draft guidance is intended to help explain how agencies of the Federal government should analyze the environmental effects of GHG emissions and climate change when they describe the environmental effects of a proposed agency action in accordance with NEPA. Regarding greenhouse gas emissions the draft guidance states:

“Specifically, if a proposed action would be reasonably anticipated to cause direct emissions of 25,000 metric tons or more of CO₂-equivalent GHG emissions on an annual basis, agencies should consider this an indicator that a quantitative and qualitative assessment may be meaningful to decision makers and the public. For long-term actions that have annual direct emissions of less than 25,000 metric tons of CO₂-equivalent, CEQ encourages Federal agencies to consider whether the action’s long-term emissions should receive similar analysis. CEQ does not propose this as an indicator of a threshold of significant effects, but rather as an indicator of a minimum level of GHG emissions that may warrant some description in the appropriate NEPA analysis for agency actions involving direct emissions of GHGs.”

In addition to the effects of greenhouse gases, the draft guidance recommends evaluation of the relationship of climate change effects to the proposed action or alternatives (increased risk of floods, wildfires, etc).

State Greenhouse Gas Standards

Executive Order S-3-05

In 2005, in recognition of California’s vulnerability to the effects of climate change, Governor Schwarzenegger established Executive Order S-3-05, which sets forth a series of target dates by which statewide emission of greenhouse gas (GHG) would be progressively reduced, as follows:

- By 2010, reduce GHG emissions to 2000 levels;
- By 2020, reduce GHG emissions to 1990 levels; and
- By 2050, reduce GHG emissions to 80 percent below 1990 levels.

Assembly Bill 32 (AB 32)

In 2006, California passed the California Global Warming Solutions Act of 2006 (Assembly Bill No. 32; California Health and Safety Code Division 25.5, Sections 38500, et seq., or AB 32), which requires the California Air Resources Board (CARB) to design and implement emission limits, regulations, and other measures, such that statewide GHG emissions will be reduced to 1990 levels by 2020.

In December 2007, CARB approved the 2020 emission limit of 427 million metric tons of CO₂ equivalents of GHGs. The 2020 target of 427 million metric tons of CO₂ equivalent (CO₂E) requires the reduction of 169 million metric tons of CO₂E, or approximately 30 percent, from the state's projected 2020 emissions of 596 million metric tons of CO₂E (business-as-usual).

Also in December 2007, CARB adopted mandatory reporting and verification regulations pursuant to AB 32. The mandatory reporting regulations require reporting for certain types of facilities that make up the bulk of the stationary source emissions in California. The regulation language identifies major facilities as those that generate more than 25,000 metric tons/year of CO₂E. Cement plants, oil refineries, electric-generating facilities/providers, cogeneration facilities, and hydrogen plants and other stationary combustion sources that emit more than 25,000 metric tons/year CO₂E, make up 94 percent of the point source CO₂E emissions in California (CARB, 2007).

In June, 2008, CARB published its *Climate Change Draft Scoping Plan* (CARB, 2008a). The *Climate Change Draft Scoping Plan* reported that CARB met the first milestones set by AB 32 in 2007: developing a list of early actions to begin sharply reducing GHG emissions; assembling an inventory of historic emissions; and establishing the 2020 emissions limit. After consideration of public comment and further analysis, CARB released the *Climate Change Proposed Scoping Plan* in October, 2008 (CARB, 2008b). The Proposed Scoping Plan proposes a comprehensive set of actions designed to reduce overall carbon emissions in California. Key elements of the Proposed Scoping Plan include:

- Expanding and strengthening existing energy efficiency programs as well as building and appliance standards
- Achieving a statewide renewable energy mix of 33 percent
- Developing a California cap-and-trade program that links with other Western Climate Initiative partner programs to create a regional market system
- Establishing targets for transportation-related GHG emissions for regions throughout California, and pursuing policies and incentives to achieve those targets
- Adopting and implementing measures pursuant to existing state laws and policies, including California's clean car standards, goods movement measures, and the Low Carbon Fuel Standard
- Creating targeted fees, including a public goods charge on water use, fees on high global warming potential gases, and a fee to fund the administrative costs of the state's long-term commitment to AB 32 implementation (CARB, 2008b)

The *Climate Change Proposed Scoping Plan* notes that “[a]fter Board approval of this plan, the measures in it will be developed and adopted through the normal rulemaking process, with public input” (CARB, 2008b).

The *Climate Change Proposed Scoping Plan* states that local governments are “essential partners” in the effort to reduce GHG emissions, and that they have “broad influence and, in some cases, exclusive jurisdiction” over activities that contribute to GHG emissions. The plan acknowledges that local governments have broad influence and, in some cases, exclusive authority over activities that contribute to significant direct and indirect GHG emissions through their planning and permitting processes, local ordinances, outreach and education efforts, and municipal operations. Many of the proposed measures to reduce GHG emissions rely on local government actions. The plan encourages local governments to reduce GHG emissions by approximately 15 percent from current levels by 2020 (CARB, 2008b).

AB 32 Recommended Actions by Sector

In October 2008, CARB approved a list of thirty-nine Recommended Actions to reduce GHG emissions to meet the AB 32 Goals, and is currently in the process of developing regulations and programs based on these measures. Regulations implementing the Discrete Early Action measures must be adopted and in effect by January 1, 2010 (HSC §38560.5 (b)). All the Recommended Actions are included in **Table 3.4-3** below.

**TABLE 3.4-3
LIST OF AB 32 RECOMMENDED ACTIONS TO REDUCE GHG EMISSIONS BY SECTOR**

Measure No.	Measure Description	GHG Reductions (Million Metric Tons per year of CO ₂ E)
Transportation		
T-1	Pavley I and II – Light Duty Vehicle Greenhouse Gas Standards	31.7
T-2	Low Carbon Fuel Standard (Discrete Early Action)	15
T-3 ¹	Regional Transportation-Related Greenhouse Gas Targets	5
T-4	Vehicle Efficiency Measures	4.5
T-5	Ship Electrification at Ports (Discrete Early Action)	0.2
T-6	Goods Movement Efficiency Measures. <ul style="list-style-type: none"> • Ship Electrification at Ports • System-Wide Efficiency Improvements 	3.5
T-7	Heavy-Duty Vehicle Greenhouse Gas Emission Reduction Measure – Aerodynamic Efficiency (Discrete Early Action)	0.93
T-8	Medium- and Heavy-Duty Vehicle Hybridization	0.5
T-9	High Speed Rail	1
Electricity and Natural Gas		
E-1	Energy Efficiency (32,000 GWh of Reduced Demand) <ul style="list-style-type: none"> • Increased Utility Energy Efficiency Programs • More Stringent Building & Appliance Standards Additional Efficiency and Conservation Programs	15.2
E-2	Increase Combined Heat and Power Use by 30,000 GWh (Net reductions include avoided transmission line loss)	6.7
E-3	Renewables Portfolio Standard (33% by 2020)	21.3
E-4	Million Solar Roofs (including California Solar Initiative, New Solar Homes Partnership and solar programs of publicly owned utilities) <ul style="list-style-type: none"> • Target of 3000 MW Total Installation by 2020 	2.1

**TABLE 3.4-3
LIST OF AB 32 RECOMMENDED ACTIONS TO REDUCE GHG EMISSIONS BY SECTOR**

Measure No.	Measure Description	GHG Reductions (Million Metric Tons per year of CO₂E)
CR-1	Energy Efficiency (800 Million Therms Reduced Consumptions) <ul style="list-style-type: none"> • Utility Energy Efficiency Programs • Building and Appliance Standards • Additional Efficiency and Conservation Programs 	4.3
CR-2	Solar Water Heating (AB 1470 goal)	0.1
Green Buildings		
GB-1	Green Buildings	26
Water		
W-1	Water Use Efficiency	1.4†
W-2	Water Recycling	0.3†
W-3	Water System Energy Efficiency	2.0†
W-4	Reuse Urban Runoff	0.2†
W-5	Increase Renewable Energy Production	0.9†
W-6	Public Goods Charge (Water)	TBD†
Industry		
I-1	Energy Efficiency and Co-Benefits Audits for Large Industrial Sources	TBD
I-2	Oil and Gas Extraction GHG Emission Reduction	0.2
I-3	GHG Leak Reduction from Oil and Gas Transmission	0.9
I-4	Refinery Flare Recovery Process Improvements	0.3
I-5	Removal of Methane Exemption from Existing Refinery Regulations	0.01
Recycling and Water Management		
RW-1	Landfill Methane Control (Discrete Early Action)	1
RW-2	Additional Reductions in Landfill Methane <ul style="list-style-type: none"> • Increase the Efficiency of Landfill Methane Capture 	TBD†
RW-3	High Recycling/Zero Water <ul style="list-style-type: none"> • Commercial Recycling • Increase Production and Markets for Compost • Anaerobic Digestion • Extended Producer Responsibility • Environmentally Preferable Purchasing 	9†
Forests		
F-1	Sustainable Forest Target	5
High Global Warming Potential (GWP) Gases		
H-1	Motor Vehicle Air Conditioning Systems: Reduction of Refrigerant Emissions from Non-Professional Servicing (Discrete Early Action)	0.26
H-2	SF ₆ Limits in Non-Utility and Non-Semiconductor Applications (Discrete Early Action)	0.3
H-3	Reduction of Perfluorocarbons in Semiconductor Manufacturing (Discrete Early Action)	0.15
H-4	Limit High GWP Use in Consumer Products Discrete Early Action (Adopted June 2008)	0.25
H-5	High GWP Reductions from Mobile Sources <ul style="list-style-type: none"> • Low GWP Refrigerants for New Motor Vehicle Air Conditioning Systems • Air Conditioner Refrigerant Leak Test During Vehicle Smog Check • Refrigerant Recovery from Decommissioned Refrigerated Shipping Containers • Enforcement of Federal Ban on Refrigerant Release during Servicing or Dismantling of Motor Vehicle Air Conditioning Systems 	3.3
H-6	High GWP Reductions from Stationary Sources <ul style="list-style-type: none"> • High GWP Stationary Equipment Refrigerant Management Program: 	10.9

**TABLE 3.4-3
LIST OF AB 32 RECOMMENDED ACTIONS TO REDUCE GHG EMISSIONS BY SECTOR**

Measure No.	Measure Description	GHG Reductions (Million Metric Tons per year of CO₂E)
	<ul style="list-style-type: none"> ○ Refrigerant Tracking/Reporting/Repair Deposit Program ○ Specifications for Commercial and Industrial Refrigeration Systems ● Foam Recovery and Destruction Program ● SF₆ Leak Reduction and Recycling in Electrical Applications ● Alternative Suppressants in Fire Protection Systems ● Residential Refrigeration Early Retirement Program 	
H-7	Mitigation Fee on High GWP Gases	5
Agriculture		
A-1	Methane Capture at Large Dairies	1.0†
<p>1 This is not the SB 375 regional target. CARB will establish regional targets for each MPO region following the input of the regional targets advisory committee and a consultation process with MPO's and other stakeholders per SB 375</p> <p>† GHG emission reduction estimates are not included in calculating the total reductions needed to meet the 2020 target</p>		
SOURCE: CARB, October 2008		

California Air Resources Board

CARB, California's state air quality management agency, regulates mobile emissions sources and oversees the activities of Air Pollution Control Districts and Air Quality Management Districts. CARB indirectly regulates local air quality by having established state ambient air quality standards and vehicle emission standards, by conducting research activities, and by planning and coordinating activities.

Northern Sonoma County Air Pollution Control District

The Northern Sonoma County Air Pollution Control District (NSCAPCD) is the regional agency empowered to regulate air pollution emissions from stationary sources in the southern portion of the North Coast Air Basin. NSCAPCD regulates air quality through its permit authority over most types of stationary emissions and through its planning and review activities. Off-site impacts associated with the Proposed Action would be within the NSCAPCD's jurisdiction.

Mendocino County Air Pollution Control District

The MCAQMD is the regional agency empowered to regulate air pollution emissions from stationary sources in the central portion of the North Coast Air Basin. MCAQMD regulates air quality through its permit authority over most types of stationary emissions and through its planning and review activities. Some off-site operational impacts associated with the Proposed Action and alternatives (vehicles travelling to and from the site) would be within the MCAQMD's jurisdiction.

Bay Area Air Quality Management District

The BAAQMD is the regional agency empowered to regulate air pollution emissions from stationary sources in the San Francisco Bay Basin. BAAQMD regulates air quality through its permit authority over most types of stationary emissions and through its planning and review activities. Some off-

site operational impacts associated with the Proposed Action and alternatives (vehicles travelling to and from the site) would be within the BAAQMD's jurisdiction.

Climate Change

Intergovernmental Panel on Climate Change

The Third Intergovernmental Panel on Climate Change (IPCC) report indicates that the average global temperature is likely to increase between 3.6 and 8.1 degrees Fahrenheit by the year 2100, with larger increases possible but not likely (IPCC, 2001). Temperature increases are expected to vary widely in specific locations depending on a variety of factors. The increase in temperature is expected to lead to higher temperature extremes, precipitation extremes leading to increased flooding and droughts, ocean acidification from increase carbon content, and rising sea levels. Because the effects of warming are likely to include making dry areas drier, and rising sea levels may inundate coastal areas, subtropical and low-lying regions are expected to be the areas most affected by climate change.

Changes in the Climates of Western United States and California

Climate models indicate that if GHG emissions continue to proceed at a medium or high rate, temperatures in California are expected to increase by 4.7 to 10.5 degrees Fahrenheit by the end of the century.³ Lower emission rates would reduce the projected warming to 3 to 5.6 degrees Fahrenheit. Almost all climate scenarios include a continuing warming trend through the end of the century given the vast amounts of GHGs already released and the difficulties associated with reducing emissions to a level that would stabilize the climate. According to the 2006 California Climate Action Team Report (CCAT, 2006), the following climate change effects are predicted in California over the course of the next century:

- A diminishing Sierra snowpack declining by 70% to 90%, threatening the state's water supply.
- Increasing temperatures from 8 to 10.4 degrees F under higher emission scenarios, leading to a 25 to 35% increase in the number of days that ozone pollution levels are exceeded in most urban areas.
- Coastal erosion along the length of California and sea water intrusion. This would exacerbate flooding in already vulnerable regions.
- Increased vulnerability of forests due to pest infestation and increased temperatures.
- Increased challenges for the state's important agriculture industry from limited water supplies, increasing temperatures, and saltwater intrusion.
- Increased electricity demand, particularly in the hot summer months.

Based on this information, temperature increases would lead to environmental impacts in a wide variety of areas, including: reduced snowpack resulting in changes to the existing water resources, increased risk of wildfires, changing weather expectations for farmers and ranchers, and public health hazards associated with higher peak temperatures, heat waves, and decreased air quality.

Water Resources

Depending on the climate model, precipitation is predicted to increase or decrease slightly. However, the form in which precipitation occurs could change substantially. Warmer winters would lead to less snow and more rain. As a result, the Sierra snowpack would be reduced and would melt earlier. Changes in Sierra snowpack would not affect the Russian River, and runoff from the Russian River is not substantially dependent upon snowmelt. However, the Russian River watershed could experience an increased frequency and/or intensity of major storm events, including flood events. This change could lead to increased flood risks as more water flows into reservoirs and rivers during the winter rainy period. Increased temperatures would also lead to a rise in the sea level, from both thermal expansion and the melting of land-based glaciers.

During the past century, sea levels along the California coast have risen by approximately seven inches. Climate forecasts indicate the sea level would rise by 7 to 23 inches over the next 100 years, depending on the climate model. Substantial melting of either the Greenland or Antarctic ice sheets would lead to an even greater increase; however, IPCC models do not indicate that this would occur within the next 100 years, which is the boundary of most climate models. Longer forecast periods are inherently less reliable as they require more assumptions, and tend to compound the effects of assumptions that may be incorrect. Increases in sea level could lead to increased coastal flooding, salt water intrusion into aquifers, and disrupt wetlands and estuaries.

Wildfires

Increased temperatures would lead to increases in evapotranspiration. The summers would likely be drier, and vegetation would also be more likely to dry out, causing increasingly more flammable forests and wildlands. In addition, warmer temperatures could lead to the expansion of pests that kill and weaken trees, leading to increases in the amount of highly flammable dead trees, increasing the risk of large forest fires.

Weather Extremes

The temperature increases presented in climate change models are yearly averages. Within those averages is the potential for substantially hotter summers and/or colder winters. As a result of global climate change, the weather is expected to become more variable, with larger extremes. In California, the increase in temperatures is expected to lead to more days with temperatures in excess of 95 degrees. More days of extreme heat have implications for public health as Californians would face greater risk of death from dehydration, heat stroke/exhaustion, heart attack, stroke, and respiratory distress caused by extreme heat. In addition, increased temperatures have implications for agricultural crops, particularly long-term crops such as grapes and fruit trees that are planted in particular locations to take advantage of micro-climates.

Uncertainty Regarding Global Climate Change

The scientific community has largely agreed that the earth is warming, and that humans are contributing to that change. However, the earth's climate is composed of many complex mechanisms, including ocean currents, cloud cover, as well as the jet-stream and other pressure/temperature

weather guiding systems. These systems are in turn influenced by changes in ocean salinity, changes in the evapotranspiration of vegetation, the reflectivity (albedo) of groundcover, and numerous other factors. Some changes have the potential to reduce climate change, while others could form a feedback mechanism that would speed the warming process beyond what is currently projected. While the climate system is inherently dynamic, the overall consensus appears to be towards a gradually warming planet.

3.4.2 Existing Conditions

Given that the prevailing winds in the northern portion of Sonoma County serve to concentrate pollutants northward into narrow valleys, the air pollution potential of this area would be high if there were significant sources of pollution. However, with the exception of some processing of agricultural goods, such as cheese and wine manufacturing, there is little industry in the valleys and only minor local sources of air pollution.

Definitions

The following definitions are provided as background to the existing conditions discussion.

Ozone

Short-term exposure to ozone can irritate the eyes and cause constriction of the airways. Besides causing shortness of breath, ozone can aggravate existing respiratory diseases such as asthma, bronchitis, and emphysema.

Ozone, the main component of photochemical smog, is primarily a summer and fall pollution problem. Ozone is not emitted directly into the air but is formed through a complex series of chemical reactions involving other compounds that are directly emitted. These directly emitted pollutants (also known as ozone precursors) include reactive organic gases (ROG) and nitrogen oxides (NO_x). The time period required for ozone formation allows the reacting compounds to spread over a large area, producing a regional pollution problem. Ozone problems are the cumulative result of regional development patterns rather than the result of a few significant emission sources.

Once formed, ozone remains in the atmosphere for one or two days. Ozone is then eliminated through reaction with chemicals on the leaves of plants, attachment to water droplets as they fall to earth (“rainout”) and absorption by water molecules in clouds that later fall to earth with rain (“washout”).

Carbon Monoxide

Ambient carbon monoxide concentrations normally are considered a local effect and typically correspond closely to the spatial and temporal distributions of vehicular traffic. Wind speed and atmospheric mixing also influence carbon monoxide concentrations. Under inversion conditions, carbon monoxide concentrations may be distributed more uniformly over an area that may extend some distance from vehicular sources. When inhaled at high concentrations, carbon monoxide combines with hemoglobin in the blood and reduces the oxygen-carrying capacity of the blood. This results in reduced oxygen reaching the brain, heart, and other body tissues. This condition

is especially critical for people with cardiovascular diseases, chronic lung disease, or anemia, as well as for fetuses.

Carbon monoxide concentrations have declined dramatically in California due to existing controls and programs and most areas of the state, including the Station Area Plan region, have no problem meeting the carbon monoxide state and federal standards. CO measurements and modeling were important in the early 1980's when CO levels were regularly exceeded throughout California. In more recent years, CO measurements and modeling have not been a priority in most California air districts due to the retirement of older polluting vehicles, less emissions from new vehicles and improvements in fuels. The clear success in reducing CO levels is evident in the first paragraph of the executive summary of CARB's *2004 Revision to the California State Implementation Plan for Carbon Monoxide Updated Maintenance Plan for Ten Federal Planning Areas* (CARB, 2004), shown below:

“The dramatic reduction in carbon monoxide (CO) levels across California is one of the biggest success stories in air pollution control. CARB requirements for cleaner vehicles, equipment and fuels have cut peak CO levels in half since 1980, despite growth. All areas of the State designated as non-attainment for the federal 8-hour CO standard in 1991 now attain the standard, including the Los Angeles urbanized area. Even the Calexico area of Imperial County on the congested Mexican border had no violations of the federal CO standard in 2003. Only the South Coast and Calexico continue to violate the more protective State 8-hour CO standard, with declining levels beginning to approach that standard.”

Respirable Particulate Matter (PM10 and PM2.5)

Respirable Particulate Matter (PM10 and PM2.5) consist of particulate matter that is 10 microns or less in diameter and 2.5 microns or less in diameter, respectively. A micron is one-millionth of a meter. PM10 and PM2.5 represent fractions of particulate matter that can be inhaled into the air passages and the lungs and can cause adverse health effects. Some sources of particulate matter, such as wood burning in fireplaces, demolition, and construction activities, are more local in nature, while others, such as vehicular traffic, have a more regional effect. PM2.5 is mostly produced by combustion sources, such as automobiles, trucks, and other vehicle exhaust. In general, particulate matter from fugitive dust is primarily composed of PM10 with a relatively small fraction of PM2.5; alternatively, particulate matter from combustion sources is primarily composed of PM2.5 with a small fraction of PM10. Very small particles of certain substances (e.g., sulfates and nitrates) can cause lung damage directly, or can contain adsorbed gases (e.g., chlorides or ammonium) that may be injurious to health. Particulates also can damage materials and reduce visibility. Large dust particles (diameter greater than 10 microns) settle out rapidly and are easily filtered by human breathing passages. This large dust is of more concern as a soiling nuisance rather than a health hazard. The remaining fraction, PM10 and PM2.5, are a health concern particularly at levels above the federal and state ambient air quality standards. PM2.5 (including diesel exhaust particles) is thought to have greater effects on health, because these particles are so small and thus, are able to penetrate to the deepest parts of the lungs. Scientific studies have suggested links between fine particulate matter and numerous health problems including asthma, bronchitis, acute and chronic respiratory symptoms such as shortness of breath and painful breathing. Recent studies have shown

an association between morbidity and mortality and daily concentrations of particulate matter in the air. Children are more susceptible to the health risks of PM₁₀ and PM_{2.5} because their immune and respiratory systems are still developing.

Mortality studies since the 1990s have shown a statistically significant direct association between mortality (premature deaths) and daily concentrations of particulate matter in the air. Despite important gaps in scientific knowledge and continued reasons for some skepticism, a comprehensive evaluation of the research findings provides persuasive evidence that exposure to fine particulate air pollution has adverse effects on cardiopulmonary health (Dockery and Pope, 2006). CARB has estimated that achieving the ambient air quality standards for PM₁₀ could reduce premature mortality rates by 6,500 cases per year (CARB, 2002).

Nitrogen Dioxide

NO₂ is a reddish brown gas that is a by-product of combustion processes. Automobiles and industrial operations are the main sources of NO₂. Aside from its contribution to ozone formation, nitrogen dioxide can increase the risk of acute and chronic respiratory disease and reduce visibility. NO₂ may be visible as a coloring component of a brown cloud on high pollution days, especially in conjunction with high ozone levels.

Toxic Air Contaminants (TACs)

TACs are airborne substances that are capable of causing short-term (acute) and/or long-term (chronic or carcinogenic, i.e., cancer causing) adverse human health effects (i.e., injury or illness). TACs include both organic and inorganic chemical substances. They may be emitted from a variety of common sources including gasoline stations, automobiles, dry cleaners, industrial operations, and painting operations. The current California list of TACs includes approximately 200 compounds, including particulate emissions from diesel-fueled engines.

Diesel particulate matter (DPM) is the most complex of diesel emissions. Diesel particulates, as defined by most emission standards, are sampled from diluted and cooled exhaust gases. This definition includes both solids and liquid material that condenses during the dilution process. The basic fractions of DPM are elemental carbon, heavy hydrocarbons derived from the fuel and lubricating oil and hydrated sulfuric acid derived from the fuel sulfur. DPM contains a large portion of the polycyclic aromatic hydrocarbons (PAH) found in diesel exhaust. Diesel particulates include small nuclei mode particles of diameters below 0.04µm and their agglomerates of diameters up to 1µm. Ambient exposures to diesel particulates in California are significant fractions of total TAC levels in the State.

Odorous Emissions

Though offensive odors from stationary sources rarely cause any physical harm, they still remain unpleasant and can lead to public distress generating citizen complaints to local governments. The occurrence and severity of odor impacts depend on the nature, frequency, and intensity of the source, wind speed and direction, and the sensitivity of receptors.

Greenhouse Gases

Gases that trap heat in the atmosphere are referred to as GHGs because they capture heat radiated from the sun as it is reflected back into the atmosphere, similar to a greenhouse. The accumulation of GHGs has been implicated as a driving force for Global Climate Change. Definitions of climate change vary between and across regulatory authorities and the scientific community, but in general can be described as the changing of the earth's climate caused by natural fluctuations and the impact of human activities that alter the composition of the global atmosphere. Both natural processes and human activities emit GHGs.

The major concern is that increases in GHGs are causing Global Climate Change. Global Climate Change is a change in the average weather on earth that can be measured by wind patterns, storms, precipitation and temperature. Although there is disagreement as to the speed of global warming and the extent of the impacts attributable to human activities, the vast majority of the scientific community now agrees that there is a direct link between increased emission of GHGs and long-term global temperature. Potential global warming impacts in California may include, but are not limited to, loss in snow pack, sea level rise, more extreme heat days per year, more high ozone days, more large forest fires, and more drought years (CARB, 2009). Secondary effects are likely to include a global rise in sea level, impacts to agriculture, changes in disease vectors, and changes in habitat and biodiversity.

The accumulation of GHGs in the atmosphere regulates the earth's temperature; however, emissions from human activities such as electricity production and motor vehicles have elevated the concentration of GHGs in the atmosphere. This accumulation of GHGs has contributed to an increase in the temperature of the earth's atmosphere and contributed to Global Climate Change. The principal GHGs are carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), sulfur hexafluoride (SF₆), perfluorocarbons (PFCs), hydrofluorocarbons (HFCs), and water vapor (H₂O). Carbon dioxide is the reference gas for climate change because it gets the most attention and is considered the most important GHG. To account for the warming potential of GHGs, GHG emissions are often quantified and reported as CO₂ equivalents (CO₂E). The effects of GHG emission sources (i.e., individual projects) are reported in metric tons/year of CO₂E.

Existing Air Quality and Monitoring Data

The CARB and local air districts collect ambient air quality data through a network of air pollutant monitoring stations. **Table 3.4-4** provides a three-year summary of ambient concentrations of ozone, PM10, and carbon monoxide at monitoring stations in the site vicinity for the years 2005 to 2007.

**TABLE 3.4-4
AIR QUALITY DATA SUMMARY (2007–2009) FOR THE STUDY AREA**

Pollutant	Standard	Monitoring Data by Year		
		2007	2008	2009
Ozone – Healdsburg Municipal Airport Station				
Highest 1-hour average, ppm ^a		0.070	0.080	0.070
Days over State Standard	0.09	0	0	0
Highest 8-hour average, ppm ^a	0.075	0.067	0.065	0.063
Days over National Standard		0	0	0
Particulate Matter (PM10) – Cloverdale				
Highest 24-hour average, µg/m ³ ^a		29	81	24
Measured days above National Standard ^b	150	0	1	0
Measured days above State Standard ^b	50	0	0	0
Particulate Matter (PM2.5) - 5th St., Santa Rosa Station				
Highest 24-hour average, µg/m ³ ^a		32	30.8	29
Measured days above National Standard ^b	65	0	0	0
State Annual Average	12	7.6	NA	7.6
Carbon Monoxide – 5th St., Santa Rosa Station				
Highest 8-hour average, ppm ^a		1.71	1.49	1.34
Days over National Standard	9	0	0	0
Days over State Standard	9.0	0	0	0

NOTES:

a ppm = parts per million; µg/m³ = micrograms per cubic meter.

b Particulate is usually measured every sixth day (rather than continuously like the other pollutants). Measured days counts the days that a measurement was greater than the standard. Estimated days mathematically estimates how many days concentrations would be greater than the level of the standard had each day been monitored.

NA = Not Available

SOURCE: CARB, 2011

Data for ozone were collected at the Healdsburg Municipal Airport monitoring station, approximately four miles southwest of the site. Data for PM10 were collected at the monitoring station in Cloverdale. Both stations are in Sonoma County and within the North Coast Air Basin. The closest monitoring station to the site that monitors for carbon monoxide and PM2.5 is the Santa Rosa/5th Street monitoring station, approximately 22 miles south of the site. Although in Sonoma County, this station is in the San Francisco Bay Area Air Basin.

Sensitive Receptors

Some receptors are considered more sensitive than others to air pollutants. Reasons for greater sensitivity include pre-existing health problems, proximity to emissions source, or duration of exposure to air pollutants. Schools, hospitals and convalescent homes are considered to be relatively sensitive to poor air quality because children, elderly people and the infirm are more susceptible to respiratory infections and other air quality-related health problems than the general public. Residential areas are also sensitive to poor air quality because people usually stay home for extended periods of time. The nearest sensitive receptor to the project site is a residence approximately 250 feet away on Santana Drive. There are also residences located across Highway

101, the nearest being approximately 500 feet on Otto Boni Drive. The nearest school is located approximately 1,500 feet east of the project site on South Cloverdale Blvd.

3.4.3 References

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3.5 Biological Resources

This section identifies the biological resources that may be affected by the Proposed Action or alternatives. For the purposes of this section, project study area (PSA) refers to the project site defined in **Section 1.0**. The assessment of existing conditions and analysis of potential effects is based upon field surveys, a review of applicable databases, species literature, and technical reports. The general and site-specific profiles of biological resources contained herein provide the environmental baseline by which direct, indirect, and cumulative environmental effects are identified and measured in **Section 4.0**. In addition, a Biological Assessment (**Appendix D**) and Wetland Delineation (**Appendix O**) have been prepared for the Proposed Action (ESA, 2009a; ESA, 2009b).

3.5.1 Biological Setting

Regional Setting

The PSA is located west of the Russian River and in the northeastern portion of Sonoma County, California. This region is characterized by rolling hills with instances of steep, rugged slopes that are densely vegetated with native grasses, trees, and brush. Regional natural plant communities in the PSA include those that are common to the Central Franciscan subsection of the Northern California Coast Ranges, such as mixed oak, mixed conifer forest, and needlegrass grassland (Miles and Goudey, 1997). Climate is typically temperate and humid. Typical elevations within this ecological subsection range from 300 feet above sea level up to 6,175 feet at Big Signal Peak. Mean annual precipitation is approximately 35 to 110 inches. Mean annual temperature ranges from 40 to 58 degrees Fahrenheit (Miles and Goudey, 1997).

Project Study Area Setting

The PSA covers approximately 64.52 rural acres located in unincorporated Sonoma County. A small south portion of the PSA is within the City of Cloverdale's boundaries. The PSA is composed of six parcels: Assessor Parcel Numbers (APN) 116-310-039, 116-310-040, 116-310-035, 116-310-020, 116-310-079, and 116-310-005. Although a majority of the PSA is located outside of the limits of the City of Cloverdale, it is within the City's sphere of influence for the purposes of General Plan compliance. The PSA is situated immediately east of Highway 101, and is bordered by Asti Road to the west. Santana Drive runs parallel to the southern boundary of the PSA. The portion of the PSA northeast of the railroad tracks currently consists of grape vineyards, which are bordered to the east by Kelly Road and the Russian River. The portion of the PSA southwest of the railroad tracks currently consists of rural residences and pasture land. Surrounding land uses include the City of Cloverdale's wastewater treatment facility to the north, industrial warehouses and storage to the south, Highway 101, residential neighborhoods, and vineyards to the west, and open space (consisting of the Russian River corridor) to the east.

Elevation within the PSA ranges from 302 to 332 feet above mean sea level, sloping very gently in a southeasterly direction. Portions of Coyote Creek (channel I-2), a relatively permanent surface tributary, cross the southern portion of the PSA; the channel is a tributary to Porterfield Creek (channel I-1), which generally flows south between the parcels along the railroad and the Russian River.

Vegetative Communities and Wildlife Habitats

Vegetative communities are assemblages of plant species that occur together in the same area. They are defined by species composition and relative abundance. The vegetative community descriptions and nomenclature described in this section generally follow the classification system provided in Sawyer and Keeler-Wolf's *A Manual of California Vegetation* (1995) and Mayer and Laudenslayer's *A Guide to Wildlife Habitats of California* (1988). Non-native annual grassland and vineyard are the dominant upland habitat types in the PSA (**Figure 3.5-1** and **Table 3.5-1**).

**TABLE 3.5-1
WILDLIFE HABITATS WITHIN THE PROJECT STUDY AREA**

Habitat Type	Acres in PSA	Percent Composition of PSA
Urban/Developed	8.89	13.8%
Agricultural Lands: Vineyards	26.10	40.4%
Coast Live Oak Woodland	4.10	6.4%
Non-native Annual Grassland	22.59	35.0%
North Coast Riparian Scrub	1.37	2.1%
Seasonal Wetland	1.47	2.3%
Total	64.52	

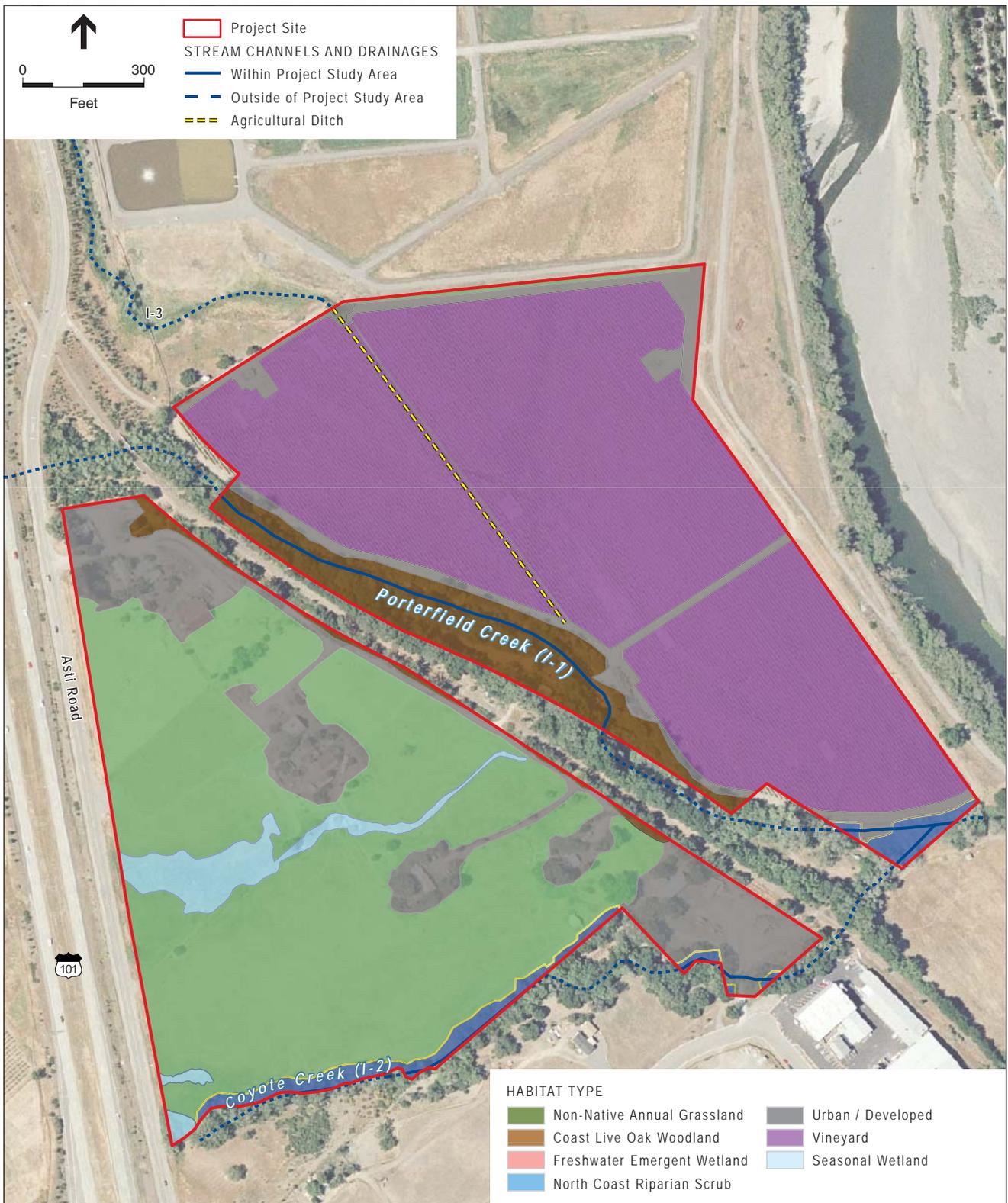
SOURCE: ESA, 2009

Upland Habitats

Urban/Developed

Urban habitats are those dominated by plant species introduced by humans and established or maintained by human disturbances or activities (Holland and Keil, 1990). Some are entirely artificial, such as areas influenced by urban or suburban landscaping or plantings. On such sites, the native vegetation has typically been removed by clearing in preparation for landscaping or development. Cleared areas that are planted with or colonized by non-indigenous plant species can create distinct communities dominated by annual grasses and forbs, shrubs, or trees. Some of these communities are only perpetuated with direct human intervention such as irrigation, weed control, or application of fertilizers, while others are capable of becoming naturalized. In some situations, introduced non-indigenous species invade native habitats, altering the composition of the native understory or canopy, or both. Within the PSA, urban habitats include roadways, buildings, and the areas around the residences, barns, horse paddocks, and corrals. There are six rural residences within the PSA.

Planted trees around the residences include tulip tree (*Liriodendron tulipifera*), coast redwood (*Sequoia sempervirens*), Monterey pine (*Pinus radiata*), English walnut (*Juglans regia*), flowering cherry (*Prunus cerasifera*), pear (*Pyrus communis*), peach (*Prunus persica*), persimmon (*Diospyros kaki*), olive (*Olea europaea*), and apple (*Malus* sp.). Ornamental shrubs include spiraea (*Spiraea* sp.), oleander (*Nerium oleander*), and rose (*Rosa* sp.). Ruderal non-native species present in disturbed areas around the horse paddocks and corrals include Italian thistle (*Carduus pycnocephalus*), rough pigweed (*Amaranthus retroflexus*), yellow star thistle, spiny cocklebur (*Xanthium spinosum*), horehound (*Marrubium vulgare*), and teasel (*Dipsacus sativus*).



SOURCE: GlobeExplorer, 2007; and ESA, 2011

Cloverdale Rancheria Resort Casino Project EIS . 207737

Figure 3.5-1
Habitat and Water Features

Native and introduced wildlife species that are tolerant of human activities often thrive in urban habitats. Urban land use components such as buildings and domestic landscaping provide habitat for some wildlife species. For example, common birds such as house finch (*Carpodacus mexicanus*) build their nests on structures, and less abundant species like black phoebe (*Sayornis nigricans*), cliff swallow (*Hirundo pyrrhonota*), and barn swallow (*Hirundo rustica*), also use buildings, especially near water. Common wildlife such as killdeer (*Charadrius vociferus*), American robin (*Turdus migratorius*), and American pipit (*Anthus rubescens*) are likely to use urban habitat. Mammals such as raccoon (*Procyon lotor*), Botta's pocket gopher (*Thomomys bottae*), Norway rat (*Rattus norvegicus*), and house mouse (*Mus musculus*) are common in urban habitats. Older farm structures, such as barns and stables, may also provide suitable roosting and maternity sites for bats, including pallid bat (*Antrozous pallidus*), Mexican free-tailed bat (*Tadarida brasiliensis*), and yuma myotis (*Myotis yumanensis*).

Agricultural Lands: Vineyards

Vineyards are composed of a grapes planted in rows usually supported on wood and wire trellises. Vines are normally intertwined in the rows but open between rows. The understory in vineyards are usually sprayed with herbicides to prevent growth of herbaceous plants, but may contain a diverse weedy flora consisting of Bermuda grass (*Cynodon dactylon*), wild oats (*Avena fatuca*), Johnson grass, annual ryegrass (*Lolium multiflorum*), barnyard grass (*Echinochloa crusgalli*), field mustard (*Brassica rapa*), fiddleneck (*Amsinckia menziesii* var. *intermedia*), and filaree. Vineyards have been planted on deep fertile soils which once supported productive and diverse natural habitats. Vineyards occur within the eastern section of the PSA adjacent to the Russian River.

Vineyards and other agricultural lands generally occur in areas that once supported productive and diverse biological communities. The conversion of native vegetation to agricultural lands has greatly reduced the wildlife species diversity and habitat value. However, some common and agricultural "pest" species forage in these habitats, and cultivated vegetation can provide benefits such as cover, shade, and moisture for these and other species during hot summer months. Wildlife such as deer and rabbits may browse on the vines and other wildlife such as squirrels and numerous birds may feed on the fruit. Some wildlife may use the vines as nesting habitat such as mourning dove (*Zenaida macroura*). Vineyards are not considered suitable foraging habitat for most raptors. Typical species found in agricultural lands include American crow (*Corvus brachyrhynchos*), Brewer's blackbird (*Euphagus cyanocephalus*), house finch, California ground squirrel (*Spermophilus beecheyi*), and western harvest mouse (*Reithrodontomys megalotis*), among others.

Coast Live Oak Woodland

Coast live oak woodland is typically found on north-facing slopes and shaded ravines in the southern and inland portions of the State and on more exposed, mesic sites in the north. This community is dominated by coast live oak, which frequently occurs in pure, dense stands with a closed canopy. Coast live oak woodland is restricted primarily to the coast side of the State and is distributed from Sonoma County to Baja California. It occurs throughout the outer South Coast ranges and coastal slopes of the Transverse and Peninsular ranges, usually below 4,000 feet in elevation. Coastal live oak woodlands are extremely variable. The overstory consists of deciduous and evergreen hardwoods. From Sonoma County south, the coastal oak woodlands are usually dominated by coast live oak (*Quercus agrifolia*). In many coastal regions, coast live oak is the only overstory species. In mesic sites, trees characteristic of mixed evergreen forests mix with coast live oak,

such as California bay (*Umbellularia californica*), madrone (*Arbutus menziesii*), tanbark oak (*Lithocarpus densiflorus*), and canyon live oak (*Quercus chrysolepis*). Typical plants in dense coast live oak woodlands are shade tolerant shrubs such as California blackberry (*Rubus ursinus*), common snowberry (*Symphoricarpos albus*), toyon (*Heteromeles arbutifolia*), and herbaceous plants such as bracken fern (*Pteridium aquilinum*), California polypody (*Polypodium californicum*), fiesta flower (*Pholistoma auritum*), and miner's lettuce (*Claytonia perfoliata*). Within the PSA, coast live oak woodland is present in a narrow band along the northern and eastern boundary of the PSA. This habitat is dominated by coast live oak, with scattered California bay and California buckeye (*Aesculus californica*). Native shrub species commonly found include toyon, and poison oak (*Toxicodendron diversilobum*), among others.

Coastal oak woodlands provide habitat for a variety of wildlife species. California quail (*Callipepla californica*), wild turkeys (*Meleagris gallopavo*), squirrels, and deer may be so dependent on acorns in fall and early winter that poor acorn year can result in significant declines in their populations. The vegetation within coastal oak woodland represents suitable nesting habitat for raptors, including red-shouldered hawk (*Buteo lineatus*) and Cooper's hawk (*Accipiter cooperii*), and migratory birds that may forage in adjacent annual grasslands.

Non-Native Annual Grassland

Non-native annual grassland is generally found in open areas in valleys and foothills throughout coastal and interior California. It typically occurs on soils consisting of fine-textured loams or clays that are somewhat poorly drained. This vegetation type is dominated by non-native annual grasses and weedy annual and perennial forbs, primarily of Mediterranean origin, that have replaced native perennial grasslands, scrub and woodland as a result of human disturbance. Scattered native wildflowers and grasses, representing remnants of the original vegetation may also be common.

Within the PSA, non-native annual grassland is present in the pastures that are used for livestock grazing (e.g., horses). Barbed wire fences and gates surround and bisect these pastures. Characteristic non-native annual grasses commonly found within the PSA include wild oats (*Avena fatua*), soft chess (*Bromus hordeaceus*), ripgut brome (*Bromus diandrus*), Mediterranean barley (*Hordeum marinum* ssp. *gussoneanum*), hare barley (*Hordeum murinum* ssp. *leporinum*), big quaking grass (*Briza maxima*), Italian ryegrass (*Lolium multiflorum*), medusa-head (*Taeniatherum caput-medusae*), hedgehog dogtail (*Cynosurus echinatus*), nit grass (*Gastridium ventricosum*), and rattail fescue (*Vulpia myuros*), among others. Common nonnative forbs include English plantain (*Plantago lanceolata*), field bindweed (*Convolvulus arvensis*), fiddle dock (*Rumex pulcher*), Italian thistle (*Carduus pycnocephalus*), yellow star thistle (*Centaurea solstitialis*), bristly ox-tongue (*Picris echioides*), little hop clover (*Trifolium dubium*), birdfoot trefoil (*Lotus corniculatus*), and red-stemmed filaree (*Erodium cicutarium*), among others. Non-native Himalayan blackberry (*Rubus discolor*) is also present within the PSA. Despite the dominance of non-native annual grasses and forbs, native plant species are also present in the grasslands. These native species include Fitch's spikeweed (*Centromadia fitchii*), hayfield tarweed (*Hemizonia congesta* ssp. *luzulifolia*), and Spanish-clover (*Lotus purshianus*), among others. Native shrubs, including coyote brush (*Baccharis pilularis*) and poison oak, are scattered throughout the non-native grassland but not in sufficient

densities to be considered a distinct vegetation community. As described previously, the majority of the non-native grassland within the PSA is subject to livestock grazing.

Many wildlife species use grasslands for foraging, but some require special habitat features such as cliffs, caves, ponds, fence posts, or habitats with woody plants for breeding, resting, and cover. Characteristic reptiles that breed in grasslands include the western fence lizard (*Sceloporus occidentalis*), common garter snake (*Thamnophis sirtalis*) and western rattlesnake (*Crotalus viridis helleri*). Mammals typically found in this habitat include the black-tailed jackrabbit (*Lepus californicus*), California ground squirrel (*Spermophilus beecheyi*), Botta's pocket gopher, western harvest mouse, California vole (*Microtus californicus*), and coyote (*Canis latrans*). Birds known to breed in annual grasslands include western burrowing owl (*Athene cunicularia hypugaea*), horned lark (*Eremophila alpestris*), and western meadowlark (*Sturnella neglecta*). This habitat also provides important foraging habitat for turkey vulture (*Cathartes aura*), red-tailed hawk (*Buteo jamaicensis*), white-tailed kite (*Elanus leucurus*), and American kestrel (*Falco sparverius*).

North Coast Riparian Scrub

North coast riparian scrub is typically comprised of several species of willow (*Salix* spp.) and other fast-growing shrubs and vines that form open to impenetrable thickets along stream banks. This plant community occurs on sand and gravel bars along streams within the coastal fog incursion zone from Sonoma County into Oregon, usually below 1,000 feet in elevation. North coast riparian scrub is generally considered early "seral," meaning that it typically precedes the development of other riparian woodland or forest communities in the absence of severe flooding. This broad-leaved deciduous riparian community is typically dominated by California blackberry (*Rubus ursinus*), coyote brush (*Baccharis pilularis*), golden yarrow (*Eriophyllum confertiflorum*), toyon, and arroyo willow (*Salix lasiolepis*).

Within the PSA, North Coast riparian scrub is present along Coyote Creek (channel I-2). Dominant overstory species include red willow (*Salix laevigata*), arroyo willow, shining willow (*Salix lucida* ssp. *lasiandra*), valley oak (*Quercus lobata*), coast live oak, California buckeye, box elder (*Acer negundo*), Oregon ash (*Fraxinus latifolia*) and California bay. The understory consists of native species such as mugwort (*Artemisia douglasiana*), willow-herb (*Epilobium ciliatum* ssp. *ciliatum*), poison oak, and coyote brush, among others. Non-native understory species include klamathweed (*Hypericum perforatum*) and Himalayan blackberry, among others.

Riparian habitat is generally of high value for wildlife. Birds that are typical inhabit these areas include Anna's (*Calypte anna*) and Allen's (*Selasphorus sasin*) hummingbirds, western kingbird (*Tyrannus verticalis*), Bewick's wren (*Thryomanes bewickii*), California quail, Nuttall's white-crowned sparrow (*Zonotrichia leucophrys nuttalli*), wild turkey (*Meleagris gallopavo*), screech owl (*Megascops kennicottii*), and red-tailed hawk. Mammals that occur in these areas typically include white-tailed deer (*Odocoileus virginianus*), coyote, opossum (*Didelphis virginiana*), striped skunk (*Mephitis mephitis*), beaver (*Castor canadensis*), and western gray squirrel (*Sciurus carolinensis*). Other wildlife species may include, western fence lizard, California slender salamander (*Batrachoseps attenuatus*), and western alligator lizard (*Elgaria coerulea*).

Wetlands and Other Waters of the U.S.

Regulated wetlands and other waters of the U.S. are subject to jurisdiction under Section 404 of the Clean Water Act. Wetlands are ecologically complex habitats that support a variety of both plant and animal life. The federal government defines wetlands in Section 404 of the Clean Water Act as “areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support (and do support, under normal circumstances) a prevalence of vegetation typically adapted for life in saturated soil conditions” (33 CFR 328.3[b] and 40 CFR 230.3). The U.S. Army Corps of Engineers (USACE) is the agency responsible for regulating wetlands under Section 404 of the Clean Water Act, while the EPA has overall responsibility for the Act. Under normal circumstances, the federal definition of wetlands requires three wetland parameters be present: wetland hydrology, hydric soils, and hydrophytic vegetation. Examples of jurisdictional wetlands include freshwater marsh, seasonal wetlands, and vernal pool complexes that have a significant ecological link to navigable waterways. “Other waters of the U.S.” refer to those hydric features that are regulated by the Clean Water Act but are not wetlands (33 CFR 328.4). To be considered jurisdictional, these features must exhibit a defined bed and bank, an ordinary high-water mark, and are tributary to a navigable waterway. Examples of other waters of the U.S. may include rivers, creeks, intermittent channels, ponds, and lakes that meet the jurisdictional criteria.

A Wetland Delineation has been prepared in accordance with the 1987 “Corps of Engineers Wetlands Delineation Manual” and the “Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region” (ESA, 2009b). The delineation was submitted to the USACE for verification. The wetland delineation map was verified by the USACE in December of 2009 (Appendix O). The USACE jurisdictional features identified by the delineation within the PSA are summarized in **Table 3.5-2**. These features include relatively permanent waters, freshwater emergent wetland, and seasonal wetland. They are described in greater detail below.

Riverine (Relatively Permanent Waters)

There are two intermittent stream channels that flow through the PSA. Both channels meet the definition of being “relatively permanent waters” by the USACE and EPA; that is, they have continuous seasonal flow for at least three months per year. Porterfield Creek (I-1) flows south between the proposed trust parcels and along the railroad; it then meanders east along the southern boundary of the eastern portion of the PSA. Porterfield Creek has an average width of 11.2 feet. Immediately south of the PSA at the downstream portion, and prior to its terminus at the Russian River approximately 500 feet south east of the PSA, Porterfield Creek it is characterized by a mature riparian corridor.

**TABLE 3.5-2
USACE JURISDICTIONAL FEATURES WITHIN THE PROJECT STUDY AREA**

Map ID	Type of Jurisdictional Feature	Average Width (feet)	Linear Feet	Acres
Relatively Permanent Waters				
	Porterfield Creek (I-1)	11.2	1,462	0.45
	Coyote Creek (I-2)	4.6	545	0.05
	Agricultural Ditch	2.0	972	0.04
Wetlands				
	Seasonal Wetland			1.47
Total area of potential jurisdictional features:				2.01

SOURCE: ESA, 2009

Coyote Creek (I-2), a tributary to Porterfield Creek, flows along the southern boundary of the western portion of the PSA. Channel I-2 has an average width of 7.6-feet and is comprised of well-developed over- and understory growth with infrequent openings. The stream banks vary from gently sloping to steeply incised with dense bank vegetation, exposed roots, and areas of active erosion. The main channel is comprised of a low-grade riffle, run, and pool complexes with a limited number of shallow to moderately deep pools up to one foot in depth. The main channel contains root wads, small woody debris, and overhanging vegetation. Overall the substrate is silty with scattered gravel to cobble-sized rocks. This reach of creek provides moderate quality habitat for aquatic flora and fauna, and exhibits few adverse effects due to human activities.

Heron Creek (channel I-3) enters the eastern portion of the PSA from the north. Channel I-3 is strongly influenced by storm drain flows from Highway 101. Due to recent off-site road work associated with Highway 101 and Asti Road, the drainage patterns associated with I-3 have been altered approximately 500-feet north west of the PSA before entering the project at the northern boundary (**Figure 3.5-1**).

Upon entering the PSA, water from this channel flows into a north-to-south excavated channel (agricultural ditch) located centrally in the vineyard. When the agricultural ditch fills with water, it then spreads across the PSA through sheet flow. Near the southern boundary of the vineyard, the channel begins to diminish with no apparent surface connection to Porterfield Creek. The ditch is maintained for agricultural purposes and no aquatic vegetation was present during the Winter 2009 site visit.

The channels on the site provide riverine habitat for wildlife. The Russian River also provides riverine habitat as it flows south, immediately east of the PSA. The open water zones of large rivers provide resting and escape cover for many species of waterfowl. Gulls (*Larus* spp.), terns (*Sterna* spp.), osprey (*Pandion haliaetus*) and bald eagle (*Haliaeetus leucocapalus*) hunt in open water. Near-shore waters provide food for waterfowl, herons, shorebirds, belted kingfisher (*Megaceryle alcyon*) and American dipper (*Cinclus mexicanus*). Many species of insectivorous birds (swallows, swifts, flycatchers) hawk their prey over water. Some of the more common mammals found in riverine habitats include Northern river otter (*Lontra canadensis*), mink (*Mustela vison*), common muskrat

(*Ondatra zibethicus*), and beaver. Native anadromous salmonids, including steelhead (*Oncorhynchus mykiss*), spawn and rear in the Russian River and its associated tributaries.

Freshwater Emergent Wetland

Freshwater emergent wetland typically occurs in low-lying sites that are permanently flooded with fresh water and lacking significant current. This plant community is found on nutrient-rich mineral soils that are saturated for all or most of the year. Freshwater marsh is most extensive where surface flow is slow or stagnant or where a shallow water table saturates the soil from below. Freshwater emergent wetland is distributed along the coast and in coastal valleys near river mouths and around the margins of lakes, springs, and streams (Holland, 1986). This vegetation community characteristically forms a dense vegetative cover dominated by perennial, emergent monocots 1 to 15 feet high that reproduce by underground rhizomes. The vegetation may vary in size from small clumps to vast areas covering several kilometers. On the upper margins of this habitat, saturated or periodically flooded soils support several moist soil plant species including big-leaf sedge, Baltic rush, redroot nutgrass, and on more alkali sites, saltgrass (*Distichlis spicata*). On wetter sites, common cattail (*Typha latifolia*), tule bulrush (*Scirpus acutus*), river bulrush (*Scirpus fluviatilis*), and arrowhead (*Sagittaria* spp.) are potential dominant species. The upland limit of fresh emergent wetlands and deep water habitats is the deep water edge of the emergent vegetation. It is generally accepted that the demarcation is at or above the 2 meter (6.6 ft) depth to which emergent wetland plants normally grow.

Freshwater emergent wetland habitat is not located within the PSA, but is located immediately south of the PSA adjacent with channel I-2. Freshwater emergent wetland is restricted to an opening in the North Coast riparian scrub canopy at the upstream end of channel I-2. Aquatic plant species recorded here include umbrella sedge (*Cyperus eragrostis*), narrow-leaved cattail (*Typha angustifolia*), low bulrush (*Scirpus cernuus*), punctuate smartweed (*Polygonum punctatum*), watercress (*Nasturtium officinale*), whorled dock (*Rumex conglomeratus*), dallis grass (*Paspalum dilatatum*), and pennyroyal (*Mentha pulegium*), among others.

Freshwater emergent wetlands are among the most productive wildlife habitats in California. They provide food, cover, and water for more than 160 species of birds, and numerous mammals, reptiles and amphibians. Many species rely on fresh emergent wetlands for their entire life cycle. Many wildlife species are dependent on wetland habitats for foraging, nesting, and cover. Slow-moving waters provide important resting and foraging habitats for migratory water birds such as the Canada goose, mallard, and cinnamon teal. The bald eagle and peregrine falcon (*Falco peregrinus*) use freshwater emergent wetlands as feeding areas and roost sites. Wetlands also provide habitat for the American coot (*Fulica americana*), great blue heron (*Ardea herodias*), great egret (*Ardea alba*), and black phoebe.

Seasonal Wetland

Seasonal wetlands are relatively shallow topographic depressions that pond for a short duration, support a fairly low diversity of plant species, and tend to support species with a high tolerance for disturbance. Seasonal wetlands are freshwater wetlands that support ponded or saturated soil conditions during winter and spring and are dry through the summer and fall. Seasonal wetlands are defined by a hydrologic regime that is dominated by saturation, rather than inundation. Seasonal

wetlands inundate for short periods of time following a storm event but the primary hydrologic regime is one of saturation. Vegetation is characterized by species of annual and perennial, native and non-native grasses and forbs that begin their growth as aquatic or semi-aquatic plants, typically resembling a wetland community, that make a transition to a dry-land environment as the pool dries. Wetland plant species that are either low-growing, tenacious perennials that tolerate disturbance or annuals that tolerate seasonal wetness often colonize seasonal wetlands. Upland grasses and forbs can become established while wetland species desiccate. Although seasonal wetlands and vernal pools share similar hydrologic characteristics, species composition of seasonal wetlands is typically more ruderal in nature. Therefore, seasonal wetlands are not considered vernal pools, which support a more specialized and less common native flora.

Within the PSA, seasonal wetlands are distributed in topographic depressions throughout the non-native annual grasslands (pastures). Plant species found within seasonal wetlands are adapted to withstand short periods of inundation, but will not withstand long periods of inundation. Herbaceous plant species present in seasonal wetlands within the PSA include pennyroyal, fiddle dock (*Rumex pulcher*), birdfoot trefoil (*Lotus corniculatus*), rabbitsfoot grass (*Polypogon monspeliensis*), and Mediterranean barley.

Sensitive Habitats

For the purpose of this EIS, sensitive habitats include a) areas of special concern to federal, state, or local resource agencies, b) areas regulated under Section 404 of the federal Clean Water Act, c) areas protected under Section 402 of the Clean Water Act, and d) areas protected under state and local regulations and policies. Four communities recognized by the California Department of Fish and Game (CDFG) as sensitive occur within general vicinity of the PSA (CDFG, 2008): (1) Clear Lake Drainage Cyprinid/Catostomid Stream, (2) Clear Lake Drainage Resident Trout Stream, (3) Clear Lake Drainage Seasonal Lakefish Spawning Stream, and (4) Northern Volcanic Ash Vernal Pool; however, these do not occur within the PSA.

Riparian habitats are considered by state and federal regulatory agencies to represent a sensitive and declining resource. Riparian areas and wetlands can serve significant biological functions by providing nesting, breeding, foraging, and spawning habitat for a wide variety of resident and migratory wildlife species. As described previously, impacts to stream channels with a defined bed and bank may be regulated under Section 404 of the Clean Water Act. The USACE regulates dredging and placement of fill into waters of the U.S., including wetlands, with oversight of permitting decisions by the U.S. Environmental Protection Agency (EPA). The U.S. Fish and Wildlife Service (USFWS) and the National Oceanic and Atmospheric Administration, Fisheries Service (NOAA Fisheries) have input on permitting decisions by the USACE when an activity could affect federally-listed species.

Wildlife Corridors

Wildlife corridors refer to established migration routes commonly used by resident and migratory species for passage from one geographic location to another. Corridors are present in a variety of habitats and link otherwise fragmented acres of undisturbed area. Maintaining the continuity of established wildlife corridors is important to a) sustain species with specific foraging requirements,

b) preserve a species' distribution potential, and c) retain diversity among many wildlife populations. Therefore, resource agencies consider wildlife corridors to be a sensitive resource.

Habitat loss, fragmentation, and degradation resulting from a change in land use or habitat conversion can alter the use and viability of wildlife movement corridors. According to Beier and Loe (1992), wildlife habitat corridors should fulfill several functions. They should maintain connectivity for daily movement, travel, mate-seeking, and migration; plant propagation; genetic interchange; population movement in response to environmental change or natural disaster; and recolonization of habitats subject to local extirpation.

The suitability of a habitat as a wildlife movement corridor is related to, among other factors, the habitat corridor's dimensions (length and width), topography, vegetation, exposure to human influence, and the species in question (Beier and Loe, 1992). Species utilize movement corridors in several ways. "Passage species" are those species that use corridors as thru-ways between outlying habitats. The habitat requirements for passage species are generally less than those for corridor dwellers. Passage species use corridors for brief durations, such as for seasonal migrations or movement within a home range. As such, movement corridors do not necessarily have to meet all of the habitat requirements necessary for a passage species' everyday survival. Large herbivores (*e.g.*, deer and elk) and medium-to-large carnivores (*e.g.*, coyotes and mountain lions) are typically passage species. "Corridor dwellers" are those species that have limited dispersal capabilities, a category that includes most plants, insects, reptiles, amphibians, small mammals, and birds, and that use corridors for a greater length of time. As such, wildlife movement corridors must fulfill key habitat components specific to a species' life history requirements in order for them to survive (Beier and Noss, 1998). In general, however, the suitability and/or utility of the landscape, specifically, of the landscape as corridor habitat, is best evaluated on a species-level (Beier and Noss, 1998).

The riparian corridor along channel I-2 (Coyote Creek) on the southern boundary provides suitable habitat for resident wildlife, but does not provide large-scale migratory movement, and/or dispersal for common and rare fish and wildlife species based on its failure to provide connectivity between habitats due to its termination at Highway 101. The overall value of the project site as a wildlife movement corridor is limited by Highway 101 along the entire western boundary and the industrial land use to the south. Much of the surrounding land use with the exception of Porterfield Creek and the Russian River to the east are developed or have been converted for use as agricultural crops or light industry. Based on the surrounding land use and lack of valuable habitat onsite, the PSA does not function as a wildlife movement corridor or contain established migratory routes.

3.5.2 Regulatory Setting

The PSA falls within the general geographic range of a number of "special-status" plants and wildlife. In this assessment, special-status species are those species that are federally listed as threatened or endangered, proposed for listing as threatened or endangered, or candidates for listing. Special-status species also includes those species considered by State or local resource agencies or conservation groups, such as the California Department of Fish and Game (CDFG) and California Native Plant Society (CNPS), as being rare or in decline. An endangered plant or wildlife species

is one that is considered in danger of becoming extinct throughout all or a significant portion of its range. A threatened species is one that is likely to become endangered within the foreseeable future. Species that have been proposed for listing are in the process of being listed. Candidate species are those for which the USFWS currently has enough information to support a proposal for listing but has not yet done so. Species on this list receive special attention from federal and state agencies during environmental review, but they are not otherwise protected under the Federal Endangered Species Act (FESA). Species have also been listed by the State of California as threatened, endangered or fully protected (from take), while CDFG has identified species of special concern (those species that may be rare or in decline). Finally, CNPS also maintains a list of plant species that may be rare, regionally unique, or in decline.

Federal Endangered Species Act

The USFWS and NOAA Fisheries has jurisdiction over species that are formally listed as threatened, endangered, or proposed under FESA. The primary protective requirement in the case of projects requiring federal permits, authorizations, or funding, is the FESA Section 7 requirement for federal lead agencies to consult (or “confer” in the case of proposed species or proposed critical habitat) with the USFWS and NOAA Fisheries to ensure that their actions do not jeopardize the continued existence of threatened or endangered species. In addition to Section 7 requirements, Section 9 of the FESA protects listed wildlife species from “take”. Take is broadly defined as those activities that “harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect [a protected species], or attempt to engage in any such conduct.” An activity can be in violation of take prohibitions even if the activity is unintentional or accidental. Significant modification or degradation of the habitats of listed species, or activities that prevent or significantly impair essential behavioral patterns, including breeding, feeding, or sheltering, are also considered “take” under the FESA and are regulated by the USFWS.

Migratory Bird Treaty Act and Bald and Golden Eagle Protection Act

The Migratory Bird Treaty Act (MBTA, 16 USC Section 703-711) and the Bald and Golden Eagle Protection Act (16 USC Section 668) protect certain species of birds from direct take. The MBTA protects migrant bird species from take through setting hunting limits and seasons and protecting occupied nests and eggs. The Bald and Golden Eagle Protection Act prohibits the take or commerce of any part of these species. The USFWS administers both acts, and reviews federal agency actions that may affect species protected by the acts.

Critical Habitat Designations

The USFWS designates critical habitat for federally-listed species to ensure habitat that is critical to species long-term survival is conserved. Within the region, critical habitat has been identified for Central California Coast Coho salmon, California Coastal Chinook salmon, and Central California Coastal steelhead.

Central California Coast Coho Salmon Critical Habitat

The Central California Coast Coho Salmon Evolutionarily Significant Unit (ESU) was listed as threatened on October 31, 1996 (61 FR 56138), and later downgraded to endangered status on June 28, 2005. On May 5, 1999, NOAA Fisheries designated critical habitat for the California

Coast Coho Salmon ESU. Designated critical habitat consists of all river reaches accessible to listed coho salmon from Punta Gorda in northern California south to the San Lorenzo River in central California, including Mill Valley (Arroyo Corte Madera Del Presidio) and Corte Madera Creek's tributaries to San Francisco Bay. Areas above specific dams or above longstanding, naturally impassable barriers (i.e., natural waterfalls in existence for at least several hundred years) are excluded. The PSA is located within designated critical habitat for the Central California Coast Coho Salmon ESU.

California Coastal Chinook Salmon Critical Habitat

The California Coastal Chinook Salmon ESU was listed as threatened on September 16, 1999, and reconfirmed on June 28th, 2005. Critical habitat was designated for this population on September 2, 2005, with an effective date of January 2, 2006. The ESU includes all naturally spawned populations of chinook salmon from rivers and streams south of the Klamath River to the Russian River in California. The PSA is located within designated critical habitat for the California Coastal Chinook Salmon ESU.

Central California Coastal Steelhead Critical Habitat

The Central California Coastal Steelhead Salmon ESU was listed as threatened on August 18, 1997, with threatened status reaffirmed on January 5, 2006. A final designation for critical habitat was published on September 2, 2005, with an effective date of January 2, 2006. The ESU includes all naturally spawned populations of steelhead (and their progeny) in California streams from the Russian River to Aptos Creek, and the drainages of San Francisco and San Pablo Bays eastward to the Napa River (inclusive), excluding the Sacramento-San Joaquin River Basin. The PSA is located within designated critical habitat for the Central California Coastal Steelhead ESU.

Essential Fish Habitat

Public Law 104-297, the Sustainable Fisheries Act of 1996, amended the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) to establish new requirements for Essential Fish Habitat (EFH) descriptions in federal Fisheries Management Plans and to require federal agencies to consult with NOAA Fisheries on activities that may adversely affect EFH. The Magnuson-Stevens Act requires all fishery management councils to amend their Fishery Management Plans (FMPs) to describe and identify EFH for each managed fishery. The Act also requires consultation for all federal agency actions that may adversely affect EFH (i.e., direct and indirect effects). It does not distinguish between actions in EFH and actions outside EFH. Any reasonable attempt to encourage the conservation of EFH must take into account actions that occur outside of EFH, such as upstream and upslope activities that may have an adverse effect on EFH. Therefore, EFH consultation with NOAA Fisheries is required by federal agencies undertaking, permitting, or funding activities that may adversely affect EFH, regardless of the activity's location. Under section 305(b)(4) of the Magnuson-Stevens Act, NOAA Fisheries is required to provide EFH conservation and enhancement recommendations to federal and state agencies for actions that adversely affect EFH. However, state agencies and private parties are not required to consult with NOAA Fisheries unless state or private actions require a federal permit or receive federal funding. EFH is managed under the FMPs as directed under the Magnuson-Stevens Fishery

Conservation and Management Act. Based on the proposed project location, the Pacific Coast Chinook Salmon EFH will be analyzed for potential effects.

3.5.3 Potentially Affected Species and Habitats

Methodology

A list of special-status plant and wildlife species that have the potential to occur within the vicinity of the PSA was compiled based on a background information search for previously documented special-status species within the project vicinity. The California Natural Diversity Database (CNDDDB) Rarefind program (CDFG, 2008) and the USFWS online list (USFWS, 2009) were queried for the *Cloverdale, Asti Yorkville, Hopland, Highland Springs, Big Foot Mountain, Tombs Creek, Warm Springs Dam, and Geyersville, California* 7.5-minute quadrangles (**Appendix E**). Each special-status species identified within the database searches as being potentially affected by the Proposed Action has been addressed individually in **Table 3.5-3**. Conclusions regarding habitat suitability and species occurrence are based on a reconnaissance-level assessment conducted by ESA biologists in the Spring of 2008 and Winter of 2009, as well as existing literature and databases described previously. No special-status plant species were found to have the potential to occur within or adjacent to the PSA.

Federally-Listed Species

Based on a review of special-status fish and wildlife species in the *Cloverdale* 7.5-minute quadrangle and surrounding quadrangles (USFWS, 2009), a total of 10 federally listed fish and wildlife species have the potential to occur within the project region. However, no federally listed wildlife species have been recorded in the CNDDDB within ten miles of the PSA (CDFG, 2009).

Based upon database searches for federally listed wildlife and habitat suitability within the PSA, ESA identified three special-status fish species that have the potential to occur within and/or adjacent to the PSA (Russian River) including Central California coast coho salmon (*Oncorhynchus kisutch*) California coastal Chinook salmon (*Oncorhynchus tshawytscha*), Central California Coastal steelhead (*Oncorhynchus mykiss*). The Tribe and BIA have been conducting informal Section 7 consultation with NOAA Fisheries regarding potential effects to California coastal Chinook salmon, Central Valley Coastal steelhead, and Central Valley coast coho salmon. A site visit was conducted on February 22nd, 2011 with NOAA Fisheries and ESA's fisheries biologist to review the project location and the existing stream channel habitats. Informal consultation regarding potential effects to federally listed USFWS species was completed on November 30th, 2009, with the appropriate USFWS letter included within **Appendix P**. Informal consultation regarding potential effects to federally listed NOAA Fisheries species was completed on July 18th, 2011, with the appropriate NOAA Fisheries letter included within **Appendix P**.

**TABLE 3.5-3
LIST OF POTENTIALLY AFFECTED SPECIES**

Species	Status		Suitable Habitat	Potential for Project to Effect
	Federal/	State/ CNPS		
Invertebrates				
<i>Syncaris pacifica</i> California freshwater shrimp	FE/--/--		Occurs in 17 stream segments within Marin, Napa and Sonoma counties. Documented occurrence in Franz Creek (Russian River tributary) east of Healdsburg. Low-gradient stream pool areas of low-elevation, living among exposed live tree roots.	No effect. No suitable habitat within project area. Project site likely outside of current known range.
Fish				
<i>Eucyclogobius newberryi</i> Tidewater goby	FE/--/--		Brackish lagoons formed by sandbars where streams feed into the ocean.	No effect. No suitable habitat within the project area.
<i>Hypomesus transpacificus</i> Delta smelt	FT/ST/--		Only in the Sacramento-San Joaquin Delta.	No effect. Project area is not within the range of species.
<i>Oncorhynchus mykiss</i> Central Valley steelhead	FT/--/--		Spawning in the Sacramento and San Joaquin Rivers and associated tributaries.	No effect. Project occurs within Russian River Watershed which is not within the range of species.
<i>Oncorhynchus tshawytscha</i> California Coastal chinook salmon	FT/ST/--		Northern California coastal streams where suitable spawning and rearing habitat occurs.	May effect. Only hatchery stock with no recent accounts of wild stock occurrences in the watershed. Most likely extirpated from Russian River.
<i>Oncorhynchus mykiss</i> Central California Coastal steelhead	FT/--/--		Northern California coastal streams where suitable spawning and rearing habitat occurs.	May effect. Within ESU for species. Lower reaches of Porterfield Creek may provide suitable rearing habitat. Potential downstream water quality effects.
<i>Oncorhynchus kisutch</i> Central California Coast coho salmon	FE/SE/--		Northern California coastal streams where suitable spawning and rearing habitat occurs from Punta Gorda south to the San Lorenza River.	May effect. Within ESU for species. Lower reaches of Porterfield Creek may provide suitable rearing habitat. Potential downstream water quality effects.
Reptiles				
<i>Actinemys marmorata marmorata</i> Northwestern Pond Turtle	--/SC/--		Rivers and streams with some canopy cover.	May effect. Suitable habitat within the project area occurs in Coyote Creek and lower reaches of Porterfield Creek.
Amphibians				
<i>Rana aurora draytonii</i> California red-legged frog	FT/--/--		Occurs in a broad range of freshwater and associated upland habitats throughout the Coast Range, Sierra Nevada and foothills, often found in perennial to seasonal drainages with dense vegetation	No effect. Outside of known range of species. USFWS NLAA letter included as Appendix P.
<i>Rana boylei</i> Foothill yellow-legged frog	--/SC/--		Fast-moving rivers and streams in chaparral, forests, and woodlands	May effect. Suitable habitat within the project area occurs in Coyote Creek and lower reaches of Porterfield Creek.

**TABLE 3.5-3
LIST OF POTENTIALLY AFFECTED SPECIES**

Species	Status Federal/ State/ CNPS	Suitable Habitat	Potential for Project to Effect
Birds			
<i>Agelaius tricolor</i> Tricolored blackbird	--/SC/--	Nests in colonies within vicinity of fresh water/ marshy areas. Colonies prefer heavy growths of cattails and tules.	No effect. Freshwater emergent wetland habitat within the project area is not extensive enough for nesting colonies to occupy.
<i>Brachyramphus marmoratus</i> Marbled murrelet	FT/SE/--	Open ocean near rocky coasts. Potentially nesting up to 45 miles inland on the ground or a mossy tree branch.	No effect. No suitable nesting habitat within project area. Site experiences a high level of human disturbance.
<i>Strix occidentalis caurina</i> Northern spotted owl	FT/--/--	Nests in dense old growth and multi-layered mixed conifer habitats in Northern California.	No effect. No suitable nesting habitat within project area.
Mammals			
<i>Antrozous pallidus</i> Pallid bat	--/SC/--	Desserts, grasslands, shrublands, woodlands and forests. Roosts in caves, rock crevices, mines, hollow trees, and buildings.	May effect. Potential for roosting in old buildings within project area.
Plants			
<i>Cordylanthus tenuis ssp. Capillaries</i> Pennell's bird's-beak	FE/CR/1B.2	Closed cone coniferous forest and chaparral in serpentine soils.	No effect. No suitable habitat exists in the project area.
<i>Hesperolinon adenophyllum</i> Glandular western flax	--/--/1B.2	Cismontane woodland. Valley and foothill grassland. 150-500 meters.	No effect. Project area is not within elevational range of species.

SOURCE: California Natural Diversity Database (2009), USFWS (2009)

Central California Coast Coho Salmon

Coho salmon are highly adaptive to local or regional environments. Coho salmon have thousands of semi-isolated populations in coastal streams over a wide range of North America. The likelihood of coho salmon potentially mixing with separate regional fish while in the Pacific Ocean exists, as individuals may spawn in non-natal streams. This occurs within the Central California Coastal ESU (Moyle, 2002). Interbreeding populations from Punta Gorda south to the San Lorenzo River contribute to the adaptive characteristic of this species.

Coho salmon once supported a commercial fishery on the Russian River, and once inhabited nearly all of the tributaries to the lower Russian including the Guerneville and Austin Creek sub-basins. The CVSF recorded no returns in 2000 and 2001, while the WSH recorded eight returns in 1999 and one return in 2000. Spawning at the hatcheries has ceased due to the low return numbers (CDFG, 2002).

Wild coho returning to WSH are currently relocated to tributaries of Dry Creek where suitable habitat occurs. Recent non-hatchery coho distribution in the Russian River is much reduced from the historic range. Limited CDFG sampling efforts conducted in 2001, found coho in only three of the 32 historic streams. Russian River Watershed Hydrologic Sub-Areas, including Austin Creek, Warm Springs, Geyserville, Guerneville and Mark West, all have had occurrences since 1993 (CDFG, 2002).

There have been no sightings or historic documentation of coho within the PSA. However, stream channel conditions within the lower reaches of Porterfield Creek may provide rearing or holding habitat within and downstream from the PSA.

Habitat Requirements

Timing for upstream migration by adult coho is primarily dependent upon flows and temperature which are dependent upon rainfall and local temperatures. The Russian River has a later run timing than many Northern California streams with coho entering the system from November through January with most spawning taking place in December (CDFG, 2002). Like the chinook salmon, a steady deposition of coarse rock substrates within the channel, proper temperature (Coho prefer temperatures from 40° to 49° F), and minimal sedimentation (less than 5% sand and silt) provides for suitable spawning habitat. Coho salmon generally prefer substrate sizes of 0.5 to 6 inches dominated by 2- to 3-inch gravel (CDFG, 1997). Eggs hatch in 50 to 60 days from the time the female deposits her eggs into a redd, depending on water temperature.

Unlike most Chinook, coho salmon have a more extended freshwater stage in their life history. Juvenile coho prefer deep cool pools with plenty of overhead cover, but are known to use a variety of habitats. During the high flows of spring, juvenile coho are equally disturbed throughout stream riffle, run and pool habitat. As stream flows diminish into the summer, higher occurrences of juvenile coho are found within pools and deeper runs. During winter, juvenile coho seek refuge from high flow velocities within off-channel pools or spring-fed tributary systems (Moyle, 2002). Overwintering habitat is an important resource for coho, as they spend their first year of life in the riverine environment prior to emigrating to the ocean. Successful coho rearing streams must

be very clear, as silt loads can reduce growth rates. Juveniles prefer water temperatures of 53° to 57° F, and cannot survive within streams with temperatures exceeding 77° F (Moyle, 2002).

Central California Coastal Steelhead

NOAA Fisheries classified six distinct ESU's of steelhead in California based on genetic and life history data. The Central California coast steelhead ESU comprises coastal populations from the Russian River south to Aptos Creek in Santa Cruz County. Along with the Klamath and Sacramento rivers, the Russian River steelhead runs have been historically prolific. Steelhead use all perennial and intermittent streams within the Russian River basin, and their distribution has not changed much, with the exception to areas upstream of created channel impediments (CDFG, 2002). CDFG operates two anadromous fish hatcheries within the Russian River Watershed; the Warm Springs Salmon and Steelhead Hatchery (WSH), located on Dry Creek at the base of Lake Sonoma, and the Coyote Valley Steelhead Facility (CVSF), located in Ukiah at the base of Lake Mendocino. The WSH and CVSF have managed a successful production of hatchery steelhead. As with all wild anadromous stocks entering the hatcheries, the WSH and CVSF relocate wild steelhead to local watershed tributaries.

The lower reaches of Porterfield Creek near the confluence with the Russian River provide suitable holding and rearing habitat, as it contains adequate riparian canopy, stream substrate, water temperature, and channel morphology.

Habitat Requirements

Steelhead may enter the Russian River between December and April, with most spawning taking place from January through March (CDFG, 2002). The life history patterns of California steelhead are both variable and flexible, but they can be generally categorized into two patterns (winter and summer). Winter steelheads enter the system during winter wet weather events that provide cold temperatures for migration and spawning. Summer steelhead generally enter the system during high flows associated with the spring run-off, and ascend to the headwaters to hold out and mature in cold deep pools and spawn the following winter or spring (Moyle, 2002). Steelhead prefers temperatures from 46° to 52° (Rich, 1997). Inadequate flows and low water levels also contribute to water quality problems during the hot summer months.

Generally, spawning habitat is not thought to limit steelhead production. Steelheads prefer temperatures from 46° to 52° F for spawning. During the 50 to 60 days from the time the female deposits eggs, gravels must be well oxygenated and free of silt and fine sediments. Juvenile steelhead generally rear within the stream habitat for two years but may emigrate after only one year. Steelhead are generally found in relatively shallow areas, with cobble or boulder bottoms at the tails of pools, or in riffles less than 24 inches deep (CDFG, 2002). Surface turbulence is a very important habitat component in many of these areas. In winter, steelheads utilize large cover or backwater areas for protection from extreme currents.

California Coastal Chinook Salmon

Information or existing data on the historic use of the Russian River by chinook salmon is inconclusive, but given the suitable habitat conditions prior to anthropogenic disturbances of the drainage system, it is likely to have supported a run. A native endemic stock of chinook salmon (i.e., California Coastal) currently utilizing the Russian River watershed is highly unlikely. Chinook salmon disappeared with the advent of agriculture and water projects in the basin (Moyle, 2002). However, suitable spawning habitat still exists today in the upper mainstem of the river and in the larger low gradient tributaries. The WSH and CVSF hatchery fish have been of multiple origin including Sacramento and Klamath River stocks. Currently, CDFG has halted hatchery spawning due to potential genetic bottlenecks. Hatchery attempts to potentially revive a run utilizing the Russian River has been relatively unsuccessful, although some spawning has been observed in the watershed (Moyle, 2002).

The lower reaches of Porterfield Creek near the confluence with the Russian River provide suitable holding and rearing habitat, as it contains adequate riparian canopy, stream substrate, water temperature, and channel morphology.

Habitat Requirements

Chinook salmon enter the Russian River between August and January with a majority of the spawning occurring in November and December. Gravel and cobble, ranging from 0.5 to 10 inches and dominated by 1- to 3-inch cobble, are essential in successful spawning ranging from 0.5 to 10 inches dominated by 1- to 3-inch cobble (CDFG, 1997). These substrates must be clean and the gravels must be free of silt and fine sediments to allow the permeation of flowing water. This will help prevent mortality by keeping eggs well oxygenated while they incubate in redds. Ideally, gravel and cobble should contain less than 5% sand and silt (McEwan et. al., 1996). Chinook salmon generally spawn in water from one to three feet deep, but have spawned in depths from 0.5 to greater than 20 feet deep (CDFG, 2002). Stream flow velocities must range from 1 to 3 feet per second. Chinook eggs hatch in 50 to 60 days, depending on water temperature.

Most chinook smolts migrate to the estuary or ocean in the spring. Once juvenile salmon emerge from gravel, they initially seek areas of shallow water and low velocities while absorbing the yolk sac. The next stage of juvenile development requires rearing within the stream channel. Optimal temperatures for chinook fry to grow are 55–64° F (CDFG, 2002). Chinook salmon need a variety of habitat types such as pools, riffles and flat waters to accommodate different life stages. Stream bank and channel cover is essential for rearing salmonid survival. Natural features such as large and small woody debris, undercut banks, root wads, overhanging terrestrial vegetation, aquatic vegetation, boulders, and bedrock ledges provide cover from predators. Deep pools provide depth for cool refugia especially where general water and air temperatures are high. In general, chinook salmon shifts to deeper and faster water as they grow larger (Moyle, 2002). Some juveniles may remain in large pools with complex cover until they emigrate to the ocean in the fall, but most are likely to emigrate in the Spring.

State and Local Special-Status Species

Based upon the CNDDDB database search for special-status plants wildlife and habitat suitability within the PSA, ESA identified three State species of concern that have the potential to occur within and/or adjacent to the PSA, including Northwestern pond turtle (*Actinemys marmorata marmorata*), foothill yellow-legged frog (*Rana boylei*), and pallid bat (*Antrozous pallidus*).

Western Pond Turtle

Pond turtles are aquatic turtles of permanent or nearly permanent ponds, marshes, rivers, streams, and irrigation ditches with aquatic vegetation generally below 6,000 feet in elevation. They need basking sites such as partially submerged logs, vegetation mats, or open mud banks, and suitable upland habitat with well-drained soils for egg-laying, such as sandy banks or grassy, open fields. Coyote Creek and lower reaches of Porterfield Creek provide suitable habitat for this species.

Foothill Yellow-Legged Frog

The foothill yellow-legged frog (FYLF) uses partly-shaded, shallow streams of small to moderate size with a rocky substrate that is at least cobble-sized (2.5 to 5 inches in diameter). It is found in a variety of habitats including valley-foothill hardwood, valley-foothill hardwood-conifer, valley-foothill riparian, ponderosa pine, mixed conifer, coastal scrub, mixed chaparral, and wet meadow types. Its upper elevation limit is roughly 6,000 feet in the Sierra Nevada. Adults bask on exposed rock surfaces near streams; they dive into water and take refuge under rocks and sediment when disturbed. During cold weather, they seek cover under rocks in the streams or on shore within a few yards of water. Egg clusters are attached to gravel or rocks in moving water near stream margins. Unlike other ranid frogs, this species is rarely found far from permanent water. Breeding and egg-laying usually await the end of spring flooding and may commence any time from mid March to May. They are infrequent or absent in habitats where introduced aquatic predators such as various fishes and bullfrogs are present.

While FYLFs are not specifically known within the PSA, there have been no species-specific surveys for their presence. Coyote Creek and lower reaches of Porterfield Creek provide suitable habitat for this species, and FYLFs are known from a similar creek at the same elevation in another drainage approximately 8.3 miles south east of the project area (CDFG, 2008).

Pallid Bat

Found throughout California in a variety of habitats such as deserts, shrublands, grasslands, woodlands and forests. Pallid bat is most common in open, dry habitats. Maternity roosts occur in caves, rock crevices, mines, hollow trees, and buildings. Roosts must be in areas that are protected from extreme heat. This mammal feeds on insects, spiders, and small reptiles such as lizards. CNDDDB records show pallid bats in the region roosting in buildings near vineyards and riparian areas (CDFG, 2008). Within the PSA, there is a potential for pallid bat to roost in old buildings.

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3.6 Cultural and Paleontological Resources

This section describes the cultural resources that may be affected by the Proposed Action and project alternatives. For the purposes of this section, the area of potential effect (APE) is the same as the project site described in **Section 1.0**. The investigation of the APE is summarized herein and described in greater detail in the confidential *Cloverdale Rancheria Fee to Trust Project, Sonoma County, California - Cultural Resources Technical Report* completed by ESA (**Appendix F**, available under separate cover).

3.6.1 Setting

Archaeology

Fredrickson (1974) divided human history in California into three broad periods: the Paleoindian period, the Archaic period, and the Emergent period. This scheme used sociopolitical complexity, trade networks, population, and the introduction and variations of artifact types to differentiate between cultural units. The significance of prehistoric sites rests partly on their ability to help archaeologists explain the reasons for these changes in different places and at different times in prehistory. This scheme provides the analytical framework for the interpretation of the San Francisco Bay and North Coast Ranges prehistory and, with minor revisions (Fredrickson 1994), remains the dominant framework for prehistoric archaeological research in this region.

The Paleoindian period (10,000 to 6000 B.C.) was characterized by small, highly mobile groups occupying broad geographic areas. During the Archaic period, consisting of the Lower Archaic period (6000 to 3000 B.C.), Middle Archaic period (3000 to 500 B.C.), and Upper Archaic period (500 B.C. to A.D. 1000), geographic mobility may have continued, although groups began to establish longer-term base camps in localities from which a more diverse range of resources could be exploited. The addition of milling tools, obsidian and chert concave-base points, and the occurrence of sites in a wider range of environments suggests that the economic base was more diverse. By the Upper Archaic, mobility was being replaced by a more sedentary adaptation in the development of numerous small villages, and the beginnings of a more complex society and economy began to emerge. During the Emergent period (A.D. 1000 to 1800), social complexity developed toward the ethnographic pattern of large, central villages where political leaders resided, with associated hamlets and specialized activity sites. Artifacts associated with the period include the bow and arrow, small corner-notched points, mortars and pestles, and a diversity of beads and ornaments (Fredrickson 1994; Gerike et al. 1996:3.11–3.17).

Ethnographic Setting

Ethnographic literature indicates that at the time of historic contact, the APE was within the territory of the Southern Pomo-speaking peoples, which extended from approximately 5 miles south of Santa Rosa northward to approximately the Sonoma–Mendocino County border, and from the eastern drainage of the Russian River westward to Southwestern Pomo, or Kashaya territory (Barrett, 1908; Bean and Theodoratus, 1978; Kroeber, 1925; McLendon and Oswalt, 1978).

The primary sociopolitical unit was the village community, or tribelet. Pomo village communities consisted of a principal village, at which the chief resided, surrounded by several secondary settlements. Each village community averaged around 100 to 2,000 people (Bean and Theodoratus 1978:293). Within Southern Pomo tribelet territories, people were allowed to freely hunt, fish, and gather plant foods. Tribelet boundaries, however, were clearly defined in regards to rights of utilization of their territory by other groups (Kroeber 1925:228–230). The Makahmo Pomo, a tribelet of the Southern Pomo, occupied the area west of the Mayacamas Mountains and east of Dry Creek (Barrett, 1908; McLendon and Oswalt, 1978:280).

Ethnographic village sites near Cloverdale included *Kala'ñkō* and *A'ka'mōtcōlōwanī*. The general area was the location of several Pomo village sites that may have been occupied both simultaneously as well as in isolation at varying periods of time.

Beginning around 1800, the Southern Pomo people were significantly diminished through missionization, Mexican slave raids, disease, and immigrant settlement in their territory (McLendon and Oswalt 1978:279). In 1921, the U.S. government officially recognized the Cloverdale Rancheria and purchased 27.5 acres of land south of Cloverdale for the “Cloverdale Band of Homeless Indians.” The Makahmo Pomo population at the time was about 40 individuals. In 1958 the U.S. government enacted the Rancheria Act of 1958, transferring tribal property into private ownership. Forty-four rancherias in California, including the Cloverdale Rancheria, were transferred. It took nearly 25 years before Pomo recognition was restored when a lawsuit, led by Pomo Tillie Hardwick, required the U.S. government to re-establish all terminated Rancherias, including Cloverdale. Ten years later, in 1994, construction of the Cloverdale Highway 101 Bypass forced Tribal landowners to sell part of their land, splitting the Rancheria on either side of the freeway. In order to gain self-reliance, the people of Cloverdale Rancheria, currently numbering nearly 500, are exploring the transfer of lands held in fee to federal trust overlapping with and just north of the historical Rancheria boundaries (Cloverdale Rancheria of Pomo Indians, 2008).

Historical Setting

The APE is located within the Mexican landgrant of Rincon de Musalacón. The land had been granted to Francisco Beryessa in 1846 by Governor Pio Pico. Beryessa sold two square leagues of the landgrant to Johnson Horrell in 1851. In 1856, R. B. Markle and W. J. Miller purchased eight hundred and fifty acres, which included the present site of Cloverdale, from Horrell. In 1859 Markle and Miller sold the land, buildings and livestock to James Abram Kleiser who established a trading post at Markle Place, as the area had become known. Kleiser had the town of Cloverdale officially surveyed and a street plan was developed. In 1872, Cloverdale was incorporated as a third class city, and in 1888 was incorporated again as a sixth class city with a population of less than 3,000.

In 1871, the North Pacific Coast Railroad (NPCRR), later the North Shore and later still the Northwestern Pacific Railroad, was formed and was completed in 1875. Though the NPCRR began as a means of transporting lumber to San Francisco, its presence in Marin and Sonoma Counties made those areas more accessible and hence land values rose. In 1906 the Southern Pacific Railroad Company gained control after an earthquake put the NPCRR out of business, and formed the Northwestern Pacific Railroad (NWPRR) the following year. The NWPRR generally served

the Highway 101 corridor from San Rafael to Arcata, and part of its line directly abuts the APE to the east.

In 1867 the APE was located within the Horrell property, about a mile south of Cloverdale (Bowers, 1867). In 1877 the property was owned by LB Gardener, although no historic structures are present on historic maps within the APE. By 1900 the property had come under the ownership of George Emery Lile. George Lile was born in Missouri in 1844, and married Sarah Christina Reeves and had seven children. Their son Joseph Lile was born in 1878, and the family moved to California in 1885, originally to Petaluma but later to Cloverdale (Cloverdale Historical Society, 1982). In Cloverdale, George Lile bought the property that encompasses much of the APE.

The property remained in the Lile family for much of the following century, passed down from George Lile to his son Joseph. In 1964, Joseph Lile distributed the property among his three children, Bernard, Clifford, and Isabelle. In 1930, Bernard Lile established a wholesale and retail milk route, although he eventually sold the dairy operation and purchased land to raise prunes and grapes. Prior to his father's death, Clifford Lile leased the property and raised prunes, grapes and sheep (Wilson, 1972). With the death of their father, Clifford and Bernard became partners and together farmed the Lile ranch. Highway 101, through most of Sonoma County, was constructed from 1954-1962; however its current route is a result of the Cloverdale Bypass which was constructed in the mid-1990s. The construction of the bypass bisected the original Lile property, as well as the historic site of the Cloverdale Rancheria. The property remained in the Lile family under the ownership of Joseph's grandchildren until the various parcels were sold through the mid 1990s and early twenty-first century.

The Cloverdale Rancheria was historically located in the southern portion of the APE. The Rancheria was created in 1921 when the United States government federally recognized the Tribe and deeded 27.5 acres on the southern edge of Cloverdale to the tribal members. In 1958 the Rancheria was terminated with the Rancheria Act of 1958, which transferred tribal communal property into private ownership.

3.6.2 Research Methods

Records and Literature Search

Methodology

A records search was conducted at the Northwest Information Center (NWIC) of the California Historical Resources Information System at Sonoma State University on March 24, 2008 (File No. 07-1363). Records were accessed by reviewing the Cloverdale and Asti 7.5-minute quadrangle base maps. Additional research was conducted using the files and literature at ESA. The records search included a 1/2-mile radius around the APE in order to (1) determine whether known cultural resources had been recorded within or adjacent to the APE; (2) assess the likelihood of unrecorded cultural resources based on historical references and the distribution of environmental settings of nearby sites; and (3) develop a context for identification and preliminary evaluation of cultural resources.

Included in the review were the *California Inventory of Historical Resources* (California Department of Parks and Recreation 1976), *California Historical Landmarks* (1990), *California Points of Historical Interest* (1992), and the *Historic Properties Directory Listing* (2007). The Historic Properties Directory includes listings of the National Register and the California Register of Historical Resources, and the most recent listing (December 4, 2007) of the California Historical Landmarks and California Points of Historical Interest. Historic-period maps (Bowers, 1867; Thompson 1876; McIntre and Lewis, 1908) were also reviewed. Research was also conducted at the Cloverdale Historical Society Museum and the Cloverdale Regional Branch of the Sonoma County Library.

Records Search Results

Results of the cultural resources records search conducted at the NWIC indicate that a small portion of the APE had been previously surveyed. The eastern and southern edges of the APE were surveyed in 1996 for a proposed sewer line between Santana Road and Porterfield Creek (Roop, 1996). No cultural resources were recorded.

Three additional cultural resources studies have been conducted adjacent to the APE. In 1973 a survey was conducted for the proposed Highway 101 corridor through Cloverdale that may have included the western edge of the current APE (Moratto, 1973). No cultural resources were recorded within ½-mile of the APE.

The same alignment was surveyed several years later (Buss and Bingham, 1981). An obsidian scatter was observed (but not formally recorded as a site) outside of the APE. During this same survey, two prehistoric sites (CA-SON-1344 and CA-SON-1345) were recorded outside of the APE (Buss et al., 1981; Melandry et al., 1981). CA-SON-1344 is a midden with obsidian and chert debitage, heat-affected rock, chert and obsidian cores, and one obsidian point fragment. CA-SON-1345 is a smaller site of surface scatter which consisted of three cores, three point fragments, chert and obsidian debitage, and three unmodified shell fragments. No midden soil was observed. The site complex has been proposed to be the dry-season village of *Kala'ñkō*.

In 2005, 21.4 acres on the west side of Highway 101 were surveyed for cultural resources (Greene 2005). No cultural resources were recorded.

The closest California Historic Landmark to the APE is the Icaria-Speranza Commune (CHL 981), a Utopian community established in 1881 by French immigrants. The community lasted until 1886 and was the only Icarian Colony in California and the last of seven established throughout the United States. The landmark is located approximately 1.3 miles from the APE on Asti Road. The closest site listed on the National Register of Historic Places is the Cloverdale Railroad Station, located approximately 0.75 miles from the APE.

Native American Consultation

Cultural institutions, lifeways, culturally valued viewsheds, places of cultural association, and other sacred places and trust assets must also be considered under the National Environmental Policy Act (NEPA) (40 CFR 1501.2), Executive Order 12898, and sometimes other authorities

(Executive Order 13175, Executive Order 13007, NAGPRA). Although Executive Order 13007 provides another avenue for consultation with tribes, it specifically deals with sacred sites.

The Native American Heritage Commission (NAHC) was contacted on April 17, 2008 to request a database search for sacred lands or other cultural properties of significance within or adjacent to the APE. A response was received on April 17, 2008. The sacred lands survey did not identify the presence of cultural resources in the APE. The NAHC provided a list of Native American contacts that might have further knowledge of the APE with respect to cultural resources. Each person or organization identified by the NAHC was contacted by letter on April 28, 2008.

The Cloverdale Rancheria of Pomo Indians is located near the APE. Correspondence with the tribe is ongoing and members assisted during the surface survey of the APE. Copies of all correspondence are provided in **Appendix L**.

Field Survey

Methodology

ESA staff Heidi Koenig and Kathy Anderson, along with members of the Cloverdale Rancheria of Pomo Indians, conducted an intensive survey of the APE on April 10, 2008 and May 7, 2008 to identify archaeological resources. Areas with surface visibility were traversed on-foot in a zigzag pattern in 10-meter transects. A cursory survey was conducted of paved or otherwise covered portions of the APE. Generally, ground visibility throughout the APE was good. Vegetation in the APE west of the railroad tracks was short due to grazing horses; with numerous rodent holes in the exposed soil. Where vegetation was dense, it was periodically scraped to reveal ground surface. Thick vegetation, including dense poison oak, obstructed the survey effort along the edge of Coyote Creek at the south of the APE and along Porterfield Creek in the north. In areas where the vegetation subsided, the perimeters of the creeks were examined for cultural resources. The APE east of the railroad tracks is currently a vineyard. Ground exposure was excellent as the rows were plowed the day of the survey.

A pedestrian field survey of the APE was also completed on the above dates to identify potentially historic architectural resources. Buildings located in the APE were photographed and evaluated for their historic significance, and are discussed below.

Results

No archaeological resources were recorded during the survey.

The pedestrian survey identified seven houses, two barns, a cattle corral and chute, a modular office building and two sheds within the APE. The modular office building, four of the residences, and barns were determined to be modern construction, and therefore not included in further analysis of the APE. The remaining three residences and three ancillary structures meet the 50 year minimum age threshold for National Register of Historic Places (NRHP) eligibility. None of these historic architectural resources was determined to meet the criteria for listing in the NRHP or California Register of Historic Resources (CR), and would not be considered an historic resource under

NEPA. The State Historic Preservation Officer sent a letter of concurrence for these findings on March 16, 2009, which can be found in **Appendix L**.

Paleontological Resources

Paleontological resources are the fossilized remains of plants and animals, including vertebrates (animals with backbones), invertebrates (e.g., starfish, clams, ammonites, and coral marine), and fossils of microscopic plants and animals (microfossils). The age and abundance of fossils depend on the location, topographic setting, and particular geologic formation in which they are found. Fossil discoveries not only provide a historic record of past plant and animal life, but may assist geologists in dating rock formations. Often, fossil discoveries constrain the time period and the geographic range of flora or fauna. On a regional scale, fossilized plants, animals and microorganisms occur primarily in marine and non-marine sedimentary rock units.

The geologic units underlying the APE are predominantly Holocene Alluvium, although portions of the Franciscan Complex outcrop within a mile of the APE (Wagner et. al, 1982). The University of California Museum of Paleontology Collections (UCMP) Database was accessed on December 3, 2008 and reviewed for any listed paleontological resources within the same formation as the project site. 503 paleontological resources have been identified within Sonoma County; however, only 10 of these resources date to the Holocene epoch and no resources have been identified within the Franciscan Complex. The Holocene resources were all identified in the western portion of the county.

3.6.3 Regulatory Setting

Federal

The cultural resources investigation completed for the APE was conducted to comply with the requirements of National Environmental Policy Act (NEPA) and Section 106 of the National Historic Preservation Act (NHPA). The NEPA review process for this cultural resources impact assessment was conducted concurrently and integrated with the requirements of Section 106 of the NHPA.

Section 106 of the National Historic Preservation Act

Section 106 requires that federal agencies consider the affects of their actions on properties that may be eligible for listing or are currently listed on the National Register of Historic Places (NRHP). These properties are known as cultural resources. In addition to federal projects, Section 106 also includes undertakings that receive federal funding or require federal permits. For this project, the Bureau of Indian Affairs (BIA) is responsible for compliance with Section 106 of the NHPA because that agency, pursuant to 25 Code of Federal Regulations Part 151, is charged with reviewing and approving tribal applications to take land into federal trust status.

It is the federal agency's responsibility to consult with the State Historic Preservation Officer (SHPO) regarding the affects of their actions on cultural resources before granting permits, funding, or other authorization of the undertaking. The Section 106 review process normally involves a

four-step procedure described in detail in the regulations implementing Section 106 of the NHPA (36 CFR Part 800):

1. Identify and evaluate historic properties in consultation with the SHPO and interested parties
2. Assess the effects of the undertaking on properties that are eligible for inclusion in the NRHP
3. Consult with the SHPO, other agencies, and interested parties to develop an agreement that addresses the treatment of historic properties and notify the Advisory Council on Historic Preservation; and
4. Proceed with the project according to the conditions of the agreement

Archaeological and architectural resources (buildings and structures) are protected through the NHPA of 1966 (16 USC 470f) and its implementing regulation, Protection of Historic Properties (36 CFR Part 800), the Archaeological and Historic Preservation Act of 1974, and the Archaeological Resources Protection Act of 1979. Prior to implementing an “undertaking” (e.g., issuing a federal permit), Section 106 of the NHPA requires federal agencies to consider the effects of the undertaking on historic properties and to afford the Advisory Council on Historic Preservation (ACHP) and SHPO a reasonable opportunity to comment on any undertaking that would adversely affect properties eligible for listing on the National Register of Historic Places (NRHP). Section 101(d)(6)(A) of the NHPA allows properties of traditional religious and cultural importance to a tribe to be determined eligible for inclusion in the NRHP. Under the NHPA, a find is significant if it meets the NRHP listing criteria at 36 CFR 60.4, as stated below:

The quality of significance in American history, architecture, archaeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association and:

- a. That are associated with events that have made a significant contribution to the broad patterns of our history, or
- b. That are associated with the lives of persons significant in our past, or
- 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 have yielded, or may be likely to yield, information important in prehistory or history.

In addition to meeting the criteria of significance, a property must have integrity. Integrity is defined as “the ability of a property to convey its significance” (U.S. Department of the Interior, 1995). The National Register recognizes seven qualities that, in various combinations, define integrity. To retain historic integrity a property must possess several, and usually most, of these seven aspects. Thus, the retention of the specific aspects of integrity is paramount for a property to convey its significance. The seven factors that define integrity are location, design, setting, materials, workmanship, feeling, and association.

The American Indian Religious Freedom Act of 1978 allows access to sites of religious importance to Native Americans. On federal or tribal land, the Archaeological Resources Protection Act (ARPA) and Native American Graves Protection and Repatriation Act (NAGPRA) would apply. The ARPA assigns penalties for vandalism and the unauthorized collection of archaeological resources on federal land and provides for federal agencies to issue permits for scientific excavation by qualified archaeologists. The NAGPRA assigns ownership of Native American graves found on federal land to their direct descendants or to a culturally affiliated tribe or organization and provides for repatriation of human remains and funerary items to identified Native American descendants.

3.6.4 References

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3.7 Socioeconomic Conditions

3.7.1 Cloverdale Rancheria of Pomo Indians

The Cloverdale Rancheria of Pomo Indians (Tribe) has a population of 498 Tribal members most of whom reside within a 50-mile radius of the City of Cloverdale. The Tribe has a long history of residing in the Cloverdale area as its Tribal membership consists of the descendants of the indigenous peoples who have lived within the Cloverdale area for many centuries.

Table 3.7-1 provides a summary of the Tribe's population and labor characteristics. In 2005, the unemployment rate for the Tribe was 28 percent unemployment rate and the number of employed Tribal members below poverty guidelines was 47 percent (BIA, 2005).

**TABLE 3.7-1
TRIBAL POPULATION AND LABOR STATISTICS**

Description	Number/Percentage
Population	498
Age	
Under 16	42%
16-64	53%
65 and over	5%
Tribal Employment	
Total Workforce or Available for Work	214
% of Workforce Employed	72%
% of Workforce Unemployed	28%
% Employed but below Poverty Guidelines*	47%

* Based on the U.S. Department of Health and Human Services 2005 Poverty Guidelines.

SOURCE: BIA, 2005

Most Tribal members continue to live and work in the Cloverdale area. Numerous children of Tribal members attend local schools. Most of the Tribal members living or working locally are active both politically and socially as members of the local community. The Tribe's current Tribal Council office is located in the City of Cloverdale.

Tribal Attitudes, Expectations, Lifestyle and Culture

As the descendants of the indigenous people residing in the Cloverdale area long before the first non-Native American settlers to the region, the Cloverdale Rancheria of Pomo Indians has an established cultural affiliation with the Cloverdale area and long standing historical heritage and connection to the local community.

The Cloverdale Rancheria is a self-governing Tribe governed by an elected five-member elected council. The Tribe's leaders and members strive jointly to achieve full self-reliance, economic independence and security for the both the Tribe and its members. The Cloverdale Rancheria is

deeply committed to continue to live and prosper in Cloverdale due to its long history and deep cultural roots in the area. The Tribe also aims for an increased presence and successful participation in the regional economy through continuing to maintain and strengthen its positive coexistence and cooperation with its non-Indian neighbors.

As Pomo Indians, the Cloverdale Rancheria Tribe has a rich cultural traditions and history. Intricate basket weaving and tribal dancing are traditions for which the Tribe is renowned and that it is deeply committed to preserving and maintaining.

3.7.2 Socioeconomic Characteristics of the Study Area

Population

Regional Population

Sonoma County is the largest in land area of the nine Bay Area counties and has the most undeveloped land acreage remaining in the Bay Area Region. The project site is located in the northern part of Sonoma County within the southern outskirts of Cloverdale. In 2008, Sonoma County had approximately 479,700 residents (DOF, 2008a).

Mendocino County's jurisdiction is located approximately seven miles north of the project. However, Mendocino County is far less populated than Sonoma County with only an estimated 89,000 residents – less than a fifth of Sonoma County's population. The nearest community North of Cloverdale is Hopland (with a population less than 800) which is located approximately 18 miles north of the project site. Ukiah is the nearest city north of Cloverdale (with a population of 15,800 residents) and it is located nearly 30 miles from the project site (DOF, 2008a).

Ukiah is geographically further from the project site than Santa Rosa, and with the steeper topography, travel times northward of Cloverdale to both Mendocino and Lake County are considerably greater than driving south on Highway 101. Consequently, the great majority of the patrons, employees and services for the project alternatives are expected to come from (or through) Sonoma County. Therefore, for the purposes of this analysis, it is conservatively assumed that Sonoma County represents the study area for evaluating potential socioeconomic impacts.

As show in **Table 3.7-2**, nearly all of Sonoma County's urban development is located in the central and southern areas of the County along the Highway 101 corridor in the cities of Petaluma, Rohnert Park, Santa Rosa, and Windsor. Santa Rosa's population alone accounts for nearly a third of the County's total residents. However, almost a third of the County's residents live within the unincorporated areas. Located in the northern part of the County, the City of Cloverdale is the fastest growing city in the County with an average annual population increase of 3.1 percent between 1990 and 2008 – a rate more than twice the County-wide growth rate.

**TABLE 3.7-2
HISTORICAL POPULATION IN SONOMA AND ITS CITIES (1990 – 2008)**

Location	1990	2000	2008	Annual % Change (1990 - 2008)
Sonoma County	388,222	458,614	484,470	1.2%
<i>Cloverdale</i>	4,924	6,831	8,577	3.1%
Cotati	5,714	6,471	7,532	1.6%
Healdsburg	9,469	10,722	11,706	1.2%
Petaluma	43,166	54,548	57,418	1.6%
Rohnert Park	36,326	42,236	43,062	1.0%
Santa Rosa	113,261	147,595	159,981	1.9%
Sebastopol	7,008	7,774	7,714	0.5%
Sonoma	8,168	9,128	9,943	1.1%
Windsor (a)	n/a	22,744	26,564	Na
Unincorporated County (a)	160,186	150,565	151,973	-0.3%

a The City of Windsor was incorporated in July 1992 accounting for the subsequent decrease to the unincorporated area's population in 2000.

SOURCE: U.S. Census 1990; DOF, 2008a.

Population Projections

Future population growth in Sonoma County is projected to decrease from its historical rates. As shown in **Table 3.7-3**, annual population growth is expected to average approximately 0.5 percent countywide – a rate that would be almost a third of the County rate of growth between 1990 and 2005. The reduced growth rate is expected to add approximately 43,500 new Sonoma County residents by 2015 and over 80,000 residents by 2030.

**TABLE 3.7-3
POPULATION PROJECTIONS FOR SONOMA COUNTY AND ITS CITIES (2008 – 30)**

Location	2008	2015	2030	Annual % Growth (2008 – 30)
Sonoma County	484,470	522,300	558,900	0.7%
<i>Cloverdale</i>	8,577	10,300	12,300	1.7%
Cotati	7,532	7,500	8,400	0.5%
Healdsburg	11,706	12,700	13,400	0.6%
Petaluma	57,418	62,800	67,500	0.7%
Rohnert Park	43,062	45,300	47,400	0.4%
Santa Rosa	159,981	173,700	189,700	0.8%
Sebastopol	7,714	8,300	8,600	0.5%
Sonoma	9,943	9,700	10,400	0.2%
Windsor	26,564	28,400	31,700	0.8%
Unincorporated County	151,973	163,600	169,500	0.5%

SOURCE: DOF, 2008a; ABAG, 2006.

Cloverdale is expected to remain Sonoma County's fastest growing city with an average annual growth rate of 1.7 percent – a rate of growth more than twice the countywide rate of 0.7 percent per year. This contrasts from the other cities in the County whose populations are projected to increase at a rate more comparable to the County's future rate of growth.

Housing

Regional Housing

Since 2000, the total number of housing units has been increasing at a slower rate than California as a whole but Sonoma County's housing growth rate of 1.2 percent has been comparable to the County's population growth.

As shown in **Table 3.7-4**, the cities of Windsor and Cloverdale have had the greatest rate of housing growth in the County during the last decade and a half. Windsor has experienced particularly rapid housing growth as it has added 3,236 new housing units since its formation as a city in 1992. Cloverdale has also grown at average annual rate of 2.9 percent.

**TABLE 3.7-4
HOUSING WITHIN SONOMA COUNTY AND ITS CITIES (1990 – 2008)**

Location	1990	2000	2008	Annual % Growth (1990 – 2008)
Sonoma County	161,062	183,153	197,907	1.2%
<i>Cloverdale</i>	<i>2,033</i>	<i>2,619</i>	<i>3,382</i>	<i>2.9%</i>
Cotati	2,433	2,639	3,087	1.3%
Healdsburg	3,766	4,191	4,615	1.1%
Petaluma	16,546	20,305	21,943	1.6%
Rohnert Park	13,915	15,808	16,544	1.0%
Santa Rosa	47,711	57,578	64,238	1.7%
Sebastopol	2,943	3,321	3,380	0.8%
Sonoma	4,181	4,740	5,218	1.2%
Windsor (a)	n/a	7,728	9,265	n/a
Unincorporated County (a)	67,534	64,224	66,235	-0.1%

a The City of Windsor was incorporated in July 1992 accounting for the subsequent decrease to the unincorporated area's population in 2000.

SOURCE: DOF, 2008b; CED, 2007.

Since 1990, home prices in Sonoma have increased greatly as home values throughout the Bay Area appreciated from increased demand and low interest rates. Home prices were relatively stable and only 10 to 15 percent above the state's median home prices during most of the 1990s. However, Sonoma County home prices then rose very rapidly between 1999 and 2005 when average home prices more than doubled in value from \$250,000 to over \$600,000. After remaining relatively unchanged in 2006, home prices have since decreased. In 2007, the median price for a home in the county was approximately \$500,000 - comparable to the 2004 Sonoma County median sale price (CED, 2007).

The cities of Sebastopol and Sonoma have the highest home values within Sonoma County. During the last decade the Cities of Healdsburg and Rohnert Park have achieved the greatest appreciation in their home values. Until the recent real estate downturn, both Cloverdale and Windsor had experienced considerable appreciation in home prices. Cloverdale continues to have the most affordable homes in the County (CED, 2007).

Housing vacancy rates in Sonoma County and its cities are shown in **Table 3.7-5**. The vacancy rates for housing in the County have remained very stable since 2000. The average vacancy rate across the County is 5.8 percent, although vacancy rates within the County's unincorporated areas are considerably higher due to a large proportion of vacation home ownership. Amongst the County's cities most have vacancy rates of less than 3 percent, although Sonoma and Healdsburg both have comparatively high vacancy rates of 6.3 and 4.1 percent, likely reflecting a higher than average proportion of vacation home ownership. Cloverdale has the second highest vacancy rate in the County with 4.7 percent, which reflects both vacation home ownership and likely greater than average amount of home vacancies.

**TABLE 3.7-5
HOUSING VACANCY IN SONOMA COUNTY
AND ITS CITIES (2000-8)**

Location	Housing Vacancy Rate (2000-8)
Sonoma County	5.8%
<i>Cloverdale</i>	4.7%
Cotati	2.1%
Healdsburg	4.1%
Petaluma	1.8%
Rohnert Park	1.9%
Santa Rosa	2.7%
Sebastopol	2.1%
Sonoma	6.3%
Windsor	1.8%
Unincorporated County	12.0%

SOURCE: DOF, 2008b;

Future Housing Projections

Future Sonoma County housing estimates are based on the Association of Bay Area Governments (ABAG) household population projections and shown in **Table 3.7-6**. The current estimates of 2008 housing conditions, based on the most recent California Department of Finance data, indicate that recent housing growth has already met or exceeded some of the future housing projections for a few cities such as Cotati and Sonoma. Some of the data discrepancies between current housing estimates and future household projections may be related to future housing vacancy factors and future ABAG projections may be adjusted.

**TABLE 3.7-6
HOUSING GROWTH PROJECTIONS FOR SONOMA COUNTY AND ITS CITIES (2008 – 30)**

Location	2008	2015	2030	Annual % Growth (2008 – 30)
Sonoma County	197,907	199,730	216,320	0.4%
<i>Cloverdale</i>	3,382	3,840	4,640	1.4%
Cotati	3,087	3,030	3,410	0.5%
Healdsburg	4,615	4,780	5,130	0.5%
Petaluma	21,943	23,490	25,560	0.7%
Rohnert Park	16,544	16,970	18,010	0.4%
Santa Rosa	64,238	67,480	74,560	0.7%
Sebastopol	3,380	3,510	3,750	0.5%
Sonoma	5,218	5,040	5,440	0.2%
Windsor	9,265	9,980	11,010	0.8%
Unincorporated County	66,235	61,910	64,810	-0.1%

SOURCE: DOF, 2008b; ABAG, 2006.

Only limited countywide growth is expected to occur (e.g. approximately 0.4 percent annual). Sonoma County is expected to remain focused on and committed to preservation of the County's historic rural and agricultural character by encouraging higher housing densities within existing residential areas. Consequently, Cloverdale, Windsor, Petaluma, and Santa Rosa may be expected to have greater growth. Little if any growth is projected to occur within the County's unincorporated area. More affluent and established cities such as Sonoma, Rohnert Park, and Healdsburg are expected to have limited housing growth.

Employment

Employment in California is generally defined by the California Employment Development Department by place of residence rather than work location. Consequently, labor force and unemployment figures estimate the number of residents that have jobs regardless of whether they work in the county or not.

The labor force represents the population of adults living within the area that are able and available to work (i.e. non-institutionalized residents between the ages of 16 and 65). Employment levels generally indicate the local economy's health. An increase in unemployment indicates a slowing of the economy, which lowers consumer spending and local development.

Labor Force

Sonoma County's total resident labor force averaged 255,080 workers between 1998 and 2007. During that period the labor grew steadily until 2001 and fell sharply in 2003. Since then the County's labor force population has recovered its 2002 peak level of 258,100 employers in 2006. As shown in **Table 3.7-7**, Sonoma County's labor force population has continued to grow and as of November 2008, is estimated to be approximately 270,500 workers.

**TABLE 3.7-7
SONOMA LABOR FORCE AND UNEMPLOYMENT (1998 – 2008)**

Location	Labor Force (1998 - 2007)	Unemployment Rate (1998 - 2007)	Labor Force (2008) (a)	Unemployment Rate (2008) (a)
Sonoma County	255,080	4.2%	270,500	6.5%
<i>Cloverdale</i>	3,500	5.9%	3,800	9.0%
Cotati	3,880	4.1%	4,100	6.4%
Healdsburg	5,740	4.6%	6,100	7.2%
Petaluma	31,400	3.8%	33,200	5.9%
Rohnert Park	22,740	4.1%	26,400	6.4%
Santa Rosa	81,020	3.3%	85,900	6.5%
Sebastopol	4,320	2.4%	4,500	3.8%
Sonoma	4,760	3.0%	5,000	4.7%
Windsor	12,360	2.4%	13,000	5.3%
Unincorporated County	85,360	5.6%	88,500	7.0%

a Labor force and unemployment for November 2008.

SOURCE: EDD, 2008.

Unemployment

The unemployment rate for Sonoma County was 6.5 percent for November 2008 and 1.7 percent less than the comparable rate for California as a whole. For more than a decade Sonoma County's unemployment rate has been consistently lower than both the state and national averages. However in 2007, the unemployment rate in Sonoma County averaged 4.4 percent.¹ Unemployment rates amongst the cities within the County varied from as low as 2.5 percent to as high as 6.2 percent for Cloverdale.

Major Industries

Table 3.7-8 presents the existing (baseline) economic conditions for each of the major industrial sectors within Sonoma County. As shown in the table, the County has a relatively diverse economy with none of the industry sectors providing a disproportionate proportion of the job opportunities in the region.

The services sector is the County's primary employment sector, providing over 32 percent of jobs - nearly three times the size of the next largest sectors (Government and Retail). However, manufacturing had the greatest sector earnings generating over \$7.7 billion in output - a contribution to the County's economy almost comparable to that of the combined services sector, despite having only a quarter of the employees.

Between 1995 and 2005, Sonoma's construction sector experienced the greatest growth in employment (77%), although the recent real estate market downturn has resulted in decreases in construction employment. Significant employment growth also occurred within the professional and business services sector (43 percent) and the tourism sector grew by 26 percent between 1995

¹ The 2007 unemployment figures are unadjusted and therefore have not been altered to account for employment fluctuations associated with seasonal related employment demand.

and 2005. The greatest employment losses have occurred in the County's manufacturing sector which enjoyed major job growth in the late nineties but after the 2001 "dot-com bust" returned to its 1995 levels (CED, 2007).

The County's long-standing tourism industry has experienced steady job growth over the last ten years. During the late 1990's booming economy and the subsequent economic downturn of 2002/2003, Sonoma County's tourism industry continued to grow. Leisure and hospitality employment in Sonoma County has continued to achieve steady growth since 2003. This growth is attributed primarily to the broad market that Sonoma's tourism sector generally serves. Most Sonoma tourists are higher income households and as a result these customers are not as highly sensitive and vulnerable to economic conditions. Furthermore, Sonoma attracts visitors not only from the Bay Area and elsewhere in the West Coast, but also from elsewhere in the county and abroad (Moody's, 2008).

**TABLE 3.7-8
ANNUAL JOBS AND OUTPUT BY SECTOR – SONOMA COUNTY (2007)**

Industry	Employment		Output (Millions)
Agriculture & Mining	7,965	3.0%	\$826
Construction	21,853	8.3%	\$3,712
Manufacturing	21,654	8.3%	\$7,739
Retail Trade	29,283	11.2%	\$2,291
Wholesale, Transportation & Utilities	14,553	5.5%	\$3,038
Financial, Investment & Real Estate	26,245	10.0%	\$6,631
Professional & Business Services (a)	26,426	10.1%	\$3,772
Education & Health Services	29,286	11.2%	\$2,779
Other Services (b)	29,146	11.1%	\$1,978
Government	31,008	11.8%	\$2,324
Tourism	24,884	9.5%	\$1,494
Total	262,303	100%	\$36,584

a Includes Information Services
b Includes Administrative Services

SOURCE: MIG, 2008.

Major Employers

The majority of Sonoma County's employment opportunities are located in the City of Santa Rosa, which between 2001 and 2007 had been the workplace for an average of 78,000 employees. The cities of Petaluma and Rohnert Park are also major employment centers. Most of the County's jobs are located in its cities or within the unincorporated areas surrounding urban areas.

With more than 5,000 estimated employees, the County of Sonoma is the largest employer in the County. Kaiser Permanente is the largest single private employer with a 2,000 person local workforce. Sutter Medical, Medtronic, and St. Joseph Health Systems are other major local healthcare industries with more than 1,000 employees each. Local educational institutions Sonoma State and San Rosa Junior College together provide approximately 3,000 local jobs. Agilent is Sonoma County's largest technology and manufacturing employer with about 1,350 employees. Another

large goods producing business in the County is Kendall Jackson Wine estates which has nearly 1,000 employees (CED, 2007; Innovation Group, 2007).

Most of the other major businesses in Sonoma are retail businesses such as Home Depot, Safeway, and Wal-Mart. Within the tourism sector, River Rock Casino and Fairmont Mission Inn Spa are the largest businesses with approximately 700 employees and 630 employees respectively.

Income

In 2008, the average income per capita for Sonoma County was \$43,318 which was the 13th highest within California. County income per capita was 9 percent above the state average of \$39,626 and 18 percent above the national average of \$36,714 (BEA, 2008).

Table 3.7-9 shows the income data available for cities within the County. The 2000 Census is the most recent city-level income estimate. The income data in **Table 3.7-9** is presented in 1999 terms and therefore is not adjusted for inflation. In 1999, a \$10,000 annual income would be equivalent to \$12,871 in 2008. Nonetheless, the unadjusted income data indicates the comparable income levels of cities within the County. Sonoma County's average income levels are higher than the statewide averages. Sonoma County's average per capita income in 1999 of \$25,724 (in 1999 dollars) was estimated to be more than 13 percent above the average California resident.

**TABLE 3.7-9
PERSONAL INCOME IN SONOMA COUNTY AND ITS CITIES**

Location	Median Family Income (1999)	Per Capita Income (1999)	Individuals below Poverty Level (1999)
U.S.	\$50,046	\$21,587	12.4%
California	\$53,025	\$22,711	14.2%
Sonoma County	\$61,921	\$25,724	8.1%
<i>Cloverdale</i>	\$50,000	\$19,750	10.4%
Cotati	\$62,419	\$24,206	8.3%
Healdsburg	\$55,386	\$22,245	9.4%
Petaluma	\$71,158	\$27,087	6.0%
Rohnert Park	\$61,420	\$23,035	8.0%
Santa Rosa	\$59,659	\$24,495	8.5%
Sebastopol	\$55,792	\$22,881	6.9%
Sonoma	\$65,600	\$32,387	3.7%
Windsor	\$67,992	\$24,336	5.1%

All dollar figures for 1999 income levels in 1998 dollar terms.

SOURCE: U.S. Census, 2000.

Cloverdale is the least affluent of all the cities within Sonoma County. The per capita income for its residents was \$19,750 which was over 23 percent lower than the County average. Of all the cities in Sonoma County, Cloverdale has the highest proportion of individuals with incomes below the federal poverty level. Although Cloverdale has an estimated 10.4 percent of its population living with incomes below the poverty level, the percentage of low-income residents is lower than both the state (14.2 percent) and the nation (12.4 percent).

Property Tax

Property taxes for new residential, industrial or commercial properties within California are based on the property's appraised full market value at the time of their creation. Subsequent annual increases in the property's appraised value are limited to a two percent increase per year. If the property is subsequently sold, then the property may be reappraised at full market value.

For properties within the City of Cloverdale, per \$100 of appraised value, the total property tax due is \$1.1072 of which \$1.00 goes to Sonoma County and \$0.08 to the City of Cloverdale. The local school district receives another \$0.0212 and other local districts receive \$0.006 of tax revenues from the property. Within the unincorporated areas outside Cloverdale, no property tax would be payable to the City – consequently the total property tax due is \$1.0272 per \$100 of the appraised value. In addition to property taxes, direct fees apply to non-trust properties within Cloverdale or its nearby surroundings.

As shown in **Table 3.7-10**, the six parcels that comprise the project site have an appraised value of approximately \$10.1 million. During the 2009-2008 tax year, the total annual property taxes paid on the land and buildings at the site was approximately \$155,600. Of this, approximately \$146,300 was collected as property taxes for the County. The City of Cloverdale only receives taxes for the one vacant parcel within the City limits. The City received approximately \$800 in tax revenues.

The Sonoma County Junior College and Cloverdale Unified School Districts each received approximately \$3,600 and \$1,900, respectively, in tax revenues from the project site properties. The Cloverdale Fire District received approximately \$750 in property taxes while the local Cloverdale Health Care and North Sonoma County Hospital Districts received approximately \$220 and \$900, respectively.

**TABLE 3.7-10
PROJECT SITE CURRENT ASSESSED VALUES AND ANNUAL PROPERTY TAXES (2009)**

Parcel Number	Acreage	Assessed Value			Property Taxes
		Land	Structures	Total	
116-310-05	10.8	\$266,770	\$72,295	\$339,065	\$3,884
116-310-020	2.05	\$636,724	\$26,530	\$663,254	\$8,024
116-310-035	16.4	\$5,595,000	\$75,000	\$5,670,000	\$92,256
116-310-039	5.1	\$34,323	\$7,269	\$41,592	\$751
116-310-040	8.5	\$3,045,000	\$35,000	\$3,080,000	\$44,000
116-310-079*	35.5	\$527,620	\$74,145	\$601,765	\$6,660
Total	78.4	\$10,105,437	\$290,239	\$10,395,676	\$155,575

* Previously 116-310-044

SOURCE: Sonoma County Assessor's 2009; Sonoma County Tax Collector 2009; ESA, 2009.

Other City and County Revenue Sources

Business Personal Property Tax Revenues

Business Personal Property (BPP) includes all supplies, equipment and any fixtures used in the operation of a business. The assessed value does not include business inventory. BPP taxes are collected by Sonoma County on behalf of the State of California. However, a portion of the tax revenues are returned to the County and local school districts.

Tribal-owned businesses operating on trust land would be exempt from paying any BPP taxes. However, non-tribal businesses operating on trust lands are still fully liable for BPP taxes.

Transient Occupancy Taxes

California tax law authorizes city and county governments to collect taxes on overnight accommodations at lodging and camping facilities within their jurisdictions known as the Transient Occupancy Tax (TOT). The tax revenues are discretionary so that governments can use the revenues for any legitimate government expense.

Sonoma County currently levies taxes of 9 percent on lodging and camping facilities operating within the unincorporated areas of the County. All the other cities in the County collect TOT revenues although the tax rates vary from 8 percent in the Town of Windsor to 12 percent in Rohnert Park and Healdsburg. Total TOT revenues within Sonoma County and its cities was approximately \$20.56 million in 2007. Sonoma County's had the largest share of the county-wide TOT revenues (38 percent) followed by Santa Rosa (8.6 percent). The City of Cloverdale received approximately \$76,000 in TOT revenues.

Business Permit Fees

Businesses operating within Sonoma County's unincorporated areas are not required to obtain business permits. However, many cities within Sonoma County require businesses operating within their jurisdictions to purchase an annual license or permit. Although the permit fees vary, they are typically very minor and in the range of \$50 to \$300 per year.

Sales and Use Taxes

Retail businesses in California are required to collect sales taxes on most goods purchased from them. Goods exempt from sales tax include grocery items and some pharmacy items. In addition, a "use tax" is also applicable for many purchases from retailers not subject to sales tax (such as retail sales by Native American tribes).

The sales and use tax rate within a specific California location consists of three components: the state tax rate, the local tax rate and any district tax rates that might be in effect. The state sales and use taxes provide revenue to the State's General Fund, to cities and counties through specific state fund allocations and to other local jurisdictions. One percent of the state-wide 7.25 percent sales and use tax rate provide local (city and county) funding, of which 0.25 percent is allocated for County transportation funds. Local governments and district can (subject to voter approval) add additional taxes to this statewide base rate.

The sales tax rate for most of Sonoma County is 7.75 percent. The rate includes an additional 0.25 percent tax for the Sonoma County Open Space Authority and Sonoma County Transportation Authority. The Cities of Santa Rosa and Sebastopol both have additional 0.25 percent city taxes for retail transactions occurring within their jurisdictions.

3.7.3 Community Infrastructure

Sonoma County Schools

The Cloverdale Unified School district provides kindergarten through twelfth-grade education for school aged children living within the City of Cloverdale and northern Sonoma County. The district's service area includes residents within unincorporated areas south of Cloverdale for several miles south of the City limits. Along Highway 101 the school district includes the small community of Asti. The District boundary extends southward as far as the homes at 23600 to 23620 Dutcher Creek Road, the residences south of which are located within the Geyserville Unified School District.

The student enrollment at Cloverdale Unified School District was 1,520 during the 2007 to 2008 school year. Only an estimated 25 percent of its enrollment consisted of students learning English which is comparable to the county-wide average of 23 percent English learners within public schools. Approximately 36 percent of the School district's students are Hispanic and 63 percent are Caucasian. Within Sonoma County, enrollment at schools has been slowly decreasing on average, although the decline in enrollment varies by district.

The School District operates five schools. Elementary level education is provided at the Jefferson and Washington Schools. The Cloverdale High School is the District's primary High School facility although the Eagle Creek Community Day School also provides education for students from Grades 7 through to 12. The Johanna Echols-Hansen Continuation High School provides continuation education for local residents seeking to complete their high school education. The district also operates a cooperative pre-school program as well as "Even Start" and "Head Start" programs for its residents. The average district expenditures for the 2006 to 2007 school year were \$8,945 per student.

Libraries

The primary library serving the City of Cloverdale and the northern Sonoma County community is located in downtown Cloverdale on North Cloverdale Boulevard near its intersection with 4th Street. The library is open six days a week and also has a community room available for community gatherings and events. Art Shows and books sales are regularly held in the community room. The next nearest library to the project is located South in Healdsburg.

Parks and Recreation

There are numerous city and regional parks located in Cloverdale and the northern Sonoma region. With 68.5 acres of open space and river access, the Cloverdale River Park is the primary park and recreation area in Cloverdale. Partly located within Cloverdale and jointly owned and operated with the County of Sonoma Parks Department, the park is the only public multi-use trail along

the entire 100-mile stretch of the Russian River. Future development of a boat ramp and improved river access is planned for the park. The other large parks within Cloverdale are the Porterfield Creek walking trail (which provides 10 acres of open space access); City Park (with 7.4 acres of open space, picnic areas, baseball and other sport facilities) and Furber Park (with 6.0 acres of open space, sport fields and playgrounds). The City of Cloverdale also has several smaller neighborhood parks and operates two community centers for public use.

Nearby Lake Sonoma also provides additional open space and water access recreation opportunities locally. When full, the Lake has more than 2,700 acres of water surface and 50 miles of shoreline. The Lake Sonoma Recreation Area is a State Park. A fish hatchery is operated at the Lake to enhance local salmon and steelhead spawning grounds. The Yorty Creek Recreation Area at Lake Sonoma is closest to Cloverdale and provides day use including picnic facilities, swimming and car top boat launching access. The Warm Spring Recreation Area located below the dam is the primary day use recreational site for Lake Sonoma with numerous individual and group picnic sites as well as volleyball courts, playground and lawn areas. There are 97 drive-in camping sites within the park at the Liberty Glen Campground site which is located several miles west of the Warm Springs site. However, 109 primitive walk-in or boat-in sites are also available at sites around the lake.

3.7.4 References

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3.8 Transportation

This section presents a description of base transportation and circulation conditions for key intersections, roadways, pedestrian, bicycle, and transit facilities in the area of the Proposed Action and alternatives. This evaluation was prepared by Whitlock & Weinberger Transportation, Inc. (W-Trans) and reviewed by an ESA traffic engineer.

3.8.1 Circulation Network

Major Roadways

The local circulation system serving the project site is shown in **Figure 3.8-1**. Primary access to the project site would be provided via Asti Road, which connects with U.S. Highway 101 (U.S. 101) via the Citrus Fair Drive interchange to the north and the South Cloverdale interchange to the south. Below is a summary of the major roadways that serve the project site:

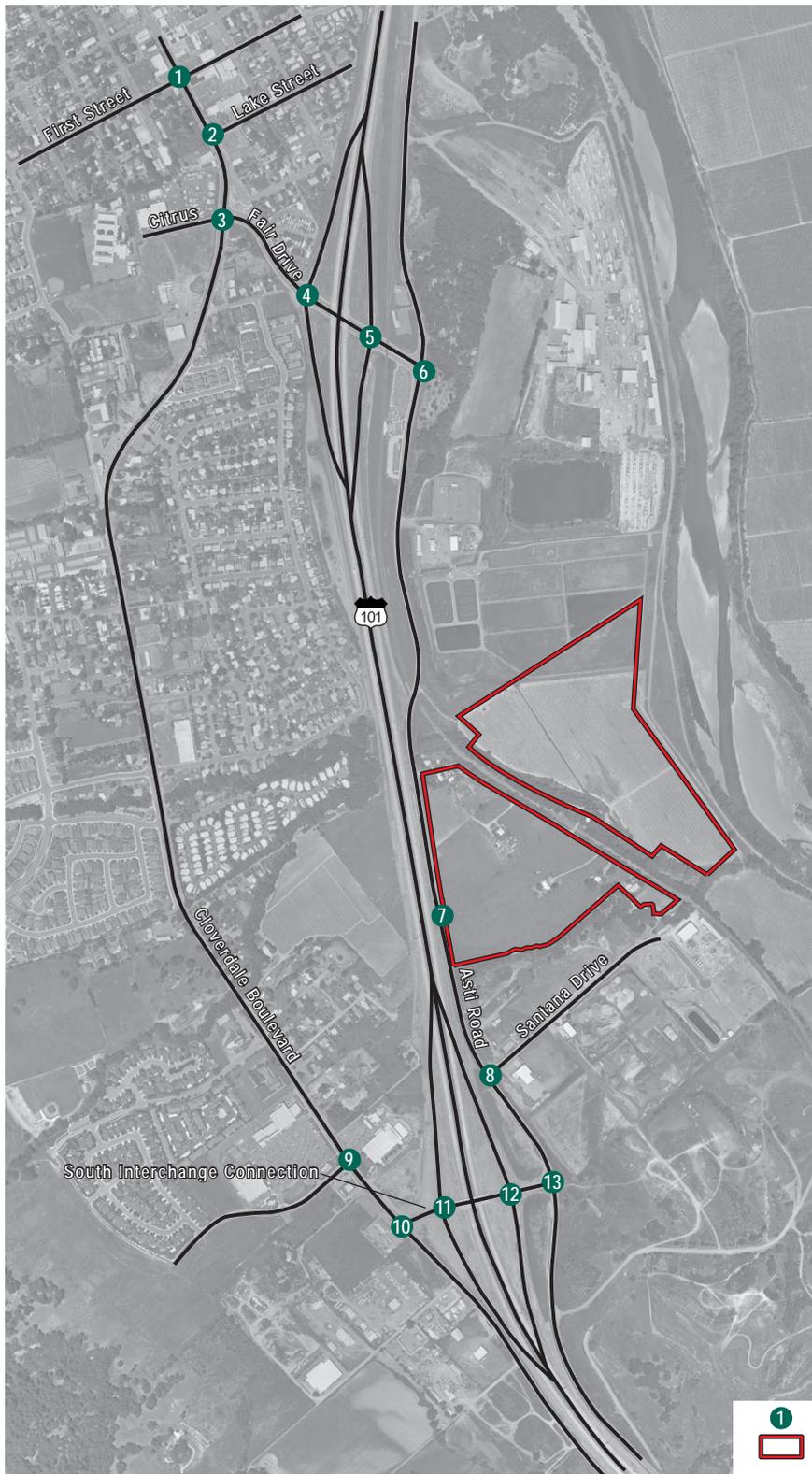
- *U.S. 101* is the primary route connecting Sonoma County to the San Francisco Bay Area to the south and Mendocino and Humboldt Counties to the north. Within Cloverdale, U.S. 101 is a four-lane freeway with interchanges at South Cloverdale, Citrus Fair Drive, and State Route (SR) 128 to the north.
- *Cloverdale Boulevard* is a north-south primary arterial running through Cloverdale that connects to SR 128 at the northern limits of Cloverdale. The corridor is primarily a three-lane road through the City.
- *Asti Road* runs parallel to U.S. 101 and connects to Cloverdale Boulevard via both Citrus Fair Drive and the South Cloverdale Interchanges. Between the Citrus Fair Drive and Cloverdale Boulevard Interchanges, this roadway has two lanes and would be the main access road to the project site.

Intersections

In order to evaluate potential impacts to the circulation network, 13 study intersections were selected, which are listed below and shown in **Figure 3.8-1**. Each of the intersections are side street stop-controlled, except as indicated below. **Figure 3.8-2** displays the existing lane configurations at each of the study intersections.

1. Cloverdale Boulevard / First Street (*signalized*)
2. Cloverdale Boulevard / Lake Street
3. Cloverdale Boulevard / Citrus Fair Drive (*signalized*)
4. U.S. 101 Southbound Ramps / Citrus Fair Drive
5. U.S. 101 Northbound Ramps / Citrus Fair Drive
6. Asti Road / Citrus Fair Drive
7. Asti Drive / Project Driveway (proposed access)
8. Asti Road / Santana Drive
9. Cloverdale Boulevard / Treadway Drive
10. Cloverdale Boulevard / South Interchange Connection
11. U.S. 101 Southbound Ramps / South Interchange Connection
12. U.S. 101 Northbound Ramps / South Interchange Connection
13. Asti Road / South Interchange Connection

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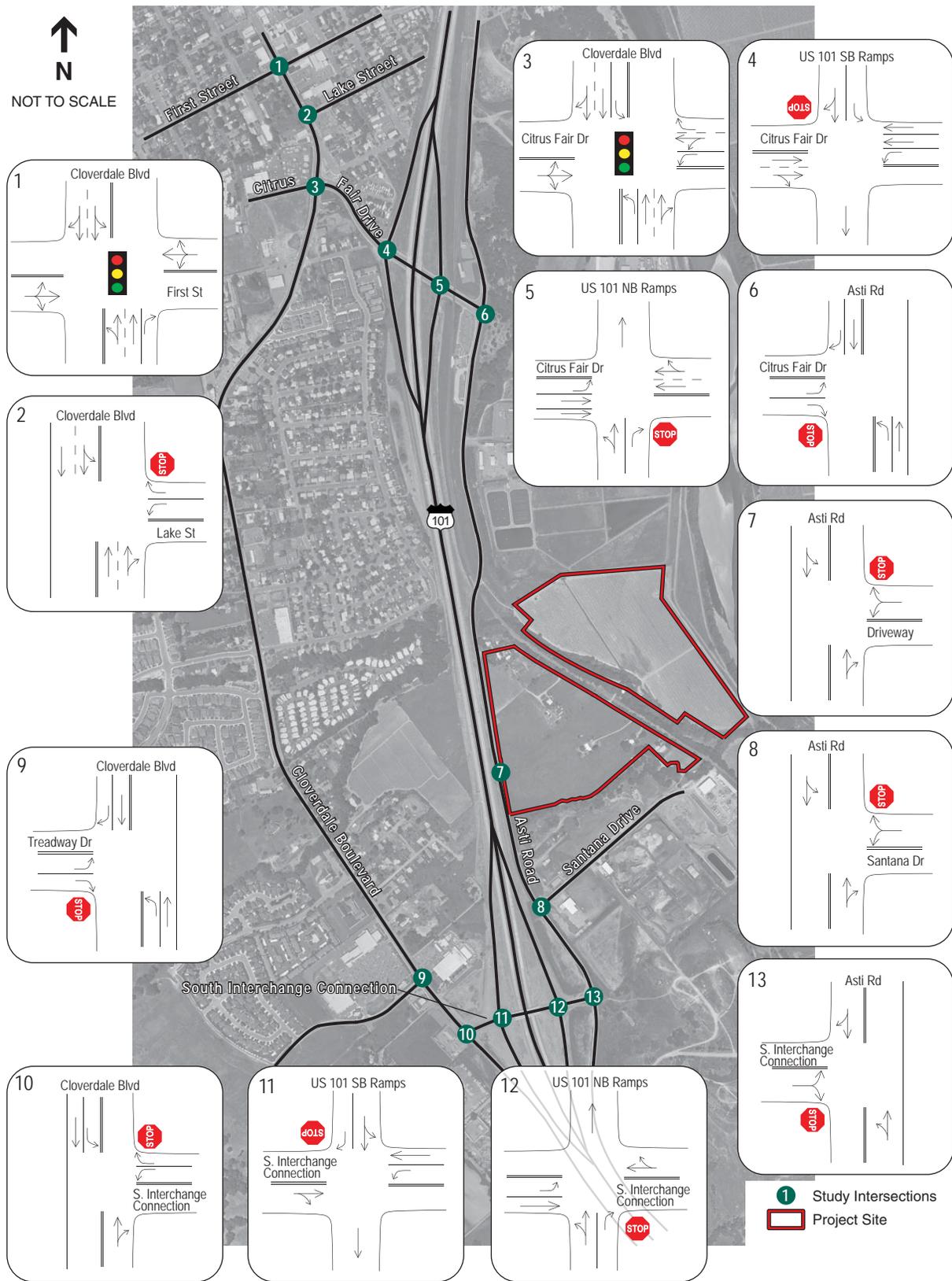


SOURCE: w-trans, 2009; and ESA, 2009

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Figure 3.8-1
Study Intersections

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SOURCE: w-trans, 2009; and ESA, 2011

Cloverdale Rancheria Resort Casino Project EIS . 207737

Figure 3.8-2
Lane Configurations

Study Periods

Major activity periods for the Proposed Action and Alternatives B through D would be the evening and weekends; traffic capacity and intersection levels of service were evaluated for the critical p.m. peak period and weekend midday peak hour. Major activity periods for Alternative E would be the morning and evening, but could vary depending on the types of business that would be developed. The p.m. peak hour occurs between 4:00 p.m. and 6:00 p.m., and typically reflects the worst congestion conditions during the homebound commute.

Pedestrian, Bicycle, and Public Transit Facilities

Pedestrian Facilities

There are areas around the City of Cloverdale with sidewalks and marked crosswalks that serve pedestrian travel. The primary areas of pedestrian activity that have facilities to accommodate pedestrians are typically within the downtown area. Another area where pedestrian facilities are found is the Citrus Fair Drive underpass and U.S. 101 ramps. Roadways such as Asti Road and the South Interchange Connection between Cloverdale Boulevard and Asti Road do not have pedestrian facilities. The general vicinity of the project site currently does not have sidewalks; pedestrians generally walk on the shoulder along Asti Road.

Bicycle Routes

The adopted *Cloverdale Bicycle & Pedestrian Master Plan* details existing and proposed Class I Bike Paths, Class II Bike Lanes, and Class III Bike Routes in Cloverdale (Sonoma County Transportation Authority, 2008). Currently, the only Class I Bike Paths in Cloverdale are located in Cloverdale River Park, to the north of the project site. There is a proposed Class I facility in the rail right-of-way as part of the SMART rail project. The 2008 Cloverdale Bicycle and Pedestrian Master Plan shows two proposed north-south Class I pathway projects in the vicinity of the project, including the SMART path (described below), which would bisect the project property, and an extension of the Cloverdale River Trail, which would follow the eastern edge of the project site along the Russian River.

Class II Bike Lanes are provided on Asti Road (from First Street / Crocker Road to about one mile south of the project site), primarily serving recreational riders, consisting of wide shoulders marked with edge lines and bike lane signs and markings. Class II lanes also are provided along the Citrus Fair Drive undercrossing of U.S. 101 to the north of the project site, and along the Cloverdale Boulevard / South Redwood Highway overcrossing of U.S. 101 to the south of the project site. These east-west connections combined with north-south bike lanes on Asti Road provide access between the project site and destinations in Cloverdale on the west side of the highway. Additional bicycle lanes have been suggested for the full length of Cloverdale Boulevard (except downtown). There are no existing (or proposed) Class III Bike Routes in the project area.

Public Transit

Sonoma County Transit

Sonoma County Transit (SCT) is the principal transit service within the City of Cloverdale, providing daily local and intercity service (sctransit.com, 2009). SCT Route 60 (Cloverdale-Healdsburg-Santa Rosa) provides intercity service seven days per week between Cloverdale City Hall and the Santa Rosa Transit Mall with stops in Asti, Geyserville, Healdsburg, Windsor Larkfield and Santa Rosa. Route 60 stops at the Cloverdale Transit Depot on Asti Road (just north of the project site) twice daily during the morning and evening commute periods, and includes stops in downtown Cloverdale, along Cloverdale Boulevard, and south of the project on Asti Road with varying headways (between 30 and 120 minutes) throughout the day.

SCT Route 68 (Cloverdale Local) provides local weekday service to destinations throughout Cloverdale with transfer points to regional SCT service and inter-regional Greyhound bus service. Route 68 operates with approximately one-hour headways with afternoon stops at the Cloverdale Transit Depot near the project site.

All Sonoma County Transit buses are wheelchair lift-equipped and can transport two wheelchair passengers at a time. Sonoma County Transit allows bikes on all of its buses, with a front-loading bike rack that can accommodate up to three bicycles. When the front-loading rack is full, bus drivers may allow up to two bikes inside the bus. Transit shelters are provided at various bus stops throughout Cloverdale.

Sonoma Marin Area Rail Transit (SMART)

The SMART Rail Train Depot is located approximately 0.6 miles north of the project site along Asti Road. There is currently no train service. The SMART District was established in 2003 by the California Legislature to oversee the development and implementation of passenger rail service in Sonoma and Marin counties along the Northwestern Pacific Railway. The SMART passenger train would serve passengers at 14 existing or planned multi-modal train stations between Cloverdale in Sonoma County and Larkspur in Marin County, where a connection can be made to San Francisco via existing ferry service. The passage of Measure Q in November 2008, which will provide funding to connect Marin and Sonoma County via train, will eventually make this an active station with connections to the south.

SMART also proposes to provide a north-south transportation route for bicyclists and pedestrians, with approximately 70 miles of multi-use pathway located along or adjacent to the right-of-way between Cloverdale and Larkspur. The SMART Path project will provide a critical north-south route for bicyclists and pedestrians in Cloverdale, connecting them to six cities in Sonoma County located south of Cloverdale.

3.8.2 Study Methods

Intersection Methodology

Operational analyses typically focus on intersections rather than road segments because the capacity of the intersections is usually more critical than the capacity of the roadway. Level of Service (LOS)

is used to rate traffic operation on various types of facilities based on traffic volumes and roadway capacity using a series of letter designations ranging from A to F. Generally, LOS A represents free flow conditions, and LOS F represents forced flow or breakdown conditions.

The study intersections were analyzed using methodologies from the *Highway Capacity Manual* (HCM) publication for various types of intersection control, all of which are related to a measurement of delay in average number of seconds per vehicle (TRB, 2000). The ranges of delay associated with the various levels of service are indicated in **Table 3.8-1**.

**TABLE 3.8-1
INTERSECTION LEVEL OF SERVICE (LOS) CRITERIA**

LOS	Two-Way Stop-Controlled	Signalized / Roundabouts
A	Delay \leq 10 seconds per vehicle. Gaps in traffic are readily available for drivers exiting the minor street.	Delay \leq 10 seconds per vehicle. Most vehicles arrive during the green phase, so do not stop at all.
B	Delay > 10 to 15 seconds per vehicle. Gaps in traffic are somewhat less readily available than with LOS A, but no queuing occurs on the minor street.	Delay > 10 to 20 seconds per vehicle. More vehicles stop than with LOS A, but many drivers still do not have to stop.
C	Delay > 15 to 25 seconds per vehicle. Acceptable gaps in traffic are less frequent, and drivers may approach while another vehicle is already waiting to exit the side street.	Delay > 20 to 35 seconds per vehicle. The number of vehicles stopping is significant, although many still pass through without stopping.
D	Delay > 25 to 35 seconds per vehicle. There are fewer acceptable gaps in traffic, and drivers may enter a queue of one or two vehicles on the side street.	Delay > 35 to 55 seconds per vehicle. The influence of congestion is noticeable, and most vehicles have to stop.
E	Delay > 35 to 50 seconds per vehicle. Few acceptable gaps in traffic are available, and longer queues may form on the side street.	Delay > 55 to 80 seconds per vehicle. Most, if not all, vehicles must stop and drivers consider the delay excessive.
F	Delay > 50 seconds per vehicle. Drivers may wait for long periods before there is an acceptable gap in traffic for exiting the side streets, creating long queues.	Delay > 80 seconds per vehicle. Vehicles may wait through more than one cycle to clear the intersection.

SOURCE: Transportation Research Board, *Highway Capacity Manual*, 2000

Two-Way Stop-Controlled Intersection Level of Service Methodology

Levels of Service for the intersections with side street stop controls were analyzed using the Two-Way Stop-Controlled unsignalized intersection capacity method from the HCM, as applied by the TRAFFIX analysis software. This method determines a level of service for each minor turning movement by estimating the level of average delay in seconds per vehicle.

Signalized Intersection Level of Service Methodology

The study intersections that are either currently signalized or anticipated to be signalized in the future were analyzed using the Operations Method contained in the HCM, as applied by the TRAFFIX analysis software. The signalized intersection methodology is based on factors including traffic volumes, signal phasing and green time for each vehicle movement, whether or not the operations of signals at adjacent intersections are coordinated, the percentage of heavy vehicles, and pedestrian activity. Average stopped delay per vehicle in seconds is used as the basis for evaluation in this LOS methodology.

Roundabout Intersection Level of Service Methodology

Operating conditions at the intersections that could be controlled by modern roundabouts were analyzed using the “Roundabout” methodology contained in the 1997 *Highway Capacity Manual*, as applied by the aaSIDRA analysis software. Delay is calculated for each approach and for the roundabout overall, and is primarily based on the availability of gaps in circulating traffic and geometric factors such as the radius of the roundabout and number of entering and circulating lanes. Roundabout LOS is then determined based upon the same delay range as applied for signalized intersections.

Signal Warrants

Potential need for installing traffic signals or other traffic controls measures such as roundabouts at the two-way stop-controlled and all-way stop controlled study intersections was evaluated using peak hour warrants from the *California Manual on Uniform Traffic Control Devices for Streets and Highways* (Caltrans, 2006). Section 4C of the MUTCD provides guidelines, or warrants, which may indicate need for a traffic control device at stop-controlled intersections

Freeway Methodology

The freeway analysis methodology contained in the HCM (“Basic Freeway Segments”) was used to determine LOS on U.S. 101, as applied by the HCS+ analysis software. The method uses variables such as traffic volumes, geometric configuration of the freeway (i.e., number of lanes, widths of lanes and shoulders), topography, the percentage of heavy vehicles, and free-flow speeds to determine LOS criteria including the “service flow rate”. Service flow rates are indicative of the travel demand on a freeway facility and are measured in the number of passenger cars per hour per lane.¹ The ranges of service flow rates associated with the various LOS are presented in **Table 3.8-2**.

**TABLE 3.8-2
FREEWAY LEVEL OF SERVICE CRITERIA**

Level of Service	Maximum Service Flow Rate
A	710 passenger car / hour / lane
B	1,170 passenger car / hour / lane
C	1,680 passenger car / hour / lane
D	2,090 passenger car / hour / lane
E	2,350 passenger car / hour / lane
F	Greater than 2,350 passenger car / hour / lane

Criteria are for a freeway with 65 mph free-flow speed
SOURCE: Caltrans, 2002

¹ Heavy vehicles are converted to passenger car equivalents that reflect differing physical and operational characteristics of heavy vehicle compared to passenger cars.

LOS Standards

The City of Cloverdale General Plan indicates that the City shall strive to maintain mid-LOS D operation during the weekday morning and evening peak periods at intersections of an arterial street with either another arterial or a collector street, and intersections of two collector streets. For projected future conditions, LOS is to be calculated using the average traffic demand over the highest 60-minute period. For all types of traffic control, the LOS standard is to be applied to the average intersection delay, and not for any single movement or approach. Therefore, mid-LOS D operation at signalized intersections is a delay of 45 seconds, and at stop-controlled intersections is a delay of 30 seconds, for the average intersection delay.

3.8.3 Existing Conditions

Data Collection

Existing traffic volumes in the study area represent conditions during the Spring of 2008. Actual traffic counts for study intersections have been collected between 2005 and 2008. Where traffic counts from previous years were used, appropriate growth factors based on historical growth trends were applied to obtain 2008 conditions. In instances where growth factors were used, recent traffic counts at adjacent locations were used to correlate the conditions. Traffic volume data for the U.S. 101 freeway segments were obtained from Caltrans.

Peak Hour Intersection Performance

The Existing Conditions scenario presents an evaluation of current operation based on existing traffic volumes. As shown in **Table 3.8-3**, all of the study intersections are currently operating acceptably at LOS C or better (for both the overall intersection and the stop-controlled side street approach), during both peak periods evaluated. The existing traffic volumes used for the LOS calculations are shown in **Figure 3.8-3**, and the LOS calculation sheets are provided in **Appendix G**.

Freeway Operations

The study area for the freeway segment capacity and LOS analysis contains the following segments of U.S. 101 from the Sonoma-Mendocino County Line to the Dry Creek Road Interchange in Healdsburg:

- Sonoma-Mendocino County Line to Junction State Route 128 West
- Junction State Route 128 West to Citrus Fair Drive Interchange
- Citrus Fair Drive Interchange to South Cloverdale Interchange
- South Cloverdale Interchange to Dutcher Creek Road
- Dutcher Creek Road to Asti Interchange
- Asti Interchange to Junction State Route 128 East
- Junction State Route 128 East to South Geyserville Road
- South Geyserville Road to Independence Lane Interchange
- Independence Lane Interchange to Lytton Springs Road
- Lytton Springs Road to Dry Creek Road Interchange

**TABLE 3.8-3
INTERSECTION AVERAGE DELAY AND LEVEL OF SERVICE
(EXISTING AND 2015 BASELINE CONDITIONS)**

Intersection	Existing Conditions		2015 Baseline	
	PM Peak Hour	Weekend Peak Hour	PM Peak Hour	Weekend Peak Hour
1. Cloverdale Boulevard / First Street	11.6 / B	11.2 / B	12.0 / B	11.7 / B
2. Cloverdale Boulevard / Lake Street	2.3 / A	2.0 / A	2.0 / A	1.7 / A
<i>Westbound Approach</i>	19.3 / C	16.0 / C	20.1 / C	14.1 / B
3. Cloverdale Boulevard / Citrus Fair Drive	13.3 / B	19.0 / B	14.6 / B	21.4 / C
4. US 101 Southbound Ramps / Citrus Fair Drive	0.9 / A	1.0 / A	1.1 / A	1.2 / A
<i>Southbound Approach</i>	9.8 / A	9.0 / A	10.4 / B	9.3 / A
5. US 101 Northbound Ramps / Citrus Fair Drive	5.5 / A	6.6 / A	9.1 / A	6.6 / A
<i>Northbound Approach</i>	10.6 / B	9.8 / A	12.2 / B	10.2 / B
6. Asti Road / Citrus Fair Drive	5.0 / A	3.4 / A	4.8 / A	4.0 / A
<i>Eastbound Approach</i>	9.8 / A	9.0 / A	10.3 / B	9.3 / A
7. Asti Road / Project Access (<i>future intersection</i>)	NA	NA	NA	NA
8. Asti Road / Santana Drive	2.0 / A	0.4 / A	1.4 / A	0.3 / A
<i>Westbound Approach</i>	9.2 / A	8.5 / A	9.7 / A	8.6 / A
9. Cloverdale Boulevard / Treadway Drive	3.3 / A	3.5 / A	3.1 / A	3.4 / A
<i>Eastbound Approach</i>	12.1 / B	11.1 / B	12.3 / B	12.3 / B
10. Cloverdale Boulevard / South Interchange Connection	9.7 / A	8.0 / A	10.8 / B	7.7 / A
<i>Westbound Approach</i>	13.4 / B	10.6 / B	16.1 / C	11.1 / B
11. U.S. 101 Southbound Ramps / South Interchange	1.1 / A	0.9 / A	2.5 / A	2.3 / A
<i>Southbound Approach</i>	12.3 / B	10.6 / B	17.3 / C	12.8 / B
12. U.S. 101 Northbound Ramps / South Interchange	13.7 / B	9.3 / A	30.2 / D	8.0 / A
<i>Northbound Approach</i>	19.0 / C	13.2 / B	51.9 / F	14.7 / B
13. Asti Road / South Interchange Connection	4.3 / A	4.2 / A	7.9 / A	7.6 / A
<i>Eastbound Approach</i>	9.5 / A	9.3 / A	13.5 / B	12.0 / B

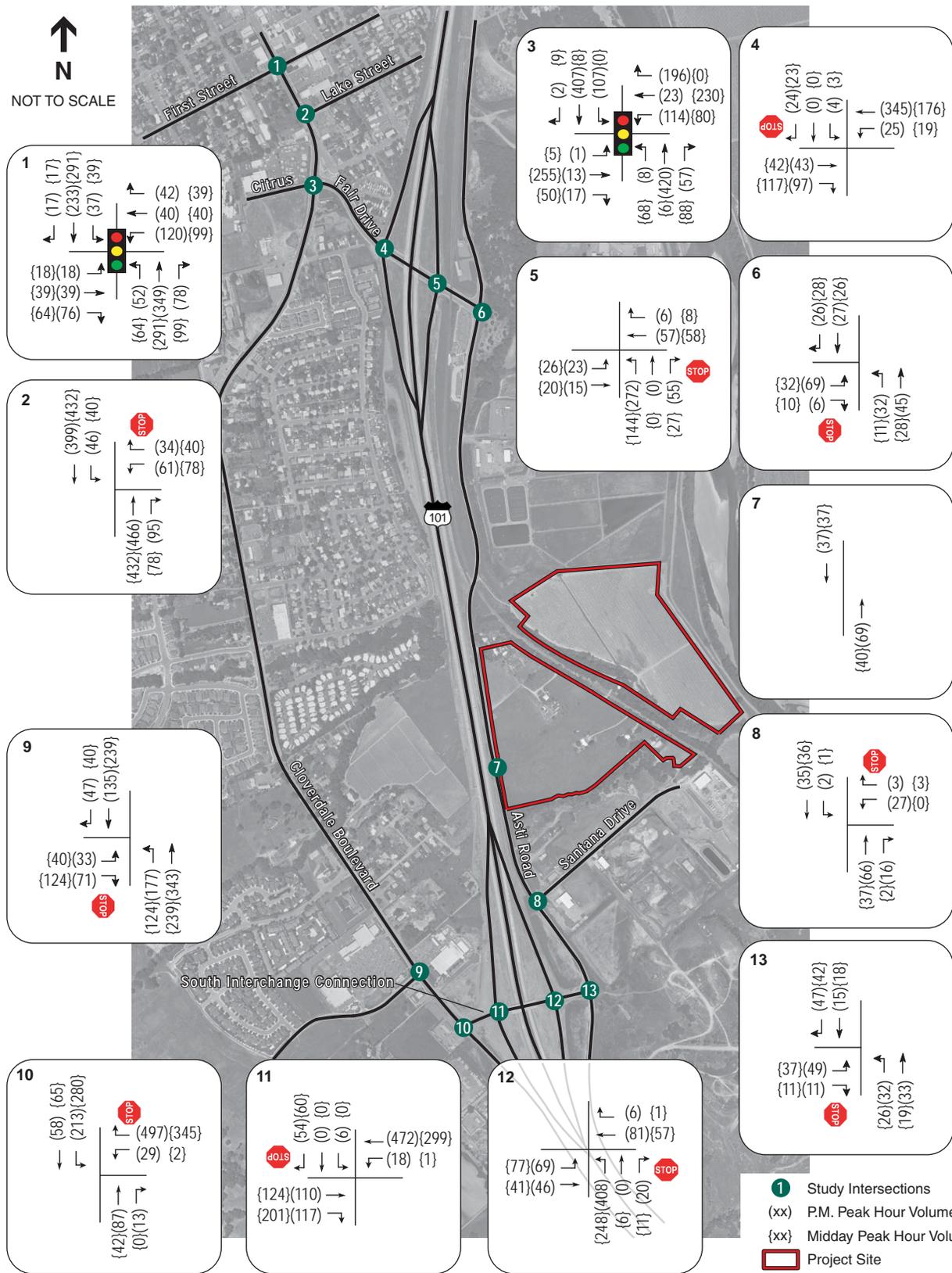
SOURCE: W-Trans, 2009 (Appendix G)

The analysis shows that the above freeway segments are currently operating at LOS B or better in both directions during the p.m. peak hour, with all at LOS A except the segment of Independence Lane to Dry Creek Interchange in the northbound direction. Results of the freeway analysis are included in **Appendix G**.

Collision History

The collision history for the study area was reviewed to determine any trends or patterns that may indicate a traffic safety issue. Collision rates were calculated based on records for the five-year period from October 2002 through October 2007, obtained from the California Highway Patrol and published in their Statewide Integrated Traffic Records System (SWITRS) reports. As presented in **Table 3.8-4**, the calculated collision rates for the study intersections were compared to average

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SOURCE: w-trans, 2009; and ESA, 2011

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Figure 3.8-3
Existing Traffic Volumes

collision rates for similar facilities statewide, as indicated in *2006 Accident Data on California State Highways* (Caltrans, 2007). As shown in the table, the following intersections have collision rates that are slightly higher than the statewide average:

1. Cloverdale Boulevard / First Street
9. Cloverdale Boulevard / Treadway Drive
10. Cloverdale Boulevard / South Interchange Connection
11. U.S. 101 Southbound Ramps / South Interchange Connection
12. U.S. 101 Northbound Ramps / South Interchange Connection
13. Asti Road / South Interchange Connection

TABLE 3.8-4
SUMMARY OF TRAFFIC COLLISION RATES (2002-2007)
(PER MILLION VEHICLES [MV])

Intersection	Number of Collisions	Collision Rate (per MV)	Statewide Average Rate (per MV)
1. Cloverdale Boulevard / First Street	11	0.53	0.43
2. Cloverdale Boulevard / Lake Street	6	0.30	0.14
3. Cloverdale Boulevard / Citrus Fair Drive	6	0.27	0.43
4. US 101 Southbound Ramps / Citrus Fair Drive	0	0.00	0.14
5. US 101 Northbound Ramps / Citrus Fair Drive	1	0.13	0.14
6. Asti Road / Citrus Fair Drive	1	0.27	0.14
8. Asti Road / Santana Drive	0	0.00	0.22
9. Cloverdale Boulevard / Treadway Drive	4	0.27	0.22
10. Cloverdale Boulevard / South Interchange	4	0.24	0.22
11. US 101 Southbound Ramps / South Interchange	4	0.31	0.22
12. US 101 Northbound Ramps / South Interchange	3	0.31	0.22
13. Asti Rd / South Interchange Connection	2	0.64	0.22

SOURCES: W-Trans, 2009, from collision reports obtained from CHP, and Caltrans, 2007.

While this does not, in and of itself, indicate a specific traffic safety problem, this information does indicate that further review is warranted. The intersection of Cloverdale Boulevard / Lake Street has a collision rate that is noticeably higher than the statewide average. These conditions may be due to existing striping at the intersection, which could be restriped to designate the northbound right-turn lane as a drop lane. While the intersections on Asti Road at Citrus Fair Drive and South Interchange have collision rates noticeably higher than the statewide average, they are very low-volume intersections with only one and two collisions over the five-year period, respectively. The remaining study intersections have collision rates equal to, or below, the statewide average, which typically indicates that there is not a specific traffic safety problem. A copy of the collision rate spreadsheets showing the derivation of actual and statewide collision rates is included in **Appendix G**.

3.8.4 Baseline Conditions

Although the project may be expected to be built and occupied between 2010 and 2012, the Year 2015 was selected as the baseline occupancy year because it would represent slightly higher and more conservative background traffic volumes. This analysis year would also provide more strategic traffic conditions in determining the timing of future improvements to the circulation system. Year 2030 represents the General Plan buildout horizon, which is the same as that used in the General Plan traffic analysis; see **Section 4.16** (Cumulative Effects) for the analysis of potential effects under 2030 conditions.

2015 Short-Term Baseline Conditions

Short-term future traffic volumes were developed based on straight line growth between the existing traffic counts and the future buildout volumes obtained from the Cloverdale General Plan Traffic Analysis. The 2015 traffic volumes for the study intersections are shown in **Figure 3.8-4**.

Under these conditions (which equate to the No Action Alternative), the study intersections would operate at LOS C or better under both p.m. and weekend midday peak periods, except for the intersection of U.S. 101 Northbound Ramps / South Interchange Connection. The study intersection would operate with an overall delay of 30.2 seconds (LOS D) during the weekday p.m. peak hour, which is worse than the mid-LOS D City standard (i.e., would be considered unacceptable under City standards). The traffic volumes at this intersection would satisfy the peak-hour traffic signal warrants under 2015 baseline conditions. Intersection level of service conditions for 2015 traffic conditions are summarized in **Table 3.8-3**, and the LOS calculation sheets are provided in **Appendix G**.

3.8.5 References

Caltrans, 2002. *Guide for the Preparation of Traffic Impact Studies*.

Caltrans, 2006. *California Manual on Uniform Traffic Control Devices for Streets and Highways*.

Caltrans, 2007. *2006 Accident Data on California State Highways*

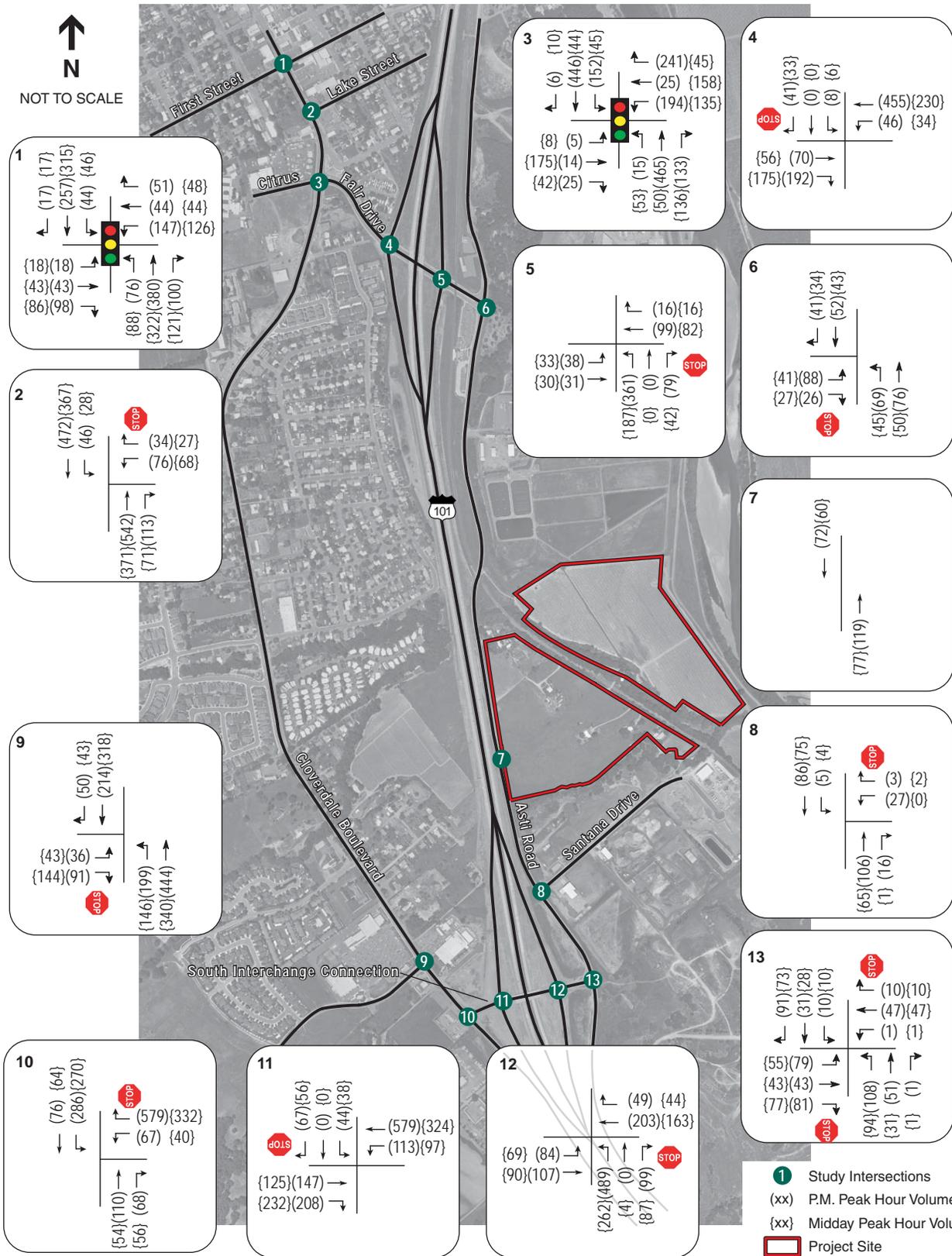
Sonoma County Transportation Authority. 2008. *Cloverdale Bicycle & Pedestrian Master Plan*.

Sonoma County Transit, 2009. Maps and Schedules, as of June 28, 2009. Available at:

<http://www.sctransit.com/>.

TRB (Transportation Research Board), 2000. *Highway Capacity Manual*.

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N
NOT TO SCALE



SOURCE: w-trans, 2009; and ESA, 2011

Cloverdale Rancheria Resort Casino Project EIS . 207737

Figure 3.8-4
2015 Traffic Volumes

3.9 Land Use and Agriculture

3.9.1 Land Use

Regional Setting

Sonoma County has a total area of approximately 1,768 square miles and is the most northerly of the nine counties in the San Francisco Bay Region. The county is located approximately 45 miles north of San Francisco and lies along the Pacific coastline. The project site is located in the Cloverdale/Northeast County Planning Area. The planning area includes the City of Cloverdale and the community of Geyserville. Sonoma County is a member of the Association of Bay Area Governments which is a mechanism for cooperative regional planning projects.

Project Setting

The Project Site is located within the Urban Growth Boundary and the Sphere of Influence of the City of Cloverdale (City of Cloverdale, 2010). Five of the parcels are within the unincorporated area of Sonoma County and one parcel (APN 116-310-020) is located within the Cloverdale city limits.

The project site is currently used for residential and agricultural uses. The two parcels east of the railroad tracks contain vineyards and one residence. The four parcels west of the railroad tracks contain six residences, a modular building, two barns, multiple sheds, and ancillary facilities related to horse grazing operations.

Surrounding land uses include the City of Cloverdale wastewater treatment plant and associated treatment ponds to the north, industrial warehouses and storage facilities to the south, Highway 101 and residential neighborhoods to the west, and the Russian River and agriculture to the east. The project site boundary is located approximately 3,900 feet from the north end of the airport runway for the Cloverdale Municipal Airport which is discussed further below.

Regulatory Setting

As discussed above, the project site is within the Sphere of Influence of the City of Cloverdale. The City's Sphere of Influence is defined as "the area of the City that has been approved for future annexation for the Sonoma County Local Agency Formation Commission" (City of Cloverdale, 2010).

The five parcels outside of the city limits contain the applicable County land use designations and proposed City land use designations (foreseeable land use designations if the parcels were incorporated into the City). **Table 3.9-1** contains a summary of the applicable land use designations and zoning for the project site. The interaction between County and City land use policy is discussed in the following text. For the five parcels outside of the city limits

**TABLE 3.9-1
LAND USE AND ZONING FOR PROJECT SITE**

Parcel Number	Jurisdiction	City Land Use Designation	County Land Use Designation	Zoning of the Applicable Jurisdiction
116-310-020	City	General Industry	N/A	General Industry
116-310-035	County	(Proposed) Business Park and General Industry	Limited Industrial	Rural Residential
116-310-039	County	(Proposed) Business Park and General Industry	Limited Industrial	Rural Residential
116-310-040	County	(Proposed) Business Park and General Industry	Limited Industrial	Rural Residential
116-310-005	County	(Proposed) Conservation	Land Intensive Agriculture	Land Intensive Agriculture
116-310-079	County	(Proposed) Conservation	Land Intensive Agriculture	Land Intensive Agriculture

SOURCE: City of Cloverdale, 2010; Sonoma County, 2009

General Plans

Sonoma County General Plan 2020

The Sonoma County General Plan was adopted in 2008 and replaced the previous plan adopted in 1989. The Land Use Element provides the distribution, location and extent of uses for each land use category. The Land Use Element has a time horizon of 2020. The Land Use Element provides the following description of land designations found on the project site. **Figure 3.9-1** provides a map of the County's land use designations for the project site and adjacent parcels.

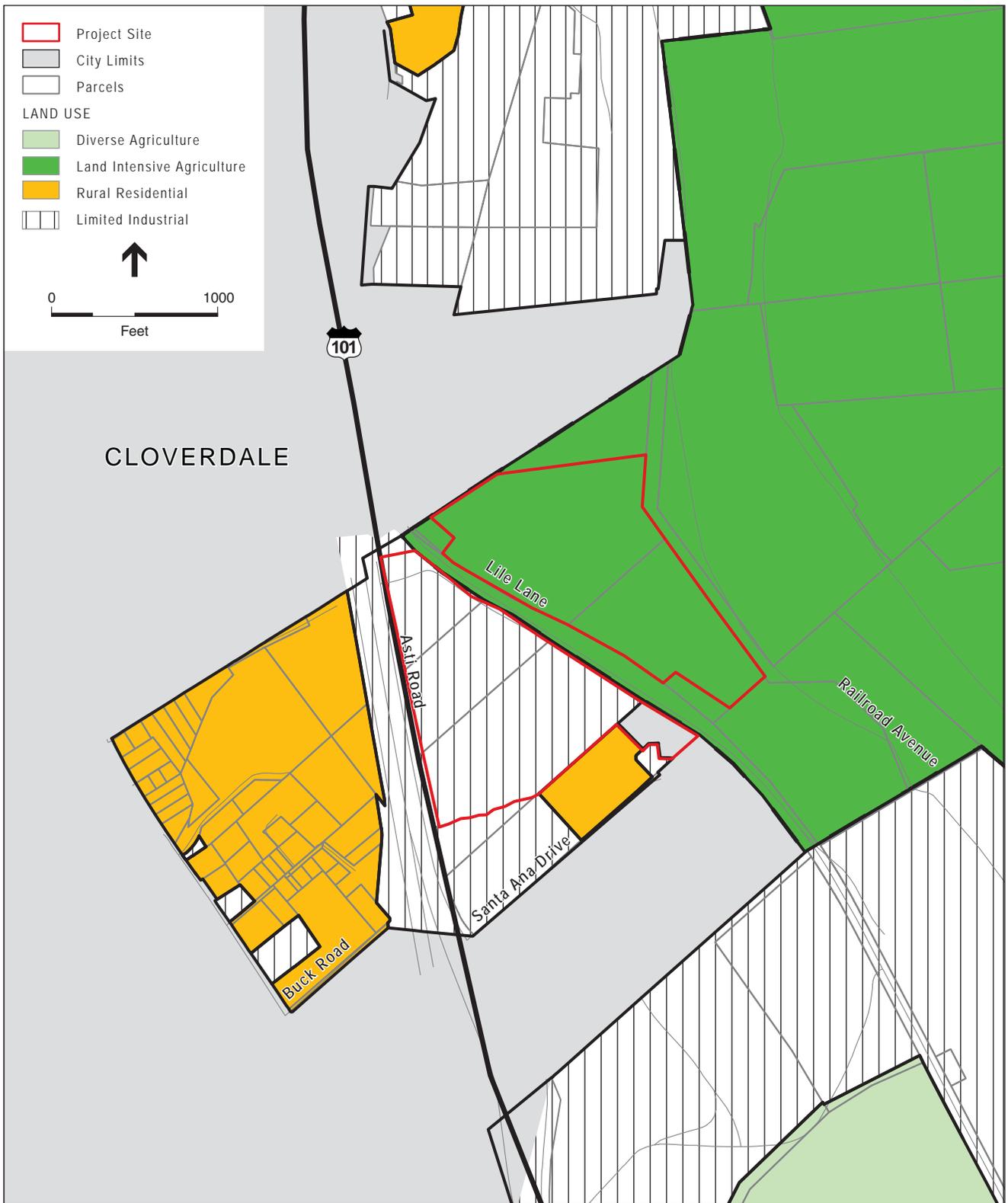
Limited Industrial Areas – This designation is designed to meet service and employment needs where the range or scale of industrial uses is limited. Factors that may limit these uses are lack of public services, incompatible adjacent land uses, and adverse environmental impacts. In general, this category includes resource related industrial uses not expected to need the full range of urban services, such as lumber mills and concrete and asphalt plants.

Land Intensive Agricultural Areas (LIA) - This designation is designed to enhance and protect lands capable of and generally used for animal husbandry and the production of food, fiber, and plant materials. The soil type and climate support relatively high production per acre of land.

Applicable land use goals and policies are listed in **Section 4.9**.

City of Cloverdale General Plan

The City's General Plan includes the goals, policies and programs that constitute the formal policy of the City for land use, development and environmental quality (City of Cloverdale, 2010). The current General Plan was adopted in May 2009 and last amended November 2010. The General Plan has a time horizon of 2025.



SOURCE: County of Sonoma, 2008; and ESA, 2011

Cloverdale Rancheria Resort Casino Project EIS . 207737

Figure 3.9-1
Sonoma County Land Use Designations

The Land Use Element provides the following description for the general distribution and intensity of uses for the project site, envisioned under the General Plan. **Figure 3.9-2** provides a map of the City's land use designations for the project site and adjacent parcels.

General Industry – This designation provides for employment opportunities. The placement of this designation is away from residential uses and sensitive habitats where possible to limit environmental effects. Primary uses include light manufacturing, limited manufacturing, industrial parks, wineries, lumber mills, assembly, warehousing and distribution. Secondary uses include professional office and research and development.

Business Park - This designation provides additional service-oriented employment opportunities in Cloverdale. Primary uses include professional office and research and development. Secondary uses include limited light industry, industrial parks, wineries, warehouses, and nurseries.

Conservation - The purpose of this designation is to manage and preserve valuable biological, visual, and agricultural resources in the Cloverdale Planning Area. Primary uses include river/stream-related recreation, open space buffers, and agricultural production. Setbacks of 50 feet from tributaries are encouraged, and between 300 feet to 1,000 feet around the Russian River.

Applicable land use goals and policies are listed in **Section 4.9**.

Zoning Ordinances

Sonoma County

The Sonoma County Zoning Ordinance (Chapter 26 of the Sonoma County Code) regulates development in the unincorporated areas of the County by establishing districts and designating lawful permitted uses and uses which may be approved through the use permit process. Applicable zoning for the project site is listed in **Table 3.9-1** and shown on **Figure 3.9-3**.

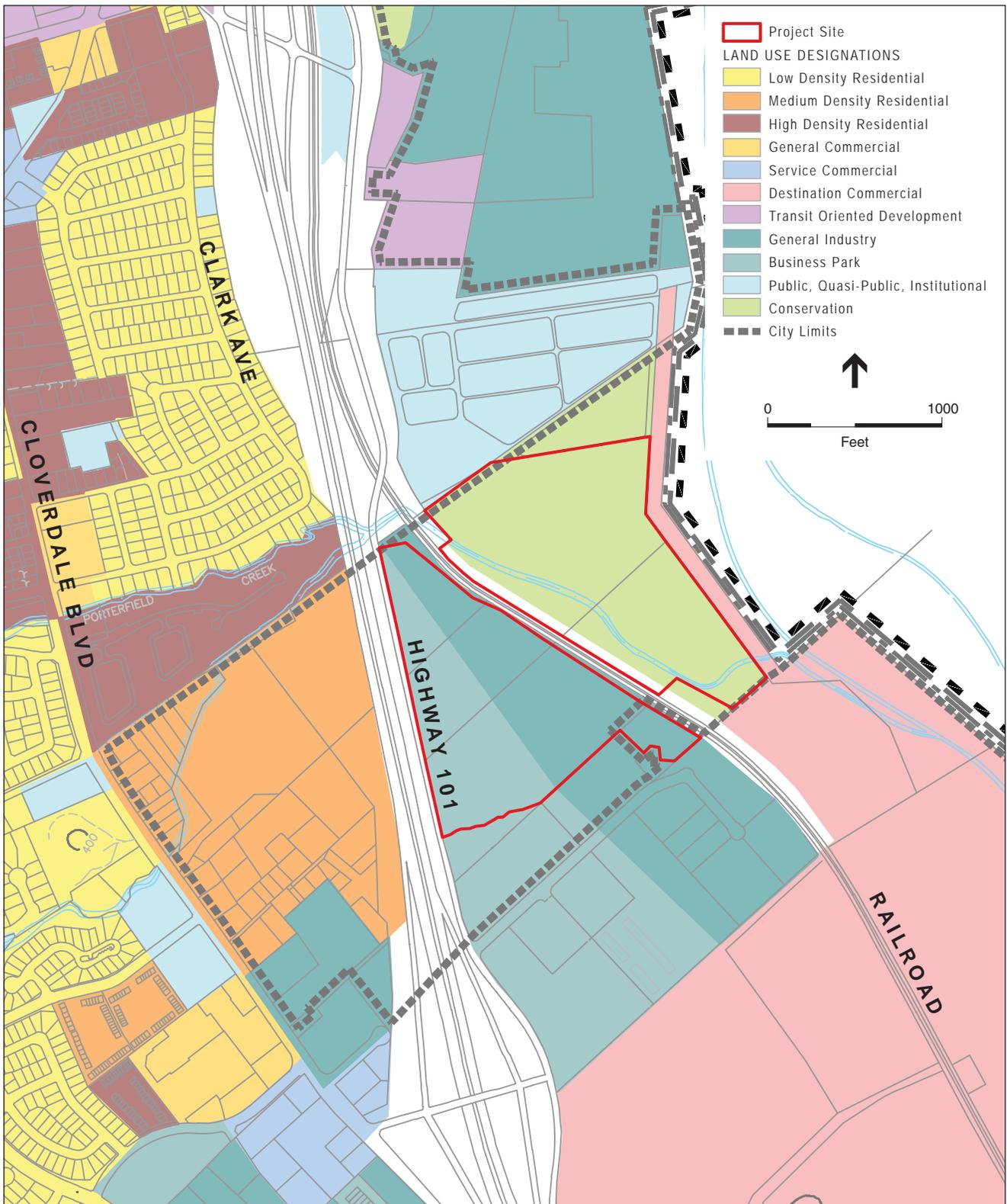
The following zoning is applicable to portions of the project site:

Rural Residential District (RR) – The purpose of this district is to preserve the rural character and amenities of lands best utilized for low-density residential development. The district may also be applied to land where it is desirable to limit development through zoning.

Land Intensive Agriculture (LIA) – The purpose of this district is to enhance and protect lands best suited for permanent agricultural use and capable of relatively high production per acre of land.

Combining District (B6 and B8) – These districts specify the residential density and/or minimum parcel or lot size for a particular parcel, lot or area.

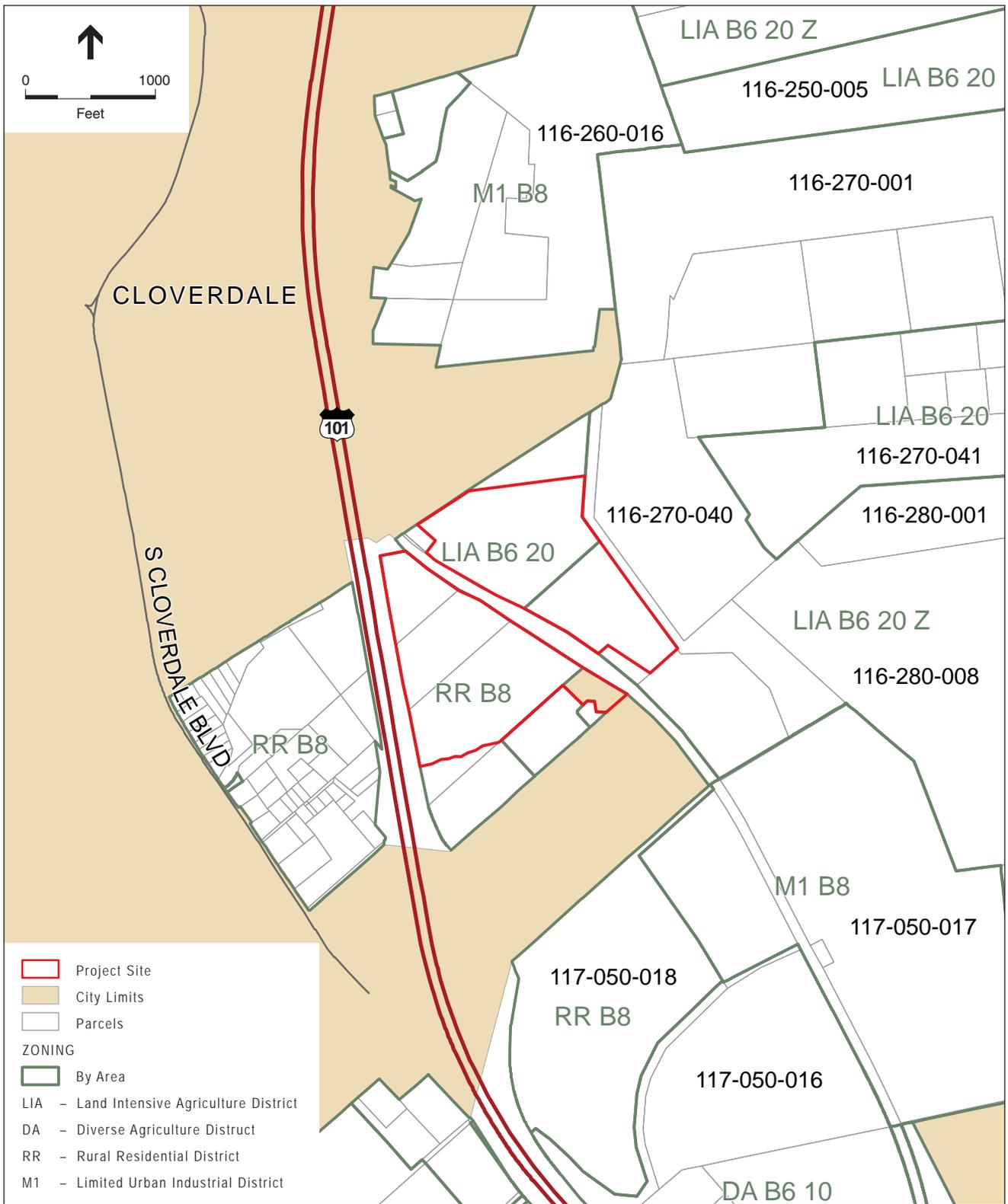
Second Unit Exclusion Combining District (Z) – Excludes a second unit due to various development constraints.



SOURCE: City of Cloverdale, 2010; and ESA, 2011

Cloverdale Rancheria Resort Casino Project EIS . 207737

Figure 3.9-2
City of Cloverdale Land Use Designations



SOURCE: County of Sonoma, 2008; and ESA, 2011

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Figure 3.9-3
Sonoma County Zoning

City of Cloverdale

Zoning regulations for the City are contained within Title 18 of the City Municipal Code. The only applicable City zoning for the project site is General Industrial District as listed in **Table 3.9-1** and shown on **Figure 3.9-4**. The purpose of this district is to provide for manufacturing, research and developmental, warehousing and distribution, and multi-tenant industrial uses, as well as certain supportive administration and professional offices and commercial activities on a limited basis.

Airport Regulation and Policy

The Cloverdale Municipal Airport is located approximately 2 miles south of the center of Cloverdale as shown on **Figure 3.9-5**. The project site is less than a mile from the airport runway. The airport is owned and operated by the City and is within an incorporated area. The airport has one paved runway serving single and light twin-engine aircraft. The runway is 3,146 feet long and 60 feet wide and oriented in a northwest to southeast direction

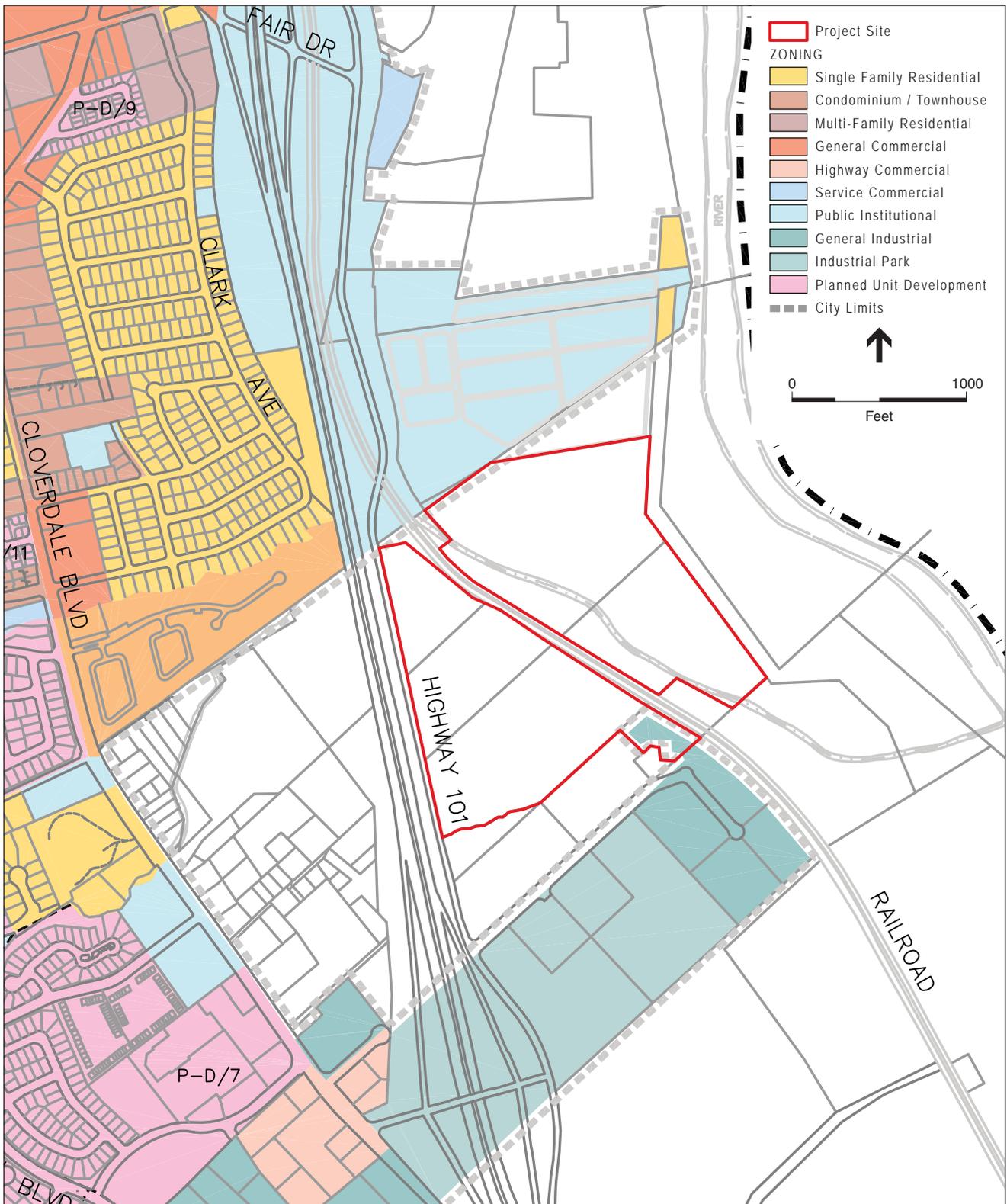
Federal

The Federal Aviation Administration (FAA) is the branch of the U.S. Department of Transportation with regulatory responsibility for civil aviation. The FAA is responsible for establishing policies and regulations to ensure the safety of the traveling public.

Federal Aviation Regulation (FAR) Part 77 establishes standards and notification requirements for objects affecting navigable airspace. Notification allows the FAA to identify potential aeronautical hazards and prevent or minimize the adverse impacts to the safe and efficient use of navigable airspace. The FAA must be notified of any construction or alternation within 10,000 feet of a public use airport which exceeds a 50:1 surface from any point on the runway. The project site boundary is approximately 3,900 feet northwest of the end of the airport runway. The project site is located beneath the horizontal surface and conical surface of the imaginary air space of the airport.

FAR Part 150 establishes noise standards for surrounding land use. Residential uses are acceptable at a maximum noise level of CNEL 65 dBA. For typical general aviation airport and less noisy suburban or rural settings, a 60 CNEL standard is sometimes used by local authorities. Critical noise is restricted to the airport property and thus there are no incompatible uses outside of the airport property (Wadell Engineering Corporation, 2007).

FAA Advisory Circular (AC) 150/5200-33B addresses hazardous wildlife attractants on or near airports. This Advisory Circular is intended to provide guidance on siting certain land uses that have the potential to attract potentially hazardous wildlife to a public-use airport or its vicinity. The FAA Advisory Circular recommends against “land use practices that attract or sustain populations of hazardous wildlife within the vicinity of airports or cause movement of hazardous wildlife onto, into, or across the approach or departure airspace, aircraft movement area, loading ramps, or aircraft parking area of airports.” The Advisory Circular recommends a



SOURCE: City of Cloverdale, 2004; and ESA, 2011

Cloverdale Rancheria Resort Casino Project EIS . 207737

Figure 3.9-4
City of Cloverdale Zoning



SOURCE: ESRI, 2006; Bing Maps, 2009; and ESA, 2011

Cloverdale Rancheria Resort Casino Project EIS . 207737

Figure 3.9-5
Cloverdale Municipal Airport

separation distance of 5,000 feet between airports using piston-powered aircraft and any project or change in land use that could attract hazardous wildlife, such as open-air water storage facilities. For airports using turbine-powered aircraft, the FAA recommends a separation distance of 10,000 feet between an airport and a potential hazardous wildlife attractant. For projects that are located outside the 5,000/10,000-foot criteria but within five statute miles of the airport's air operations area, the FAA may review development plans, proposed land use changes, operational changes, or wetland mitigation plans to determine whether such changes in land use would create potential wildlife hazards to aircraft operations.

State

Caltrans Division of Aeronautics

The State Aeronautics Act (Public Utilities Code section 21001 *et seq.*), provides the foundation for the California Department of Transportation's (Caltrans) aviation policies. The Division of Aeronautics issues permits for and annually inspects public-use airports throughout the State, and provides grants and loans for safety, maintenance and capital improvement projects at airports. To foster compatible land use around airports, the Division administers noise regulation and land use planning laws and encourages environmental mitigation measures to lessen noise, air pollution, and other impacts caused by aviation. The Division's System Planning group provides for the integration of aviation into transportation system planning on a regional, statewide, and national basis.

The State Aeronautics Act requires local jurisdictions that operate public airports to establish Airport Land Use Commissions (ALUCs) or an equivalent designated body to protect the public health, safety, and welfare. The ALUC or equivalent is responsible for promoting the orderly expansion of airports and adoption of land use measures by local public agencies to minimize exposure to excessive noise and safety hazards near airports. Each ALUC or equivalent designated body is responsible for preparing and maintaining an Airport Land Use Compatibility Plan that identifies compatible land uses near each public use airport within its jurisdiction. The Plan must provide policies for reviewing certain types of development that occur near airports. State law requires consistency between airport land use compatibility plans and any associated general plans. Caltrans is responsible for the review and approval of all Land Use Compatibility Plans within the State of California.

Local

Comprehensive Airport Land Use Plan for Sonoma County

The Sonoma County Comprehensive Airport Land Use Plan (CALUP) was adopted in 2001. The Sonoma County CALUP notes that "[t]he primary referral area for Cloverdale Municipal Airport runs close to the airport on the west since there is no traffic pattern on that side, but extends some 6,000 feet to the east to encompass some of the high terrain in that area" (Sonoma County, 2001). The project site is located on the west side within the same Traffic Pattern Zone (TPZ) as the Alexander Valley Resort. The land use standards in the TPZ include uses with a maximum population density of 150 persons per acre, maximum residential density of 4 units per acre, a minimum amount of 15% gross area for open space. Uses including schools, auditoriums, stadiums, and amphitheatres are discouraged in the TPZ.

Cloverdale Municipal Airport Master Plan 2025

The Cloverdale Municipal Airport Master Plan 2025 was prepared by Waddell Engineering Corporation to evaluate existing airport facilities, assess airport demand and prepare an airport master plan to accommodate growth through 2025 (2007). The Master Plan states that 28 aircraft are based at the airport and anticipates 42 aircraft, primarily single-engine aircraft, by 2025. Annual runway operations for general aviation are anticipated to increase from 14,700 to 22,050 by 2025. To meet FAA standards the existing 3,146 x 60 foot runway will need to be lengthened to 3,160 feet with 240 foot safety areas off each end to meet current demand and improve safety. Increased parking facility for aircraft and development of city owned hangars for based aircraft is recommended.

The Master Plan discusses that incompatible off-site uses include those that could potentially cause height obstruction, electrical interference, lighting distractions, or attraction of birds.

3.9.2 Agriculture

Agriculture Setting

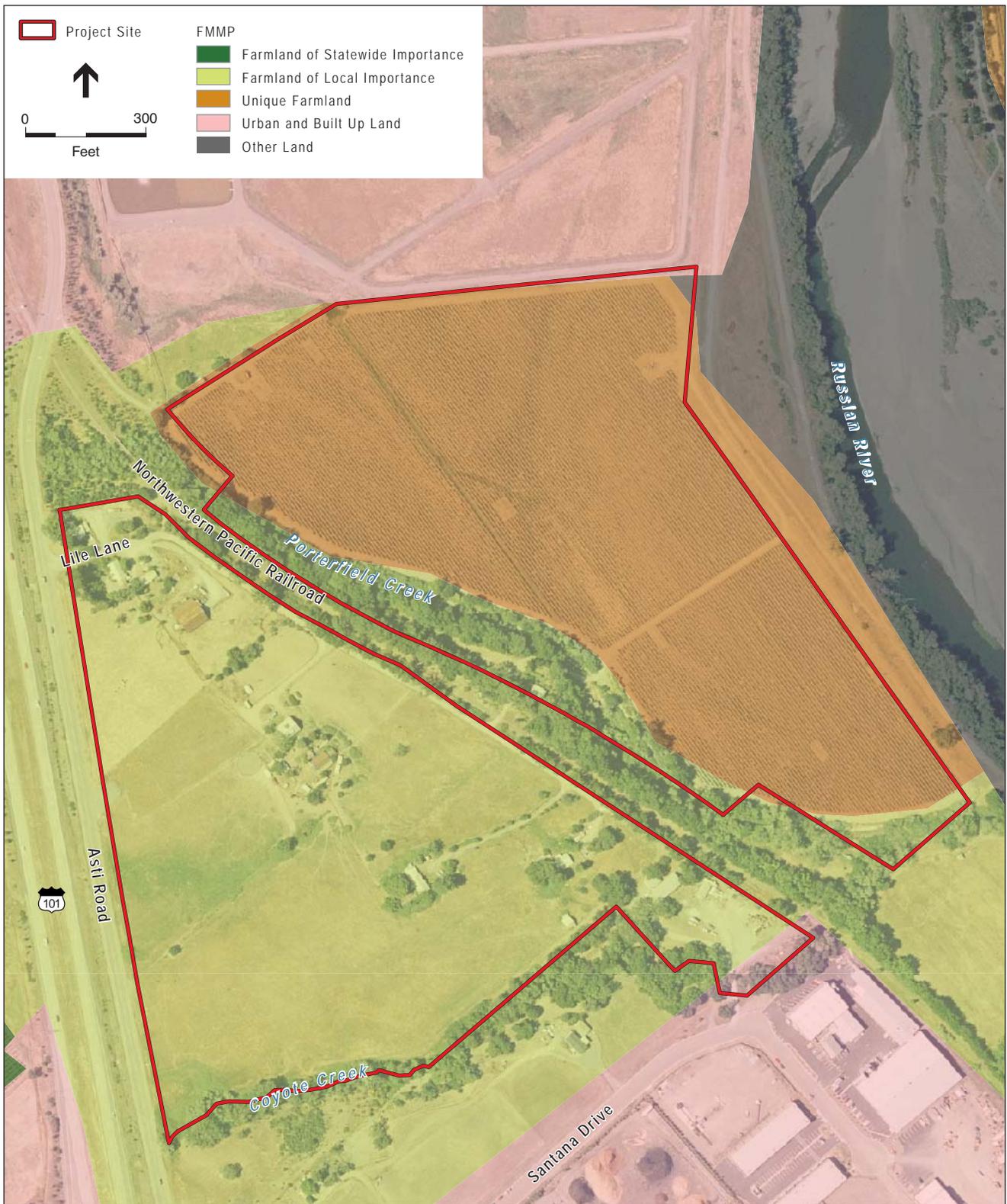
There are currently agricultural activities on the project site. The eastern portion of the project site is used for vineyards. The western portion of the project site is used for horse grazing. The two parcels east of the railroad tracks are associated with Land-Intensive Agricultural designation and zoning by Sonoma County. The remainder of the project site is not zoned or designated for agricultural uses by either Sonoma County or City of Cloverdale.

The California Department of Conservation maintains the Farmland Mapping and Monitoring Program which analyzes impacts to California's agricultural resources. As shown on **Figure 3.9-6** the project site contains farmland of state importance and farmland of local importance.

Regulatory Setting

Farmland Protection Policy Act

The Farmland Protection Policy Act (FPPA) is contained within the Agriculture and Food Act of 1981 (7 U.S.C § 4201). The purpose is to minimize the impact of proposed federal actions on unnecessary conversion of farmland to non-agricultural uses. The Natural Resource Conservation Service (NRCS) implements the program and evaluates the agricultural importance of the farmland on Form AD 1006, the Farmland Conversion Impact Rating Form. The form contains a rating system which scores sites from 0 to 260. A maximum of 100 points can be assigned through the land evaluation completed by NRCS. A maximum of 160 points can be assigned through the site assessment completed by the federal agency (the BIA for the Proposed Action). The USDA recommends that sites receiving a total score of less than 160 need not be evaluated further. Sites receiving scores totaling 160 or more should be given increasingly higher levels of consideration for protection (7 C.F.R. Section 658.4). **Table 3.9-2** summarizes scoring for the project site. NRCS



SOURCE: FMMP, 2006; GlobeXplorer, 2007; and ESA, 2011

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Figure 3.9-6
Farmland Mapping

**TABLE 3.9-2
FARMLAND CONVERSION IMPACT FORM SCORING SUMMARY**

Characteristics	Criteria	Points	Project Site Score
Percentage of land in non-urban use within a radius of 1.0 mile from the project	>90%	15	12
	90-20%	14 to 1	
	<20%	0	
Percentage of site perimeter bordering on land in non-urban use.	>90%	10	8
	90-20%	9 to 1	
	<20%	0	
Percentage of site that has been farmed more than five of the last 10 years.	>90%	20	20
	90-20%	19 to 1	
	<20%	0	
Site subject to State or local government policies/programs to protect farmland or covered by private programs to protect farmland.	Protected	20	20
	Unprotected	0	
Proximity to urban built-up area	2 miles or more	11-15	1
	1 to 2 miles	6-10	
	Less than one mile	1-5	
	Adjacent	0	
Proximity of site to water lines, sewer lines and/or other local facilities and services with capacities and design that would promote non-agricultural use.	No services within 3 miles	15	0
	Some services 1-3 miles from site	10	
	Services within ½ mile of site	0	
Is farm unit containing the site (before the project) as large as the average-size farming unit in the county?	Greater than 50 percent of average or larger	9 to 1	0
	Less than 50 percent below average	0	
Percentage of remaining land (on farm) to become non-farmable because of interference with land patterns.	25% or more	10	10
	5 to 25%	9 to 1	
	Less than 5%	0	
Availability of adequate supply of farm support services and markets, i.e., farm suppliers, equipment dealers, processing and storage facilities and farmer's markets.	All services available	5	5
	Some services available	4 to 1	
	No services available	0	
Substantial and well-maintained on-farm investments, i.e. barns, other storage buildings, fruit trees and vines, field terraces, drainage, irrigation, waterways, or other soil and water conservation measures.	High amount	20	20
	Moderate amount	19 to 1	
	None	0	
Does conversion of farmland to non-agricultural use reduce demand for farm support services used by remaining farms in the area so as to jeopardize the continued existence of these support services?	Substantial reduction	10	0
	Some reduction	9 to 1	
	No significant reduction	0	
Is the kind and intensity of the proposed use of the site sufficiently incompatible with agriculture that it is likely to contribute to the eventual conversion of surrounding farmland to non-agricultural use?	Incompatible	10	0
	Tolerable	9 to 1	
	Fully compatible	0	
Total Site Assessment Points		160	96
Land Evaluation Points		100	27
Total Score		260	123

SOURCE: NRCS, 2009 (**Appendix M**); ESA, 2009

assigned the site a land evaluation score of 27 points and it has been assessed that the Proposed Action would result in a site assessment score of 96 points. With 123 total points the site would not need to be evaluated further, as discussed above. Correspondence with NRCS and the scoring criteria are included as **Appendix M**.

Williamson Act

The California Land Conservation Act (Williamson Act) of 1965 was enacted to allow for counties and cities to designate agricultural preserves (Williamson Act lands) and provide favorable taxation to private agricultural landowners based on the income-producing value of their property in agricultural use, rather than on the property's assessed market value. In order to receive the favorable tax rate, the landowner signs a contract with the county or city agreeing to not develop the land for a minimum 10-year period. The contracts automatically renew every 10 years unless a party to the contract files for nonrenewal or petitions for cancellation. Once the nonrenewal process has been started, the annual tax assessment gradually increases until the end of the 9-year nonrenewal period when the contract is terminated.

Land uses allowed under Williamson Act contact (e.g. agricultural and limited ancillary uses) are governed by Government Code Section 51238.1. In accordance with state law, each city and county has the discretion to determine land uses that are or are not compatible with Williamson Act contracts, provided these uses are not prohibited under the Act. The two parcels of the project site east of the railroad tracks are under Williamson Act contracts.

3.9.3 References

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Wadell Engineering Corporation, 2007. Cloverdale Municipal Airport Master Plan 2025. December 2005 Revised December 2007. Burlingame, California.

3.10 Public Services

3.10.1 Water Supply

The City of Cloverdale supplies potable water within the city limits. The City has four groundwater wells which pump the underflow of the Russian River. Three wells are active. A new well is planned to replace one of the existing wells (City of Cloverdale, 2010). According to the Water Supply Assessment prepared for the City's 2008 General Plan Update, the three active wells have a combined flow of approximately 2,900 gallons per minute (gpm). The inactive well was estimated to have a capacity of 800 gpm. The City's water treatment plant was recently expanded to accommodate 4.5 million gallons per day (mgd). The average annual water production for the City from 2000 to 2005 was 1,483 acre-feet or 483 million gallons. The City's Municipal Service Review estimates the average demand for water in recent years is 1.7 million gallons per day (1,180 gpm; Economic & Planning Systems, 2006).

There is ongoing replacement of undersized water mains to improve fire flow. Both the Water Supply Assessment and the Municipal Service Review anticipate the need for at least one additional well prior to build-out of the General Plan. Both reports also identify potential impacts to water source (Russian River basin) in future dry years.

Potable water outside of the City limits is supplied by private groundwater wells and water districts. The project site contains private wells and wells supplying water from the South Cloverdale Water Company and Six Acre Water Company.

3.10.2 Wastewater Service

The City of Cloverdale provides wastewater treatment within the City limits. The wastewater treatment plant has a capacity of 1 mgd for average daily flow and 8.3 mgd for peak wet weather flow. Flows as of 2006 were, 0.5 mgd in the dry season and 1.9 mgd in the wet season. Capacity is expected to be sufficient for buildout (Economic & Planning Systems, 2006). The City plans to require developers to install needed infrastructure and pay impact development fees for additional lift stations and sewer infrastructure.

There is an existing 18-inch sewer line which is adjacent to the project site. Two lines from Santana Drive and Asti Road combine and continue northeast along the southern project boundary as an 18-inch line; at Lile Lane the 18-inch line continues northwest along the railroad, between the project parcels.

3.10.3 Solid Waste Service

The California Integrated Waste Management Act (CIWMA), also known as Assembly Bill 939 required each jurisdiction in the state to divert 25 percent of its solid waste from landfill or transformation facilities by 1995 and 50 percent by 2000. Accepted diversion methods include source reduction, recycling and composting activities. Waste from outside the boundaries of the State of

California or Indian County within the boundaries of the state of California is excluded from the diversion rates reported pursuant to CIWMA (California Integrated Waste Management Board, 2008).

The CIWMA also required each County to prepare a County Integrated Waste Management Plan (CoIWMP) which is the main planning document for solid waste management in each County. Sonoma County is currently working on amending its CoIWMP and associated environmental documentation. The previously adopted plan relied on the continued use and expansion of the Central Landfill for County solid waste; however, underdrain contamination has prevented landfill expansion. As noted in the Notice of Preparation and Initial Study for the amended CoIWMP, refuse is currently hauled to out-of-County permitted landfills, which is inconsistent with the Siting Element of the CoIWMP. Out-hauling for an interim period is permissible through the County's transfer stations, including the Healdsburg Transfer Station, through a California Environmental Quality Act categorical exemption. The County cites recent analysis by Brown, Vence & Associates which indicates there is adequate landfill capacity in the Bay Area to support the County's disposal needs for 25 years (starting from the year 2004). The following landfills which receive County waste include, but are not limited to, Redwood Sanitary Landfill in Novato, Potrero Hills Landfill in Suisun City, Keller Canyon Landfill in Pittsburg, Vasco Road Sanitary Landfill in Livermore, Hay Road Landfill in Vacaville, Yolo County Central Landfill in Davis and Clover Flat Landfill in Calistoga (Sonoma County Waste Agency, 2008). Solid waste and recycling in the project vicinity is collected by Redwood Empire. The waste and recycling is hauled to the Healdsburg Transfer Station and then to the out-of-County landfills listed above.

3.10.4 Electricity, Natural Gas, and Telecommunications

Pacific Gas & Electric (PG&E) provides electricity and natural gas service in the project vicinity. Electricity is supplied to residences on the project site from an overhead 3-phase distribution pole which crosses the project site. Gas is not currently available to the project site. An existing gas main is located on the east side of Asti Road approximately 2,500 feet south of Santana Drive (**Appendix H**).

Cable television and phone service is provided by AT&T. Cable television is not currently provided to the project site, although various satellite providers serve the area.

3.10.5 Public Health and Safety

Law Enforcement

Primary law enforcement services in the project vicinity are provided by the Sonoma County Sheriff's Office and the Cloverdale Police Department. California Highway Patrol provides primary law enforcement services on Highway 101.

Sonoma County Sheriff's Office

The Sonoma County Sheriff's Office provides law enforcement, court security, and detention services within the County. The primary jurisdiction of the Sheriff's Office covers 1,600 square miles and includes the unincorporated areas of the County and the cities of Windsor and Sonoma.

The service population for this area is approximately 500,000. The Sheriff's Office includes over 1,000 employees. There are over 275 deputy sheriffs in the patrol, investigations, court security, and transportation bureaus of the department. The detention division includes 2 facilities with over 300 correctional officers and support staff (Sonoma County Sheriff's Office, 2009). The daily inmate population is approximately 1,000 (Sonoma County, 2011). The main station is located at 2796 Ventura Avenue in Santa Rosa. Substations are located in Guerneville, Larkfield, Roseland, and Sonoma Valley. The department includes a helicopter unit, K-9 units, Special Weapons and Tactics (SWAT) team, hostage negotiation team, among other specialized services (Sonoma County Sheriff's Office, 2009). A marine unit provides services on waterways within the County. **Table 3.10-1** summarizes crimes reported by the Sheriff Department through the Uniform Crime Reporting (UCR) Program.

**TABLE 3.10-1
OFFENSES KNOWN TO SONOMA COUNTY SHERIFF'S OFFICE**

Offenses	2006	2007
Homicide	2	2
Forcible Rape	43	44
Robbery	48	37
Aggravated Assaults	498	441
Simple Assaults	700	597
Burglaries	739	705
Larceny	1172	997
Vehicle Thefts	20	24

SOURCE Sonoma County Sheriff's Office, 2009

Cloverdale Police Department

The primary jurisdiction of the Cloverdale Police Department is the incorporated area of the City of Cloverdale. The main station is located at 112 Broad Street in Cloverdale. The station has a temporary holding center prior to transfer to the Sonoma County jail. The Department has 14 sworn staff which includes the chief, 3 sergeants, 1 corporal, and 9 patrol officers. The Department also staffs 6 dispatchers, 1 records supervisor, 1 community service officer, 2 reserve officers, and 2 crossing guards. The City is not divided into specific patrol zones but the project site is regularly patrolled as it is on the patrol route to the airport via Asti Road (Tuma, pers. comm., 2009).

The Department works cooperatively with the Sheriff's Office and typically responds to calls within one mile of the City limits until the Sheriff's Office arrives. The City accesses the Sheriff's Office helicopter during emergencies under mutual aid; the Sonoma County Board of Supervisors has approved a fee for use of the helicopter for non-emergencies and law enforcement activities lasting greater than 15 minutes.. The Department also helps to fund the countywide Multiple Agency Gang Enforcement Team which is primarily staffed by the Sheriff's Office.

Response times within the City average approximately three minutes or less for high priority calls. In 2006 the Department received 14,100 calls for service and 13,900 calls for service in 2007.

Table 3.10-2 summarizes crimes reported by the Cloverdale Police Department through the UCR Program.

**TABLE 3.10-2
OFFENSES KNOWN TO CITY OF CLOVERDALE POLICE DEPARTMENT**

Offenses	2006	2007
Violent Crime	25	28
Homicide	0	0
Forcible Rape	3	1
Robbery	3	5
Aggravated Assaults	19	22
Property Crime	169	179
Burglaries	38	28
Larceny	121	135
Vehicle Thefts	10	16
Arson	3	1

SOURCE: FBI, 2009

Information on the existing and future needs of the Department was obtained from Police Chief Mark Tuma (2009). The police station is currently shared with the Cloverdale Fire Protection District (CFPD), which is planning to move into a new station. The new fire station is under construction. Even with the space currently filled by the CFPD, the building is considered undersized and does not meet seismic standards. Staff needs include a police secretary, detective, and a lieutenant. The police secretary would provide administrative and accounting support. The detective position is currently vacant but could be filled by existing patrol staff if an additional patrol officer were hired. A detective would assist in case management including investigations which require leaving the City. These services are currently provided by patrol staff through overtime.

Fire Protection Services

CFPD provides fire protection services to 76 square miles including the City of Cloverdale and surrounding unincorporated areas. The fire station is located at 116 Broad Street. In August 2009 it is anticipated that CFPD will move to a new facility at 451 South Cloverdale Boulevard which is currently under construction. CFPD response within the city limits is three to four minutes although the first vehicle on site may be a command vehicle. The wildfire risk at the project site is low.

The fire district employs four full-time staff including a fire chief, captain, engineer, and 40-hour firefighter. CFPD also has two part time support staff. The majority of staff is supplied by a volunteer work force. Equipment includes five fire engines, two rescue vehicles and two command vehicles. Engines include those specialized for urban, rural, and wildland interface (Elliott, pers. comm., 2009).

CFPD provides a portion of the funding for the CalFIRE station at 1001 South Cloverdale Boulevard through an Amador Contract. Both the CFPD and CalFIRE respond to service calls within the District automatically. Geyserville Fire Protection District would provide backup if needed.

Information on the existing and future needs of CFPD was obtained from Fire Chief Brian Elliott (2009). The District's apparatus replacement program is a year behind, resulting in daily use of a fire engine from 1975. A 75-foot aerial apparatus was recommended for the Alexander Valley Resort project which includes a hotel. This apparatus could adequately provide service to buildings of six stories or less. The nearest ladder truck currently is in Healdsburg approximately 17 miles from Cloverdale.

Emergency Medical Services

As noted above, a portion of emergency medical services is provided by CFPD. Ambulance service is provided by the Cloverdale Healthcare District. The nearest emergency room is located at Healdsburg District Hospital. The nearest trauma center is Santa Rosa Memorial Hospital. Air medical services are available from REACH, and CalStar. The Sheriff's Office and California Highway Patrol also have helicopters which could be used in an emergency.

3.9.6 References

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3.11 Noise

3.11.1 Setting

Noise can be 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. Sound pressure fluctuations can be measured in units of hertz (Hz), which correspond to the frequency of a particular sound. Typically, sound does not consist of a single frequency, but rather a broad band of frequencies varying in levels of magnitude (sound power). The sound pressure level, therefore, constitutes the additive force exerted by a sound corresponding to the frequency/sound power level spectrum.

The typical human ear is not equally sensitive to all frequencies of the audible sound spectrum. As a consequence, when assessing potential noise impacts, sound is measured using an electronic filter that de-emphasizes the frequencies below 1,000 Hz and above 5,000 Hz in a manner corresponding to the human ears decreased sensitivity to low and extremely high frequencies instead of the frequency mid-range. This method of frequency weighting is referred to as A-weighting and is expressed in units of A-weighted decibels (dBA). Frequency A-weighting follows an international standard methodology of frequency de-emphasis and is typically applied to community noise measurements. Some representative noise sources and their corresponding A-weighted noise levels are shown in **Figure 3.11-1**.

3.11.2 Existing Conditions

Noise Exposure and Community Noise

An individual's noise exposure is a measure of noise over a period of time. A noise level is a measure of noise at a given instant in time. Community noise varies continuously over a period of time with respect to the contributing sound sources of the community noise environment. Community noise is primarily the product of many distant noise sources, which constitute a relatively stable background noise exposure, with the individual contributors unidentifiable. The background noise level changes throughout a typical day, but does so gradually, corresponding with the addition and subtraction of distant noise sources such as traffic and atmospheric conditions. What makes community noise constantly variable throughout a day, besides the slowly changing background noise, is the addition of short duration single event noise sources (e.g., aircraft flyovers, motor vehicles, sirens), which 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 of time 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 most frequently used noise descriptors are summarized:

- Leq:** the energy-equivalent sound level is used to describe noise over a specified period of time, typically one hour, in terms of a single numerical value. The Leq is the constant sound level which would contain the same acoustic energy as the varying sound level, during the same time period (i.e., the average noise exposure level for the given time period).
- Lmax:** the instantaneous maximum noise level for a specified period of time.
- L₅₀:** the noise level that is equaled or exceeded 50 percent of the specified time period. The L₅₀ represents the median sound level.
- L₉₀:** the noise level that is equaled or exceeded 90 percent of the specific time period. This is considered the background noise level during a given time period.
- Ldn:** 24-hour day and night A-weighted noise exposure level 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 p.m. and 7:00 a.m. is weighted (penalized) by adding 10 dBA to take into account the greater annoyance of nighttime noises.
- CNEL:** similar to Ldn, the Community Noise Equivalent Level (CNEL) adds a 5-dBA “penalty” for the evening hours between 7:00 p.m. and 10:00 p.m. in addition to a 10-dBA penalty between the hours of 10:00 p.m. and 7:00 a.m.

As a general rule, in areas where the noise environment is dominated by traffic, the Leq during the peak-hour is generally within one to two decibels of the Ldn at that location.

Effects of Noise on People

Environmental noise within an urbanized area typically fluctuates over time. This time-varying characteristic of environmental noise is described using statistical noise descriptors. An individual’s noise exposure is a measure of noise exposure over a time period. A noise level is a measure of noise at a given instant in time. However, community noise varies continuously over time because of the contributing sound sources of 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, passing vehicle, sirens, or similar sources, all of which are readily identifiable to the individual.

A 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 so-called “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

These relationships occur in part because of the logarithmic nature of sound and the decibel system. The human ear perceives sound in a non-linear fashion; hence the decibel scale was developed. Because the decibel scale is based on logarithms, two noise sources do not combine in a simple additive fashion, rather logarithmically. For example, if two identical noise sources produce noise levels of 50 dBA, the combined sound level would be 53 dBA, not 100 dBA.

Noise Attenuation

Stationary point sources of noise, including stationary mobile sources such as idling vehicles, attenuate (lessen) at a rate between 6 dBA for hard sites and 7.5 dBA for soft sites for each doubling of distance from the reference measurement. Hard sites are those with a reflective surface between the source and the receiver such as parking lots or smooth bodies of water. No excess ground attenuation is assumed for hard sites and the changes in noise levels with distance (drop-off rate) is simply the geometric spreading of the noise from the source. Soft sites have an absorptive ground surface such as soft dirt, grass or scattered bushes and trees. In addition to geometric spreading, an excess ground attenuation value of 1.5 dBA (per doubling distance) is normally assumed for soft sites. Line sources (such as traffic noise from vehicles) attenuate at a rate between 3 dBA for hard sites and 4.5 dBA for soft sites for each doubling of distance from the reference measurement (Caltrans, 1998).

Fundamentals of Vibration

As described in the Federal Transit Administration's *Transit Noise and Vibration Impact Assessment* (FTA, 2006), ground-borne vibration can be a concern for nearby neighbors of a transit system route or maintenance facility, causing buildings to shake and rumbling sounds to be heard. In contrast to airborne noise, ground-borne vibration is not a common environmental problem. It is unusual for vibration from sources such as buses and trucks to be perceptible, even in locations close to major roads. Some common sources of ground-borne vibration are trains, buses on rough roads, and construction activities such as blasting, pile-driving and operating heavy earth-moving equipment.

There are several different methods that are used to quantify vibration. The peak particle velocity (PPV) is defined as the maximum instantaneous peak of the vibration signal. The PPV is most frequently used to describe vibration impacts to buildings. The root mean square (RMS) amplitude is most frequently used to describe the affect of vibration on the human body. The RMS amplitude is defined as the average of the squared amplitude of the signal. Decibel notation (Vdb) is commonly used to measure RMS. The decibel notation acts to compress the range of numbers required to describe vibration. Typically, ground-borne vibration generated by man-made activities attenuates rapidly with distance from the source of the vibration. Sensitive receptors for vibration include structures (especially older masonry structures), people (especially residents, the elderly and sick), and vibration sensitive equipment.

The effects of ground-borne vibration include movement of the building floors, rattling of windows, shaking of items on shelves or hanging on walls, and rumbling sounds. In extreme cases, the vibration can cause damage to buildings. Building damage is not a factor for most projects, with the occasional exception of blasting and pile-driving during construction. Annoyance from vibration often occurs

when the vibration exceeds the threshold of perception by only a small margin. A vibration level that causes annoyance will be well below the damage threshold for normal buildings. The FTA measure of the threshold of architectural damage for conventional sensitive structures is 0.2 in/sec peak particle velocity (PPV) (FTA, 2006).

Existing Noise Environment and Sensitive Receptors

Some land uses are considered more sensitive to ambient noise levels 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, parks, and other outdoor recreation areas generally are more sensitive to noise than are commercial (other than lodging facilities) and industrial land uses. The nearest sensitive receptor to the project site is a residence approximately 250 feet to the south on Santana Drive. There are also residences located across Highway 101 to the west, the nearest being approximately 500 feet to the west on Otto Boni Drive.

The noise environment surrounding the site is influenced primarily by truck and automobile traffic on Highway 101 and operation noise from the Reuser Inc. manufacturing facility to the south of the project site. To quantify the existing noise environment, three long term (LT) 72-hour noise level measurements and seven short term (ST) 5-minute noise level measurements were taken on and around the site. All noise measurements were collected using Calibrated Metrosonics dB3080 sound level meters. The location of the noise measurements are shown in **Figure 3.11-2**. Results of the long-term noise measurements are presented in **Table 3.11-1** and **Figures 3.11-3**, through **3.11-11**. As indicated by these measurements, areas adjacent to Highway 101 experience hourly average noise levels of between approximately 50 and 64 Leq as a result of traffic noise.

**TABLE 3.11 -1
EXISTING NOISE ENVIRONMENTS AT PROJECT SITE**

Location	Time Period	Leq (decibels)	Noise Sources
LT-1: Electric Pole Across Santana Drive from Reuser Inc. Near Home.	24 hour CNEL measurements were: Friday 63 Saturday 61 Sunday 63	Hourly Average Leq's ranged from: 50 to 63	Unattended noise measurements do not specifically identify noise sources.
ST-1: Electric Pole Across Santana Drive from Reuser Inc. Near Home.	Monday 04/14/08 10:34 – 10:39 AM	5-minute Average Noise Level, Leq 55	Traffic on Hwy 101 Dozer at Reuser Inc.: 58 dBA Truck on Santana Dr.: 65 dBA
LT-2: Tree next to house at North End of Property 223 feet from Hwy 101 NB.	24 hour CNEL measurements were: Friday 69 Saturday 65 Sunday 64	Hourly Average Leq's ranged from: 56 to 64	Unattended noise measurements do not specifically identify noise sources.
LT-3: Fence 115 feet from Hwy 101 SB	24 hour CNEL measurements were: Friday 68 Saturday 66 Sunday 64	Hourly Average Leq's ranged from: 55 to 64	Unattended noise measurements do not specifically identify noise sources.

**TABLE 3.11 -1
EXISTING NOISE ENVIRONMENTS AT PROJECT SITE**

Location	Time Period	Leq (decibels)	Noise Sources
ST-2: Fence 115 feet from Hwy 101 SB	Monday 04/14/08 11:34 – 11:39 AM	5-minute Average Noise Level, Leq 59	Traffic on Hwy 101 No traffic: 50 dBA
ST-3: On train tracks behind yellow house on Santana.	Thursday 04/10/08 10:05 – 10:10 AM	5-minute Average Noise Level, Leq 50	Traffic on Hwy 101: 52 dBA Quiet: 45 dBA
ST- 4: On train tracks behind yellow house	Monday 04/14/08 10:52 – 10:57 AM	5-minute Average Noise Level, Leq 53	Traffic on Hwy 101 Wind: 57 dBA Bird: 55 dBA
ST- 5: On train tracks behind yellow house	Thursday 04/10/08 10:25 – 10:30 AM	5-minute Average Noise Level, Leq 64	Traffic on Hwy 101: 68 dBA Traffic on Asti Rd.: 73 dBA
ST- 6: End of dirt road at yellow house	Monday 04/14/08 11:00 – 11:05 AM	5-minute Average Noise Level, Leq 50	Traffic on 101 Wind: 57 dBA
ST- 7: North and Middle of Riparian area.	Monday 04/14/08 10:52 – 10:57 AM	5-minute Average Noise Level, Leq 55	Traffic on Hwy 101 Wind: 65 dBA

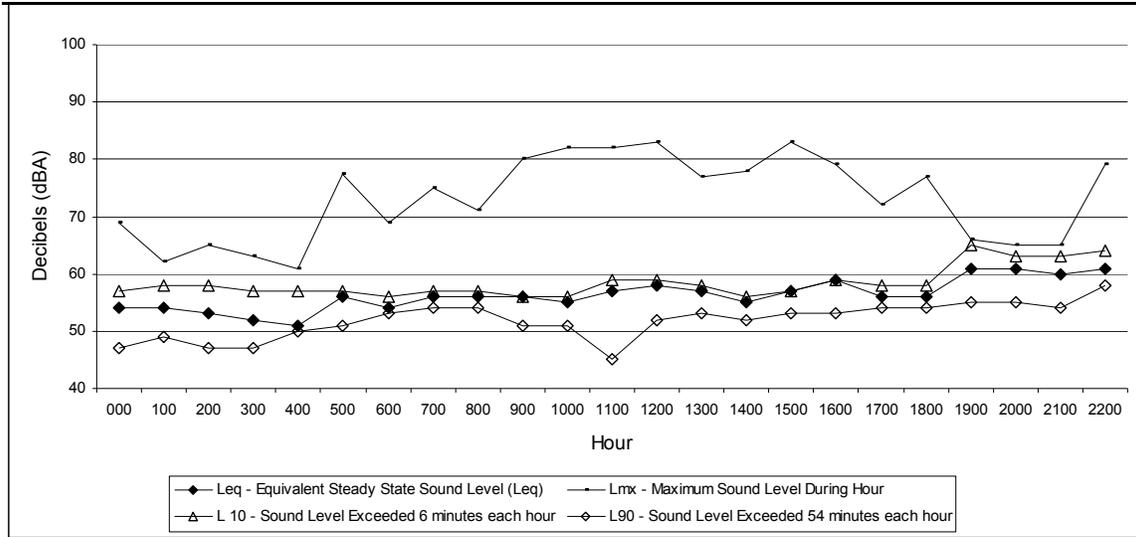
SOURCE: ESA, 2008.



SOURCE: GlobeXplorer, 2006; and ESA, 2011

Cloverdale Rancheria Resort Casino Project EIS . 207737

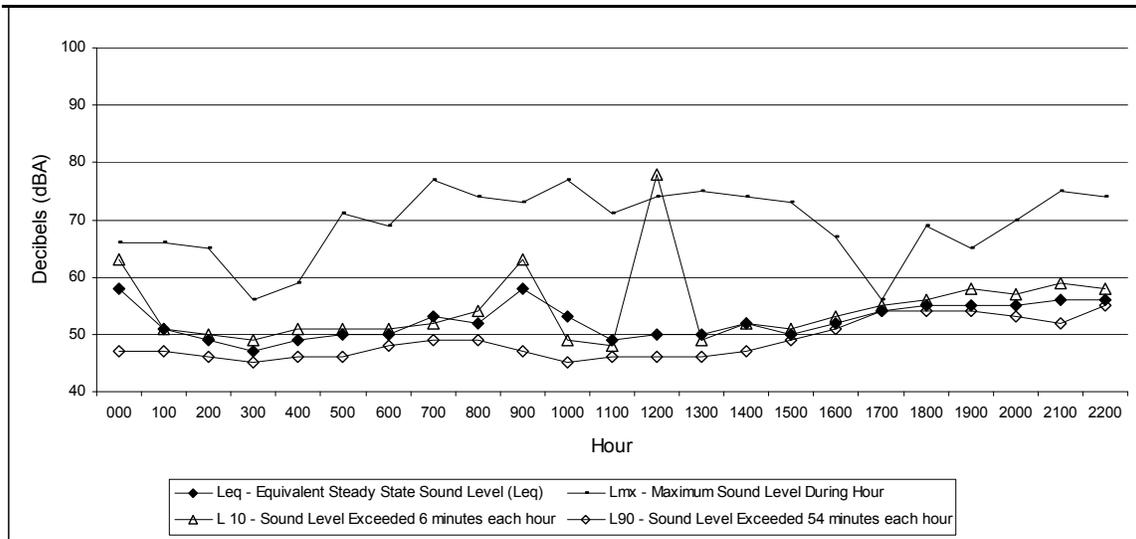
Figure 3.11-2
Noise Measurement Locations



Cloverdale Rancheria Casino Project. 207737

Figure 3.11-3

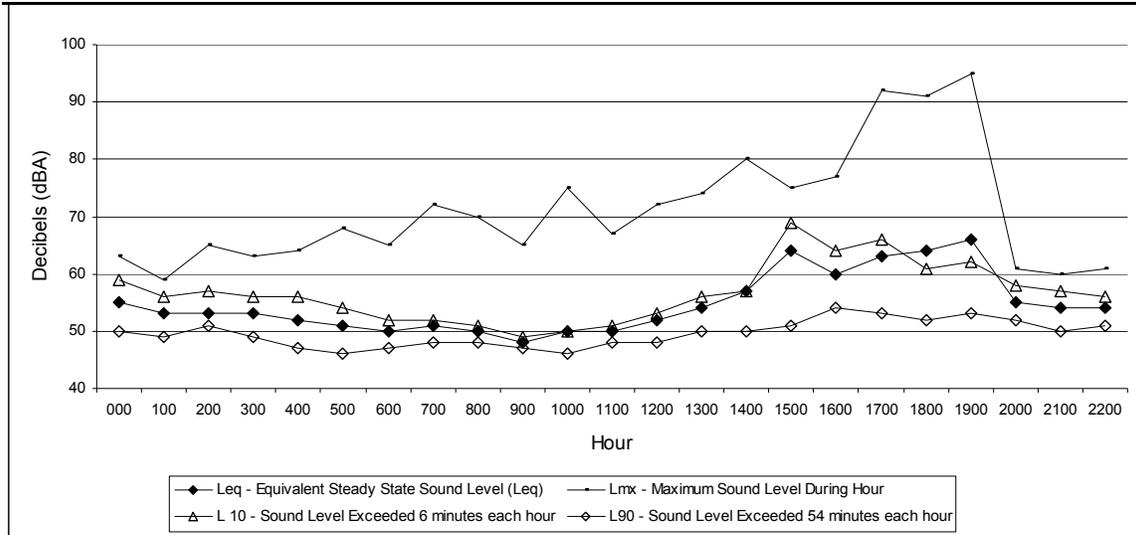
Long Term Measurement 1: Santana Drive
Friday April 11, 2008



Cloverdale Rancheria Casino Project. 207737

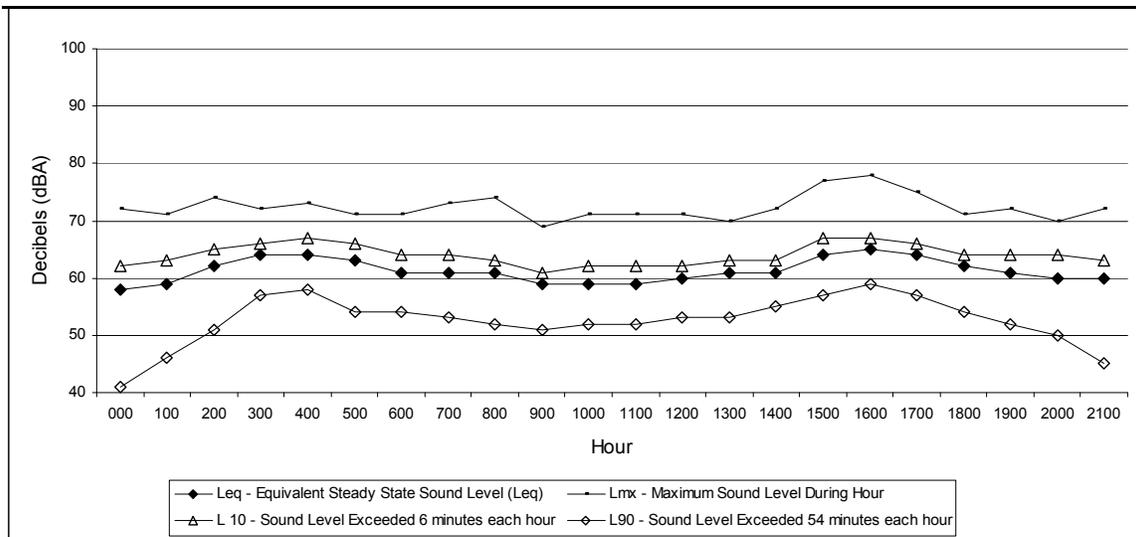
Figure 3.11-4

Long Term Measurement 1: Santana Drive
Saturday April 12, 2008



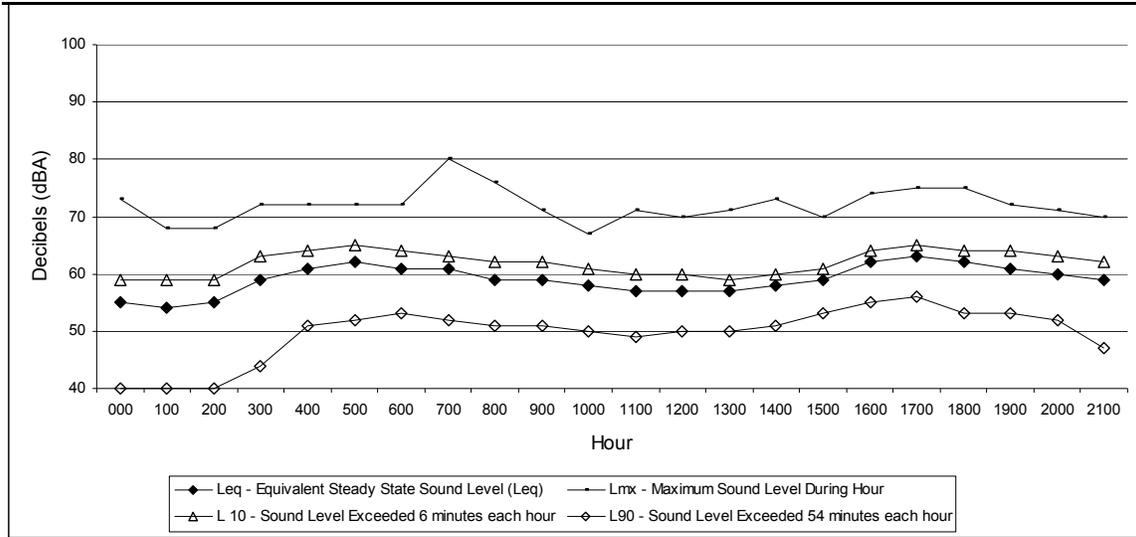
Cloverdale Rancheria Casino Project, 207737

Figure 3.11-5
Long Term Measurement 1: Santana Drive
Sunday April 13, 2008



Cloverdale Rancheria Casino Project, 207737

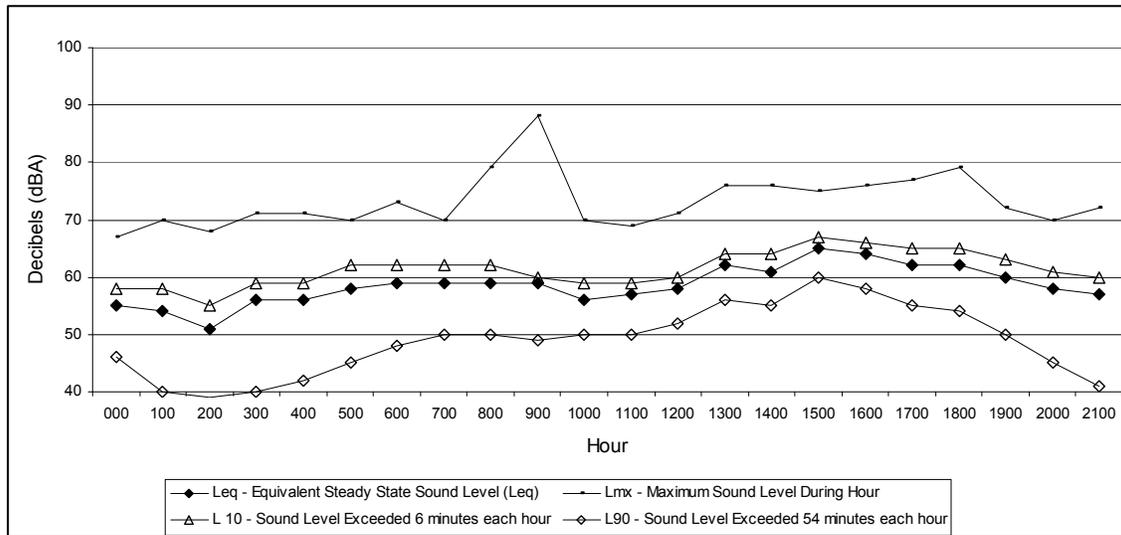
Figure 3.11-6
Long Term Measurement 2: North Side of Property
Friday April 11, 2008



Cloverdale Rancheria Casino Project. 207737

Figure 3.11-7

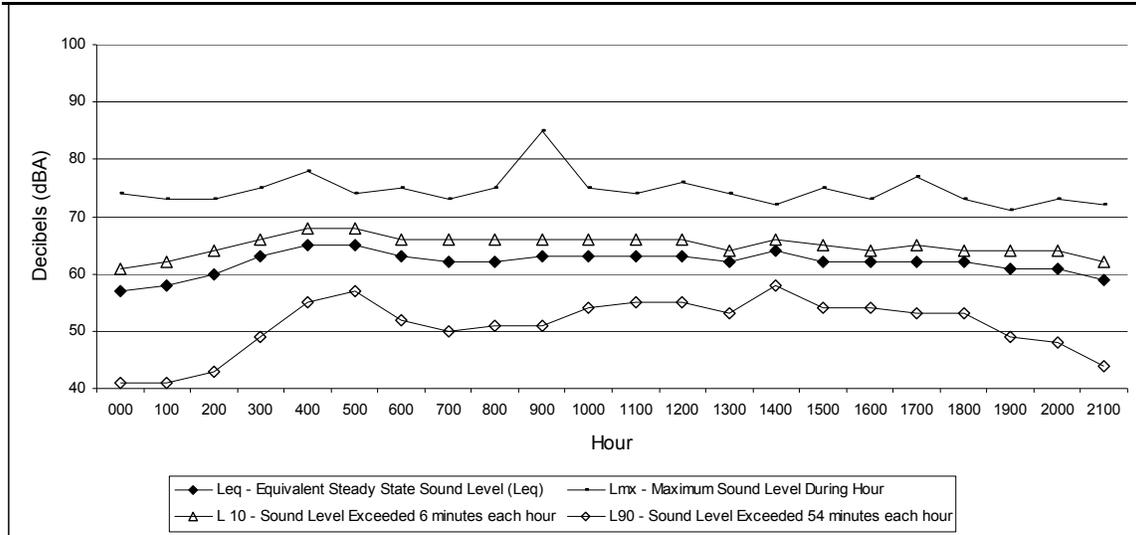
Long Term Measurement 2: North Side of Property
Saturday April 12, 2008



Cloverdale Rancheria Casino Project. 207737

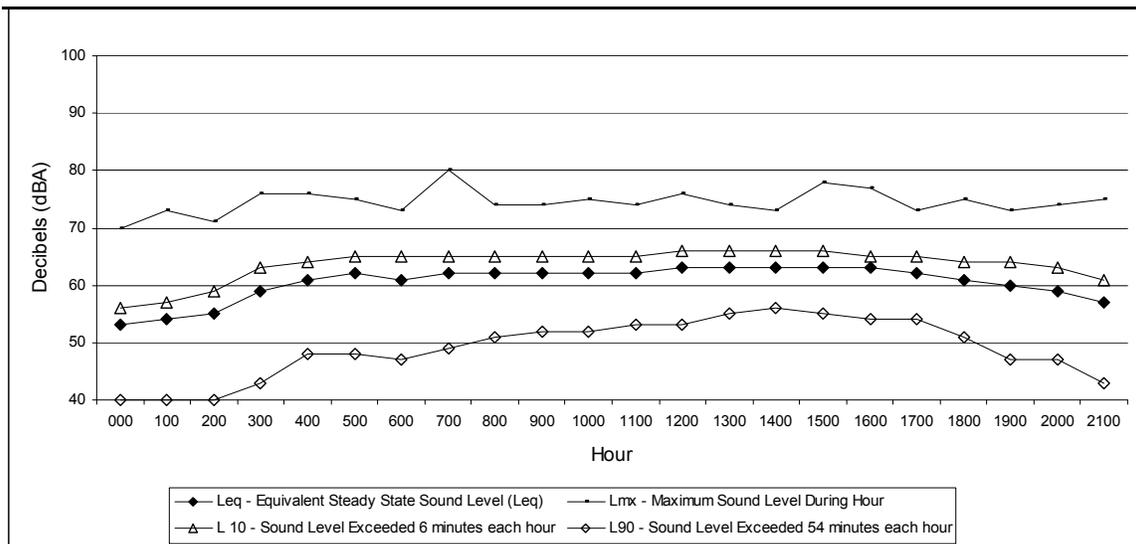
Figure 3.11-8

Long Term Measurement 2: North Side of Property
Sunday April 13, 2008



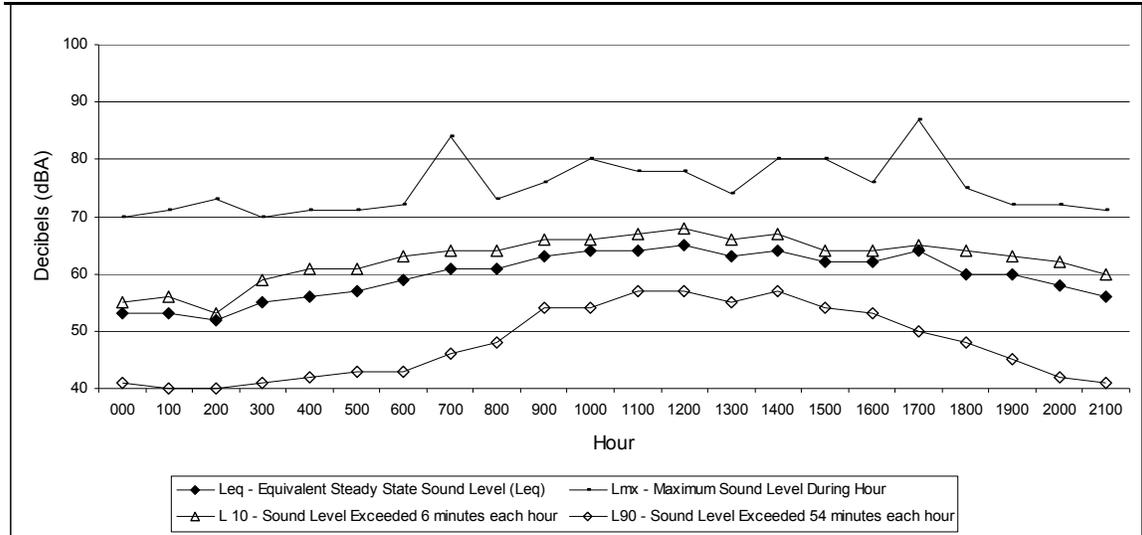
Cloverdale Rancheria Casino Project. 207737

Figure 3.11-9
 Long Term Measurement 3: 115 ft from 101 SB
 Friday April 11, 2008



Cloverdale Rancheria Casino Project. 207737

Figure 3.11-10
 Long Term Measurement 3: 115 ft from 101 SB
 Saturday April 12, 2008



Cloverdale Rancheria Casino Project. 207737

Figure 3.11-11

Long Term Measurement 3: 115 ft from 101 SB
 Sunday April 13, 2008

3.11.3 References

- Caltrans, 1998. Technical Noise Supplement: A Technical Supplement to the Traffic Noise Analysis Protocol. October 1998. Available online at:
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3.12 Hazardous Materials

The following section summarizes the results of the Phase I Environmental Site Assessments (Geomatrix, 2007a; Geomatrix, 2007b) and the Phase II Environmental Investigation Reports (**Appendix K**) prepared for the project site. The purpose of the Phase I and Phase II analysis was to identify environmental conditions and hazardous materials that may pose a material risk to human health or to the environment, or affect the proposed use of the project site.

3.12.1 Records Search

Regulatory agency records were searched in an effort to identify any current or historical hazardous materials involvement on the project site and/or adjacent properties. The regulatory agency database review was accomplished by using the services of a computerized search firm, *Environmental Data Resources, Inc.* (EDR). EDR uses a geographical information system to plot locations of past and/or current hazardous materials involvement. The databases searched by the EDR report are summarized in **Table 3.12-1**.

TABLE 3.12-1
DATABASES SEARCHED IN PROJECT AREA ASSESSMENT

Database	Type of Record	Agency
NPL	National Priority List (Superfund). The NPL is a subset of CERCLIS and identifies sites for priority cleanup under the Superfund Program	USEPA
CERCLIS	Comprehensive Environmental Response Compensation and Liability Information System maintained by EPA to record hazardous waste sites reported by states, municipalities, private companies and private persons	USEPA
ENG CONTROLS	Listing of sites with engineering controls in place	
INST CONTROLS	Listing of sites with institutional controls in place	
CONSENT	Major legal settlements that establish responsibility and standards for cleanup at NPL sites	U.S. District Courts
RODS	Record of Decision documents mandate a permanent remedy at an NPL site containing technical and health information to aid the cleanup	
HIST CAL-SITES	Contains both known and potential hazardous substance sites. No longer updates and replaced by ENVIROSTOR	Department of Toxic Substance Control (DTSC)
SWF/LF	The Solid Waste Facilities/Landfill Sites is an inventory of solid waste disposal facilities or landfills	Integrated Waste Management Board
CORTESE	Public drinking water wells with detectable concentrations of constituents, hazardous substances sites selected for remedial action and other release sites	State
LUST	Leaking Underground Storage Tanks database	Regional Water Quality Control Board (RWQCB)
CA SLIC	Spills, leaks and industrial cleanup sites	RWQCB
UST	Active underground storage tanks	Various
HIST UST	Historical UST registered database	Various
SWEEPS	Statewide Environmental Evaluation and Planning System is a UST database which is no longer updated or maintained	State
DEED	Recorded land use restrictions	DTSC
ENVIROSTOR	Sites that have known contamination or sites for which there may be reasons to investigate further	DTSC

SOURCE: Geomatrix, 2007a

Based on the records search, the MGM Brakes Assembly Plant located to the southwest had the greatest potential to affect the environmental conditions of the project site. Environmental conditions associated with the other facilities reviewed from the database results do not appear to have adversely affected environmental conditions on the project site because they are either sufficiently distant from it, groundwater flows down or cross gradient of it, or they have obtained regulatory closure (Geomatrix, 2007a). The MGM Brakes Assembly Plant is discussed further below, under Neighboring Site Conditions.

3.12.2 Project Site Conditions

For the purposes of this analysis, the project site was divided into two areas. The Amonos Site contains the four parcels west of the railroad tracks, while the Sirrah Site contains the two parcels east of the railroad tracks. The individual parcels on the two Sites have also been number sequentially; these include Parcels #1 (APN 116-310-039), #2 (APN 116-310-040), #3 (APN 116-310-035) and #4 (APN 116-310-020) on the Amonos Site and Parcels #5 (116-310-079) and #6 (116-310-005) on the Sirrah Site.

The Phase I reports define Recognized Environmental Conditions (RECs) as:

“the presence or likely presence of any hazardous substances or petroleum products on a property under conditions that indicate an existing release, a past release, or a material threat of a release of any hazardous substances or petroleum products into structures on the property or into the ground, groundwater, or surface water of the property. The term includes hazardous substances or petroleum products even under conditions in compliance with laws. The term is not intended to include *de minimis* conditions that generally do not present a threat to public health or the environment that generally would not be the subject of an enforcement action if brought to the attention of appropriate government agencies” (Geomatrix, 2007).

Amonos Site

Certain historical uses of the Amonos Site were not considered RECs on the basis of visual observation. Site reconnaissance indicated no evidence of environmental impact to on-site soils or vegetation, and certain historical activities involving chemicals (such as activities inside the barn) are considered *de minimis* because the floor is intact and the chemicals stored there are handled appropriately and stored with secondary containment.

Potential RECs associated with historical uses of the site include the following:

- The Amonos Site is located down gradient of the MGM Brakes Assembly Plant. Concentrations of chlorinated solvents, and their associated breakdown products, are present in groundwater beneath the MGM facility. Groundwater has moved preferentially in the backfill of a sewer that runs along the southern side of Parcel #3 and Parcel #4 and then northward up Lile Lane. A recent investigation indicates that shallow bedrock underlying Parcel #1 does not appear to be impacted by activities at the MGM Brake Assembly Plant. The status of deeper groundwater within bedrock is unknown.
- One 350-gallon aboveground gasoline storage tank was previously located on exposed soil northwest of the barn on Parcel #1. No staining or distressed vegetation was observed in the area. The date of the removal of the tank is unknown.

- Lubricating Oils, batteries and tractor tires were formerly located on exposed soil adjacent to the barn at the northern ranch site. The materials were removed prior to the previous owner purchasing Parcels #2 and #3.
- Small amounts of oils and fuel were noted to the rear of the southwestern-most residence on Parcel #1, apparently for the use of an off-road vehicle. Chemicals were stored in a wooden cabinet within the central portion of the barn.
- Three 500-gallon aboveground fuel storage tanks were previously located on exposed soil at the northern ranch site on Parcel #2. No staining or distressed vegetation was observed in the area. The tanks were removed in the mid-1980s.
- As a former plum and grape farm, pesticides, including lime, sulfur, and “winter oil” were applied within the central portion of the Hayes Property until the 1980s. There may be residual pesticides in the area and around the ranch site, where the chemicals were stored.
- As a former plum and grape farm, pesticides, including lime, sulfur, and “winter oil” were applied within the central portion of Parcels #2 and #3 until the 1980s. There may be residual pesticides in the area and around the ranch site, where the chemicals were stored.
- Diesel-impacted groundwater is present in the vicinity of the former Louisiana Pacific Truck Shop located southeast of the intersection of Asti Road and Santana Drive. The impact appears to extend to Coyote Creek along the southern boundary of Parcel #3, where low levels of TPHd have been detected.

Parcel #1 (APN 116-310-039)

Parcel #1 is located at 208 Lile Lane in Cloverdale, CA between Highway 101 to the west and the Russian River floodplain to the east. The parcel is bordered on the north by Porterfield Creek, on the east by Lile Lane, on the west by Asti Road and on the south by Parcel #2. Parcel #1 is also dissected by Lile Lane. The parcel was owned by the Lile family from 1901 until it was sold to Amonos, LLC.

Geomatrix conducted a site visit on October 12, 2007. Parcel #1 consists mainly of undeveloped ranch land, but is also occupied by three houses and a large barn. The three homes are currently rented as residences. A small chemical storage area was noted to the rear of the westernmost residence on the southern side of Lile Lane. Minor staining was noted in the area, which appeared to be used for maintenance of an off-road vehicle. Each of the homes is equipped with a propane tank.

The barn is currently being used for a construction contracting business, but was originally used to support a dairy farm from approximately 1930 until 1954. The barn is approximately 5,000 square feet and has a paved floor and wooden walls and roof. The contracting business has been operating for approximately a year and a half and is used for vehicle maintenance and staging construction projects. The ground surface in the vehicle maintenance and staging area was stained and cracks were noted in the concrete floor. An open top drain pan was noted containing a significant amount of waste oil. There was a hazardous materials storage area inside the barn immediately north of the main entrance. The storage area had a standing secondary containment system with drums stored on a grate above the containment. Stored liquids in the area included hydraulic oils, lubricating oils and motor oil. A cabinet is used to store a small volume (i.e., less than 5-gallons) of paint and cleaners. Chemicals also were stored in a 20-foot metal cargo container located outside of the main entrance to the barn. The container contained two 55-gallon drums of gasoline and several

car batteries as well as a spill kit drum. There was a significant amount of equipment and machinery stored outside of the barn, including a bulldozer and a large water tanker. During the assessment, the bulldozer bucket was holding a supplemental diesel fuel tank designed to be installed in a pickup truck bed. Another fuel tank was being stored on the roof of the cargo container. Two one-gallon cans of lubricating oil were noted on open ground along the western wall of the barn; there was no evidence of a release (Geomatrix, 2007).

Occasionally, the northeastern portion of the parcel was used to store large trucks. There was no evidence of underground storage tanks noted at the site. Other than the recently installed monitoring tower associated with the assessment, no wells were noted at the parcel (Geomatrix, 2007).

Parcels #2 (116-310-040), #3 (116-310-035) and #4 (116-310-020)

Parcels #2 and #3 consist of two adjacent properties. The northern parcel is located at 250 Lile Lane and the southern parcel is located at 496 Lile Lane. The properties are bordered by Asti Road on the west, Coyote Creek on the south, the Ruiz Property on the southeast, Lile Lane on the east, and the Lile Property on the north. The parcels are currently occupied by three rental houses and a horse ranch.

Parcels #2 and #3 were historically used as a plum and wine grape farm and as grazing land for sheep until the 1980s. The central portion of the property was planted with plums and grapes. A Phase I revealed a recognized environmental condition associated with chlorinated solvents in the runoff from the MGM Brakes Assembly Plant. Shallow bedrock underlying the Lile Property does not appear to be impacted by activities at the MGM Brake Assembly Plant, but the status of deeper groundwater within bedrock is unknown (Geomatrix, 2007). The EDR report did not find any sites in its search of environmental records on the Parcels #2 and #3.

Geomatrix conducted a site visit to Parcels #2 and #3 in July and August, 2007. The parcels have three homesteads used as single family residences. A horse ranch is also located on the parcels. The northern ranch site also has a wooden barn, used to support the horse ranch and an open-faced wooden garage. The materials stored in the barn were limited to supplies for the horses, including hay and various grooming products. Stored in an adjacent room were several old appliances and a drum with unknown contents. No staining was seen around the drum. In the garage, there was a scrap car and several empty paint cans. There was no sign of staining or stressed vegetation. Previously the garage area was used to store and maintain farm vehicles. Only minor repairs were performed on site, while major repairs were performed off-site. There were two aboveground fuel storage tanks located south of the garage on open soil, including an approximately 500-gallon diesel tank and an approximately 500-gallon gasoline tank. No staining was observed (Geomatrix, 2007).

Parcel #4 is located at 585 Santana Drive. It is located to the south of the southeast corner of Parcel #3. The property is bordered by a rural residential property to the west, Coyote Creek to the south and further south by Santana Drive and A&M Enterprises, railroad tracks to the east, and Lile Lane and the Hayes Properties to the north. Parcel #4 is occupied by a single residence from which a fencing business is operated.

Parcel #4 was owned by the previous owners for approximately two years and prior to that by Bruce Reuser for an unspecified amount of time. Past property usage was not revealed in the Phase I, but Mr. Reuser had advised the Ruiz's to not drink water from the nearby well.

A single residence sits in the northern portion of Parcel #4 and has a stand alone garage. Southeast of the house is a large tent structure. A small storage unit is at the eastern end of the tent and is used to store tools and small amounts of chemicals including lubricants and paints. There was no sign of spillage or dumping. A can of paint thinner was left open-topped on the pavement within the tent area. A significant amount of debris was found on the southeastern portion of the site, including various pieces of machinery. Numerous bags of trash were seen on the southwestern corner of the gravel area. Several empty five-gallon paint cans were noted near the southeastern corner of the site adjacent to the creek (Geomatrix, 2007).

A small decaying shed is located along the western boundary of the site. There are also several old cars and trucks that are stored in this area on open ground. There was no evidence of staining or stressed vegetation. There was no evidence of any aboveground or underground storage tanks.

Soil and Groundwater Investigation

For the Phase II analysis, 15 borings were drilled ranging from 50 feet to 90 feet in depth, and 9 monitoring wells were installed ranging from 20 feet to 93 feet below ground surface (bgs). Soil, rock, and/or groundwater samples were collected from the borings and groundwater wells. These activities were conducted from September 24, 2007 through May 23, 2008, in six separate mobilizations. The Phase II Investigation involved the review and evaluation of previous Phase I studies and soil and groundwater sampling and analysis work, which was conducted to assess the potential impacts to soil and groundwater on the western portion of the project site.

To facilitate the evaluation of the analytical results of the soil and groundwater samples collected at the Amonos site, the data were compared using the San Francisco Regional Water Quality Control Board (SFRWQCB) Environmental Screening Levels (ESLs; SFRWQCB, 2008) as the primary screening values for soil and groundwater. The ESLs that were used reflect both a residential and an industrial/commercial land use scenario and consider groundwater where groundwater is a current or potential source of drinking water.

The ESLs are considered to be conservative. Under most circumstances, and within the limitations described, the presence of a chemical in soil, soil gas, or groundwater at concentrations below the corresponding ESL can be assumed to not pose a significant, long term (chronic) threat to human health and the environment. Additional evaluation will generally be necessary at sites where a chemical is present at concentrations above the corresponding ESL. Active remediation may or may not be required depending on site specific conditions and considerations. The presence of a chemical at concentrations in excess of an ESL does not necessarily indicate that adverse impacts to human health or the environment are occurring; this simply indicates that a potential for adverse risk may exist and that additional evaluation is warranted (SFRWQCB, 2008).

Concentrations of metals in the soil and groundwater appear to be indicative of naturally-occurring background levels, although there are a few instances of metals concentrations exceeding residential and commercial/industrial ESLs. Considering the geologic environment, especially in the northern Coast Ranges region, it is not uncommon for background metals to exceed ESLs. Of the elevated metals concentrations detected, the results do not appear to suggest a surface contaminant source or a more widespread soil and groundwater contamination issue. Diesel and motor oil range hydrocarbons were identified at low concentrations in some shallow surface and deep soil samples throughout the site. The detected diesel and motor oil concentrations could be a result of a) residual, localized surface spills/applications from farming practices or farm vehicles, b) proximity to State Route 101, or c) false positives due to the sampling and analytical methodology. Nevertheless, the low concentrations of diesel and motor oil are below the commercial/industrial ESLs for soil and no findings indicate that the presence of diesel and motor oil in the soil represents problematic, wide spread site contamination. TPH and VOCs and pesticides did not exceed relevant ESLs in soil or groundwater monitoring-well samples.¹ Available information and data reviewed for this site does not suggest that ongoing or historical site uses have caused significant soil or groundwater contamination on the site.

Sirrah Site

Parcels #5 (116-310-079) and #6 (116-310-005)

Parcels #5 and #6 consist of two adjacent properties. The northern parcel is located at 225 Lile Lane and the southern parcel is located at 505 Lile Lane. The properties are surrounded by Kelly Road and the Russian River to the east, City of Cloverdale wastewater treatment facilities to the north, the railroad and Parcels #1-4 to the west and agricultural land to the south. These parcels have historically been used as vineyards.

Soil and Groundwater Investigation

Soil samples were collected from 14, 1.5-foot deep, hand-augered soil borings. Boring locations were randomly selected throughout the Sirrah Property to obtain a representative sampling of the soil conditions. Sample collection from shallow borings is appropriate for evaluation of soil conditions in agricultural settings where the primary concern is the bioaccumulation of chlorinated pesticides, metals, and nitrates. Surface water samples were collected from the Russian River near Santana Drive. Groundwater samples were collected from three agricultural production wells on different portions of the Sirrah Site. The field investigation and sampling program conducted for the Phase II was appropriate given the past and present use of the property as a vineyard. Available information and data reviewed for the Sirrah Property indicates that historical and ongoing site uses have not resulted in notable soil or groundwater contamination on the Sirrah Property.

¹ The Phase II identified total petroleum hydrocarbons (TPH) as diesel and motor oil that exceeded the detection limit and the corresponding ESLs in several “grab” water samples obtained from open borings during monitoring well installation. Results of “grab” groundwater samples often do not represent actual groundwater conditions and can be inherently unreliable. The uncertainty with “grab” samples stems from several factors including the difficulty in isolating specific groundwater flow zones, cross-contamination during sampling, false positives due to foreign matter in sample, and impacts to groundwater from drilling equipment. For this reason, the Phase II investigation relied on the analytical results of TPH in water samples collected from the completed and developed monitoring wells located at nine representative locations on the site. Diesel and motor oil was not detected in the groundwater obtained from monitoring wells.

Concentrations of metals in the soil, surface water (Russian River) and groundwater appear to be characteristic of naturally-occurring background levels, although there are a few instances of metals concentrations exceeding the ESLs. As discussed for the Amonos Site, it is not uncommon for background metals to exceed ESLs in this region. Overall, the metals detected do not suggest a surface contaminant source or a more widespread soil and groundwater contamination issue.

The total coliform detected in the property groundwater wells may indicate that the groundwater and surface water at the Sirrah Property is impacted by the upstream and adjacent City of Cloverdale Wastewater Treatment Facility. Other sources of total coliform include faulty well seals that do not isolate the screened zone of the well from surface infiltration. The presence of total coliform, however, is not considered an impediment to development of the Sirrah Property because if a potable water system is developed, the EPA would require that the production well and water treatment system be designed to treat and eliminate concentrations of total coliform in the potable water supply.

Detections of residual pesticides at very low concentrations in the soil and low levels of degraded diesel do not represent an ongoing impact to soil and groundwater and the levels are well below the ESL screening criteria used to protect human health and the environment. Nitrates and pesticide concentrations detected in soils do not indicate significant residual soil contamination by agricultural fertilizers, herbicides, or pesticides. Available information and data reviewed for this site does not suggest that ongoing or historical site uses have caused significant soil or groundwater contamination on the site (**Appendix K**).

3.12.3 Neighboring Site Conditions

The environmental impact to the project site from the MGM Brake facility is negligible. A release of industrial solvents occurred at the MGM Brake facility located southwest and across Highway 101 from the project site many years ago and the plume has migrated off site. The MGM Brake site is currently under regulatory clean up oversight by the Regional Water Quality Control Board (RWQCB), which is requiring continued monitoring and remediation activities. Although there is reported concentrations of VOCs in the groundwater flowing through backfill of an offsite sewer main, the impact to groundwater appears minor, localized within the backfill, and contained within the identified preferential flow paths. Investigation results indicate that VOCs from the MGM site have not migrated onto the project site above the relevant ESLs. Groundwater monitoring and reporting for VOCs at the MGM site and in monitoring wells located off-site and down-gradient is required by the RWQCB and is currently ongoing. Soil and groundwater contamination does not appear to present a significant issue at the project site (**Appendix K**).

3.12.4 References

ESA, 2008. Phase II Environmental Investigation Report. Amonos Site, Cloverdale, California. December 2008. San Francisco, California.

ESA, 2009. Phase II Environmental Investigation Report. Sirrah Property, Cloverdale, California. January 2009. San Francisco, California.

Geomatrix, 2007. Phase I Environmental Assessments for the Hayes & Ruiz and Lile Properties.

San Francisco, Regional Water Quality Control Board, 2008. Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwater, Interim Final – November 2007 (Revised May 2008).

3.13 Visual Resources

3.13.1 Introduction

This section describes the visual resources of the project site and surrounding area. Visual resources include the scenic character of a particular region. These scenic features include both natural features, such as vegetation and topography, and man-made features. These resources contribute to the public's experience and appreciation of the environment. Areas that are more sensitive to potential effects are usually readily observable, such as land found adjacent to major roadways or hilltops. Depending on the extent to which a project's presence would alter the perceived visual character and quality of the environment, visual or aesthetic impacts may occur. This analysis of potential visual effects is based on review of a variety of data, including project maps and drawings, visual survey of the project site, aerial and ground level photographs of the project site, visual simulations, and planning documents.

3.13.2 Environmental Setting

Regional Setting

Sonoma County, the most northerly county in the San Francisco Bay Region, is located along the Pacific coast approximately forty miles north of San Francisco. The county, the largest of the nine Bay Area counties, is just over 1,500 square miles in size. Sonoma County is bordered by the Pacific Ocean on the west, Marin County and San Pablo Bay to the south, Solano, Napa and Lake Counties to the east, and Mendocino County to the north. Because of the geographic configuration and topography of the area, transportation linkages to adjacent counties are limited to a few routes. U.S. Highway 101 is the major north-south route, connecting the county to San Francisco and Marin to the south and to Mendocino to the north.

The City of Cloverdale is located at the northern end of Sonoma County near the Mayacmas Mountains in the Alexander Valley. The City is located approximately 67 miles southeast of Mendocino, 25 miles south of Ukiah, and 34 miles northwest of Santa Rosa. The City lies in the valley formed by the Russian River. The banks of the Russian River are lined with vineyards, agricultural tracts, and riparian habitat, and provide scenic opportunities for waterway recreation in Sonoma County.

Project Setting

The project site is located in a generally rural area, with development consisting primarily of low-density residences south of the City of Cloverdale. The area is characterized by rolling hills with instances of steep, rugged slopes that are densely vegetated with native grasses, trees, and brush. Elevations range from 302 to 332 feet above mean sea level, sloping very gently in a southeasterly direction. Manmade structures include six rural residences and associated ancillary buildings, as well as the crossing of a Northwestern Pacific railroad through the project site. In general, the scenic character of the area is rustic, with single-family residences being the most prominent man made features.

The segment of U.S. Highway 101 adjacent to the project site is considered a Scenic Corridor for purposes of the Sonoma County General Plan, and a scenic road for the purposes of the Cloverdale General Plan and City land use regulations. U.S. Highway 101 is not, however, designated as a Scenic Highway by Caltrans within the boundaries of Sonoma County.

West Parcels

The City of Cloverdale has designated the western parcels of the project site as Business Park and General Industry (approximately half each). The General Industry designation allows light and quasi-heavy industrial uses with as little environmental impact as possible. The Business Park designation allows for additional service-oriented businesses. Visual resources on these parcels are predominantly rolling hills with rural residences and pastures. These parcels are readily visible from major roadways, including U.S. Highway 101 and Asti Road, and would be visible to commuters along these roads. The parcels are also visible from the single family residences located on to the west of U.S. Highway 101, as well as along U.S. Highway 101. **Figure 3.13-1** displays the existing conditions of the west parcels (where the majority of site development would occur) from north and south viewpoints.

East Parcels

The parcels on the eastern border of the project site are designated as Public, Quasi-Public Uses. The eastern parcels currently contain grape vineyards, which are bordered to the east by Kelly Road, with the Russian River located beyond, and to the west by the Northwestern Pacific Railroad and Porterfield Creek. An additional rural residential property is located on these parcels. The westernmost boundary of these parcels is densely vegetated by oak woodlands which obscures views of the west parcels. The east parcels are visible from the Russian River and would subsequently be visible to recreational users on the river. **Figure 3.13-2** displays the existing conditions of the east parcels as viewed near the west banks of the Russian River.

3.13.3 Regulatory Setting

Visual resources would be significantly affected by an action that may substantially alter the scenic character of a site and therefore affect the quality of the human environment. The significance of the effect is determined by considering the context in which the action will occur and the intensity of that action. Potential adverse effects are considered based on the intensity or degree by which the action would have an impact on visual resources or would result in the degraded quality of the visitor's or community's experience. This may include actions that are out of character and compliance with existing or planned land uses as defined in the Open Space and Resource Conservation Element of the Sonoma County General Plan or the City of Cloverdale Conservation, Design and Open Space Element. Consistency with local land use plans is discussed further in **Section 4.9** (Land Use).



PHOTOGRAPH 1. View of project site from south west.



PHOTOGRAPH 2. View of project site from north west.



PHOTOGRAPH 3. View of project site from east.

Both the Open Space and Resource Conservation Element of the Sonoma County General Plan or the City of Cloverdale Conservation, Design and Open Space Element contain regulations intended to protect the visual resources and rural character of the County and City. The City of Cloverdale General Plan also contains guidance to the protection of the visual resources and character of the City.

The City of Cloverdale General Plan (2009)

Conservation, Design and Open Space Element

Goal CDO 3. Maintain and improve the design of the built environment. Improve the appearance of entries and approaches to the downtown and the community. Provide design guidelines for new development and growth.

Policy CDO 3-9 Develop a design plan for the industrial and commercial areas visible from the freeway. Freeway visible uses should de-emphasize freeway-oriented signage and designs with parking as a main visual element from the freeway. Standards should encourage significant landscape areas, including tree screening, between the freeway and the uses.

Policy CDO 6-4 New private and public development, including public street, sidewalk, utility, and park construction, shall provide a mix of trees with a crown that can provide shade and summer cooling and trees with height to create a silhouette against the skyline.

Policy CDO 6-5 New public and private development shall provide street trees parallel to streets -- in planter strips, in sidewalks, or at back of sidewalks, spaced at regular intervals along the street. Tree intervals shall provide a canopy with leaves touching at maturity. Tree locations shall be identified prior to design of utilities, drainage, hydrants, electrical equipment boxes, vaults, etc., and those features should be subservient to tree locations.

Policy CDO 6-7 Require the use of drought-tolerant or native to Mediterranean climate trees, shrubs, and ground covers for use in public and private landscaping development approvals.

Urban Lighting Element

Goal UL 1. Maintain night time lighting levels that provide security and safety but also preserve and maintain views of night time skies.

Policy UL 1-1 Require that all new development projects and public improvements maintain night time lighting levels at the minimum necessary to provide security and safety, using fixtures which shield the light source so that light is directed downward, with height and power limited to the minimum necessary to provide adequate lighting.

Policy UL 1-2 Minimize light spillage that carries off the property where lights are located.

Policy UL 1-4 Eliminate excess lighting from illuminated signs.

Policy UL 1-7 Avoid the use of reflective building materials which can cause daytime and nighttime glare.

Sonoma County General Plan

Open Space and Resource Conservation Element

GOAL OSRC-6: Preserve the unique rural and natural character of Sonoma County for residents, businesses, visitors and future generations.

Objective OSRC-6.2: Establish Rural Character as a primary criterion for review of discretionary projects, but not including administrative design review for single family homes on existing lots including administrative design review for single family homes on existing lots, that protect and reflect the rural character of Sonoma County. Use the following general design principles until these Design Guidelines are adopted, while assuring that Design Guidelines for agricultural support uses on agricultural lands are consistent with Policy AR-9h of the Agricultural Resources Element.

1. New structures blend into the surrounding landscape, rather than stand out.
2. Landscaping is included and is designed to blend in with the character of the area.
3. Paved areas are minimized and allow for informal parking areas.
4. Adequate space is provided for natural site amenities.
5. Exterior lighting and signage is minimized.*

3.14 Environmental Justice

3.14.1 Policy/Regulatory Considerations

Federal agencies are directed by Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority and Low Income Populations*, as amended, to develop an Environmental Justice Strategy that identifies and addresses disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority populations and low-income populations. Regulation of the Federal Government's compliance with Executive Order 12898 and National Environmental Policy Act (NEPA) is provided by the Council on Environmental Quality (CEQ). CEQ, with assistance from the Environmental Protection Agency (EPA) and other agencies, has developed guidance to assist Federal agencies with their NEPA procedures so that environmental justice concerns are effectively identified and addressed. CEQ's *Environmental Justice Guidance under the National Environmental Policy Act* advises agencies to consider the composition of the affected area, to determine whether minority populations, low-income populations, or Indian tribes are present in the area affected by the proposed action, and if so whether there may be disproportionately high and adverse environmental effects.

3.14.2 Affected Environment

Federal agencies must identify a geographic scale for which they will obtain demographic information in order to determine whether a proposed action will possibly have disproportionately high and adverse effects. The geographic scale should more or less correspond to the affected environment.

A census tract is a specific area grouped for the purpose of taking a census. Census tract boundaries are defined by a local committee of census data users for the purpose of taking a census. Traditionally, census tract boundaries follow visible features and may also coincide with city, towns or other administrative limits. Census tracts are intended to display uniform demographic information with regards to the economic status, living conditions and characteristics of the people within the tract at the time of the tract's formation. Consequently, the affected environment for the environmental justice analysis is determined to be the area within Census Tract 1542 which includes the City of Cloverdale and the unincorporated area surrounding the project.¹

Minority Populations

According to CEQ guidelines for environmental justice analysis, "Minority populations should be identified where either (a) the minority population of the affected area exceeds 50 percent or (b) the minority population percentage of the affected area is meaningfully greater than the majority population percentage in the general population or other appropriate unit of geographic analysis...A minority population also exists if there is more than one minority group present and

¹ The Census Tract 1542 boundary extends more than ten miles south of Cloverdale to the outskirts of Healdsburg at Lytton Springs Road.

the minority percentage, as calculated by aggregating all minority persons, meets one of the above-stated thresholds” (CEQ, 1997).

Information regarding racial diversity was derived from the 2000 Census (U.S. Census Bureau, 2000a). **Table 3.14-1** presents the racial composition for Sonoma County, the City of Cloverdale, and Census Tract 1542. As shown in the table, the racial composition for Census Tract 1542 is very similar to that of the City of Cloverdale, differing only in a slightly higher proportion of White alone residents and correspondingly reduced proportion of Hispanic or Latino residents.

**TABLE 3.14-1
RACIAL COMPOSITION FOR APPLICABLE STUDY AREA (2000)**

	White	Hispanic / Latino	Black	American Indian / Alaska Native	Asian	Native Hawaiian / Pacific Islander	Other
Sonoma County	74.5%	17.3%	1.3%	0.8%	3.0%	0.2%	2.9%
City of Cloverdale	68.7%	26.7%	0.1%	1.2%	0.9%	0.1%	2.4%
Census Tract 1542	69.3%	26.1%	0.1%	1.2%	0.9%	0.1%	2.4%

Other includes reported unspecified race or individuals of two or more non-hispanic or non-latino races.

SOURCE: U.S. Census Bureau, 2000a. Summary File 1, QT-P4.

Compared with Sonoma County’s racial composition, Cloverdale has a smaller proportion of White alone residents and a greater proportion of Hispanic or Latino residents. Cloverdale’s Black and Asian population represent a considerable smaller proportion of the local population than for Sonoma County as a whole. There are also a greater proportion of American Indian residents in the Cloverdale area than within Sonoma County.

Under CEQ guidelines for minority populations, neither the City of Cloverdale nor Census Tract 1542 would qualify as minority populations.

Income

The CEQ’s environmental justice guidance does not clearly set the demarcations at the census poverty thresholds, but states that “Low-income populations in an affected area should be identified with the annual statistical poverty thresholds from the Bureau of the Census’ Current Population Reports, Series P-60 on Income and Poverty.”

Poverty level thresholds vary according to a household’s size and composition. The Census poverty threshold for a two-parent household with two children was \$17,465 in 1999 dollars which is equivalent to \$22,044 in 2008 dollar terms. The poverty thresholds provide one national measurement of income that is not adjusted for regional costs of living. Among its poverty statistical data, the U.S. Census Bureau also reports population data income ratios from 50 percent to 200 percent of the poverty threshold (U.S. Census Bureau, 2000b). For many federal and state programs,

eligibility levels are significantly higher than the poverty level (e.g., for the Women, Infants, and Children program² the eligibility criterion is 185 percent of the poverty level).

The Metropolitan Transportation Commission's (MTC) *2001 Regional Transportation Plan Equity Analysis and Environmental Justice Report* provides one of the most substantial recent environmental justice analyses and is used by several other Bay Area agencies as a model. In its definition of low-income communities, the report states (MTC, 2001):

“Low-income is defined as the household income that is at or below the U.S. Department of Health and Human Services Poverty Guidelines. For the purposes of this exercise [i.e., 2001 Regional Transportation Plan Equity Analysis] the definition of low-income to households was established as households at or below 200 percent of poverty. This level was used to reflect the relatively high cost of living in the Bay Area. Zones, where the low-income population was 30 percent of the total population or greater, were included in the Equity Analysis.”

Table 3.14-2 presents the percentages of residents with incomes less than the poverty level (including less than and greater than 200 percent of the poverty level) for Cloverdale, Sonoma County and Census Tract 1542.

**TABLE 3.14-2
INCOME OF APPLICABLE STUDY AREA (2000)**

	Median Family Income (1999)	Population with Incomes Less than Poverty Level	Population with Incomes Less than 200 Percent of Poverty Level	Population with Incomes Greater than 200 Percent of Poverty Level
Sonoma County	\$61,921	8.1%	22.2%	77.8%
Cloverdale	\$50,000	10.4%	26.7%	73.3%
Census Tract 1542	\$50,771	10.8%	26.7%	73.3%

SOURCE: U.S. Census Bureau, 2000b. Summary File 3, QT-P32, QT-P33, QT-P34.

The 2000 Census reported that the median household income of Sonoma County was \$60,821 in 1999 dollars. The census also determined that approximately 8.1 percent of all persons included had an income below the federal poverty level. As discussed in **Section 3.7**, Sonoma County has a higher median family income than at the State of California and national level. The County has a lower proportion of residents living below poverty level than at the State and national level. The City of Cloverdale's median family income level is lower than Sonoma County and California as a whole, but it is above the national average. Although the City of Cloverdale has a higher proportion of residents living below the lower poverty level than Sonoma County, its proportion is less than at the State or national level. Even using the more stringent MTC definition, neither Cloverdale nor Census Tract 1542 qualify as low-income communities.=

² The Women, Infants, and Children program is a nutrition program under the California Department of Health Services that helps pregnant women, new mothers, and young children eat well and stay healthy.

3.14.3 References

- Council on Environmental Quality (CEQ), 1997. *Environmental Justice – Guidance under the National Environmental Policy Act*. Executive Office of the President; Washington, D.C. Available at: <http://www.nepa.gov/nepa/regs/ej/justice.pdf>. Accessed September 28, 2009.
- Metropolitan Transportation Commission (MTC), 2001. *The 2001 Regional Transportation Plan - Equity Analysis and Environmental Justice Report*. Oakland, CA. September 2001. Available at: http://www.mtc.ca.gov/library/2001_rtp/downloads/EJ/EquityReport.pdf. Accessed September 28, 2009.
- U.S. Census Bureau, 2000a. Table QT-P4: Race, Combinations of Two Races, and Not Hispanic or Latino: 2000. Census 2000 Summary File 1. Available at: <http://factfinder.census.gov/>.
- U.S. Census Bureau, 2000b. Table QT-P32: Income Distribution in 1999 of Households and Families: 2000; Table QT-P33: Income in 1999 by Selected Household, Family, and Individual Characteristics: 2000; Table QT-P34: Poverty Status in 1999 of Individuals: 2000. Census 2000 Summary File 3. Available at: <http://factfinder.census.gov/>.

SECTION 4.0

Environmental Consequences

4.1 Introduction

This section describes the environmental consequences that would result from the development of the Proposed Action and alternatives. The analysis presented in this section has been prepared in accordance with the Council on Environmental Quality's (CEQ) National Environmental Policy Act (NEPA) Regulations (40 CFR 1502.16). The direct environmental effects of each alternative are provided for issue areas discussed in **Section 3.0**. These issue areas include Land Resources, Water Resources, Air Quality, Biological Resources, Cultural and Paleontological Resources, Socioeconomic Conditions, Transportation, Land Use and Agriculture, Public Services, Noise, Hazardous Materials, Visual Resources and Environmental Justice.

4.1.1 Determination of Significance

The CEQ NEPA Regulations (40 CFR 1508.27) define significance of effects in terms of context and intensity. Context refers to society as whole, the affected region or interests, and the locality. The significance of effects varies depending on the setting of the proposed action. Intensity refers to the severity of effect. The following issues were considered in evaluating intensity:

- Effects may be both beneficial and adverse
- Degree of public health or safety effects
- Unique resource characteristics of the geographic area
- Degree of controversy over environmental effects
- Uncertainty and unknown risks of effects
- Degree to which the action may set a precedence
- Cumulative effects
- Effects on scientific, cultural, or historic resources
- Effects to endangered or threatened species or its habitat
- Violation of federal, state, or local environmental regulations

In evaluating potential impacts, the private option for water and wastewater was assumed for all alternatives unless otherwise specified. If the municipal option were selected, direct impacts to the eastern portion of the project site would be substantially lessened as no new water or wastewater facilities would be constructed on these parcels.

4.2 Land Resources

4.2.1 Alternative A – Proposed Action

Impact 4.2.1-1: Changes to Existing Topography (Less than Significant)

Development of the project site would involve grading and other earthwork as discussed in the Preliminary Grading Plan (**Appendix A**). For Alternative A, it is recommended that cut and fill be balanced on site. Approximately 1,000 cubic yards of fill would be generated by excavations on the western portion of the site, which would be used on the eastern portion of the site to elevate water and wastewater facilities above the floodplain. Significant changes to existing topography are not proposed and thus impacts would be less than significant.

Impact 4.2.1-2: Potential for Soil Hazards (Potentially Significant)

The previous development of residences on project site soils, the known characteristics of project soils, and preliminary borings do not suggest that soil hazards are likely to occur. However, subsurface conditions can vary and even soils suitable for development require mitigation for common soil limitations. Construction limitations include the potential for erosion, subsidence, shrink-swell behavior, and corrosion as described below.

Erosion is the process whereby soil materials become detached and are transported either by wind or water. Rates of erosion can vary depending on the soil texture, structure, and amount of organic matter. The corresponding slope, length, and degree of steepness are also prime factors in determining the potential for soil erosion.

Subsidence is the lowering of the land surface due to loss or compaction of underlying materials. Subsidence can occur as the result of hydrocompaction¹; groundwater, gas, and oil extraction; or the decomposition of highly organic soils. Outside of the Delta, subsidence is generally attributed to consistent and long-term overdraft of the groundwater basin but can also be caused by oxidation, anaerobic decomposition, shrinkage, and wind erosion.

Expansive Soils are soils that exhibit a “shrink-swell” behavior. “Shrink-swell” is the cyclical expansion and contraction that occurs in fine-grained clay sediments from wetting and drying. Structures located on soils with this characteristic may be damaged over a long period of time, usually as the result of inadequate foundation engineering.

Corrosive Soils can damage underground utilities including pipelines and cables, and can weaken roadway structures.

These limitations may exist and would be potentially significant. **Mitigation Measure 5.2-1** would reduce impacts to a less than significant level. Erosion would be reduced by best management practices, which are included as project design elements as well as **Mitigation Measure 5.5-3**.

¹ Hydrocompaction is the process of volume decrease and density increase upon saturation of moisture-deficient deposits.

Significance after Mitigation: Less than Significant

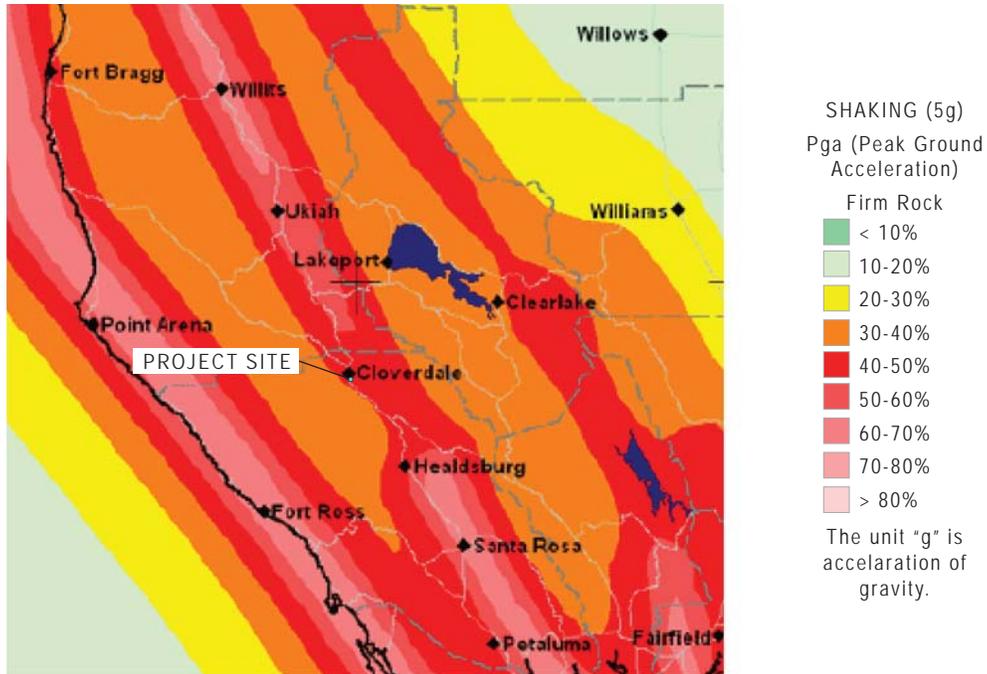
Impact 4.2.1-3: Potential for Seismic Hazards (Potentially Significant)

As the project site is within a seismically-active region there are several potential seismic hazards which could affect the proposed development. The major hazards associated with earthquakes are ground shaking, surface fault rupture, liquefaction, earthquake-induced settlement, and slope instability.

Ground Shaking: The California Geological Survey (CGS) has determined the probability of earthquake occurrences and their associated peak ground accelerations throughout the State of California. A probabilistic seismic hazard map shows the hazards from earthquakes that geologists and seismologists agree could occur in California. The map is probabilistic in the sense that the analysis takes into consideration the uncertainties in the size and location of earthquakes and the resulting ground motions that can affect a particular site. Maps are typically expressed in terms of probability of exceeding a certain ground motion. Current maps produced by the CGS are based on 10 percent exceedance in 50 years. This probability level allows engineers to design buildings for larger ground motions than those that geologists and seismologists think will occur during a 50-year interval. These levels of ground shaking are used primarily for formulating building codes and for designing buildings. The maps can also be used for estimating potential economic losses and preparing for emergency response. The peak ground acceleration (PGA) for the project site, based on a 10 percent exceedance in 50 years, could range from approximately 40 to 50%, which is considered moderate and can cause light structural damage (**Figure 4.2-1**).

Surface Fault Rupture: Fault rupture is displacement at the Earth's surface resulting from fault movement associated with an earthquake. Surface expression of fault rupture is typically observed and is expected on or within close proximity to the causative fault. The project site is not located within or near an Alquist-Priolo Earthquake Fault Zone and thus the risk of surface fault rupture is considered low.

Liquefaction: Liquefaction is the sudden temporary loss of shear strength in saturated, loose to medium dense, granular sediments subjected to ground motion. Liquefaction can cause foundation failure of buildings and other facilities due to the reduction of foundation bearing strength. The potential for liquefaction depends on the duration and intensity of earthquake shaking, particle size distribution of the soil, density of the soil, and elevation of the groundwater. Areas at risk of liquefaction are typified by a high groundwater table and underlying loose to medium-dense, granular sediments, particularly younger alluvium and artificial fill. Clayey type soils are generally not subject to liquefaction. Hazard maps produced by ABAG depict liquefaction hazards for the entire Bay Area. ABAG data indicates that the portion of the project site west of the railroad tracks has a low risk for liquefaction. While the portion of the project site east of the railroad tracks is very highly susceptible to liquefaction it is a moderate hazard due to the distance from the center of a major earthquake (**Figure 4.2-1**). Soils susceptible to strength loss during strong earthquake ground shaking are found in the project vicinity.



Probabilistic Ground Shaking -- 10% probability of Being Exceeded in 50 Years



Liquefaction Susceptibility



NOT TO SCALE

Earthquake-Induced Settlement: Settlement of the ground surface can be accelerated by earthquakes. During an earthquake, settlement can occur as a result of the relatively rapid compaction and settling of subsurface materials (e.g., loose, non-compacted, and variable sandy sediments) due to the rearrangement of soil particles during prolonged ground shaking. Settlement can occur both uniformly and differentially (i.e., where adjoining areas settle at different rates). Typically, areas underlain by artificial fills, unconsolidated alluvial sediments, slope wash, and areas with improperly engineered construction fills are susceptible to this type of settlement. Soils susceptible to strength loss during strong earthquake ground shaking are found in the project vicinity.

Slope Instability: Slope failures, commonly referred to as landslides, include many phenomena that involve the downslope displacement and movement of material, either triggered by static (i.e., gravity) or dynamic (i.e., earthquake) forces. The susceptibility for native and engineered slopes to fail depends on the gradient and localized geology as well as the amount of rainfall, excavation, or seismic activities. Steep slopes and down-slope creep of surface materials characterize areas that are most susceptible to failure. Engineered slopes have a higher tendency to fail if not properly designed, constructed, or compacted. The slope of the project site is not considered a high risk for landslides.

The potential hazards as discussed above include ground shaking, liquefaction, and earthquake-induced settlement. Slope instability is less likely but could occur. Construction of the project facilities to California Building Code (CBC) standards as discussed in the project description (**Section 2.0**) would reduce impacts; however, this impact is still considered potentially significant. Implementation of **Mitigation Measure 5.2-1** would reduce impacts to a less than significant level.

Significance after Mitigation: Less than Significant

Impact 4.2.1-4: Loss of Mineral Resources (Less than Significant)

The eastern portion of the project site has the potential to contain high quality aggregate resources as identified by the California Geological Survey (2005); however, it is not guaranteed that these resources are present or that they can be economically extracted. Non-urban uses including agriculture and open space are considered consistent with the Mineral Resource Zone (MRZ)-2b. The eastern portion of the project site would be developed with water and wastewater facilities. The remainder of this portion of the site would support sprayfield crops and open space consistent with MRZ-2b. A significant amount of land in the vicinity, and outside of the project site, is zoned as MRZ-2b where mineral resources could be further defined and developed; therefore, the potential loss of resources on the project site does not represent a significant impact.

4.2.2 Alternative B – Reduced Hotel and Casino

Impact 4.2.2-1: Changes to Existing Topography (Less than Significant)

Alternative B would require the import of approximately 27,000 cubic yards of fill. The fill would be used to create building pad elevations similar to Alternative A. Significant changes to existing topography are not proposed and thus impacts would be less than significant.

Impact 4.2.2-2: Potential for Soil Hazards (Potentially Significant)

Potential soil limitations are the same as those discussed for Alternative A. These limitations would be potentially significant. **Mitigation Measure 5.2-1** would reduce impacts to a less than significant level. Erosion would be reduced by best management practices, which are included as project design elements as well as **Mitigation Measure 5.5-3**.

Significance after Mitigation: Less than Significant

Impact 4.2.3-3: Potential for Seismic Hazards (Potentially Significant)

The potential seismic hazards are the same as those discussed for Alternative A. Construction of the project facilities to CBC standards as discussed in the project description would reduce impacts; however, this impact is considered potentially significant. Implementation of **Mitigation Measure 5.2-1** would reduce impacts to a less than significant level.

Significance after Mitigation: Less than Significant

Impact 4.2.2-4: Loss of Mineral Resources (Less than Significant)

As with Alternative A, the eastern portion of the project site would contain uses compatible with mineral resources zones. Additionally, a significant amount of land in the vicinity, and outside of the project site, is zoned as MRZ-2b where mineral resources could be further defined and developed; therefore, the potential loss of resources on the project site does not represent a significant impact.

4.2.3 Alternative C – Reduced Casino

Impact 4.2.3-1: Changes to Existing Topography (Less than Significant)

Alternative C would require the import of approximately 27,000 cubic yards of fill. The fill would be used to create building pad elevations similar to Alternative A. Significant changes to existing topography are not proposed and thus impacts would be less than significant.

Impact 4.2.3-2: Potential for Soil Hazards (Potentially Significant)

Potential soil limitations are the same as those discussed for Alternative A. **Mitigation Measure 5.2-1** would reduce impacts to a less than significant level. Erosion would be reduced by best management practices, which are included as project design elements as well as **Mitigation Measure 5.5-3**.

Significance after Mitigation: Less than Significant

Impact 4.2.3-3: Potential for Seismic Hazards (Potentially Significant)

The potential seismic hazards are the same as those discussed for Alternative A. Construction of the project facilities to CBC standards as discussed in the project description would reduce impacts; however, this impact is considered potentially significant. **Mitigation Measure 5.2-1** would reduce impacts to a less than significant level.

Significance after Mitigation: Less than Significant

Impact 4.2.3-4: Loss of Mineral Resources (Less than Significant)

As with Alternative A, the eastern portion of the project site would contain uses compatible with mineral resources zones. Additionally, a significant amount of land in the vicinity, and outside of the project site, is zoned as MRZ-2b where mineral resources could be further defined and developed; therefore, the potential loss of resources on the project site does not represent a significant impact.

4.2.4 Alternative D – Casino Only

Impact 4.2.4-1: Changes to Existing Topography (Less than Significant)

Alternative D would require the import of approximately 34,000 cubic yards of fill. The fill would be used to create building pad elevations similar to Alternative A. Significant changes to existing topography are not proposed and thus impacts would be less than significant.

Impact 4.2.4-2: Potential for Soil Hazards (Potentially Significant)

Potential soil limitations are the same as those discussed for Alternative A. **Mitigation Measure 5.2-1** would reduce impacts to a less than significant level. Erosion would be reduced by best management practices, which are included as project design elements as well as **Mitigation Measure 5.5-3**.

Significance after Mitigation: Less than Significant

Impact 4.2.4-3: Potential for Seismic Hazards (Potentially Significant)

The potential seismic hazards are the same as those discussed for Alternative A. Construction of the project facilities to CBC standards as discussed in the project description would reduce impacts; however, this impact is considered potentially significant. Implementation of **Mitigation Measure 5.2-1** would reduce impacts to a less than significant level.

Significance after Mitigation: Less than Significant

Impact 4.2.4-4: Loss of Mineral Resources (Less than Significant)

As with Alternative A, the eastern portion of the project site would contain uses compatible with mineral resources zones. Additionally, a significant amount of land in the vicinity, and outside of the project site, is zoned as MRZ-2b where mineral resources could be further defined and developed; therefore, the potential loss of resources on the project site does not represent a significant impact.

4.2.5 Alternative E – Commercial Retail-Office Space

Impact 4.2.5-1: Changes to Existing Topography (Less than Significant)

Alternative E would require the import of approximately 4,000 cubic yards of fill. The fill would be used to create level areas for circulation and building pad. Significant changes to existing topography are not proposed and thus impacts would be less than significant.

Impact 4.2.5-2: Potential for Soil Hazards (Potentially Significant)

Potential soil limitations are the same as those discussed for Alternative A. **Mitigation Measure 5.2-1** would reduce impacts to a less than significant level. Erosion would be reduced by best management practices, which are included as project design elements as well as **Mitigation Measure 5.5-3**.

Significance after Mitigation: Less than Significant

Impact 4.2.5-3: Potential for Seismic Hazards (Potentially Significant)

The potential seismic hazards are the same as those discussed for Alternative A. Construction of the project facilities to CBC standards as discussed in the project description would reduce impacts; however, this impact is considered potentially significant. Implementation of **Mitigation Measure 5.2-1** would reduce impacts to a less than significant level.

Significance after Mitigation: Less than Significant

Impact 4.2.5-4: Loss of Mineral Resources (Less than Significant)

As with Alternative A, the eastern portion of the project site would contain uses compatible with mineral resources zones. Additionally, a significant amount of land in the vicinity, and outside of the project site, is zoned as MRZ-2b where mineral resources could be further defined and developed; therefore, the potential loss of resources on the project site does not represent a significant impact.

4.2.6 Alternative F – No Action

Impact 4.2.6-1: Changes to Existing Topography (Less than Significant)

Under Alternative F, no additional site development would occur in the near term. The project site may eventually be developed with business park, general industry, and/or public facilities. Future development would be required to prepare a grading plan which would address topographic changes to the project site.

Impact 4.2.5-2: Potential for Soil Hazards (Less than Significant)

Future development would be required to conform to building codes and to prepare a design-level geotechnical study prior to construction which would reduce impacts to a less than significant level.

Impact 4.2.5-3: Potential for Seismic Hazards (Less than Significant)

Future development would be required to conform to building codes and to prepare a design-level geotechnical study prior to construction which would reduce impacts to a less than significant level.

Impact 4.2.5-4: Loss of Mineral Resources (Less than Significant)

Future development of the project site would not likely result in a loss of mineral resources. While the eastern portion of the project site is designated as MRZ-2b, no resources have been identified on the site. There is a substantial amount of undeveloped land within the floodplain designated as MRZ-2b which could be investigated and developed and thus impacts would be less than significant.

4.2.7 References

California Geological Survey 2003. Seismic Shaking Hazards in California. Map based on USGS/CGS Probabilistic Seismic Hazards Assessment Model, 2002 (revised 2003), 10% probability of being exceeded in 50 years.
<http://redirect.conservation.ca.gov/cgs/rghm/pshamap/pshamain.html>

ABAG, 2005. Liquefaction Susceptibility Map, <http://quake.abag.ca.gov>, USGS Open File Report 00-444.

CGS, 2005. Miller, Russell V., Kohler, Susan L., Busch, Lawrence L., Dupras, Don, Clinkenbeard, John, 2005, Mineral Land Classification of Sonoma County, California, Special Report 175, California Geological Survey.

4.3 Water Resources

This section provides an assessment of the potential impacts to water resources that could result from implementing the Proposed Action or alternatives. Impact categories discussed in this section include potential changes in surface and groundwater hydrology and water quality, changes in runoff patterns, and the potential effects of flooding within the project site. Measures to avoid, minimize, or mitigate potential adverse effects are contained in **Section 5.3**. Indirect and cumulative impacts are discussed in **Sections 4.15** and **4.16**, respectively.

This impact analysis addresses effects on surface water resources, groundwater resources, and flooding. Within this framework, each alternative has been analyzed to determine the level of environmental change that would occur, in terms of changes to surface water hydrology or quality, groundwater hydrology or quality, or flooding and drainage, as a result of construction and operation of each alternative. In addition, potential effects associated with water supply and wastewater treatment capacity are also addressed. A summary of the water supply and wastewater service needs of each alternative is provided below.

Water Supply

Implementation of the Proposed Action and alternatives would require additional water demand to support each proposed use. As discussed in **Section 2.0**, water would be supplied via either on-site groundwater pumping or municipal water supply from the City of Cloverdale. **Section 2.0** provides an overview of the total annual volume and peak daily water demands associated with each of the alternatives. Additional discussion of methodologies for determining these results, as well as details concerning calculations behind this analysis, are provided in the Water Supply Report, contained in **Appendix I**.

Wastewater Service

Implementation of each alternative would result in the generation of wastewater that would need to be treated and properly disposed of. As discussed in **Section 2.0**, raw wastewater would be either treated on-site or piped to the City of Cloverdale's existing wastewater treatment plant for treatment and disposal. During the winter storm season (for the on-site treatment option), wastewater discharge would be stored in an on-site pond until disposal could occur. **Section 2.0** provides an overview of the volume of wastewater that would be generated under each alternative. Additional details regarding these calculations are provided in **Appendix J**.

4.3.1 Alternative A – Proposed Action

Impact 4.3.1-1: Changes to Existing Drainage Patterns (Potentially Significant)

Implementation of Alternative A would result in changes to existing drainage patterns, both on-site and off-site, including the addition of up to 17 acres of new impervious or semi-pervious surfaces. Impervious surfaces, such as roads, cement walkways, buildings, parking lots, and similar, prevent the infiltration of stormwater into underlying sediments. Stormwater that cannot infiltrate remains

on the ground surface and either pools, runs into adjacent areas, or becomes channeled into available drainage control facilities.

Additionally, construction activities such as grading, scraping, earth-moving, import or export of fill, and installation of structures, parking lots, landscaping, storage ponds, and other proposed features, would result in changes to the grade and slope of existing surfaces in the project site. Such changes would be anticipated to alter the existing drainage patterns located on-site, and could result in unintended pooling, ponding, flooding, or discharge of stormwater to areas not suited to convey, hold, or retain storm flows.

Increased stormwater flows could result in increased discharge of stormwater to downstream areas, potentially resulting in increased incidence of flooding or erosion off-site. However, several drainage features have been incorporated into the design of Alternative A that would retain stormwater on-site and lessen discharge of storm flows to downstream areas. As discussed in **Section 2.0**, the Preliminary Drainage Study, **Appendix B**, and the preliminary Stormwater Quality Management Plan (SQMP), **Appendix Q** these include

- Installation of a subterranean stormwater detention system, sized to contain a 10-year storm event (60,100 cubic-foot capacity);
- Inclusion of pervious concrete surfaces for most driveway and parking surfaces;
- Source control methods;
- Minimization of impervious areas and inclusion of pervious features in site design (landscaping, wetland area, grassy swales, etc.); and
- Discharge to an upland drainage release system.
- Bio-retention features;
- Flow-through planters

The SQMP proposes BMPs to manage stormwater quality and flow control focus on three tiers of application. In order of effectiveness, these are: limiting directly-connected impervious area, controlling the sources of pollutants, and treating stormwater. This tiered approach to stormwater management has been shown to be most effective in controlling non-point source pollution, and is the approach advocated by the California Stormwater Quality Association, the Bay Area Stormwater Management Agencies Association, and the Regional Water Quality Control Board (RWQCB).

Incorporation of these measures into the design of Alternative A would reduce stormwater flows discharged from the site for a 10-year storm event to less than significant levels. However, during storm events of greater intensity than a 10-year storm event, only the amount of water equivalent to that of a 10-year storm event would be retained. Sizing factors for the treatment and flow BMPs meet the following objectives:

- To meet the water quality treatment guideline, the treatment area is sized to treat the 85th percentile mean annual 24-hour rainfall intensity (0.21 in/hr).
- Where required to meet the peak flow control guideline, the storage volume will be sized to limit the post-project two-year, 24-hour peak flow rate to pre-development conditions.

Additional water would be discharged to the upland drainage release system, where it could potentially result in additional inundation, increased stream or drainage flows, erosion, or flooding. During a 100-year storm event, the stormwater flows released to the upland drainage system could contribute to additional flooding. Implementation of **Mitigation Measure 5.3-1**, would ensure that Alternative A would not contribute to off-site flooding, including flooding during a 100-year storm event, and would reduce this impact to a less than significant level.

Significance after Mitigation: Less than Significant

Impact 4.3.1-2: Location in a Delineated Floodplain (Potentially Significant)

The northeastern parcels are located within a FEMA-defined 100-year flood zone. As discussed in greater detail in **Section 3.3**, flooding on-site is created primarily by run-on to the project site associated with the Russian River. As a result, all of the facilities proposed for the northeastern parcels under Alternative A, including a groundwater well, water treatment plant, water supply tanks and pipelines, wastewater treatment plant, wastewater storage pond, wastewater sprayfields, and drainage ditches, would be located within a 100-year flood zone.

As discussed in Section 2.0 and **Appendix B**, the proposed water treatment plant, wastewater treatment plant, and wastewater storage pond would be surrounded by flood control levees. These levees would be designed to reach a minimum height of the FEMA-defined 100-year flood height plus at least 3 feet of freeboard above the 100-year flood height.

Installation of these levees would remove approximately 32.2 acres of area from the existing FEMA-defined 100-year floodplain. As a result, flood water that would have been stored in this area would be displaced into surrounding areas during a 100-year flood event, and could potentially increase flood heights in adjacent areas. To estimate the magnitude of this potential increase, flood height was modeled for Alternative A using a mass balance calculation. The flood height determination used fine-scale topographic survey data completed for the site in 2009, along with FEMA-defined 100-year flood heights (see **Figure 3.3-3**) and the proposed footprint and elevation of the leveed wastewater facilities. The total volume of flood water that would be displaced by installing the proposed levees was then calculated. It was then assumed that the calculated displaced flood water volume would disperse evenly within the parcel where the facility would be located, as well as hydrologically connected parcels located immediately adjacent to the project site.

Results from the flood height model indicated that flood heights in affected areas would increase by a maximum of 0.67 foot as a result of implementing Alternative A. However, based on the methodology used for the calculation, a conservative estimate of flood height increase is approximately 1 foot. A 100-year flood height increase of this magnitude would remain within existing available freeboard for the levees along the City's wastewater treatment plant to the north, as well as other levees or berms located to the east and west of the affected parcel. This magnitude of water level increase on the parcel immediately south of the project site is not anticipated to significantly increase 100-year flood heights, and due to existing retaining features, would not result in significant encroachment of

flood waters onto adjacent parcels or other areas where flooding does not presently occur. No additional mitigation for the water treatment plant, wastewater treatment plant, or the wastewater storage pond would be required. To protect the proposed groundwater well (if selected as a water supply source) from flooding, **Mitigation Measure 5.3-2a** would be required to reduce this impact to a less than significant level.

It should be noted that the increase in flood height due to the project was estimated for the purposes of determining the magnitude of change for this analysis under NEPA. Additional analysis in accordance with Executive Order 11988 would be still be required by FEMA before the Tribe constructs facilities on the floodplain. Development on the floodplain would not be permitted to begin until the Tribe has demonstrated to FEMA that the proposed facilities and properties upstream and downstream would not be adversely affected by the proposed activities on the floodplain and the Conditional Letter of Map Revision is completed and approved (See Regulatory Setting, Section 3.3, *Water Resources*). In consultation with FEMA, **Mitigation Measures 5.3-2b** through **d** are included to ensure that the project conforms with FEMA standards throughout the design process. The Tribe would prepare a hydraulic model in accordance with FEMA floodplain hydraulic modeling requirements, seek participation in the National Flood Insurance Program, and establish a Tribal Mitigation Plan per FEMA guidance.

Significance after Mitigation: Less than Significant

Impact 4.3.1-3: Water Quality during Construction (Less than Significant)

Construction of Alternative A would involve the use of heavy machinery for grading, earth-moving, import of building materials, and construction of the proposed facilities. The use of heavy machinery for these activities could result in the release of sediment, as well as construction-related oils, greases, fuels, antifreeze, and other fluids associated with the use of heavy machinery. These potential water pollutants could become entrained in stormwater flows and could degrade water quality of natural waterways off-site, and potentially contribute to water quality impairments along the Russian River, as discussed in **Section 3.3**.

Construction of Alternative A would be subject to regulation under the Federal Clean Water Act. As such, the applicant would be required to acquire an NPDES general permit for construction activities prior to the initiation of construction activities on site. Conditions for the NPDES permit would include completion and adherence to the recommendations of a Stormwater Pollution Prevention Plan (SWPPP), which in turn would implement a series of Best Management Practices (BMPs). BMPs would include measures to reduce the loading of sediment and other construction-related pollutants during the construction period, and would include measures such as stormwater retention ponds, settling basins, slope stabilization, temporary erosion control measures (fiber rolls, staked straw bales, temporary revegetation), mechanical stormwater filtration measures, and use and containment requirements for hazardous construction materials (fuels, solvents, lubricants, concrete wash-out, and similar). Adherence to the conditions of the NPDES general permit

for construction activities would therefore ensure that the potential for discharge of contaminated waters from the project site during construction would be less than significant.

Impact 4.3.1-4: Water Quality during Operation (Less than Significant)

Effects to water quality during operation of Alternative A could occur due to discharge of stormwater containing elevated levels of pollutants. Specifically, operation of Alternative A would involve additional use of the project site by automobiles, buses, delivery trucks, and other uses associated with daily operations of the proposed facilities. Additionally, landscaping activities would be anticipated to include the use of pesticides, herbicides, and fertilizers. During storm events, pollutants associated with these uses, including oils, greases, brake dust, sediments, trash, fertilizers, herbicides, and pesticides, may become entrained in stormwater flow and result in discharge of these constituents outside of the project site, causing degraded water quality off-site.

As discussed in **Section 2.0**, the preliminary Drainage Study, **Appendix B**, and the SQMP, **Appendix Q**, Alternative A would incorporate design measures that would reduce the intensity of pollutant discharges associated with stormwater runoff during operation. The SQMP proposes BMPs to manage stormwater quality and flow control focus on three tiers of application. In order of effectiveness, these are: limiting directly-connected impervious area, controlling the sources of pollutants, and treating stormwater. Specifically, the use of slope protection practices would reduce erosion and sediment loading of stormwater, the use of landscaped swales/bioswales, bioretention areas and flow-through planters would filter and reduce pollutant loads from impervious surfaces prior to storm drain transport, the use of porous concrete and other porous hardscape surfaces to promote stormwater infiltration and reduce polluted runoff, overland discharge of storm flows to prevent discharge of polluted stormwater directly into local streams and the Russian River, and the incorporation of Integrated Pest Management principles and techniques for design and maintenance of landscaping, which would reduce fertilizer, herbicide and pesticide use and associated potential for runoff during storm events. Sizing factors for the treatment and flow BMPs meet the following objectives:

- To meet the water quality treatment guideline the treatment area is sized to treat the 85th percentile mean annual 24-hour rainfall intensity (0.21 in/hr).
- Where required to meet the peak flow control guideline, the storage volume will be sized to limit the post-project two-year, 24-hour peak flow rate to pre-development conditions

Incorporation of these measures into the design of Alternative A would ensure that water quality impacts during operation would be less than significant.

Impact 4.3.1-5: Groundwater Levels and Effects on the Russian River from Groundwater Pumping (Less than Significant)

As discussed in detail in **Appendix I**, implementation of Alternative A would result in the use of up to 74.6 acre-feet of groundwater per year (af/yr), taking into account the use of recycled water. Under the private option, groundwater would be drawn from a groundwater supply well near the southeast corner of the project site. Groundwater pumping from the supply well could lower groundwater levels in onsite and neighboring wells, including the active South Cloverdale Water District supply well and impact flows from the Russian River.

The effects of project-related groundwater extraction were analyzed using an analytical element model, which simulated the groundwater response to the proposed supply well (Hydrometrics LLC, 2009). The first analysis completed in August 2009, modeled a simulation well. The analysis assumed that the simulation well would be located in the southern corner of the site. The input data for the model were obtained from available project site and vicinity hydrogeologic information developed during previous well installations, available pump tests, water level measurements, and ongoing groundwater pumping. For the 2009 analysis, the simulation groundwater supply well was assumed to operate continuously and pump 45 gallons per minute (gpm). This rate was based on an annual project water demand of 74.6 acre feet per year, as presented in the Water Supply Report, **Appendix I**.

In July 2010, a water supply well was installed about 500 feet east of the simulation well used in the 2009 analysis. The well is deeper and closer to the Russian River than what was simulated. Subsequent to the original simulated well analysis, a supplemental analysis was conducted that reflects the characteristics of the existing well and included an increased pumping rate. The increased pumping rate was used to represent the rate that the proposed project may require if recycled water was not available for irrigation and toilet flushing.

Results from August 2009 Groundwater Pumping Analysis

The model results reflect a groundwater flow gradient beneath the site that is generally perpendicular to the Russian River but also accounts for a component of down-valley groundwater flow. Therefore, the groundwater extracted from the proposed well would be made up of water that, if not extracted, would eventually flow down-gradient and enter the Russian River. At a pumping rate of 45 gpm, the model output indicated that the well would produce a steady state drawdown of about 2 feet and result in the withdrawal of about 42 gpm of groundwater flowing that would otherwise flow to the Russian River. The model simulation of the pumping resulted in an ovate capture zone with its long axis parallel to groundwater flow (and perpendicular to the river). At the 45 gpm pumping rate, the capture zone does not extend far enough to intersect the flow of the Russian River; that finding is important and indicates that the proposed pumping well would not be drawing flow away from the surface flows of the river. Rather, the well would intercept and draw groundwater that is flowing down-gradient from the adjacent uplands towards the river and that would reach the river under current conditions.

The removal of 42 gpm of groundwater from the “gaining” river system of the Russian River equates to about 0.09 cubic feet per second (cfs). As discussed in **Section 3.3**, the flow of the Russian River between November and April is, on average, 1,763 cfs and during the months of May through October, averages 286 cfs. Therefore, it is reasonable to predict that the proposed continuous groundwater pumping of 45 gpm from the project site would indirectly diminish Russian River flows (through removal of groundwater inflow to the river) about 0.005 percent during the winter months and 0.03 percent during the summer months. The Biological Opinion issued by the National Marine Fisheries Service on Water Supply, Flood Control Operations, and Channel Maintenance in the Russian River watershed¹ requires instream flow requirements for the upper Russian River from 150/185 cfs to 125 cfs under normal conditions. As a result, the estimated reduction caused by groundwater pumping by the proposed project of 0.03 percent of the 286 cubic feet per second (cfs) summer flow would increase to 0.07 percent under the 125 cfs flow dictated by the BO. Based on this evaluation, the reduction of less than 0.1 percent of available flow to the Russian River caused by the proposed groundwater pumping would be very small and not observable or measurable and would not negatively impact the hydrology of the river or aquatic habitats. Groundwater pumping proposed by the project would have a less than significant effect on the Russian River.

According to the analysis, groundwater pumping at 45 gpm from the proposed groundwater well would establish a drawdown at the well of about 2 feet. Based on the modeling exercise, this drawdown would be localized and would decrease with distance from the well. Resultant drawdown in the neighboring wells would be less than 2 feet but most likely, would not be observable or distinguishable from seasonal or monthly groundwater fluctuation. The small drawdown attributable to the proposed well would not negatively impact the operation, condition, or yield in other onsite or neighboring wells. The proposed project would have a less than significant impact on other local groundwater production.

Results from April 2010 Supplemental Groundwater Analysis

The supplemental groundwater pumping analysis differed from the 2009 analysis in the following ways:

- It evaluated the parameters from an existing groundwater supply well, not a simulation well.
- The supply well is located about 500 feet closer the Russian River.
- The depth of the supply well was 50 feet deeper than the simulation well.
- The modeled pumping rate was 64 gallons per minute (gpm) to reflect pumping without the recycled water compared to the 45 gpm used in the analysis of the simulation well.

The results of the supplemental analysis were generally similar to the original analysis. However, in this analysis, the deep capture zone does not intercept the Russian River; while the shallow capture zone does intercept the Russian River. This indicates that some water is extracted directly from the Russian River and some water is intercepted before it gets to the Russian River because the well is

¹ Biological opinion regarding activities conducted by the U.S. Army Corps of Engineers, the Sonoma County Water Agency and the Mendocino County Russian River Flood Control and Water Conservation Improvement District

closer to the river and the pumping rate is higher. The model calculates that Russian River flow is diminished by approximately 60 gpm, or 0.13 cubic feet per second (cfs) due to pumping the new supply well. Over 94 percent of the water captured by the production well is therefore water that is either extracted from the Russian River, or would otherwise discharge into the Russian River.

The important finding between the 2009 and 2011 supplemental analysis is that the estimated amount that the Russian River flows are diminished by groundwater pumping is roughly the same and as previously determined; this amount of flow reduction is small and not observable and would not negatively impact the hydrology of the river or aquatic habitats. Considering the recent Biological Opinion issued by the National Marine Fisheries Service, a reduction of 0.13 cfs is 0.1 percent under the 125 cfs flow dictated by the BO. Similar to the results of the 2009 analysis for the simulated well, this additional analysis indicates that groundwater pumping from the existing supply well would have a less than significant effect on the Russian River.

Proposed groundwater pumping at 64 gpm from the supply well would establish a maximum drawdown of about 0.5 feet, which would be localized and would decrease with distance from the well. Resultant drawdown in the neighboring wells would be less than 0.5 feet, but most likely would not be observable or distinguishable from seasonal or monthly groundwater fluctuation. As predicted with the simulation well in the 2009 analysis, the small drawdown attributable to the supply well would not negatively impact the operation, condition, or yield in other onsite or neighboring wells. The proposed project would have a less than significant impact on other local groundwater production.

Alternatively, if the municipal water supply option is selected, Alternative A would rely on water supplied by the City of Cloverdale. The City of Cloverdale is a surface water source with a water right (Statement SO 1423 7) and maintains four groundwater wells for water supply, which pump the underflow of the Russian River. As discussed in **Section 3.3**, groundwater levels in the vicinity of the project site and the City of Cloverdale are generally stable, although some seasonal fluctuation does occur. In terms of demand, the amount of water required by the proposed Action would be equivalent to roughly 2.8 percent of the City of Cloverdale's annual water use (2.4 million gallons per day (mgd), or 2,688 af/yr; see **Section 3.3**). The City is currently expanding its well capacity, and plans to install a fifth groundwater well in 2009. A less than significant impact would occur.

Impact 4.3.1-6: Treated Effluent Sprayfields and Water Quality (Potentially Significant)

Implementation of Alternative A could include construction and operation of sprayfields for the disposal of treated effluent generated by the proposed facilities. As discussed in **Section 2.0**, sprayfields would only be needed under the on-site wastewater option and would be used for the discharge of treated effluent during dry periods; no discharge would occur from October 1 to May 14. Additionally, effluent would be treated to the level mandated by the EPA, and as further described as "tertiary disinfected" in the California Code of Regulations, Title 22, Section 60301.230, including the use of a constant flow membrane bioreactor, chlorination, and an aerated storage pond.

The spray field area would be a cultivated crop field of approximately 14.6 acres. The 14.6 acre area was determined considering the required 50-foot protective buffer around onsite and neighboring groundwater wells (ESA, 2009). Considering the size of the field, soil percolation rates, soil holding capacity, depth to groundwater, and evapotranspiration of the chosen crop, the spray field should provide adequate application area for treated effluent, ensuring that surface ponding and runoff would not occur and the underlying soil can accommodate the applied water. Based on the water balance evaluation and subsequent alterations made to the proposed effluent application scenario, the majority of the water applied to the sprayfield would remain in the soil or be taken up as evapotranspiration. In certain months a fraction of the applied water may percolate to the water table but that water would be mixed and diluted in the aquifer.

However, if improperly managed, treated effluent discharged during sprayfield operation could pool and run off-site, resulting in co-mingling of treated effluent and surface waters. Because treated effluent would meet Title 22 standards, no significant reduction in the quality of affected surface water or of drinking water quality is anticipated. To ensure that no significant and adverse effects to surface water quality or groundwater quality occur **Mitigation Measure 5.3-3** is recommended for management of sprayfield operation.

Significance after Mitigation: Less than Significant

4.3.2 Alternative B – Reduced Hotel and Casino

Impact 4.3.2-1: Changes to Existing Drainage Patterns (Potentially Significant)

Implementation of Alternative B would result in similar changes to existing drainage patterns as discussed for Alternative A, including up to 17 acres of additional impervious features. These additional impervious surfaces, along with changes to drainage patterns associated with construction activities (as discussed in detail under Alternative A), could result in the generation of polluted stormwater, which could be carried off-site and affect downstream water quality. In addition to the stormwater retention, infiltration, and dispersion indicated in **Section 2.0, Appendix B**, and as discussed above for Alternative A, **Mitigation Measure 5.3-1** would be required to ensure that Alternative B would not contribute to off-site flooding, including flooding during a 100-year storm event.

Significance after Mitigation: Less than Significant

Impact 4.3.2-2: Location in a Delineated Floodplain (Potentially Significant)

Implementation of Alternative B would result in construction of facilities within a FEMA-defined 100-year flood zone, as described under Alternative A. Installation of flood control levees to protect these improvements would result in an increase in 100-year flood height of less than 1 foot. In

addition to the flood control levees noted in **Section 2.0, Appendix B**, and the discussion for Alternative A above, implementation of **Mitigation Measures 5.3-2a-d** would reduce this impact to a less than significant level.

Significance after Mitigation: Less than Significant

Impact 4.3.2-3: Water Quality during Construction (Less than Significant)

Construction of Alternative B would involve the use of heavy machinery for grading, earth-moving, import of building materials, and construction of the proposed facilities, and would result in similar potential for degradation of water quality as discussed for Alternative A. Construction of Alternative B would be subject to regulation under the Federal Clean Water Act, and similar BMPs would be required for the implementation of Alternative B as discussed for Alternative A. Therefore, this impact would be less than significant.

Impact 4.3.2-4: Water Quality during Operation (Less than Significant)

Operation of Alternative B would involve additional use of the project site by automobiles, buses, delivery trucks, and other uses associated with daily operations of the proposed facilities. Although the intensity of use would be somewhat reduced in comparison to Alternative A, potential changes in water quality would remain similar to those discussed for Alternative A. Additionally, Alternative B would incorporate similar design measures to those discussed for Alternative A, that would reduce potential stormwater pollution. Therefore, this impact would be less than significant.

Impact 4.3.2-5: Groundwater Levels and Effects on the Russian River from Groundwater Pumping (Less than Significant)

As discussed in detail in **Appendix I**, implementation of Alternative B would result in the use of up to 54.6 af/yr. Groundwater would be drawn from a proposed well or via municipal supply, as indicated for Alternative A, above. In terms of demand, the amount of water required by Alternative B would be equivalent to roughly 2.0 percent of the City of Cloverdale's annual water use (2.4 mgd, or 2,688 af/yr; see **Section 3.3**). Other potential impacts to groundwater levels (including effects to neighboring wells) and the Russian River would be similar to Alternative A, except reduced in intensity concurrent with reduced water use. Thus, a less than significant impact would occur.

Impact 4.3.2-6: Treated Effluent Sprayfields and Water Quality (Potentially Significant)

Implementation of Alternative B could include construction and operation of sprayfields for the disposal of treated effluent generated by proposed facilities, as discussed for Alternative A. Alternative B would result in a lower intensity of use of sprayfields, as compared to Alternative A, but would otherwise potentially result in similar effects on water quality. To ensure that no significant and adverse effects to surface water quality or groundwater quality occur **Mitigation Measure 5.3-3** is recommended for management of sprayfield operation.

Significance after Mitigation: Less than Significant

4.3.3 Alternative C – Reduced Casino

Impact 4.3.3-1: Changes to Existing Drainage Patterns (Potentially Significant)

Implementation of Alternative C would result in similar changes to existing drainage patterns as discussed for Alternative A, including up to 17 acres of additional impervious features. These additional impervious surfaces, along with changes to drainage patterns associated with construction activities (as discussed in detail under Alternative A), could result in the generation of polluted stormwater, which could be carried off-site and affect downstream water quality. In addition to the stormwater retention, infiltration, and dispersion indicated in **Section 2.0, Appendix B**, and as discussed above for Alternative A, **Mitigation Measure 5.3-1** would be required to ensure that Alternative C would not contribute to off-site flooding, including flooding during a 100-year storm event.

Significance after Mitigation: Less than Significant

Impact 4.3.3-2: Location in a Delineated Floodplain (Potentially Significant)

Implementation of Alternative B would result in construction of facilities within a FEMA-defined 100-year flood zone, as described under Alternative A. Installation of flood control levees would result in an increase in 100-year flood height of less than 1 foot. In addition to the flood control levees noted in **Section 2.0, Appendix B**, and the discussion for Alternative A above, implementation of **Mitigation Measures 5.3-2a-d** would reduce this impact to a less than significant level.

Significance after Mitigation: Less than Significant

Impact 4.3.3-3: Water Quality During Construction (Less than Significant)

Construction of Alternative C would involve the use of heavy machinery for grading, earth-moving, import of building materials, and construction of the proposed facilities, and would result in similar potential for degradation of water quality as discussed for Alternative A. Construction of Alternative C would be subject to regulation under the Federal Clean Water Act, and similar BMPs would be required for the implementation of Alternative C as discussed for Alternative A. Therefore, this impact would be less than significant.

Impact 4.3.3-4: Water Quality during Operation (Less than Significant)

Operation of Alternative C would involve additional use of the project site by automobiles, buses, delivery trucks, and other uses associated with daily operations of the proposed facilities. Although the intensity of use would be somewhat reduced in comparison to Alternative A, potential changes in water quality would remain similar to those discussed for Alternative A. Additionally, Alternative C would incorporate similar design measures to those discussed for Alternative A, that would reduce potential stormwater pollution. Therefore, this impact would be less than significant.

Impact 4.3.3-5: Groundwater Levels and Effects on the Russian River from Groundwater Pumping (Less than Significant)

As discussed in detail in **Appendix I**, implementation of Alternative C would result in the use of up to 49.1 af/yr. Groundwater would be drawn from a proposed well or via municipal supply, as indicated for Alternative A, above. In terms of demand, the amount of water required by Alternative C would be equivalent to roughly 1.8 percent of the City of Cloverdale's annual water use (2.4 mgd, or 2,688 af/yr; see **Section 3.3**). Other potential impacts to groundwater levels (including effects to neighboring wells) and the Russian River would be similar to Alternative A, except reduced in intensity concurrent with reduced water use. Thus, a less than significant impact would occur.

Impact 4.3.3-6: Treated Effluent Sprayfields and Water Quality (Potentially Significant)

Implementation of Alternative C could include construction and operation of sprayfields for the disposal of treated effluent generated by proposed facilities, as discussed for Alternative A. Alternative C would result in a lower intensity of use of sprayfields, as compared to Alternative A, but would otherwise potentially result in similar effects on water quality. To ensure that no significant and adverse effects to surface water quality or groundwater quality occur **Mitigation Measure 5.3-3** is recommended for management of sprayfield operation.

Significance after Mitigation: Less than Significant

4.3.4 Alternative D – Casino Only

Impact 4.3.4-1: Changes to Existing Drainage Patterns (Potentially Significant)

Implementation of Alternative D would result in similar changes to existing drainage patterns as discussed for Alternative A, including up to 12 acres of additional impervious features. These additional impervious surfaces, along with changes to drainage patterns associated with construction activities (as discussed in detail under Alternative A), could result in the generation of polluted stormwater, which could be carried off-site and affect downstream water quality. In addition to the stormwater retention, infiltration, and dispersion indicated in **Section 2.0, Appendix B**, and as discussed above for Alternative A, **Mitigation Measure 5.3-1** would be required to reduce this impact to a less than significant level. This mitigation measure would ensure that Alternative D would not contribute to off-site flooding, including flooding during a 100-year storm event.

Significance after Mitigation: Less than Significant

Impact 4.3.4-2: Location in a Delineated Floodplain (Potentially Significant)

Implementation of Alternative D would result in construction of facilities within a FEMA-defined 100-year flood zone, as described under Alternative A. Installation of flood control levees would result in an increase in 100-year flood height of less than 1 foot. In addition to the flood control levees noted in **Section 2.0, Appendix B**, and the discussion for Alternative A above, implementation of **Mitigation Measures 5.3-2a-d** would reduce this impact to a less than significant level.

Significance after Mitigation: Less than Significant

Impact 4.3.4-3: Water Quality during Construction (Less than Significant)

Construction of Alternative D would involve the use of heavy machinery for grading, earth-moving, import of building materials, and construction of the proposed facilities, and would result in similar potential for degradation of water quality as discussed for Alternative A. Construction of Alternative D would be subject to regulation under the Federal Clean Water Act, and similar BMPs would be required for the implementation of Alternative D as discussed for Alternative A. Therefore, this impact would be less than significant.

Impact 4.3.4-4: Water Quality during Operation (Less than Significant)

Operation of Alternative D would involve additional use of the project site by automobiles, buses, delivery trucks, and other uses associated with daily operations of the proposed facilities. Although the intensity of use would be somewhat reduced in comparison to Alternative A, potential changes in water quality would remain similar to those discussed for Alternative A. Additionally, Alternative

D would incorporate similar design measures to those discussed for Alternative A, that would reduce potential stormwater pollution. Therefore, this impact would be less than significant.

Impact 4.3.4-5: Groundwater Levels and Effects on the Russian River from Groundwater Pumping (Less than Significant)

As discussed in detail in **Appendix I**, implementation of Alternative D would result in the use of up to 28.4 af/yr. Groundwater would be drawn from a proposed well or via municipal supply, as indicated for Alternative A, above. In terms of demand, the amount of water required by Alternative D would be equivalent to roughly 1.1 percent of the City of Cloverdale’s annual water use (2.4 mgd, or 2,688 af/yr; see **Section 3.3**). Other potential impacts to groundwater levels (including effects to neighboring wells) and the Russian River would be similar to Alternative A, except reduced in intensity concurrent with reduced water use. Thus, a less than significant impact would occur.

Impact 4.3.4-6: Treated Effluent Sprayfields and Water Quality (Potentially Significant)

Implementation of Alternative D could include construction and operation of sprayfields for the disposal of treated effluent generated by proposed facilities, as discussed for Alternative A. Alternative D would result in a lower intensity of use of sprayfields, as compared to Alternative A, but would otherwise potentially result in similar effects on water quality. To ensure that no significant and adverse effects to surface water quality or groundwater quality occur **Mitigation Measure 5.3-3** is recommended for management of sprayfield operation.

Significance after Mitigation: Less than Significant

4.3.5 Alternative E – Commercial Retail-Office Space

Impact 4.3.5-1: Changes to Existing Drainage Patterns (Potentially Significant)

Implementation of Alternative E would result in the installation of different facilities than Alternative A, but the facilities would have, overall, a similar footprint, as discussed in **Section 2.0**. The total area of impervious surfaces included in Alternative E would be less than Alternative A, or approximately 7 acres. However, these additional impervious surfaces, along with changes to drainage patterns associated with construction activities that would be similar to those discussed in detail under Alternative A, could result in the generation of polluted stormwater. This polluted stormwater could then be carried off-site and affect downstream water quality. In addition to the stormwater retention, infiltration, and dispersion indicated in **Section 2.0**, **Appendix B**, and as discussed above for Alternative A, mitigation measure **Mitigation Measure 5.3-1** would be required to reduce this impact to a less than significant level. This mitigation measure would ensure

that Alternative E would not contribute to off-site flooding, including flooding during a 100-year storm event.

Significance after Mitigation: Less than Significant.

Impact 4.3.5-2: Location in a Delineated Floodplain (Potentially Significant)

Implementation of Alternative E could result in construction of water supply, wastewater treatment, and wastewater disposal facilities within a FEMA-defined 100-year flood zone, similar to those proposed under Alternative A, but sized according to the requirements of Alternative E. Installation of flood control levees would result in an increase in 100-year flood height of less than one foot. In addition to the flood control levees noted in **Section 2.0, Appendix B**, and the discussion for Alternative A above, implementation of **Mitigation Measures 5.3-2a-d** would reduce this impact to a less than significant level.

Significance after Mitigation: Less than Significant.

Impact 4.3.5-3: Water Quality during Construction (Less than Significant)

Construction of Alternative E would involve the use of heavy machinery for grading, earth-moving, import of building materials, and construction of the proposed facilities, and would result in similar potential for degradation of water quality as discussed for Alternative A. Construction of Alternative E would be subject to regulation under the Federal Clean Water Act, and similar BMPs would be required for the implementation of Alternative E as discussed for Alternative A. Therefore, this impact would be less than significant.

Impact 4.3.5-4: Water Quality During Operation (Less than Significant)

Operation of Alternative E would involve additional use of the project site by automobiles, buses, delivery trucks, and other uses associated with daily operations of the proposed retail, office, and other facilities. Although the intensity of use would be somewhat reduced in comparison to Alternative A, potential changes in water quality would remain similar to those discussed for Alternative A. Additionally, Alternative E would incorporate similar design measures to those discussed for Alternative A, that would reduce potential stormwater pollution. Therefore, this impact would be less than significant.

Impact 4.3.5-5: Groundwater Levels and Effects on the Russian River from Groundwater Pumping (Less than Significant)

As discussed in detail in **Appendix I**, implementation of Alternative E would result in the use of up to 28.5 af/yr. Groundwater would be drawn from a proposed well or via municipal supply, as indicated for Alternative A, above. In terms of demand, the amount of water required by the proposed Action would be equivalent to roughly 1.1 percent of the City of Cloverdale's annual water use (2.4 mgd, or 2,688 af/yr; see **Section 3.3**). Other potential impacts to groundwater levels (including effects to neighboring wells) and the Russian River would be similar to Alternative A, except reduced in intensity concurrent with reduced water use. Thus, a less than significant impact would occur.

Impact 4.3.5-6: Treated Effluent Sprayfields and Water Quality (Potentially Significant)

Implementation of Alternative E could include construction and operation of sprayfields for the disposal of treated effluent generated by proposed facilities, as discussed for Alternative A. Alternative E would result in a lower intensity of use of sprayfields, as compared to Alternative A, but would otherwise potentially result in similar effects on water quality. To ensure that no significant and adverse effects to surface water quality or groundwater quality occur **Mitigation Measure 5.3-3** is recommended for management of sprayfield operation.

Significance after Mitigation: Less than Significant.

4.3.6 Alternative F – No Action

Implementation of Alternative F would have no impact upon existing drainage patterns, flooding, water quality, and water supply in the near term. In the long term, any proposed development would be subject to state and local environmental laws, thereby ensuring that a less than significant impact would occur to water resources.

4.3.7 References

ESA, 2009. Technical Memorandum Supplemental Evaluation of Dispersal by Spray Irrigation, Sirrah Property, Cloverdale Rancheria EIS Project, Cloverdale, CA. July 30, 2009.

Hydrometrics LLC, 2009. Limited Groundwater Pumping Analysis, Amonos and Sirrah Sites, Cloverdale, CA. Correspondence to ESA dated August 18, 2009.

4.4 Air Quality

Federal General Conformity Rule

As the Tribe has not adopted their own air quality program, the thresholds of significance established in the Federal General Conformity Rule would normally apply to the Proposed Action and alternatives. General Conformity Rule thresholds are presented below in **Table 4.4-1**.

**TABLE 4.4-1
GENERAL CONFORMITY RULE THRESHOLDS**

VOC or ROG	50 tons per year
NOx	100 tons per year
PM10	100 tons per year
PM2.5	100 tons per year
Carbon Monoxide	100 tons per year
BAAQMD is a Maintenance Area for CO, marginal nonattainment for ozone, and nonattainment for PM2.5.	
SOURCE: U.S. EPA (http://www.epa.gov/oar/genconform/deminimis.htm)	

The Proposed Action is located in the Northern Sonoma County Air Pollution Control District (NSCAPCD). Project operation would generate criteria pollutant emissions in that district and also in two others, the Mendocino County Air Quality Management District (MCAQMD) and the Bay Area Air Quality Management District (BAAQMD). Pollutant emissions generated in the NSCAPCD and the MCAQMD would not require review under the federal General Conformity Rule because both districts are designated attainment or unclassified for all Federal criteria pollutants.

The BAAQMD is currently designated nonattainment for ozone and PM 2.5 and is a Maintenance Area for Carbon Monoxide (CO). To ensure compliance with the General Conformity Rule, emissions generated by the project within the BAAQMD have been evaluated below to determine whether they would “exceed applicable thresholds or be regionally significant.

Summary of Analysis

The project and alternatives would not exceed de minimus thresholds during construction as the construction would be located within the NSCAPCD where review under the federal General Conformity is not required. As such, this issue will not be discussed further in the document.

Alternatives A through E would exceed the de minimus threshold for CO in the BAAQMD. The CALINE 4 dispersion model was used to quantify CO concentrations at sensitive receptors. The model results show that traffic emissions would not contribute to a new or existing violation, and therefore this impact would be less than significant.

Local Thresholds

Air quality within up to three different air pollution control districts may be affected by the emissions of the Proposed Action and alternatives. The NSCAPCD is where the project site is located; however, vehicles would be traveling from the MCAQMD to the north and from the BAAQMD to the south. The local thresholds for emissions within each district are summarized in **Table 4.4-2**.

Project-related air quality impacts fall into two categories: short-term impacts due to construction, and long-term impacts due to project operation. Operation of the proposed project would result in an increase in emissions due both to project-related motor vehicle trips, stationary sources, and area sources (e.g., landscaping activities, natural gas fuel combustion). Emissions associated with the proposed project have been estimated using an emission inventory model URBEMIS 2007 version 9.2.4, which includes both emissions from mobile and area sources.

**TABLE 4.4-2
LOCAL AIR QUALITY DISTRICT THRESHOLDS**

Air District	Pollutant	Threshold
NSCAPCD	VOC or ROG	40 tons per year
	NO _x	40 tons per year
	PM ₁₀	15 tons per year
	Carbon Monoxide	100 tons per year
MCAQMD	VOC or ROG	220 lbs/day
	NO _x	220 lbs/day
	PM ₁₀	80 lbs/day
	Carbon Monoxide	550 lbs/day
BAAQMD	VOC or ROG	80 lbs/day
	NO _x	80 lbs/day
	PM ₁₀	80 lbs/day
	Carbon Monoxide	550 lbs/day

SOURCES: NSCAPCD, 2008. Air Quality Control Rules, Rule 130-P8, October 2008; MCAQMD, 2008. Air Quality Control Rules, Rule 1-130-S2 September, 2008; BAAQMD, 1999. CEQA Guidelines, December 1999.

4.4.1 Alternative A – Proposed Action

Impact 4.4.1-1: Construction Emissions (Potentially Significant)

Construction related emissions would be generated by a variety of activities including: 1) grading, excavation, road building, and other earth moving activities; 2) travel by construction equipment and employee vehicles, especially on unpaved surfaces; 3) exhaust from construction equipment; 4) architectural coatings; and 5) asphalt paving.

PM₁₀ emissions from construction would vary greatly from day to day depending on the level of activity, the equipment being operated, silt content of the soil, and the prevailing weather. Larger-diameter dust particles (i.e., greater than 30 microns) generally fall out of the atmosphere within

several hundred feet of construction sites, and represent more of a soiling nuisance than a health hazard. Smaller-diameter particles (e.g., PM10) are associated with adverse health effects and generally remain airborne until removed from the atmosphere by moisture. Therefore, unmitigated construction dust emissions could result in significant local effects.

NO_x, ROG, PM10, PM2.5, CO, and CO₂ construction emissions were estimated based on default crew, truck trip, and equipment. Emissions are based on criteria pollutant emission factors embedded in the URBEMIS 2007 model. The URBEMIS 2007 results are presented in **Table 4.4-3**. Based on this evaluation, construction emissions would not violate NSAPCD thresholds.

Construction activities would be short-term in duration and the impacts would be localized. On-site construction impacts would not be subject to North Coast Air Basin standards. However, fugitive dust may become a nuisance during construction to both on-site and adjacent off-site areas. This is a potentially significant impact. **Mitigation Measure 5.4-1** would reduce impacts associated with dust emissions (PM10) to less than significant. **Mitigation Measures 5.4-2** through **5.4-4** would further reduce impacts associated with construction emissions.

**TABLE 4.4-3
ALTERNATIVE A CONSTRUCTION EMISSION ESTIMATES**

Unmitigated Annual Operational Emissions (tons/year)	ROG	NO_x	CO	PM10	PM2.5
2010 Totals	1	3	3	10	2
2011 Totals	5	4	11	<1	<1
NSCAPCD Significance Thresholds (tons/year)	40	40	100	15	NA
Potentially Significant (Yes or No)?	No	No	No	No	NA

Values in **bold** are in excess of local air district thresholds.
For more details see the AQ appendix.

SOURCE: ESA, 2009.

Toxic Air Contaminants

The greatest potential for TACs emissions would be related to diesel particulate emissions (DPM) associated with heavy equipment operations during grading and excavation activities. Health effects from carcinogenic air toxics are usually described in terms of individual cancer risk. “Individual Cancer Risk” is the likelihood that a person exposed to concentrations of TACs over a 70-year lifetime would contract cancer, based on the use of standard risk-assessment methodology. The project would not result in a long-term (i.e., 70 years) substantial source of TAC emissions. In addition, **Mitigation Measures 5.4-2** through **5.4-4** shall be implemented to reduce DPM during the short-term duration of construction. As such, project-related toxic emission impacts during construction would be less than significant.

Significance after Mitigation: Less than Significant

Impact 4.4.1-2: Operation Emissions – Local Standards (Potentially Significant)

Emissions from both mobile and area sources associated with Alternative A have been estimated using URBEMIS 2007. Traffic estimates are based on the traffic analysis included **Sections 3.8** and **4.8**. Operational emissions (on-road vehicle traffic) were split between three air districts that operational trips would travel through to get to the project site; they are shown below in **Table 4.4-4**. As shown below, operational emissions of NO_x, CO, and PM₁₀ would exceed the established NSCAPCD and BAAQMD thresholds for Alternative A. ROG would also exceed the BAAQMD threshold. No operational emissions would exceed MCAQMD thresholds. **Mitigation Measure 5.4-5** is recommended to reduce the significance of this impact; however, the impact would remain significant and adverse even after mitigation.

**TABLE 4.4-4
ALTERNATIVE A OPERATION EMISSION (ON-ROAD VEHICLES AND AREA SOURCE) ESTIMATES**

Unmitigated Annual Operational Emissions (tons/year)	ROG	NO _x	CO	PM ₁₀	PM _{2.5}
Operational Emissions – NSCAPCD					
Project Operations ¹ (tons/year)	37	55	585	56	11
NSCAPCD Significance Thresholds (tons/year)	40	40	100	15	NS
Potentially Significant (Yes or No)?	No	Yes	Yes	Yes	NS
Operational Emissions – BAAQMD					
Project Operations ² (lbs/day)	94	132	1559	157	30
BAAQMD Significance Thresholds (lbs/day)	80	80	550	80	NS
Potentially Significant (Yes or No)?	Yes	Yes	Yes	Yes	NS
Project Operations (tons/year)	19	28	302	29	5
General Conformity Thresholds (tons/year)	50	100	100	100	100
Potentially Significant (Yes or No)?	No	No	Yes	No	No
Operational Emissions – MCAQMD					
Project Operations ³ (lbs/day)	18	25	292	30	6
MCAQMD Significance Thresholds (lbs/day)	220	220	550	80	NS
Potentially Significant (Yes or No)?	No	No	No	No	NS

Values in **bold** are in excess of local air district thresholds.

1. Project operational emissions for NSCAPCD were estimated (based on distances to air basin boundaries and assumptions from the trip distribution and the Gamer Visits study) to be 62% of total operational URBEMIS 2007, version 9.2.4 emissions. See **Appendix C** for more information.
2. Project operational emissions for BAAQMD were estimated (based on distances to air basin boundaries and assumptions from the trip distribution and the Gamer Visits study) to be 32% of total operational URBEMIS 2007, version 9.2.4 emissions. See **Appendix C** for more information.
3. Project operational emissions for MCAQMD were estimated (based on distances to air basin boundaries and assumptions from the trip distribution and the Gamer Visits study) to be 6% of total operational URBEMIS 2007, version 9.2.4 emissions. See **Appendix C** for more information.

NS = No Standard for this pollutant

SOURCE: ESA, 2009.

Toxic Air Contaminants

Alternative A would not itself contribute or generate toxic air contaminants. However, diesel bus and truck travel to and from the gaming, facility, especially loading areas, would result in an increased concentration of diesel emissions in those areas, resulting in a potentially significant

impact of toxic air contaminants in the area. Application of **Mitigation Measure 5.4-5** and **5.4-6** would reduce effects to less than significant.

Significance after Mitigation: Significant

Impact 4.4.1-3: Operation Emissions – Federal General Conformity (Less than Significant)

As shown in **Table 4.4-4**, CO emissions exceed General Conformity Thresholds in the BAAQMD. For the other pollutants of concern, the BAAQMD was either in attainment or met the General Conformity Thresholds.

CO measurements and modeling were important in the early 1980's when CO levels were regularly exceeded throughout California. In more recent years, CO measurements and modeling have not been a priority in most California air districts due to the retirement of older polluting vehicles, less emissions from new vehicles and improvements in fuels. The clear success in reducing CO levels is evident in the first paragraph of the executive summary of the California Air Resources Board *2004 Revision to the California State Implementation Plan for Carbon Monoxide Updated Maintenance Plan for Ten Federal Planning Areas*, shown below:

“The dramatic reduction in carbon monoxide (CO) levels across California is one of the biggest success stories in air pollution control. Air Resources Board (ARB or Board) requirements for cleaner vehicles, equipment and fuels have cut peak CO levels in half since 1980, despite growth. All areas of the State designated as non-attainment for the federal 8-hour CO standard in 1991 now attain the standard, including the Los Angeles urbanized area. Even the Calexico area of Imperial County on the congested Mexican border had no violations of the federal CO standard in 2003. Only the South Coast and Calexico continue to violate the more protective State 8-hour CO standard, with declining levels beginning to approach that standard.”

The CALINE 4 dispersion model was used to quantify CO concentrations at sensitive receptors and the model results show that traffic emissions would not contribute to a new or existing violation. A segment of US 101 between Asti Road and the Junction of Route 128 East was used as it was most affected by project-related traffic, it was assumed that if carbon monoxide concentrations at these areas would not exceed the ambient air quality standards, the project's contribution to impacts at other segments would also be less than significant under General Conformity standards.

As shown in **Table 4.4-5**, the analysis demonstrated that no violations of the State or Federal CO standard would occur at the receptor locations near the roadway segments modeled. Project traffic would have a less than significant effect upon CO concentrations in the area, thus, project-related and cumulative traffic would have a less than significant conformity determination.

**TABLE 4.4-5
ESTIMATED CARBON MONOXIDE CONCENTRATIONS**

Receptor Location ^b	Averaging Time (hours)	Concentrations (ppm) ^a				Significant? (Yes or No)
		State Standard	Future No Project	Alternative A	Incremental Increase of Alternative A Versus Future No Project	
US 101	1	20	1.9	2.0	0.1	No
	8	9	1.3	1.4	0.1	No

a. Concentrations relate to receptor locations at approximately 200 feet from the middle of the roadway. The carbon monoxide analysis focuses on the weekday evening (p.m.) peak-hour because the project's effects on traffic congestion and related carbon monoxide concentrations are greater during that period than the a.m. peak-hour or off-peak periods. Carbon monoxide estimates shown above include background year 2008 concentrations of 1.7 ppm.

b. Since these receptors are located along the most affected roadway by project-related traffic, other receptors in the project vicinity would experience lower CO concentrations and the impact would also be less than significant.

SOURCE: ESA 2009

Significance after Mitigation: Less than Significant

Impact 4.4.1-4: Objectionable Odors (Potentially Significant)

The proposed wastewater treatment plant could create an odor impact. The nearest sensitive receptor to the wastewater treatment plant would be located approximately 900 feet across State Highway 101. Sensitive receptors at these distances may be affected by odor if the facility needs maintenance and/or during stagnant meteorological conditions. Based on these conditions, the proposed wastewater treatment plant could affect a substantial number of people. This is a potentially significant impact. **Mitigation Measure 5.4-7** would reduce the significance of this impact to less than significant.

Significance after Mitigation: Less than Significant

Impact 4.4.1-5: Greenhouse Gas Emissions and Global Climate Change (Potentially Significant)

As with other non-industrial projects (i.e., projects that are not cement plants, oil refineries, electric generating facilities/providers, co-generation facilities, hydrogen plants, or other stationary combustion sources that emit more than 25,000 MMT per year CO₂e), the specific emissions from this proposed action would not be expected to individually have an impact on Global Climate Change (Association of Environmental Professionals, 2007). For this evaluation, three considerations will be used to determine whether Alternative A could be in conflict with federal, state, and local goals for reducing greenhouse gas emissions. These considerations were developed from a review of recent publications and actions from the Council on Environmental Quality (CEQ) and CARB that address approaches to analyzing greenhouse gases. The considerations include a review of:

- A. The potential conflicts of the alternative with the CARB 39 recommended actions in the AB 32 Scoping Plan;

- B. The relative size of the Project in comparison to the estimated greenhouse reduction goal of 174 MMTCO₂e by 2020 and in comparison to annual emissions of 25,000 metric tons of CO₂e. The threshold 25,000 metric tons of CO₂e per year is based on the use of this number by CEQ Draft Guidance¹ as a proposed minimum indicator level for GHG emissions that may warrant description in NEPA and by CARB as a mandatory reporting requirement for California stationary source emissions. It should be noted that this analysis conservatively includes mobile source emissions which are not required to be reported by CARB.
- C. The basic parameters of a project to determine whether its design is inherently energy efficient.

With regard to Item A, Alternative A would not pose any apparent conflict with the AB 32 Scoping Plan 39 recommended actions (see **Table 3.4-3**).

With regard to Item B, Alternative A construction greenhouse gas emissions would be approximately 1,578 metric tons per year of CO₂e. Area, onroad, and indirect operational emissions are shown below in **Table 4.4-6**. Alternative A would be classified as a major source of greenhouse gas emissions (maximum total operational emissions from operation would be about 192 percent of the lower reporting limit, which is 25,000 metric tons per year of CO₂e). Compared to the overall state reduction goal of approximately 174 million metric tons per year CO₂e, the maximum greenhouse gas emissions for Alternative A would be 52,211 metric tons per year CO₂e or 0.030 percent of the state goal.

With regard to Item C, Alternative A would provide the residents of Cloverdale and the surrounding area a closer and additional source of new employment opportunities in the construction trades and commercial service industry. Area residents would have fewer miles to travel to reach the amenities that will be provided by Alternative A, therefore decreasing emissions caused by longer trips. However, most customers would be driving from far distances to reach these premises.

**TABLE 4.4-6
ALTERNATIVE A INDIRECT GHG EMISSIONS (METRIC TONS PER YEAR)**

Operational Emissions – Alternative A	CO2
Area Source	829
Onroad Vehicle	47,081
Electrical Use	4,301
Total	52,211
Percentage of 25,000	209%
Percentage of 174 Million	0.030%
Operational Emissions – Wastewater Treatment Plant	
Electrical Use	446
Percentage of 25,000	1.9%
Percentage of 174 Million	0.0003%

1. Project operational emissions estimates were made using URBEMIS 2007, version 9.2.4. See **Appendix C** more information.
SOURCE: ESA, 2009

¹ CEQ, 2010. Memorandum to Federal Agencies regarding Draft National Environmental Policy Act Guidance on Consideration of the Effects of Climate Change and Greenhouse Gas Emissions. February 18, 2010.

The review of Items A through C indicates that Alternative A would generate substantial amounts of greenhouse gas emissions. **Mitigation Measures 5.4-5, 5.4-8 and 5.4-10** are recommended to reduce the significance of this impact. Mitigation includes energy efficiency measures and purchase of GHG offset credits for operational emissions which exceed the 25,000 CO₂e reporting limit.

Significance after Mitigation: Less than Significant

Impact 4.4.1-6: Climate Change Impacts on Project Site (Potentially Significant).

The Intergovernmental Panel on Climate Change reports that mean sea level will rise by approximately 12 to 36 inches by the year 2100 (IPCC, 2007). However, the project site is located approximately 24 miles from the ocean, and as a result, it is unlikely that erosion or an increase in flooding as a result of climate-induced sea level rise would affect it.

The hydrology of the Russian River does not depend substantially on flows associated with snowmelt. Therefore, the Russian River system is not anticipated to incur significant reductions in water supply availability as a result of reductions in snowpack due to climate change. Climate change could, however, result in increased intensity and/or frequency of major storm events, including those events that could result in flooding. As discussed in **Section 3.3**, a portion of the project site is located within a 100-year flood zone. However, as discussed in **Section 4.3**, sufficient freeboard would be incorporated into project design, or required via mitigation measures, in order to ensure that potential increases in storm intensity due to climate change would not adversely affect the proposed facilities. Therefore, potential impacts associated with climate change would be less than significant, with implementation of **Mitigation Measures 5.3-1 and 5.3-2**.

Significance after Mitigation: Less than Significant

Impact 4.4.1-7: Indoor Air Quality Impacts (Potentially Significant)

Environmental tobacco smoke (ETS), also known as second-hand smoke, is a complex mixture of chemicals generated during the burning and smoking of tobacco products to which non-smokers are exposed. On January 26, 2006, CARB identified ETS as a TAC. ETS is now formally identified as an airborne toxic substance that may cause and/or contribute to death or serious illness. Since smoking will be permitted indoors at the casino, patrons of the proposed gaming facility could be exposed to toxics and carcinogens from indoor tobacco use. Although the deleterious effects of ETS are widely known, it is possible that some employees or patrons would be unknowingly exposed to ETS without realizing its harmful effects. Such exposure to ETS from the project would be a potentially significant effect. **Mitigation Measure 5.4-9** would reduce the significance of this impact to less than significant.

Significance after Mitigation: Less than Significant

4.4.2 Alternative B – Reduced Hotel and Casino

Impact 4.4.2-1: Construction Emissions (Potentially Significant)

Similar to Alternative A, construction related emissions would be generated by a variety of activities including: 1) grading, excavation, road building, and other earth moving activities; 2) travel by construction equipment and employee vehicles, especially on unpaved surfaces; 3) exhaust from construction equipment; 4) architectural coatings; and 5) asphalt paving.

PM10 emissions from construction would vary greatly from day to day depending on the level of activity, the equipment being operated, silt content of the soil, and the prevailing weather. Larger-diameter dust particles (i.e., greater than 30 microns) generally fall out of the atmosphere within several hundred feet of construction sites, and represent more of a soiling nuisance than a health hazard. Smaller-diameter particles (e.g., PM10) are associated with adverse health effects and generally remain airborne until removed from the atmosphere by moisture. Therefore, unmitigated construction dust emissions could result in significant local effects.

NO_x, ROG, PM10, PM2.5, CO, and CO₂ construction emissions were estimated based on default crew, truck trip, and equipment. Emissions are based on criteria pollutant emission factors embedded in the URBEMIS 2007 model. The URBEMIS 2007 results are presented in **Table 4.4-7**. Based on this evaluation, construction emissions would not violate NSCAPCD thresholds.

Construction activities would be short-term in duration and the impacts would be localized. On-site construction impacts would not be subject to North Coast Air Basin standards. However, fugitive dust may become a nuisance during construction to both on-site and adjacent off-site areas. This is a potentially significant impact. **Mitigation Measure 5.4-1** would reduce impacts associated with dust emissions (PM10) to less than significant. **Mitigation Measures 5.4-2** through **5.4-4** would further reduce impacts associated with construction emissions.

**TABLE 4.4-7
ALTERNATIVE B CONSTRUCTION EMISSION ESTIMATES**

Unmitigated Annual Operational Emissions (tons/year)	ROG	NO_x	CO	PM10	PM2.5
2010 Totals	1	4	3	7	2
2011 Totals	4	4	8	<1	<1
NSCAPCD Significance Thresholds (tons/year)	40	40	100	15	NA
Potentially Significant (Yes or No)?	No	No	No	No	NA

Values in **bold** are in excess of local air district thresholds.
For more details see the AQ appendix.

SOURCE: ESA, 2009.

Toxic Air Contaminants

The greatest potential for TACs emissions would be related to DPM associated with heavy equipment operations during grading and excavation activities. According to AVAQMD methodology,² health effects from carcinogenic air toxics are usually described in terms of individual cancer risk. “Individual Cancer Risk” is the likelihood that a person exposed to concentrations of TACs over a 70-year lifetime would contract cancer, based on the use of standard risk-assessment methodology. The project would not result in a long-term (i.e., 70 years) substantial source of TAC emissions. In addition, **Mitigation Measures 5.4-2** through **5.4-4** shall be implemented to reduce DPM during the short-term duration of construction. As such, project-related toxic emission impacts during construction would be less than significant.

Significance after Mitigation: Less than Significant

Impact 4.4.2-2: Operation Emissions – Local Standards (Potentially Significant)

Emissions from both mobile and area sources associated with Alternative B have been estimated using URBEMIS 2007. Traffic estimates are based on the traffic analysis included **Sections 3.8** and **4.8**. Operational emissions (on-road vehicle traffic) were split between three air districts that operational trips would travel through to get to the project site; they are shown below in **Table 4.4-8**. As shown below, operational emissions of CO and PM10 would exceed the established NSCAPCD and BAAQMD thresholds for Alternative B. No operational emissions would exceed MCAQMD thresholds. **Mitigation Measure 5.4-5** is recommended to reduce the significance of this impact; however, the impact would remain significant and adverse even after mitigation.

Toxic Air Contaminants

Alternative B would not itself contribute or generate toxic air contaminants. However, diesel bus and truck travel to and from the gaming, facility, especially loading areas, would result in an increased concentration of diesel emissions in those areas, resulting in a potentially significant impact of toxic air contaminants in the area. Application of **Mitigation Measure 5.4-5** and **5.4-6** would reduce effects to less than significant.

Significance after Mitigation: Significant

² AVAQMD CEQA guidelines state that the use of the methodologies as presented in the latest South Coast Air Quality Management District (SCAQMD) CEQA Air Quality Handbook are acceptable. This methodology is from the SCAQMD.

**TABLE 4.4-8
ALTERNATIVE B OPERATION EMISSION (ON-ROAD VEHICLES AND AREA SOURCE) ESTIMATES**

Unmitigated Annual Operational Emissions	ROG	NOx	CO	PM10	PM2.5
Operational Emissions – NSCAPCD					
Project Operations ¹ (tons/year)	25	38	409	39	7
NSCAPCD Significance Thresholds (tons/year)	40	40	100	15	NS
Potentially Significant (Yes or No)?	No	No	Yes	Yes	NS
Operational Emissions – BAAQMD					
Project Operations ² (lbs/day)	66	93	1092	110	21
BAAQMD Significance Thresholds (lbs/day)	80	80	550	80	NS
Potentially Significant (Yes or No)?	No	Yes	Yes	Yes	NS
Project Operations (tons/year)	13	20	211	20	4
General Conformity Thresholds (tons/year)	50	100	100	100	100
Potentially Significant (Yes or No)?	NO	No	Yes	No	No
Operational Emissions – MCAQMD					
Project Operations ³ (lbs/day)	12	17	205	21	4
MCAQMD Significance Thresholds (lbs/day)	220	220	550	80	NS
Potentially Significant (Yes or No)?	No	No	No	No	NS

Values in **bold** are in excess of local air district thresholds.

1 Project operational emissions for NSCAPCD were estimated (based on distances to air basin boundaries and assumptions from the trip distribution and the Gamer Visits study) to be 62% of total operational URBEMIS 2007, version 9.2.4 emissions. See **Appendix C** for more information.

2 Project operational emissions for BAAQMD were estimated (based on distances to air basin boundaries and assumptions from the trip distribution and the Gamer Visits study) to be 32% of total operational URBEMIS 2007, version 9.2.4 emissions. See **Appendix C** for more information.

3 Project operational emissions for MCAQMD were estimated (based on distances to air basin boundaries and assumptions from the trip distribution and the Gamer Visits study) to be 6% of total operational URBEMIS 2007, version 9.2.4 emissions. See **Appendix C** for more information.

NS = No Standard for this pollutant

SOURCE: ESA, 2009.

Impact 4.4.2-3: Operation Emissions – Federal General Conformity (Less than Significant)

As shown in **Table 4.4-8**, CO emissions exceed General Conformity Thresholds in the BAAQMD. For the other pollutants of concern, the BAAQMD was either in attainment or met the General Conformity Thresholds.

CO measurements and modeling were important in the early 1980's when CO levels were regularly exceeded throughout California. In more recent years, CO measurements and modeling have not been a priority in most California air districts due to the retirement of older polluting vehicles, less emissions from new vehicles and improvements in fuels. The clear success in reducing CO levels is evident in the first paragraph of the executive summary of the California Air Resources Board *2004 Revision to the California State Implementation Plan for Carbon Monoxide Updated Maintenance Plan for Ten Federal Planning Areas*, shown below:

“The dramatic reduction in carbon monoxide (CO) levels across California is one of the biggest success stories in air pollution control. Air Resources Board (ARB or Board) requirements for cleaner vehicles, equipment and fuels have cut peak CO levels in half since 1980, despite growth. All areas of the State designated as non-attainment for the federal 8-hour CO standard

in 1991 now attain the standard, including the Los Angeles urbanized area. Even the Calexico area of Imperial County on the congested Mexican border had no violations of the federal CO standard in 2003. Only the South Coast and Calexico continue to violate the more protective State 8-hour CO standard, with declining levels beginning to approach that standard.”

The CALINE 4 dispersion model was used to quantify CO concentrations at sensitive receptors and the model results show that traffic emissions would not contribute to a new or existing violation. A segment of US 101 between Asti Road and the Junction of Route 128 East was used as it was most affected by project-related traffic, it was assumed that if carbon monoxide concentrations at these areas would not exceed the ambient air quality standards, the project’s contribution to impacts at other segments would also be less than significant under General Conformity standards.

As shown in **Table 4.4-9**, the analysis demonstrated that no violations of the State or Federal CO standard would occur at the receptor locations near the roadway segments modeled. Project traffic would have a less than significant effect upon CO concentrations in the area, thus, project-related and cumulative traffic would have a less than significant conformity determination.

**TABLE 4.4-9
ESTIMATED CARBON MONOXIDE CONCENTRATIONS**

Receptor Location ^b	Averaging Time (hours)	Concentrations (ppm) ^a				Significant? (Yes or No)
		State Standard	Future No Project	Alternative B	Incremental Increase of Alternative B Versus Future No Project	
US 101	1	20	1.9	2.0	0.1	No
	8	9	1.3	1.4	0.1	No

a Concentrations relate to receptor locations at approximately 200 feet from the middle of the roadway. The carbon monoxide analysis focuses on the weekday evening (p.m.) peak-hour because the project’s effects on traffic congestion and related carbon monoxide concentrations are greater during that period than the a.m. peak-hour or off-peak periods. Carbon monoxide estimates shown above include background year 2008 concentrations of 1.7 ppm.

b Since these receptors are located along the most affected roadway by project-related traffic, other receptors in the project vicinity would experience lower CO concentrations and the impact would also be less than significant.

SOURCE: ESA 2009

Significance after Mitigation: Less than Significant

Impact 4.4.2-4: Objectionable Odors (Potentially Significant)

Similar to Alternative A, the proposed wastewater treatment plant could create an odor impact. The nearest sensitive receptor to the wastewater treatment plant would be located approximately 900 feet across State Highway 101. Sensitive receptors at these distances may be affected by odor if the facility needs maintenance and/or during stagnant meteorological conditions. Based on these conditions, the proposed wastewater treatment plant could affect a substantial number of people. This is a potentially significant impact. **Mitigation Measure 5.4-7** would reduce the significance of this impact to less than significant.

Significance after Mitigation: Less than Significant

Impact 4.4.2-5: Greenhouse Gas Emissions and Global Climate Change (Potentially Significant)

Similar to Alternative A, Alternative B has the potential to emit greenhouse gases and therefore contribute towards global climate change. With regard to Item A, Alternative B would not pose any apparent conflict with the AB 32 Scoping Plan 39 recommended actions (see **Table 3.4-3**).

With regard to Item B, Alternative B operational greenhouse gas operational emissions are summarized in **Table 4.4-10**.

**TABLE 4.4-10
ALTERNATIVE B INDIRECT GHG EMISSIONS
(METRIC TONS PER YEAR)**

Operational Emissions – Alternative B	CO2
Area Source	541
Onroad Vehicle	32,985
Electrical Use	3,222
Total	36,748
Percentage of 25,000	147%
Percentage of 174 Million	0.021%
Operational Emissions – Wastewater Treatment Plant	
Electrical Use	446
Percentage of 25,000	1.9%
Percentage of 174 Million	0.0003%

1 Project operational emissions estimates were made using URBEMIS 2007, version 9.2.4. See **Appendix C** more information.

SOURCE: ESA, 2009

With regard to Item C, Alternative B would provide the residents of Cloverdale and the surrounding area a closer and additional source of new employment opportunities in the construction trades and commercial service industry. Area residents would have fewer miles to travel to reach the amenities that will be provided by Alternative B, therefore decreasing emissions caused by longer trips. However, most customers would be driving from far distances to reach these premises.

The review of Items A through C indicates that Alternative B would not generate substantial amounts of greenhouse gas emissions. **Mitigation Measures 5.4-5, 5.4-8 and 5.4-10** are recommended to reduce the significance of this impact. Mitigation includes energy efficiency measures and purchase of GHG offset credits for operational emissions which exceed the 25,000 CO₂e reporting limit.

Significance after Mitigation: Less than Significant

Impact 4.4.2-6: Climate Change Impacts on Project Site (Potentially Significant)

The Intergovernmental Panel on Climate Change reports that mean sea level will rise by approximately 12 to 36 inches by the year 2100 (IPCC, 2007). However, the project site is located approximately 24 miles from the ocean, and as a result, it is unlikely that erosion or an increase in flooding as a result of climate-induced sea level rise would affect it.

The hydrology of the Russian River does not depend substantially on flows associated with snowmelt. Therefore, the Russian River system is not anticipated to incur significant reductions in water supply availability as a result of reductions in snowpack due to climate change. Climate change could, however, result in increased intensity and/or frequency of major storm events, including those events that could result in flooding. As discussed in **Section 3.3**, a portion of the project site is located within a 100-year flood zone. However, as discussed in **Section 4.3**, sufficient freeboard would be incorporated into project design, or required via mitigation measures, in order to ensure that potential increases in storm intensity due to climate change would not adversely affect the proposed facilities. Therefore, potential impacts associated with climate change would be less than significant, with implementation of **Mitigation Measure 5.3-2**.

Significance after Mitigation: Less than Significant

Impact 4.4.2-7: Indoor Air Quality Impacts (Potentially Significant)

Environmental tobacco smoke (ETS), also known as second-hand smoke, is a complex mixture of chemicals generated during the burning and smoking of tobacco products to which non-smokers are exposed. On January 26, 2006, CARB identified ETS as a TAC. ETS is now formally identified as an airborne toxic substance that may cause and/or contribute to death or serious illness. Since smoking will be permitted indoors at the casino, patrons of the proposed gaming facility could be exposed to toxics and carcinogens from indoor tobacco use. Although the deleterious effects of ETS are widely known, it is possible that some employees or patrons would be unknowingly exposed to ETS without realizing its harmful effects. Such exposure to ETS from the project would be a potentially significant effect. **Mitigation Measure 5.4-9** would reduce the significance of this impact to less than significant.

Significance after Mitigation: Less than Significant

4.4.3 Alternative C – Reduced Casino

Impact 4.4.3-1: Construction Emissions (Potentially Significant)

Similar to Alternative A, construction related emissions would be generated by a variety of activities including: 1) grading, excavation, road building, and other earth moving activities; 2) travel by

construction equipment and employee vehicles, especially on unpaved surfaces; 3) exhaust from construction equipment; 4) architectural coatings; and 5) asphalt paving.

PM10 emissions from construction would vary greatly from day to day depending on the level of activity, the equipment being operated, silt content of the soil, and the prevailing weather. Larger-diameter dust particles (i.e., greater than 30 microns) generally fall out of the atmosphere within several hundred feet of construction sites, and represent more of a soiling nuisance than a health hazard. Smaller-diameter particles (e.g., PM10) are associated with adverse health effects and generally remain airborne until removed from the atmosphere by moisture. Therefore, unmitigated construction dust emissions could result in significant local effects.

NO_x, ROG, PM10, PM2.5, CO, and CO₂ construction emissions were estimated based on default crew, truck trip, and equipment. Emissions are based on criteria pollutant emission factors embedded in the URBEMIS 2007 model. The URBEMIS 2007 results are presented in **Table 4.4-11**. Based on this evaluation, construction emissions would not violate NSCAPCD thresholds.

Construction activities would be short-term in duration and the impacts would be localized. On-site construction impacts would not be subject to North Coast Air Basin standards. However, fugitive dust may become a nuisance during construction to both on-site and adjacent off-site areas. This is a potentially significant impact. **Mitigation Measure 5.4-1** would reduce impacts associated with dust emissions (PM10) to less than significant. **Mitigation Measures 5.4-2** through **5.4-4** would further reduce impacts associated with construction emissions.

**TABLE 4.4-11
ALTERNATIVE C CONSTRUCTION EMISSION ESTIMATES**

Unmitigated Annual Operational Emissions (tons/year)	ROG	NO_x	CO	PM10	PM2.5
2010 Totals	1	4	3	6	1
2011 Totals	3	3	8	<1	<1
NSCAPCD Significance Thresholds (tons/year)	40	40	100	15	NA
Potentially Significant (Yes or No)?	No	No	No	No	NA

Values in **bold** are in excess of local air district thresholds.
For more details see the AQ appendix.

SOURCE: ESA, 2009.

Toxic Air Contaminants

The greatest potential for TACs emissions would be related to DPM associated with heavy equipment operations during grading and excavation activities. According to AVAQMD methodology,³ health effects from carcinogenic air toxics are usually described in terms of individual cancer risk. “Individual Cancer Risk” is the likelihood that a person exposed to concentrations of TACs over a 70-year lifetime would contract cancer, based on the use of standard risk-assessment methodology. The project would not result in a long-term (i.e., 70 years) substantial source of TAC emissions. In

³ AVAQMD CEQA guidelines state that the use of the methodologies as presented in the latest South Coast Air Quality Management District (SCAQMD) CEQA Air Quality Handbook are acceptable. This methodology is from the SCAQMD.

addition, **Mitigation Measures 5.4-2 through 5.4-4** shall be implemented to reduce DPM during the short-term duration of construction. As such, project-related toxic emission impacts during construction would be less than significant.

Significance after Mitigation: Less than Significant

Impact 4.4.3-2: Operation Emissions – Local Standards (Potentially Significant)

Emissions from both mobile and area sources associated with Alternative C have been estimated using URBEMIS 2007. Traffic estimates are based on the traffic analysis included **Sections 3.8 and 4.8**. Operational emissions (on-road vehicle traffic) were split between three air districts that operational trips would travel through to get to the project site; they are shown below in **Table 4.4-12**. As shown below, operational emissions of CO and PM10 would exceed the established NSCAPCD and BAAQMD thresholds for Alternative C. No operational emissions would exceed MCAQMD thresholds. **Mitigation Measure 5.4-5** is recommended to reduce the significance of this impact; however, the impact would remain significant and adverse even after mitigation.

**TABLE 4.4-12
ALTERNATIVE C OPERATION EMISSION (ON-ROAD VEHICLES AND AREA SOURCE) ESTIMATES**

Unmitigated Annual Operational Emissions	ROG	NOx	CO	PM10	PM2.5
Operational Emissions – NSCAPCD					
Project Operations ¹ (tons/year)	23	35	1948	197	37
NSCAPCD Significance Thresholds (tons/year)	40	40	100	15	NS
Potentially Significant (Yes or No)?	No	No	Yes	Yes	NS
Operational Emissions – BAAQMD					
Project Operations ² (lbs/day)	61	85	1005	101	19
BAAQMD Significance Thresholds (lbs/day)	80	80	550	80	NS
Potentially Significant (Yes or No)?	No	Yes	Yes	Yes	NS
Project Operations (tons/year)	12	18	194	19	4
General Conformity Thresholds (tons/year)	50	100	100	100	100
Potentially Significant (Yes or No)?	NO	No	Yes	No	No
Operational Emissions – MCAQMD					
Project Operations ³ (lbs/day)	11	16	189	19	4
MCAQMD Significance Thresholds (lbs/day)	220	220	550	80	NS
Potentially Significant (Yes or No)?	No	No	No	No	NS

Values in **bold** are in excess of local air district thresholds.

- 1 Project operational emissions for NSCAPCD were estimated (based on distances to air basin boundaries and assumptions from the trip distribution and the Gamer Visits study) to be 62% of total operational URBEMIS 2007, version 9.2.4 emissions. See **Appendix C** for more information.
- 2 Project operational emissions for BAAQMD were estimated (based on distances to air basin boundaries and assumptions from the trip distribution and the Gamer Visits study) to be 32% of total operational URBEMIS 2007, version 9.2.4 emissions. See **Appendix C** for more information.
- 3 Project operational emissions for MCAQMD were estimated (based on distances to air basin boundaries and assumptions from the trip distribution and the Gamer Visits study) to be 6% of total operational URBEMIS 2007, version 9.2.4 emissions. See **Appendix C** for more information.

NS = No Standard for this pollutant

SOURCE: ESA, 2009.

Toxic Air Contaminants

Alternative C would not itself contribute or generate toxic air contaminants. However, diesel bus and truck travel to and from the gaming, facility, especially loading areas, would result in an increased concentration of diesel emissions in those areas, resulting in a potentially significant impact of toxic air contaminants in the area. Application of **Mitigation Measures 5.4-5** and **5.4-6** would reduce effects to less than significant.

Significance after Mitigation: Significant

Impact 4.4.3-3: Operation Emissions – Federal General Conformity (Less than Significant)

As shown in **Table 4.4-12**, CO emissions exceed General Conformity Thresholds in the BAAQMD. For the other pollutants of concern, the BAAQMD was either in attainment or met the General Conformity Thresholds.

CO measurements and modeling were important in the early 1980's when CO levels were regularly exceeded throughout California. In more recent years, CO measurements and modeling have not been a priority in most California air districts due to the retirement of older polluting vehicles, less emissions from new vehicles and improvements in fuels. The clear success in reducing CO levels is evident in the first paragraph of the executive summary of the California Air Resources Board *2004 Revision to the California State Implementation Plan for Carbon Monoxide Updated Maintenance Plan for Ten Federal Planning Areas*, shown below:

“The dramatic reduction in carbon monoxide (CO) levels across California is one of the biggest success stories in air pollution control. Air Resources Board (ARB or Board) requirements for cleaner vehicles, equipment and fuels have cut peak CO levels in half since 1980, despite growth. All areas of the State designated as non-attainment for the federal 8-hour CO standard in 1991 now attain the standard, including the Los Angeles urbanized area. Even the Calexico area of Imperial County on the congested Mexican border had no violations of the federal CO standard in 2003. Only the South Coast and Calexico continue to violate the more protective State 8-hour CO standard, with declining levels beginning to approach that standard.”

The CALINE 4 dispersion model was used to quantify CO concentrations at sensitive receptors and the model results show that traffic emissions would not contribute to a new or existing violation. A segment of US 101 between Asti Road and the Junction of Route 128 East was used as it was most affected by project-related traffic, it was assumed that if carbon monoxide concentrations at these areas would not exceed the ambient air quality standards, the project's contribution to impacts at other segments would also be less than significant under General Conformity standards.

As shown in **Table 4.4-13**, the analysis demonstrated that no violations of the State or Federal CO standard would occur at the receptor locations near the roadway segments modeled. Project traffic would have a less than significant effect upon CO concentrations in the area, thus, project-related and cumulative traffic would have a less than significant conformity determination.

**TABLE 4.4-13
ESTIMATED CARBON MONOXIDE CONCENTRATIONS**

Receptor Location ^b	Averaging Time (hours)	Concentrations (ppm) ^a				
		State Standard	Future No Project	Alternative C	Incremental Increase of Alternative C Versus Future No Project	Significant? (Yes or No)
US 101	1	20	1.9	1.9	0	No
	8	9	1.3	1.3	0	No

a Concentrations relate to receptor locations at approximately 200 feet from the middle of the roadway. The carbon monoxide analysis focuses on the weekday evening (p.m.) peak-hour because the project's effects on traffic congestion and related carbon monoxide concentrations are greater during that period than the a.m. peak-hour or off-peak periods. Carbon monoxide estimates shown above include background year 2008 concentrations of 1.7 ppm.

b Since these receptors are located along the most affected roadway by project-related traffic, other receptors in the project vicinity would experience lower CO concentrations and the impact would also be less than significant.

SOURCE: ESA 2009

Significance after Mitigation: Less than Significant

Impact 4.4.3-4: Objectionable Odors (Potentially Significant)

Similar to Alternative A, the proposed wastewater treatment plant could create an odor impact. The nearest sensitive receptor to the wastewater treatment plant would be located approximately 900 feet across State Highway 101. Sensitive receptors at these distances may be affected by odor if the facility needs maintenance and/or during stagnant meteorological conditions. Based on these conditions, the proposed wastewater treatment plant could affect a substantial number of people. This is a potentially significant impact. **Mitigation Measure 5.4-7** would reduce the significance of this impact to less than significant.

Significance after Mitigation: Less than Significant

Impact 4.4.3-5: Greenhouse Gas Emissions and Global Climate Change (Potentially Significant)

Similar to Alternative A, Alternative C has the potential to emit greenhouse gases and therefore contribute towards global climate change. With regard to Item A, Alternative C would not pose any apparent conflict with the AB 32 Scoping Plan 39 recommended actions (see **Table 3.4-3**).

With regard to Item B, Alternative C operational greenhouse gas operational emissions are summarized in **Table 4.4-14**.

With regard to Item C, Alternative C would provide the residents of Cloverdale and the surrounding area a closer and additional source of new employment opportunities in the construction trades and commercial service industry. Area residents would have fewer miles to travel to reach the

amenities that will be provided by Alternative C, therefore decreasing emissions caused by longer trips. However, most customers would be driving from far distances to reach these premises.

The review of Items A through C indicates that Alternative C would generate substantial amounts of greenhouse gas emissions. **Mitigation Measures 5.4-5, 5.4-8 and 5.4-10** are recommended to reduce the significance of this impact. Mitigation includes energy efficiency measures and purchase of GHG offset credits for operational emissions which exceed the 25,000 CO₂e reporting limit.

**TABLE 4.4-14
ALTERNATIVE C INDIRECT GHG EMISSIONS (METRIC TONS PER YEAR)**

Operational Emissions – Alternative C	CO₂
Area Source	515
Onroad Vehicle	30,370
Electrical Use	3,043
Total	33,928
Percentage of 25,000	136%
Percentage of 174 Million	0.019%
Operational Emissions – Wastewater Treatment Plant	
Electrical Use	446
Percentage of 25,000	1.9%
Percentage of 174 Million	0.0003%

1 Project operational emissions estimates were made using URBEMIS 2007, version 9.2.4.
See **Appendix C** more information.

SOURCE: ESA, 2009

Significance after Mitigation: Less than Significant

Impact 4.4.3-6: Climate Change Impacts on Project Site (Potentially Significant)

The Intergovernmental Panel on Climate Change reports that mean sea level will rise by approximately 12 to 36 inches by the year 2100 (IPCC, 2007). However, the project site is located approximately 24 miles from the ocean, and as a result, it is unlikely that erosion or an increase in flooding as a result of climate-induced sea level rise would affect it.

The hydrology of the Russian River does not depend substantially on flows associated with snowmelt. Therefore, the Russian River system is not anticipated to incur significant reductions in water supply availability as a result of reductions in snowpack due to climate change. Climate change could, however, result in increased intensity and/or frequency of major storm events, including those events that could result in flooding. As discussed in **Section 3.3**, a portion of the project site is located within a 100-year flood zone. However, as discussed in **Section 4.3**, sufficient freeboard would be incorporated into project design, or required via mitigation measures, in order to ensure that potential increases in storm intensity due to climate change would not adversely affect

the proposed facilities. Therefore, potential impacts associated with climate change would be less than significant, with implementation of **Mitigation Measure 5.3-2**.

Significance after Mitigation: Less than Significant

Impact 4.4.3-7: Indoor Air Quality Impacts (Potentially Significant)

Environmental tobacco smoke (ETS), also known as second-hand smoke, is a complex mixture of chemicals generated during the burning and smoking of tobacco products to which non-smokers are exposed. On January 26, 2006, CARB identified ETS as a TAC. ETS is now formally identified as an airborne toxic substance that may cause and/or contribute to death or serious illness. Since smoking will be permitted indoors at the casino, patrons of the proposed gaming facility could be exposed to toxics and carcinogens from indoor tobacco use. Although the deleterious effects of ETS are widely known, it is possible that some employees or patrons would be unknowingly exposed to ETS without realizing its harmful effects. Such exposure to ETS from the project would be a potentially significant effect. **Mitigation Measure 5.4-9** would reduce the significance of this impact to less than significant.

Significance after Mitigation: Less than Significant

4.4.4 Alternative D – Casino Only

Impact 4.4.4-1: Construction Emissions (Potentially Significant)

Similar to Alternative A, construction related emissions would be generated by a variety of activities including: 1) grading, excavation, road building, and other earth moving activities; 2) travel by construction equipment and employee vehicles, especially on unpaved surfaces; 3) exhaust from construction equipment; 4) architectural coatings; and 5) asphalt paving.

PM10 emissions from construction would vary greatly from day to day depending on the level of activity, the equipment being operated, silt content of the soil, and the prevailing weather. Larger-diameter dust particles (i.e., greater than 30 microns) generally fall out of the atmosphere within several hundred feet of construction sites, and represent more of a soiling nuisance than a health hazard. Smaller-diameter particles (e.g., PM10) are associated with adverse health effects and generally remain airborne until removed from the atmosphere by moisture. Therefore, unmitigated construction dust emissions could result in significant local effects.

NO_x, ROG, PM10, PM2.5, CO, and CO₂ construction emissions were estimated based on default crew, truck trip, and equipment. Emissions are based on criteria pollutant emission factors embedded in the URBEMIS 2007 model. The URBEMIS 2007 results are presented in **Table 4.4-15**. Based on this evaluation, construction emissions would not violate NSCAPCD thresholds.

Construction activities would be short-term in duration and the impacts would be localized. On-site construction impacts would not be subject to North Coast Air Basin standards. However, fugitive dust may become a nuisance during construction to both on-site and adjacent off-site areas. This is a potentially significant impact. **Mitigation Measure 5.4-1** would reduce impacts associated with dust emissions (PM10) to less than significant. **Mitigation Measures 5.4-2** through **5.4-4** would further reduce impacts associated with construction emissions.

**TABLE 4.4-15
ALTERNATIVE D CONSTRUCTION EMISSION ESTIMATES**

Unmitigated Annual Operational Emissions (tons/year)	ROG	NOx	CO	PM10	PM2.5
2010 Totals	1	3	3	3	1
2011 Totals	2	1	2	<1	<1
NSCAPCD Significance Thresholds (tons/year)	40	40	100	15	NA
Potentially Significant (Yes or No)?	No	No	No	No	NA

Values in **bold** are in excess of local air district thresholds.
For more details see the AQ appendix.

SOURCE: ESA, 2009.

Toxic Air Contaminants

The greatest potential for TACs emissions would be related to DPM associated with heavy equipment operations during grading and excavation activities. According to AVAQMD methodology,⁴ health effects from carcinogenic air toxics are usually described in terms of individual cancer risk. “Individual Cancer Risk” is the likelihood that a person exposed to concentrations of TACs over a 70-year lifetime would contract cancer, based on the use of standard risk-assessment methodology. The project would not result in a long-term (i.e., 70 years) substantial source of TAC emissions. In addition, **Mitigation Measures 5.4-2** through **5.4-4** shall be implemented to reduce DPM during the short-term duration of construction. As such, project-related toxic emission impacts during construction would be less than significant.

Significance after Mitigation: Less than Significant

Impact 4.4.4-2: Operation Emissions – Local Standards (Potentially Significant)

Emissions from both mobile and area sources associated with Alternative D have been estimated using URBEMIS 2007. Traffic estimates are based on the traffic analysis included **Sections 3.8** and **4.8**. Operational emissions (on-road vehicle traffic) were split between three air districts that operational trips would travel through to get to the project site; they are shown below in **Table 4.4-16**. As shown below, operational emissions of CO, and PM10 would exceed the established

⁴ AVAQMD CEQA guidelines state that the use of the methodologies as presented in the latest South Coast Air Quality Management District (SCAQMD) CEQA Air Quality Handbook are acceptable. This methodology is from the SCAQMD.

NSCAPCD and BAAQMD thresholds for Alternative D. No operational emissions would exceed MCAQMD thresholds. **Mitigation Measure 5.4-5** is recommended to reduce the significance of this impact; however, the impact would remain significant and adverse even after mitigation.

**TABLE 4.4-16
ALTERNATIVE D OPERATION EMISSION (ON-ROAD VEHICLES AND AREA SOURCE) ESTIMATES**

Unmitigated Annual Operational Emissions	ROG	NOx	CO	PM10	PM2.5
Operational Emissions – NSCAPCD					
Project Operations ¹ (tons/year)	19	28	302	29	5
NSCAPCD Significance Thresholds (tons/year)	40	40	100	15	NS
Potentially Significant (Yes or No)?	No	No	Yes	Yes	NS
Operational Emissions – BAAQMD					
Project Operations ² (lbs/day)	49	69	807	81	15
BAAQMD Significance Thresholds (lbs/day)	80	80	550	80	NS
Potentially Significant (Yes or No)?	No	No	Yes	Yes	NS
Project Operations (tons/year)	10	15	156	15	3
General Conformity Thresholds (tons/year)	50	100	100	100	100
Potentially Significant (Yes or No)?	NO	No	Yes	No	No
Operational Emissions – MCAQMD					
Project Operations ³ (lbs/day)	9	13	151	15	3
MCAQMD Significance Thresholds (lbs/day)	220	220	550	80	NS
Potentially Significant (Yes or No)?	No	No	No	No	NS

Values in bold are in excess of local air district thresholds.

- 1 Project operational emissions for NSCAPCD were estimated (based on distances to air basin boundaries and assumptions from the trip distribution and the Gamer Visits study) to be 62% of total operational URBEMIS 2007, version 9.2.4 emissions. See Appendix C for more information.
- 2 Project operational emissions for BAAQMD were estimated (based on distances to air basin boundaries and assumptions from the trip distribution and the Gamer Visits study) to be 32% of total operational URBEMIS 2007, version 9.2.4 emissions. See Appendix C for more information.
- 3 Project operational emissions for MCAQMD were estimated (based on distances to air basin boundaries and assumptions from the trip distribution and the Gamer Visits study) to be 6% of total operational URBEMIS 2007, version 9.2.4 emissions. See Appendix C for more information.

NS = No Standard for this pollutant

SOURCE: ESA, 2009.

Toxic Air Contaminants

Alternative D would not itself contribute or generate toxic air contaminants. However, diesel bus and truck travel to and from the gaming, facility, especially loading areas, would result in an increased concentration of diesel emissions in those areas, resulting in a potentially significant impact of toxic air contaminants in the area. Application of **Mitigation Measure 5.4-5** and **5.4-6** would reduce effects to less than significant.

Significance after Mitigation: Significant

Impact 4.4.4-3: Operation Emissions – Federal General Conformity (Less than Significant)

As shown in **Table 4.4-16**, CO emissions exceed General Conformity Thresholds in the BAAQMD. CO measurements and modeling were important in the early 1980's when CO levels were regularly exceeded throughout California. In more recent years, CO measurements and modeling have not been a priority in most California air districts due to the retirement of older polluting vehicles, less emissions from new vehicles and improvements in fuels. The clear success in reducing CO levels is evident in the first paragraph of the executive summary of the California Air Resources Board *2004 Revision to the California State Implementation Plan for Carbon Monoxide Updated Maintenance Plan for Ten Federal Planning Areas*, shown below:

“The dramatic reduction in carbon monoxide (CO) levels across California is one of the biggest success stories in air pollution control. Air Resources Board (ARB or Board) requirements for cleaner vehicles, equipment and fuels have cut peak CO levels in half since 1980, despite growth. All areas of the State designated as non-attainment for the federal 8-hour CO standard in 1991 now attain the standard, including the Los Angeles urbanized area. Even the Calexico area of Imperial County on the congested Mexican border had no violations of the federal CO standard in 2003. Only the South Coast and Calexico continue to violate the more protective State 8-hour CO standard, with declining levels beginning to approach that standard.”

The CALINE 4 dispersion model was used to quantify CO concentrations at sensitive receptors and the model results show that traffic emissions would not contribute to a new or existing violation. A segment of US 101 between Asti Road and the Junction of Route 128 East was used as it was most affected by project-related traffic, it was assumed that if carbon monoxide concentrations at these areas would not exceed the ambient air quality standards, the project's contribution to impacts at other segments would also be less than significant under General Conformity standards.

As shown in **Table 4.4-17**, the analysis demonstrated that no violations of the State or Federal CO standard would occur at the receptor locations near the roadway segments modeled. Project traffic would have a less than significant effect upon CO concentrations in the area, thus, project-related and cumulative traffic would have a less than significant conformity determination.

**TABLE 4.4-17
ESTIMATED CARBON MONOXIDE CONCENTRATIONS**

Receptor Location ^b	Averaging Time (hours)	Concentrations (ppm) ^a				Significant? (Yes or No)
		State Standard	Future No Project	Alternative D	Incremental Increase of Alternative D Versus Future No Project	
US 101	1	20	1.9	1.9	0	No
	8	9	1.3	1.3	0	No

a Concentrations relate to receptor locations at approximately 200 feet from the middle of the roadway. The carbon monoxide analysis focuses on the weekday evening (p.m.) peak-hour because the project's effects on traffic congestion and related carbon monoxide concentrations are greater during that period than the a.m. peak-hour or off-peak periods. Carbon monoxide estimates shown above include background year 2008 concentrations of 1.7 ppm.

b Since these receptors are located along the most affected roadway by project-related traffic, other receptors in the project vicinity would experience lower CO concentrations and the impact would also be less than significant.

SOURCE: ESA 2009

Significance after Mitigation: Less than Significant

Impact 4.4.4-4: Objectionable Odors (Potentially Significant)

Similar to Alternative A, the proposed wastewater treatment plant could create an odor impact. The nearest sensitive receptor to the wastewater treatment plant would be located approximately 900 feet across State Highway 101. Sensitive receptors at these distances may be affected by odor if the facility needs maintenance and/or during stagnant meteorological conditions. Based on these conditions, the proposed wastewater treatment plant could affect a substantial number of people. This is a potentially significant impact. **Mitigation Measure 5.4-7** would reduce the significance of this impact to less than significant.

Significance after Mitigation: Less than Significant

Impact 4.4.4-5: Greenhouse Gas Emissions and Global Climate Change (Potentially Significant)

Similar to Alternative A, Alternative D has the potential to emit greenhouse gases and therefore contribute towards global climate change. With regard to Item A, Alternative D would not pose any apparent conflict with the AB 32 Scoping Plan 39 recommended actions (see **Table 3.4-3**).

With regard to Item B, Alternative D operational greenhouse gas emissions are summarized in **Table 4.4-18**.

**TABLE 4.4-18
ALTERNATIVE D INDIRECT GHG EMISSIONS
(METRIC TONS PER YEAR)**

Operational Emissions – Alternative D	CO2
Area Source	247
Onroad Vehicle	24,321
Electrical Use	1,862
Total	26,430
Percentage of 25,000	106%
Percentage of 174 Million	0.015%
Operational Emissions – Wastewater Treatment Plant	
Electrical Use	446
Percentage of 25,000	1.9%
Percentage of 174 Million	0.0003%

1 Project operational emissions estimates were made using URBEMIS 2007, version 9.2.4. See Appendix C more information.

SOURCE: ESA, 2009

With regard to Item C, Alternative D would provide the residents of Cloverdale and the surrounding area a closer and additional source of new employment opportunities in the construction trades and commercial service industry. Area residents would have fewer miles to travel to reach the amenities that will be provided by Alternative D, therefore decreasing emissions caused by longer trips. However, most customers would be driving from far distances to reach these premises.

The review of Items A through C indicates that Alternative D would generate substantial amounts of greenhouse gas emissions. **Mitigation Measures 5.4-5, 5.4-8 and 5.4-10** are recommended to reduce the significance of this impact. Mitigation includes energy efficiency measures and purchase of GHG offset credits for operational emissions which exceed the 25,000 CO₂e reporting limit.

Significance after Mitigation: Less than Significant

Impact 4.4.4-6: Climate Change Impacts on Project Site (Potentially Significant)

The Intergovernmental Panel on Climate Change reports that mean sea level will rise by approximately 12 to 36 inches by the year 2100 (IPCC, 2007). However, the project site is located approximately 24 miles from the ocean, and as a result, it is unlikely that erosion or an increase in flooding as a result of climate-induced sea level rise would affect it. The hydrology of the Russian River does not depend substantially on flows associated with snowmelt. Therefore, the Russian River system is not anticipated to incur significant reductions in water supply availability as a result of reductions in snowpack due to climate change. Climate change could, however, result in increased intensity and/or frequency of major storm events, including those events that could result in flooding. As discussed in **Section 3.3**, a portion of the project site is located within a 100-year flood zone. However, as discussed in **Section 4.3**, sufficient freeboard would be incorporated into project design, or required via mitigation measures, in order to ensure that potential increases in storm intensity due to climate change would not adversely affect the proposed facilities. Therefore, potential impacts associated with climate change would be less than significant, with implementation of **Mitigation Measure 5.3-2**.

Significance after Mitigation: Less than Significant

Impact 4.4.4-7: Indoor Air Quality Impacts (Potentially Significant)

Environmental tobacco smoke (ETS), also known as second-hand smoke, is a complex mixture of chemicals generated during the burning and smoking of tobacco products to which non-smokers are exposed. On January 26, 2006, CARB identified ETS as a TAC. ETS is now formally identified as an airborne toxic substance that may cause and/or contribute to death or serious illness. Since smoking will be permitted indoors at the casino, patrons of the proposed gaming facility could be exposed to toxics and carcinogens from indoor tobacco use. Although the deleterious effects of ETS are widely known, it is possible that some employees or patrons would be unknowingly exposed to ETS without realizing its harmful effects. Such exposure to ETS from the project would

be a potentially significant effect. **Mitigation Measure 5.4-9** would reduce the significance of this impact to less than significant.

Significance after Mitigation: Less than Significant

4.4.5 Alternative E – Commercial Retail-Office Space

Impact 4.4.5-1: Construction Emissions (Potentially Significant)

Similar to Alternative A, construction related emissions would be generated by a variety of activities including: 1) grading, excavation, road building, and other earth moving activities; 2) travel by construction equipment and employee vehicles, especially on unpaved surfaces; 3) exhaust from construction equipment; 4) architectural coatings; and 5) asphalt paving.

PM10 emissions from construction would vary greatly from day to day depending on the level of activity, the equipment being operated, silt content of the soil, and the prevailing weather. Larger-diameter dust particles (i.e., greater than 30 microns) generally fall out of the atmosphere within several hundred feet of construction sites, and represent more of a soiling nuisance than a health hazard. Smaller-diameter particles (e.g., PM10) are associated with adverse health effects and generally remain airborne until removed from the atmosphere by moisture. Therefore, unmitigated construction dust emissions could result in significant local effects.

NO_x, ROG, PM10, PM2.5, CO, and CO₂ construction emissions were estimated based on default crew, truck trip, and equipment. Emissions are based on criteria pollutant emission factors embedded in the URBEMIS 2007 model. The URBEMIS 2007 results are presented in **Table 4.4-19**. Based on this evaluation, construction emissions would not violate NSCAPCD thresholds.

Construction activities would be short-term in duration and the impacts would be localized. On-site construction impacts would not be subject to North Coast Air Basin standards. However, fugitive dust may become a nuisance during construction to both on-site and adjacent off-site areas. This is a potentially significant impact. **Mitigation Measure 5.4-1** would reduce impacts associated with dust emissions (PM10) to less than significant. **Mitigation Measures 5.4-2** through **5.4-4** would further reduce impacts associated with construction emissions.

**TABLE 4.4-19
ALTERNATIVE E CONSTRUCTION EMISSION ESTIMATES**

Unmitigated Annual Operational Emissions (tons/year)	ROG	NO_x	CO	PM10	PM2.5
2010 Totals	2	4	4	6	1
2011 Totals	3	4	5	<1	<1
NSCAPCD Significance Thresholds (tons/year)	40	40	100	15	NA
Potentially Significant (Yes or No)?	No	No	No	No	NA

Values in bold are in excess of local air district thresholds.
For more details see the AQ appendix.

SOURCE: ESA, 2009.

Toxic Air Contaminants

The greatest potential for TACs emissions would be related to DPM associated with heavy equipment operations during grading and excavation activities. According to AVAQMD methodology,⁵ health effects from carcinogenic air toxics are usually described in terms of individual cancer risk. “Individual Cancer Risk” is the likelihood that a person exposed to concentrations of TACs over a 70-year lifetime would contract cancer, based on the use of standard risk-assessment methodology. The project would not result in a long-term (i.e., 70 years) substantial source of TAC emissions. In addition, **Mitigation Measures 5.4-2** through **5.4-4** shall be implemented to reduce DPM during the short-term duration of construction. As such, project-related toxic emission impacts during construction would be less than significant.

Significance after Mitigation: Less than Significant

Impact 4.4.5-2: Operation Emissions – Local Standards (Potentially Significant)

Emissions from both mobile and area sources associated with Alternative E have been estimated using URBEMIS 2007. Traffic estimates are based on the traffic analysis included **Sections 3.8** and **4.8**. Operational emissions (on-road vehicle traffic) were split between three air districts that operational trips would travel through to get to the project site; they are shown below in **Table 4.4-20**. As shown below, operational emissions of NO_x, CO, and PM₁₀ would exceed the established NSCAPCD and BAAQMD thresholds for Alternative E. No operational emissions would exceed MCAQMD thresholds. **Mitigation Measure 5.4-5** is recommended to reduce the significance of this impact; however, the impact would remain significant and adverse even after mitigation.

Toxic Air Contaminants

Alternative E would not itself contribute or generate toxic air contaminants. However, diesel truck travel to and from loading docks, would result in an increased concentration of diesel emissions in those areas, resulting in a potentially significant impact of toxic air contaminants in the area. Application of **Mitigation Measure 5.4-5** and **5.4-6** would reduce effects to less than significant.

Significance After Mitigation: Significant

⁵ AVAQMD CEQA guidelines state that the use of the methodologies as presented in the latest South Coast Air Quality Management District (SCAQMD) CEQA Air Quality Handbook are acceptable. This methodology is from the SCAQMD.

**TABLE 4.4-20
ALTERNATIVE E OPERATION EMISSION (ON-ROAD VEHICLES AND AREA SOURCE) ESTIMATES**

Unmitigated Annual Operational Emissions	ROG	NOx	CO	PM10	PM2.5
Operational Emissions – NSCAPCD					
Project Operations ¹ (tons/year)	32	48	513	49	9
NSCAPCD Significance Thresholds (tons/year)	40	40	100	15	NS
Potentially Significant (Yes or No)?	No	Yes	Yes	Yes	NS
Operational Emissions – BAAQMD					
Project Operations ² (lbs/day)	82	116	1371	138	26
BAAQMD Significance Thresholds (lbs/day)	80	80	550	80	NS
Potentially Significant (Yes or No)?	Yes	Yes	Yes	Yes	NS
Project Operations (tons/year)	16	25	265	25	5
General Conformity Thresholds (tons/year)	50	100	100	100	100
Potentially Significant (Yes or No)?	NO	No	Yes	No	No
Operational Emissions – MCAQMD					
Project Operations ³ (lbs/day)	15	22	257	26	5
MCAQMD Significance Thresholds (lbs/day)	220	220	550	80	NS
Potentially Significant (Yes or No)?	No	No	No	No	NS

Values in bold are in excess of local air district thresholds.

- 1 Project operational emissions for NSCAPCD were estimated (based on distances to air basin boundaries and assumptions from the trip distribution and the Gamer Visits study) to be 62% of total operational URBEMIS 2007, version 9.2.4 emissions. See Appendix C for more information.
- 2 Project operational emissions for BAAQMD were estimated (based on distances to air basin boundaries and assumptions from the trip distribution and the Gamer Visits study) to be 32% of total operational URBEMIS 2007, version 9.2.4 emissions. See Appendix C for more information.
- 3 Project operational emissions for MCAQMD were estimated (based on distances to air basin boundaries and assumptions from the trip distribution and the Gamer Visits study) to be 6% of total operational URBEMIS 2007, version 9.2.4 emissions. See Appendix C for more information.

NS = No Standard for this pollutant

SOURCE: ESA, 2009.

Impact 4.4.5-3: Operation Emissions – Federal General Conformity (Less than Significant)

As shown in **Table 4.4-20** CO emissions exceed General Conformity Thresholds in the BAAQMD. CO measurements and modeling were important in the early 1980's when CO levels were regularly exceeded throughout California. In more recent years, CO measurements and modeling have not been a priority in most California air districts due to the retirement of older polluting vehicles, less emissions from new vehicles and improvements in fuels. The clear success in reducing CO levels is evident in the first paragraph of the executive summary of the California Air Resources Board *2004 Revision to the California State Implementation Plan for Carbon Monoxide Updated Maintenance Plan for Ten Federal Planning Areas*, shown below:

“The dramatic reduction in carbon monoxide (CO) levels across California is one of the biggest success stories in air pollution control. Air Resources Board (ARB or Board) requirements for cleaner vehicles, equipment and fuels have cut peak CO levels in half since 1980, despite growth. All areas of the State designated as non-attainment for the federal 8-hour CO standard in 1991 now attain the standard, including the Los Angeles urbanized area. Even the Calexico area of Imperial County on the congested Mexican border had no violations of the federal CO standard in 2003. Only the South Coast and

Calexico continue to violate the more protective State 8-hour CO standard, with declining levels beginning to approach that standard.”

The CALINE 4 dispersion model was used to quantify CO concentrations at sensitive receptors and the model results show that traffic emissions would not contribute to a new or existing violation. A segment of US 101 between Asti Road and the Junction of Route 128 East was used as it was most affected by project-related traffic, it was assumed that if carbon monoxide concentrations at these areas would not exceed the ambient air quality standards, the project’s contribution to impacts at other segments would also be less than significant under General Conformity standards.

As shown in **Table 4.4-21**, the analysis demonstrated that no violations of the State or Federal CO standard would occur at the receptor locations near the roadway segments modeled. Project traffic would have a less than significant effect upon CO concentrations in the area, thus, project-related and cumulative traffic would have a less than significant conformity determination.

**TABLE 4.4-21
ESTIMATED CARBON MONOXIDE CONCENTRATIONS**

Receptor Location ^b	Averaging Time (hours)	Concentrations (ppm) ^a				
		State Standard	Future No Project	Alternative E	Incremental Increase of Alternative E Versus Future No Project	Significant? (Yes or No)
US 101	1	20	1.9	1.9	0	No
	8	9	1.3	1.3	0	No

a Concentrations relate to receptor locations at approximately 200 feet from the middle of the roadway. The carbon monoxide analysis focuses on the weekday evening (p.m.) peak-hour because the project’s effects on traffic congestion and related carbon monoxide concentrations are greater during that period than the a.m. peak-hour or off-peak periods. Carbon monoxide estimates shown above include background year 2008 concentrations of 1.7 ppm.

b Since these receptors are located along the most affected roadway by project-related traffic, other receptors in the project vicinity would experience lower CO concentrations and the impact would also be less than significant.

SOURCE: ESA 2009

Significance after Mitigation: Less than Significant

Impact 4.4.5-4: Objectionable Odors (Potentially Significant)

Similar to Alternative A, the proposed wastewater treatment plant could create an odor impact. The nearest sensitive receptor to the wastewater treatment plant would be located approximately 900 feet across State Highway 101. Sensitive receptors at these distances may be affected by odor if the facility needs maintenance and/or during stagnant meteorological conditions. Based on these conditions, the proposed wastewater treatment plant could affect a substantial number of people. This is a potentially significant impact. **Mitigation Measure 5.4-7** would reduce the significance of this impact to less than significant.

Significance after Mitigation: Less than Significant

Impact 4.4.5-5: Greenhouse Gas Emissions and Global Climate Change (Potentially Significant)

Similar to Alternative A, Alternative E has the potential to emit greenhouse gases and therefore contribute towards global climate change. With regard to Item A, Alternative E would not pose any apparent conflict with the AB 32 Scoping Plan 39 recommended actions (see **Table 3.4-3**).

With regard to Item B, Alternative E construction greenhouse gas operational emissions are summarized in **Table 4.4-22**.

**TABLE 4.4-22
ALTERNATIVE E INDIRECT GHG EMISSIONS (METRIC TONS PER YEAR)**

Operational Emissions – Alternative E	CO2
Area Source	480
Onroad Vehicle	41,326
Electrical Use	1,952
Total	43,758
Percentage of 25,000	175%
Percentage of 174 Million	0.025%
Operational Emissions – Wastewater Treatment Plant	
Electrical Use	446
Percentage of 25,000	1.9%
Percentage of 174 Million	0.0003%

1 Project operational emissions estimates were made using URBEMIS 2007, version 9.2.4.
See Appendix C more information.

SOURCE: ESA, 2009

With regard to Item C, Alternative E would provide the residents of Cloverdale and the surrounding area a closer and additional source of new employment opportunities in the construction trades and commercial service industry. Area residents would have fewer miles to travel to reach the amenities that will be provided by Alternative E, therefore decreasing emissions caused by longer trips. However, most customers would be driving from far distances to reach these premises.

The review of Items A through C indicates that Alternative E would generate substantial amounts of greenhouse gas emissions. **Mitigation Measures 5.4-5, 5.4-8 and 5.4-10** are recommended to reduce the significance of this impact. Mitigation includes energy efficiency measures and purchase of GHG offset credits for operational emissions which exceed the 25,000 CO₂e reporting limit.

Significance after Mitigation: Less than Significant

Impact 4.4.5-6: Climate Change Impacts on Project Site (Potentially Significant)

The Intergovernmental Panel on Climate Change reports that mean sea level will rise by approximately 12 to 36 inches by the year 2100 (IPCC, 2007). However, the project site is located approximately 24 miles from the ocean, and as a result, it is unlikely that erosion or an increase in flooding as a result of climate-induced sea level rise would affect it.

The hydrology of the Russian River does not depend substantially on flows associated with snowmelt. Therefore, the Russian River system is not anticipated to incur significant reductions in water supply availability as a result of reductions in snowpack due to climate change. Climate change could, however, result in increased intensity and/or frequency of major storm events, including those events that could result in flooding. As discussed in **Section 3.3**, a portion of the project site is located within a 100-year flood zone. However, as discussed in **Section 4.3**, sufficient freeboard would be incorporated into project design, or required via mitigation measures, in order to ensure that potential increases in storm intensity due to climate change would not adversely affect the proposed facilities. Therefore, potential impacts associated with climate change would be less than significant, with implementation of **Mitigation Measure 5.3-2**.

Significance after Mitigation: Less than Significant

4.4.6 Alternative F – No Action

Implementation of Alternative F would not have a potentially significant impact upon air quality. In the near term, current emissions from the project site would continue (primarily associated with minor residential vehicle trips, farm equipment, and residential fireplaces). In the long term, the site may be developed in a fashion similar to that presented in Alternative E. Impacts associated with air quality would be subject to review under state and local laws under this scenario, therefore a less than significant impact would result.

4.4.7 References

Association of Environmental Professionals, 2007. *Alternative Approaches to Analyzing Greenhouse Gas Emissions and Global Climate Change in CEQA Documents*.

Bay Area Air Quality Management District, *CEQA Guidelines*, December 1999.

IPCC, 2007. *Climate Change 2007 – The Physical Science Basis*. Contribution of Working Group I to the Fourth Assessment Report of the IPCC. Available online at:

http://www.aaas.org/news/press_room/climate_change/media/4th_spm2feb07.pdf.

Mendocino County Air Quality Management District, *Air Quality Control Rules*, September, 2008.

Northern Sonoma County Air Pollution Control District, *Air Quality Control Rules*, October 2008.

4.5 Biological Resources

The purpose of this section is to analyze the potential effects of the Proposed Action and Alternatives on biological resources including wildlife and habitats, federally listed species, migratory birds, special status species of State and local concern, and jurisdictional “waters of the U.S.” The analysis of potential effects is based on the biological setting described in **Section 3.5**.

4.5.1 Alternative A – Proposed Action

General Discussion

Implementation of Alternative A would have several potential effects to biological resources in the PSA. This includes an increase in human activity, reduction in habitat, and potential effects to aquatic habitats within the PSA. Each of these potential effects is described in greater detail below.

Increase in Human Activity

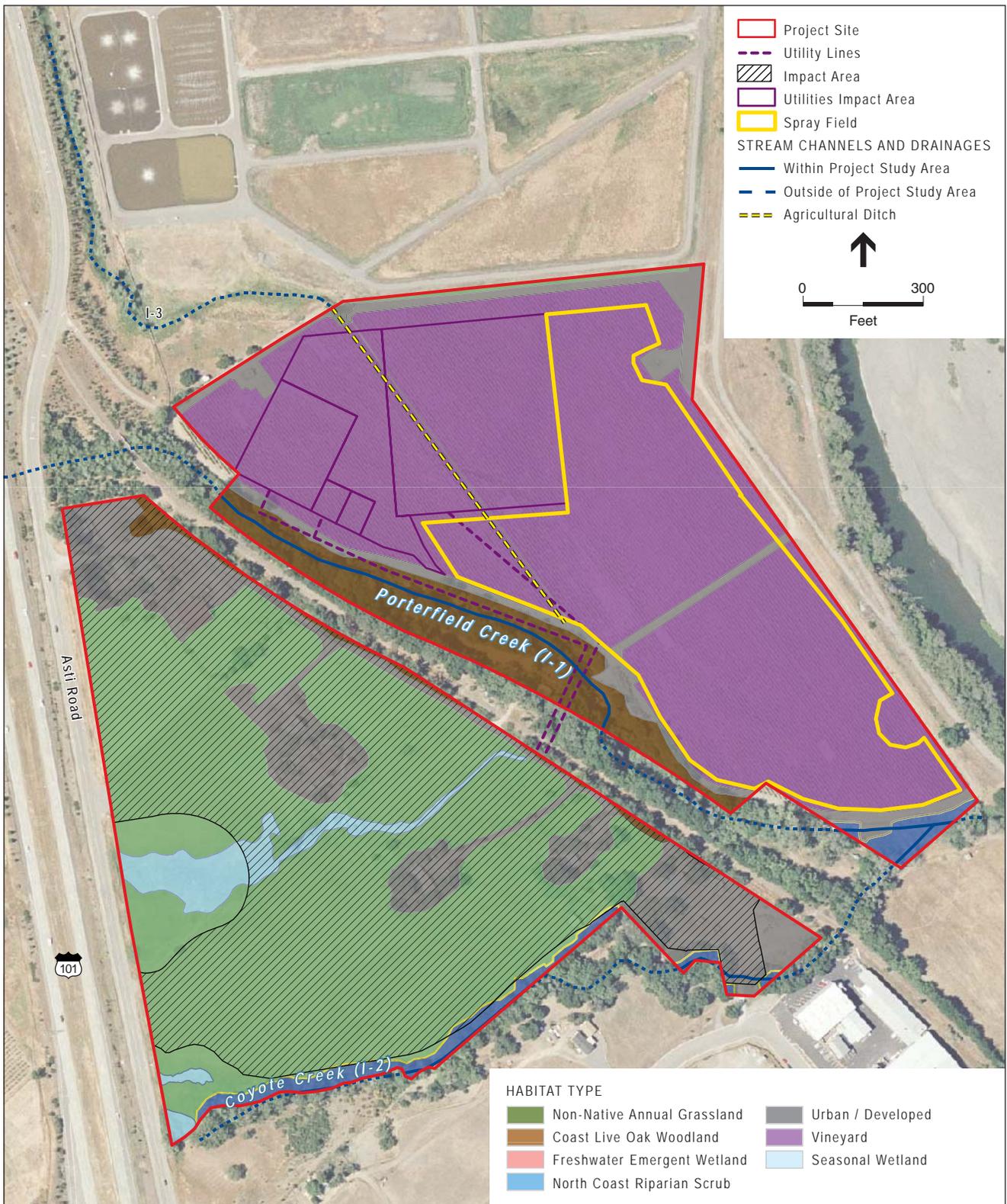
Implementation of Alternative A would cause an increase in human activity within the action area. Many species of wildlife will avoid areas that have a high degree of human activity, thereby causing them to forage over greater distances and reducing the number of breeding and resting sites that are available to them. Large terrestrial mammals, such as deer, mountain lion, and coyote would likely be most affected by an increase in human presence. Other species, such as scrub jay, American crow, and Brewer’s blackbird may actually increase in numbers within the action area. This may in turn have an adverse effect upon other, smaller passerines, such as warblers and vireos, due to increased interspecific competition for resources.

Reduction in Habitat

Implementation of Alternative A would require the removal of habitats that are relied upon by many species of wildlife (refer to the general habitat descriptions in **Section 3.5**). Based upon preliminary design drawings, implementation of Alternative A would directly affect approximately 22.5 acres of the 26.10 total acres of vineyard, 0.58 acres of the 4.10 total acres of Coast live oak woodland, 20.18 acres of the 22.75 total acres of non-native annual grassland, and 0.11 acres of the 1.37 total acres of North Coast riparian. In addition, approximately 0.48 acres of the 1.47 total acres of seasonal wetland, and 0.04 total acres of the agricultural ditch would be permanently impacted as a result of the Alternative A (**Figure 4.5-1**).

Effects to Water Quality and Local Hydrology

Alternative A may generate adverse impacts to water quality and downstream hydrology (flooding). These impacts may be generated through the construction of new impervious surfaces, including parking lots and buildings, as well as through introducing additional sources of pollutants, including vehicles and trash. These impacts could adversely impact aquatic life in habitats located within, adjacent to, and downstream of the PSA.



SOURCE: GlobeExplorer, 2007; and ESA, 2011

Cloverdale Rancheria Resort Casino Project EIS . 207737

Figure 4.5-1
Impacts to Habitats – Alternatives A-D

Impact 4.5.1-1: Effects to Upland Habitats (Potentially Significant)

Development of Alternative A would affect upland habitats that are used by a variety plant and wildlife species. **Table 4.5-1** provides a summary of the acreage of each upland habitat type that would be affected under Alternative A.

**TABLE 4.5-1
POTENTIAL EFFECTS TO UPLAND WILDLIFE HABITAT TYPES-
ALTERNATIVE A**

Habitat Type	Acres Affected	Percent Affected ¹
Urban/Developed	6.46	72.7%
Agricultural Lands: Vineyards	22.50	86.2%
Coast Live Oak Woodland	0.58	14.1%
Non-native Annual Grassland	20.18	89.3%
North Coast Riparian Scrub	0.11	8.0%
Total	49.83	77.2%

¹ Based upon amount of habitat available within PSA for each type as reflected in Table 3.5-1

SOURCE: ESA, 2008

Most of the above communities, including urban/developed, vineyards, and non-native annual grassland, are either regionally abundant (grasslands/vineyards) or are of little value to plants and wildlife (urban). However, two of the communities, coast live oak woodland and north coast riparian scrub, are considered both important biological communities (in terms of providing habitat) and are less regionally abundant. Based on these factors, impacts to these habitat types would be potentially significant without mitigation. **Mitigation Measure 5.5-1** would reduce this impact to less than significant.

Significance after Mitigation: Less than Significant

Impact 4.5.1-2: Effects to Wetlands and Other Waters of the U.S. (Potentially Significant)

Development of Alternative A would fill approximately 0.48 acres of wetlands and approximately 0.04 acres of the agricultural ditch. Any proposed discharge of fill material into waters of the U.S. would require a Section 404 permit from the Corps and a Water Quality Certification from EPA Region IX. **Table 4.5-2** provides a summary of the acreage for each wetland type that would be directly affected under Alternative A. There would be no direct effects to stream channels or freshwater emergent wetlands under Alternative A.

The loss of waters of the U.S., including wetlands, is a potentially significant impact. As described in **Section 3.5**, wetlands are ecologically important features that provide habitat for a variety of fish and wildlife, in addition to providing important water quality and hydrological functions. **Mitigation Measure 5.5-2** would reduce this impact to less than significant.

**TABLE 4.5-2
POTENTIAL DIRECT EFFECTS TO WATERS OF THE U.S.- ALTERNATIVE A**

Type of Jurisdictional Feature	Acres Affected	Percent Affected ¹
Wetlands		
Seasonal Wetland	0.48	32.6%
Agricultural Ditch	0.04	100%

¹ Based upon amount of habitat available within PSA for each type as reflected in Table 3.5-1

SOURCE: ESA, 2008

Significance after Mitigation: Less than Significant

Impact 4.5.1-3: Effects to Federally Listed Species (Potentially Significant)

The following discussion evaluates the potential indirect effects that Alternative A may have on federally listed species. There are no federally listed species that would be directly affected by Alternative A. Federally listed species that may be impacted by Alternative A include California Coastal chinook, Central California Coast coho, and Central California Coastal steelhead. No other federally listed species would be affected by Alternative A.

California Coastal Chinook, Central California Coast Coho, and Central California Coastal Steelhead

Implementation of Alternative A would not directly remove or degrade any riparian habitat or in-channel substrate within areas that are suitable for rearing or holding of native salmonids. Stream channels within the PSA do not likely provide suitable spawning opportunities for anadromous species, as existing culverts block upstream migration. In addition, beyond the lower reaches of the Porterfield Creek (channel I-1) confluence with the Russian River, channel substrate lacks suitable cobble/gravel complexes, and exhibits increased sedimentation and lack of gravels and cobbles within the bed and bank. Proposed construction will occur within upland habitat not associated with suitable aquatic habitat, and no direct effects associated with the construction of these facilities are anticipated.

Construction and placement of storm drain outfall structures along Porterfield Creek and the upland drainage release system located along I-2 may result in a discharge of sediments downstream of these sites. Increased sedimentation may cause reduced survival of eggs or alevins, reduce primary and secondary creek/river productivity, interfere with feedings, and cause behavioral avoidance to native fish species downstream of the discharge area. However, by incorporating bioswales, a subterranean stormwater detention system, and porous concrete into the project design (see Drainage Study, Appendix B), along with implementing appropriate best management practices (BMP's) and erosion control measures, effects to emigrating juveniles or migrating adult California Coastal chinook, Central California Coast coho, and Central California Coastal steelhead would be minimized.

Water quality may also be impacted if a spill or discharge of sediment-laden stormwater were to occur during construction of these improvements. The introduction of pollutants into these water bodies by a spill or discharge may result in the introduction of heavy metals, nutrients, hydrocarbons, or synthetic compounds, which may cause increased temperatures, disease susceptibility, or algal blooming. Sediment-laden stormwater may impact these species as described above. These potential effects would adversely affect native fish populations within Porterfield Creek and the Russian River. This is a potentially significant impact. Implementation of **Mitigation Measure 5.5-3** would reduce this impact to less than significant.

Impact 4.5.1-4: Effects to Migratory Birds (Potentially Significant)

Several raptor species, such as red-shouldered hawk, Cooper's hawk, and sharp-shinned hawk, have the potential to nest within the oak woodlands along channels I-1 and I-2. These channels also provide suitable nesting habitat for migratory songbirds, such as flycatchers, warblers, and woodpeckers. These species may be adversely affected if active nest sites are either directly removed or exposed to a substantial increase in noise or human presence during construction. This impact would only occur if construction activities (initial tree removal) were to occur during the active nesting season (March 1 through August 31). This is a potentially significant impact. **Mitigation Measure 5.5-4** would reduce this impact to less than significant.

Significance after Mitigation: Less than Significant

Impact 4.5.1-5: Effects to State and Local Special-Status Species (Potentially Significant)

The following discussion evaluates the potential indirect effects that Alternative A may have on species listed by the State or local entities as being rare or in decline. State and local special-status species that may be impacted by Alternative A include pallid bat, northwestern pond turtle, and foothill yellow-legged frog. Impacts to these species would be potentially significant.

Pallid Bat

The pallid bat may utilize buildings and other structures on the site for roosting or maternity sites. Implementation of Alternative A would remove and therefore directly affect potential roosting or maternity sites for this species. This is a potentially significant impact. **Mitigation Measure 5.5-5** would reduce this impact to less than significant.

Northwestern Pond Turtle and Foothill Yellow-Legged Frog

The foothill yellow-legged frog and northwestern pond turtle may occur within suitable habitat found in Porterfield (I-1) and Coyote (I-2) Creeks within the PSA. Implementation of Alternative A would not directly remove or degrade aquatic habitat for either species as these features will be avoided. As described in the impact discussed for salmonids, there is the potential for construction-related sedimentation or contamination of aquatic habitat to occur as a result of construction. These

potential impacts to water quality would have a detrimental effect to these species if present within or downstream of the PSA. This would be a potentially significant impact. **Mitigation Measure 5.5-3** would reduce this impact to less than significant.

Significance after Mitigation: Less than Significant

4.5.2 Alternative B – Reduced Hotel and Casino

General Effects

Although reduced in size compared to Alternative A, implementation of Alternative B would have very similar types of potential impacts to biological resources. These impacts may include a marked increase in human activity, a reduction in habitat, and effects to water quality and local hydrology. This is primarily due to the fact that the overall area of land development would remain the same. Please see the discussion for Alternative A (**Section 4.5.1**) for more details on these potential effects.

Impact 4.5.2-1: Effects to Upland Habitats (Potentially Significant)

Development of Alternative B would affect upland habitats that are utilized by plant and wildlife species. **Table 4.5-3** provides a summary of the acreage of each upland habitat type that would be affected under Alternative B.

**TABLE 4.5-3
POTENTIAL EFFECTS TO UPLAND WILDLIFE HABITAT TYPES-
ALTERNATIVE B**

Habitat Type	Acres Affected	Percent Affected ¹
Urban/Developed	6.46	72.7%
Agricultural Lands: Vineyards	22.50	86.2%
Coast Live Oak Woodland	0.58	14.1%
Non-native Annual Grassland	20.18	89.3%
North Coast Riparian Scrub	0.11	8.0%
Total	49.83	77.2%

¹ Based upon amount of habitat available within PSA for each type as reflected in Table 3.5-1

SOURCE: ESA, 2008

Most of the above communities, including urban/developed, vineyards, and non-native annual grassland, are either regionally abundant (grasslands/vineyards) or are of little value to plants and wildlife (urban). However, two of the communities, coast live oak woodland and north coast riparian scrub, are considered both important biological communities (in terms of providing habitat) and are less regionally abundant. Based on these factors, impacts to these habitat types would be potentially significant without mitigation. **Mitigation Measure 5.5-1** would reduce this impact to less than significant.

Significance after Mitigation: Less than Significant

Impact 4.5.2-2: Effects to Wetlands and Other Waters of the U.S. (Potentially Significant)

Development of Alternative B would fill approximately 0.48 acres of wetlands and approximately 0.04 acres of the agricultural ditch. Any proposed discharge of fill material into waters of the U.S. would require a Section 404 permit from the Corps and a Water Quality Certification from EPA Region IX. **Table 4.5-4** provides a summary of the acreage for each wetland type that would be directly affected under Alternative B. There would be no direct effects to stream channels or freshwater emergent wetlands under Alternative B.

**TABLE 4.5-4
POTENTIAL DIRECT EFFECTS TO WATERS OF THE U.S.- ALTERNATIVE B**

Type of Jurisdictional Feature	Acres Affected	Percent Affected ¹
Wetlands		
Seasonal Wetland	0.48	32.6%
Agricultural Ditch	0.04	100%

¹ Based upon amount of habitat available within PSA for each type as reflected in Table 3.5-1

SOURCE: ESA, 2008

The loss of waters of the U.S., including wetlands, is a potentially significant impact. As described in **Section 3.5**, wetlands are ecologically important features that provide habitat for a variety of fish and wildlife, in addition to providing important water quality and hydrological functions. **Mitigation Measure 5.5-2** would reduce this impact to less than significant.

Significance after Mitigation: Less than Significant

Impact 4.5.2-3: Effects to Federally Listed Species (Potentially Significant)

The following discussion evaluates the potential indirect effects that Alternative B may have on federally listed species. There are no federally listed species that would be directly affected by Alternative B. Federally listed species that may be impacted by Alternative B include California Coastal chinook, Central California Coast coho, and Central California Coastal steelhead. No other federally listed species would be affected by Alternative B.

California Coastal Chinook, Central California Coast Coho, and Central California Coastal Steelhead

Implementation of Alternative B would not directly remove or degrade any riparian habitat or in-channel substrate within areas that are suitable for rearing or holding of native salmonids. Stream channels within the PSA do not likely provide suitable spawning opportunities for anadromous

species, as existing culverts block upstream migration. In addition, beyond the lower reaches of the Porterfield Creek (channel I-1) confluence with the Russian River, channel substrate lacks suitable cobble/gravel complexes, and exhibits increased sedimentation and lack of gravels and cobbles within the bed and bank. Proposed construction will occur within upland habitat not associated with suitable aquatic habitat, and no direct effects associated with the construction of these facilities are anticipated.

Construction and placement of storm drain outfall structures along Porterfield Creek and the upland drainage release system located along I-2 may result in a discharge of sediments downstream of these sites. Increased sedimentation may cause reduced survival of eggs or alevins, reduce primary and secondary creek/river productivity, interfere with feedings, and cause behavioral avoidance to native fish species downstream of the discharge area. However, by incorporating bioswales, a subterranean stormwater detention system, and porous concrete into the project design (see Drainage Study, Appendix B), along with implementing appropriate best management practices (BMP's) and erosion control measures, effects to emigrating juveniles or migrating adult California Coastal chinook, Central California Coast coho, and Central California Coastal steelhead would be minimized.

Water quality may also be impacted if a spill or discharge of sediment-laden stormwater were to occur during construction of these improvements. The introduction of pollutants into these water bodies by a spill or discharge may result in the introduction of heavy metals, nutrients, hydrocarbons, or synthetic compounds, which may cause increased temperatures, disease susceptibility, or algal blooming. Sediment-laden stormwater may impact these species as described above. These potential effects would adversely affect native fish populations within Porterfield Creek and the Russian River. This is a potentially significant impact. Implementation of **Mitigation Measure 5.5-3** would reduce this impact to less than significant.

Significance after Mitigation: Less than Significant

Impact 4.5.2-4: Effects to Migratory Birds (Potentially Significant)

Several raptor species, such as red-shouldered hawk, Cooper's hawk, and sharp-shinned hawk, have the potential to nest within the oak woodlands along channels I-1 and I-2. These channels also provide suitable nesting habitat for migratory songbirds, such as flycatchers, warblers, and woodpeckers. These species may be adversely affected if active nest sites are either directly removed or exposed to a substantial increase in noise or human presence during construction. This impact would only occur if construction activities (initial tree removal) were to occur during the active nesting season (March 1 through August 31). This is a potentially significant impact. **Mitigation Measure 5.5-4** would reduce this impact to less than significant.

Significance after Mitigation: Less than Significant

Impact 4.5.2-5: Effects to State and Local Special-Status Species (Potentially Significant)

The following discussion evaluates the potential indirect effects that Alternative B may have on species listed by the State or local entities as being rare or in decline. State and local special-status species that may be impacted by Alternative B include pallid bat, northwestern pond turtle, and foothill yellow-legged frog. Impacts to these species would be potentially significant.

Pallid Bat

The pallid bat may utilize buildings and other structures on the site for roosting or maternity sites. Implementation of Alternative B would remove and therefore directly affect potential roosting or maternity sites for this species. This is a potentially significant impact. **Mitigation Measure 5.5-5** would reduce this impact to less than significant.

Northwestern Pond Turtle and Foothill Yellow-Legged Frog

The foothill yellow-legged frog and northwestern pond turtle may occur within suitable habitat found in Porterfield (I-1) and Coyote (I-2) Creeks within the PSA. Implementation of Alternative B would not directly remove or degrade aquatic habitat for either species as these features will be avoided. As described in the impact discussed for salmonids, there is the potential for construction-related sedimentation or contamination of aquatic habitat to occur as a result of construction. These potential impacts to water quality would have a detrimental effect to these species if present within or downstream of the PSA. This would be a potentially significant impact. **Mitigation Measure 5.5-3** would reduce this impact to less than significant.

Significance after Mitigation: Less than Significant

4.5.3 Alternative C – Reduced Casino

General Effects

Although reduced in size compared to Alternative A, implementation of Alternative C would have very similar types of potential impacts to biological resources. These impacts may include a marked increase in human activity, a reduction in habitat, and effects to water quality and local hydrology. This is primarily due to the fact that the overall area of land development would remain the same. Please see the discussion for Alternative A (**Section 4.5.1**) for more details on these potential effects.

Impact 4.5.3-1: Effects to Upland Habitats (Potentially Significant)

Development of Alternative C would affect upland habitats that are utilized by plant and wildlife species. **Table 4.5-5** provides a summary of the acreage of each upland habitat type that would be affected under Alternative C.

**TABLE 4.5-5
POTENTIAL EFFECTS TO UPLAND WILDLIFE HABITAT TYPES-
ALTERNATIVE C**

Habitat Type	Acres Affected	Percent Affected¹
Urban/Developed	6.46	72.7%
Agricultural Lands: Vineyards	22.50	86.2%
Coast Live Oak Woodland	0.58	14.1%
Non-native Annual Grassland	20.18	89.3%
North Coast Riparian Scrub	0.11	8.0%
Total	49.83	77.2%

¹ Based upon amount of habitat available within PSA for each type as reflected in Table 3.5-1

SOURCE: ESA, 2008

Most of the above communities, including urban/developed, vineyards, and non-native annual grassland, are either regionally abundant (grasslands/vineyards) or are of little value to plants and wildlife (urban). However, two of the communities, coast live oak woodland and north coast riparian scrub, are considered both important biological communities (in terms of providing habitat) and are less regionally abundant. Based on these factors, impacts to these habitat types would be potentially significant without mitigation. **Mitigation Measure 5.5-1** would reduce this impact to less than significant.

Significance after Mitigation: Less than Significant

Impact 4.5.3-2: Effects to Wetlands and Other Waters of the U.S. (Potentially Significant)

Development of Alternative C would fill approximately 0.48 acres of wetlands and approximately 0.04 acres of the agricultural ditch. Any proposed discharge of fill material into waters of the U.S. would require a Section 404 permit from the Corps and a Water Quality Certification from EPA Region IX. **Table 4.5-6** provides a summary of the acreage for each wetland type that would be directly affected under Alternative C. There would be no direct effects to stream channels or freshwater emergent wetlands under Alternative C.

**TABLE 4.5-6
POTENTIAL DIRECT EFFECTS TO WATERS OF THE U.S.- ALTERNATIVE C**

Type of Jurisdictional Feature	Acres Affected	Percent Affected¹
Wetlands		
Seasonal Wetland	0.48	32.6%
Agricultural Ditch	0.04	100%

¹ Based upon amount of habitat available within PSA for each type as reflected in Table 3.5-1

SOURCE: ESA, 2008

The loss of waters of the U.S., including wetlands, is a potentially significant impact. As described in **Section 3.5**, wetlands are ecologically important features that provide habitat for a variety of fish and wildlife, in addition to providing important water quality and hydrological functions.

Mitigation Measure 5.5-2 would reduce this impact to less than significant.

Significance after Mitigation: Less than Significant

Impact 4.5.3-3: Effects to Federally Listed Species (Potentially Significant)

The following discussion evaluates the potential indirect effects that Alternative C may have on federally listed species. There are no federally listed species that would be directly affected by Alternative C. Federally listed species that may be impacted by Alternative C include California Coastal chinook, Central California Coast coho, and Central California Coastal steelhead. No other federally listed species would be affected by Alternative C.

California Coastal Chinook, Central California Coast Coho, and Central California Coastal Steelhead

Implementation of Alternative C would not directly remove or degrade any riparian habitat or in-channel substrate within areas that are suitable for rearing or holding of native salmonids. Stream channels within the PSA do not likely provide suitable spawning opportunities for anadromous species, as existing culverts block upstream migration. In addition, beyond the lower reaches of the Porterfield Creek (channel I-1) confluence with the Russian River, channel substrate lacks suitable cobble/gravel complexes, and exhibits increased sedimentation and lack of gravels and cobbles within the bed and bank. Proposed construction will occur within upland habitat not associated with suitable aquatic habitat, and no direct effects associated with the construction of these facilities are anticipated.

Construction and placement of storm drain outfall structures along Porterfield Creek and the upland drainage release system located along I-2 may result in a discharge of sediments downstream of these sites. Increased sedimentation may cause reduced survival of eggs or alevins, reduce primary and secondary creek/river productivity, interfere with feedings, and cause behavioral avoidance to native fish species downstream of the discharge area. However, by incorporating bioswales, a subterranean stormwater detention system, and porous concrete into the project design (see Drainage Study, Appendix B), along with implementing appropriate best management practices (BMP's) and erosion control measures, effects to emigrating juveniles or migrating adult California Coastal chinook, Central California Coast coho, and Central California Coastal steelhead would be minimized.

Water quality may also be impacted if a spill or discharge of sediment-laden stormwater were to occur during construction of these improvements. The introduction of pollutants into these water bodies by a spill or discharge may result in the introduction of heavy metals, nutrients, hydrocarbons, or synthetic compounds, which may cause increased temperatures, disease susceptibility, or algal blooming. Sediment-laden stormwater may impact these species as described above. These potential

effects would adversely affect native fish populations within Porterfield Creek and the Russian River. This is a potentially significant impact. Implementation of **Mitigation Measure 5.5-3** would reduce this impact to less than significant.

Significance after Mitigation: Less than Significant

Impact 4.5.3-4: Effects to Migratory Birds (Potentially Significant)

Several raptor species, such as red-shouldered hawk, Cooper's hawk, and sharp-shinned hawk, have the potential to nest within the oak woodlands along channels I-1 and I-2. These channels also provide suitable nesting habitat for migratory songbirds, such as flycatchers, warblers, and woodpeckers. These species may be adversely affected if active nest sites are either directly removed or exposed to a substantial increase in noise or human presence during construction. This impact would only occur if construction activities (initial tree removal) were to occur during the active nesting season (March 1 through August 31). This is a potentially significant impact. **Mitigation Measure 5.5-4** would reduce this impact to less than significant.

Significance after Mitigation: Less than Significant

Impact 4.5.3-5: Effects to State and Local Special-Status Species (Potentially Significant)

The following discussion evaluates the potential indirect effects that Alternative C may have on species listed by the State or local entities as being rare or in decline. State and local special-status species that may be impacted by Alternative C include pallid bat, northwestern pond turtle, and foothill yellow-legged frog. Impacts to these species would be potentially significant.

Pallid Bat

The pallid bat may utilize buildings and other structures on the site for roosting or maternity sites. Implementation of Alternative C would remove and therefore directly affect potential roosting or maternity sites for this species. This is a potentially significant impact. **Mitigation Measure 5.5-5** would reduce this impact to less than significant.

Northwestern Pond Turtle and Foothill Yellow-Legged Frog

The foothill yellow-legged frog and northwestern pond turtle may occur within suitable habitat found in Porterfield (I-1) and Coyote (I-2) Creeks within the PSA. Implementation of Alternative C would not directly remove or degrade aquatic habitat for either species as these features will be avoided. As described in the impact discussed for salmonids, there is the potential for construction-related sedimentation or contamination of aquatic habitat to occur as a result of construction. These potential impacts to water quality would have a detrimental effect to these species if present within or downstream of the PSA. This would be a potentially significant impact. **Mitigation Measure 5.5-3** would reduce this impact to less than significant.

Significance after Mitigation: Less than Significant

4.5.4 Alternative D – Casino Only

General Effects

Although reduced in size compared to Alternative A, implementation of Alternative D would have very similar types of potential impacts to biological resources. These impacts may include a marked increase in human activity, a reduction in habitat, and effects to water quality and local hydrology. This is primarily due to the fact that the overall area of land development would remain the same. Please see the discussion for Alternative A (**Section 4.5.1**) for more details on these potential effects.

Impact 4.5.4-1: Effects to Upland Habitats (Potentially Significant)

Development of Alternative D would affect upland habitats that are utilized by plant and wildlife species. **Table 4.5-7** provides a summary of the acreage of each upland habitat type that would be affected under Alternative D.

**TABLE 4.5-7
POTENTIAL EFFECTS TO UPLAND WILDLIFE HABITAT TYPES-
ALTERNATIVE D**

Habitat Type	Acres Affected	Percent Affected ¹
Urban/Developed	6.46	72.7%
Agricultural Lands: Vineyards	22.50	86.2%
Coast Live Oak Woodland	0.58	14.1%
Non-native Annual Grassland	20.18	89.3%
North Coast Riparian Scrub	0.11	8.0%
Total	49.83	77.2%

¹ Based upon amount of habitat available within PSA for each type as reflected in Table 3.5-1
SOURCE: ESA, 2008

Most of the above communities, including urban/developed, vineyards, and non-native annual grassland, are either regionally abundant (grasslands/vineyards) or are of little value to plants and wildlife (urban). However, two of the communities, coast live oak woodland and north coast riparian scrub, are considered both important biological communities (in terms of providing habitat) and are less regionally abundant. Based on these factors, impacts to these habitat types would be potentially significant without mitigation. **Mitigation Measure 5.5-1** would reduce this impact to less than significant.

Significance after Mitigation: Less than Significant

Impact 4.5.4-2: Effects to Wetlands and Other Waters of the U.S. (Potentially Significant)

Development of Alternative D would fill approximately 0.48 acres of wetlands and approximately 0.04 acres of the agricultural ditch. Any proposed discharge of fill material into waters of the U.S. would require a Section 404 permit from the Corps and a Water Quality Certification from EPA Region IX. **Table 4.5-8** provides a summary of the acreage for each

wetland type that would be directly affected under Alternative D. There would be no direct effects to stream channels or freshwater emergent wetlands under Alternative D.

**TABLE 4.5-8
POTENTIAL DIRECT EFFECTS TO WATERS OF THE U.S.- ALTERNATIVE D**

Type of Jurisdictional Feature	Acres Affected	Percent Affected ¹
Wetlands		
Seasonal Wetland	0.48	32.6%
Agricultural Ditch	0.04	100%

¹ Based upon amount of habitat available within PSA for each type as reflected in Table 3.5-1

SOURCE: ESA, 2008

The loss of waters of the U.S., including wetlands, is a potentially significant impact. As described in **Section 3.5**, wetlands are ecologically important features that provide habitat for a variety of fish and wildlife, in addition to providing important water quality and hydrological functions. **Mitigation Measure 5.5-2** would reduce this impact to less than significant.

Significance after Mitigation: Less than Significant

Impact 4.5.4-3: Effects to Federally Listed Species (Potentially Significant)

The following discussion evaluates the potential indirect effects that Alternative D may have on federally listed species. There are no federally listed species that would be directly affected by Alternative D. Federally listed species that may be impacted by Alternative D include California Coastal chinook, Central California Coast coho, and Central California Coastal steelhead. No other federally listed species would be affected by Alternative D.

California Coastal Chinook, Central California Coast Coho, and Central California Coastal Steelhead

Implementation of Alternative D would not directly remove or degrade any riparian habitat or in-channel substrate within areas that are suitable for rearing or holding of native salmonids. Stream channels within the PSA do not likely provide suitable spawning opportunities for anadromous species, as existing culverts block upstream migration. In addition, beyond the lower reaches of the Porterfield Creek (channel I-1) confluence with the Russian River, channel substrate lacks suitable cobble/gravel complexes, and exhibits increased sedimentation and lack of gravels and cobbles within the bed and bank. Proposed construction will occur within upland habitat not associated with suitable aquatic habitat, and no direct effects associated with the construction of these facilities are anticipated.

Construction and placement of storm drain outfall structures along Porterfield Creek and the upland drainage release system located along I-2 may result in a discharge of sediments downstream of these sites. Increased sedimentation may cause reduced survival of eggs or alevins, reduce primary

and secondary creek/river productivity, interfere with feedings, and cause behavioral avoidance to native fish species downstream of the discharge area. However, by incorporating bioswales, a subterranean stormwater detention system, and porous concrete into the project design (see Drainage Study, Appendix B), along with implementing appropriate best management practices (BMP's) and erosion control measures, effects to emigrating juveniles or migrating adult California Coastal chinook, Central California Coast coho, and Central California Coastal steelhead would be minimized.

Water quality may also be impacted if a spill or discharge of sediment-laden stormwater were to occur during construction of these improvements. The introduction of pollutants into these water bodies by a spill or discharge may result in the introduction of heavy metals, nutrients, hydrocarbons, or synthetic compounds, which may cause increased temperatures, disease susceptibility, or algal blooming. Sediment-laden stormwater may impact these species as described above. These potential effects would adversely affect native fish populations within Porterfield Creek and the Russian River. This is a potentially significant impact. Implementation of **Mitigation Measure 5.5-3** would reduce this impact to less than significant.

Significance after Mitigation: Less than Significant

Impact 4.5.4-4: Effects to Migratory Birds (Potentially Significant)

Several raptor species, such as red-shouldered hawk, Cooper's hawk, and sharp-shinned hawk, have the potential to nest within the oak woodlands along channels I-1 and I-2. These channels also provide suitable nesting habitat for migratory songbirds, such as flycatchers, warblers, and woodpeckers. These species may be adversely affected if active nest sites are either directly removed or exposed to a substantial increase in noise or human presence during construction. This impact would only occur if construction activities (initial tree removal) were to occur during the active nesting season (March 1 through August 31). This is a potentially significant impact. **Mitigation Measure 5.5-4** would reduce this impact to less than significant.

Significance after Mitigation: Less than Significant

Impact 4.5.4-5: Effects to State and Local Special-Status Species (Potentially Significant)

The following discussion evaluates the potential indirect effects that Alternative D may have on species listed by the State or local entities as being rare or in decline. State and local special-status species that may be impacted by Alternative D include pallid bat, northwestern pond turtle, and foothill yellow-legged frog. Impacts to these species would be potentially significant.

Pallid Bat

The pallid bat may utilize buildings and other structures on the site for roosting or maternity sites. Implementation of Alternative D would remove and therefore directly affect potential roosting or maternity sites for this species. This is a potentially significant impact. **Mitigation Measure 5.5-5** would reduce this impact to less than significant.

Northwestern Pond Turtle and Foothill Yellow-Legged Frog

The foothill yellow-legged frog and northwestern pond turtle may occur within suitable habitat found in Porterfield (I-1) and Coyote (I-2) Creeks within the PSA. Implementation of Alternative D would not directly remove or degrade aquatic habitat for either species as these features will be avoided. As described in the impact discussed for salmonids, there is the potential for construction-related sedimentation or contamination of aquatic habitat to occur as a result of construction. These potential impacts to water quality would have a detrimental effect to these species if present within or downstream of the PSA. This would be a potentially significant impact. **Mitigation Measure 5.5-3** would reduce this impact to less than significant.

Significance after Mitigation: Less than Significant

4.5.5 Alternative E – Commercial Retail-Office Space

General Effects

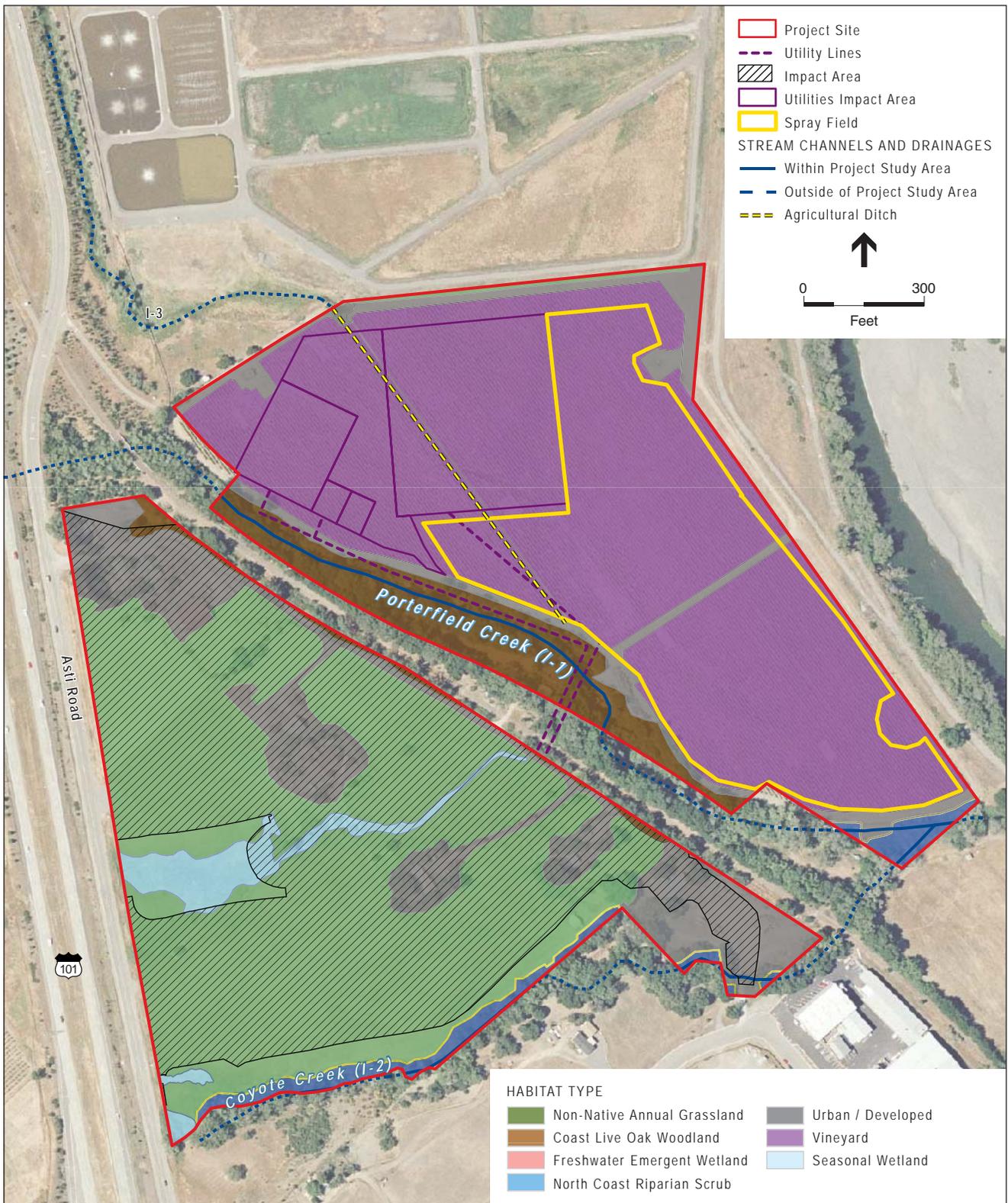
As with the other alternatives, implementation of Alternative E would have very similar types of potential effects to biological resources. These impacts may include a marked increase in human activity, a reduction in habitat, and effects to water quality and local hydrology. However, Alternative E would have slightly less direct impacts to upland habitats, as described below. Effects associated with increases in human presence and effects to water quality and local hydrology would be similar to that described for Alternative A.

Reduction in Habitat

Implementation of Alternative E would require the removal of habitats that are relied upon by many species of wildlife (refer to the general habitat descriptions in **Section 3.5**). Based upon preliminary design drawings, implementation of Alternative E would directly affect approximately 22.5 acres of the 26.10 total acres of vineyard, 0.56 acres of the 4.10 total acres of Coast live oak woodland, and 19.99 acres of the 22.75 total acres of non-native annual grassland. In addition, approximately 0.44 acres of the 1.47 total acres of seasonal wetland, and 0.04 total acres of the agricultural ditch would be permanently impacted as a result of the Alternative E (**Figure 4.5-2**).

Impact 4.5.5-1: Effects to Upland Habitats (Potentially Significant)

Development of Alternative E would affect upland habitats that are used by a variety of plant and wildlife species. **Table 4.5-9** provides a summary of the acreage of each upland habitat type that would be affected under Alternative E.



SOURCE: GlobeExplorer, 2007; and ESA, 2011

Cloverdale Rancheria Resort Casino Project EIS . 207737

Figure 4.5-2
Impacts to Habitats – Alternatives E

**TABLE 4.5-9
POTENTIAL EFFECTS TO UPLAND WILDLIFE HABITAT TYPES-
ALTERNATIVE E**

Habitat Type	Acres Affected	Percent Affected ¹
Urban/Developed	5.67	63.8%
Agricultural Lands: Vineyards	22.50	86.2%
Coast Live Oak Woodland	0.56	13.6%
Non-native Annual Grassland	19.99	88.5%
Total	48.72	75.5%

¹ Based upon amount of habitat available within PSA for each type as reflected in Table 3.5-1

SOURCE: ESA, 2008

Most of the above communities, including urban/developed, vineyards, and non-native annual grassland, are either regionally abundant (grasslands/vineyards) or are of little value to plants and wildlife (urban). However, coast live oak woodland is considered both an important biological community (in terms of providing habitat) and is less regionally abundant. Based on these factors, impacts to this habitat type would be potentially significant without mitigation. **Mitigation Measure 5.5-1** would reduce this impact to less than significant.

Significance after Mitigation: Less than Significant

Impact 4.5.5-2: Effects to Wetlands and Other Waters of the U.S. (Potentially Significant)

Development of Alternative E would fill approximately 0.44 acres of wetlands and approximately 0.04 acres of the agricultural ditch. Any proposed discharge of fill material into waters of the U.S. would require a Section 404 permit from the Corps and a Water Quality Certification from EPA Region IX. **Table 4.5-10** provides a summary of the acreage for each wetland type that would be directly affected under Alternative E. There would be no direct effects to stream channels or freshwater emergent wetlands under Alternative E.

**TABLE 4.5-10
POTENTIAL DIRECT EFFECTS TO WATERS OF THE U.S.- ALTERNATIVE E**

Type of Jurisdictional Feature	Acres Affected	Percent Affected ¹
Wetlands		
Seasonal Wetland	0.44	29.9%
Agricultural Ditch	0.04	100%

¹ Based upon amount of habitat available within PSA for each type as reflected in Table 3.5-1

SOURCE: ESA, 2008

The loss of waters of the U.S., including wetlands, is a potentially significant impact. As described in **Section 3.5**, wetlands are ecologically important features that provide habitat for a variety of fish and wildlife, in addition to providing important water quality and hydrological functions. **Mitigation Measure 5.5-2** would reduce this impact to less than significant.

Significance after Mitigation: Less than Significant

Impact 4.5.5-3: Effects to Federally Listed Species (Potentially Significant)

The following discussion evaluates the potential indirect effects that Alternative E may have on federally listed species. There are no federally listed species that would be directly affected by Alternative E. Federally listed species that may be impacted by Alternative E include California Coastal chinook, Central California Coast coho, and Central California Coastal steelhead. No other federally listed species would be affected by Alternative E.

California Coastal Chinook, Central California Coast Coho, and Central California Coastal Steelhead

Implementation of Alternative E would not directly remove or degrade any riparian habitat or in-channel substrate within areas that are suitable for rearing or holding of native salmonids. Stream channels within the PSA do not likely provide suitable spawning opportunities for anadromous species, as existing culverts block upstream migration. In addition, beyond the lower reaches of the Porterfield Creek (channel I-1) confluence with the Russian River, channel substrate lacks suitable cobble/gravel complexes, and exhibits increased sedimentation and lack of gravels and cobbles within the bed and bank. Proposed construction will occur within upland habitat not associated with suitable aquatic habitat, and no direct effects associated with the construction of these facilities are anticipated.

Construction and placement of storm drain outfall structures along Porterfield Creek and the upland drainage release system located along I-2 may result in a discharge of sediments downstream of these sites. Increased sedimentation may cause reduced survival of eggs or alevins, reduce primary and secondary creek/river productivity, interfere with feedings, and cause behavioral avoidance to native fish species downstream of the discharge area. However, by incorporating bioswales, a subterranean stormwater detention system, and porous concrete into the project design (see Drainage Study, Appendix B), along with implementing appropriate best management practices (BMP's) and erosion control measures, effects to emigrating juveniles or migrating adult California Coastal chinook, Central California Coast coho, and Central California Coastal steelhead would be minimized.

Water quality may also be impacted if a spill or discharge of sediment-laden stormwater were to occur during construction of these improvements. The introduction of pollutants into these water bodies by a spill or discharge may result in the introduction of heavy metals, nutrients, hydrocarbons, or synthetic compounds, which may cause increased temperatures, disease susceptibility, or algal blooming. Sediment-laden stormwater may impact these species as described above. These potential effects would adversely affect native fish populations within Porterfield Creek and the Russian River. This is a potentially significant impact. Implementation of **Mitigation Measure 5.5-3** would reduce this impact to less than significant.

Significance after Mitigation: Less than Significant

Impact 4.5.5-4: Effects to Migratory Birds (Potentially Significant)

Several raptor species, such as red-shouldered hawk, Cooper's hawk, and sharp-shinned hawk, have the potential to nest within the oak woodlands along channels I-1 and I-2. These channels also provide suitable nesting habitat for migratory songbirds, such as flycatchers, warblers, and woodpeckers. These species may be adversely affected if active nest sites are either directly removed or exposed to a substantial increase in noise or human presence during construction. This impact would only occur if construction activities (initial tree removal) were to occur during the active nesting season (March 1 through August 31). This is a potentially significant impact. **Mitigation Measure 5.5-4** would reduce this impact to less than significant.

Significance after Mitigation: Less than Significant

Impact 4.5.5-5: Effects to State and Local Special-Status Species (Potentially Significant)

The following discussion evaluates the potential indirect effects that Alternative E may have on species listed by the State or local entities as being rare or in decline. State and local special-status species that may be impacted by Alternative E include pallid bat, northwestern pond turtle, and foothill yellow-legged frog. Impacts to these species would be potentially significant.

Pallid Bat

The pallid bat may utilize buildings and other structures on the site for roosting or maternity sites. Implementation of Alternative E would remove and therefore directly affect potential roosting or maternity sites for this species. This is a potentially significant impact. **Mitigation Measure 5.5-5** would reduce this impact to less than significant.

Northwestern Pond Turtle and Foothill Yellow-Legged Frog

The foothill yellow-legged frog and northwestern pond turtle may occur within suitable habitat found in Porterfield (I-1) and Coyote (I-2) Creeks within the PSA. Implementation of Alternative E would not directly remove or degrade aquatic habitat for either species as these features will be avoided. As described in the impact discussed for salmonids, there is the potential for construction-related sedimentation or contamination of aquatic habitat to occur as a result of construction. These potential impacts to water quality would have a detrimental effect to these species if present within or downstream of the PSA. This would be a potentially significant impact. **Mitigation Measure 5.5-3** would reduce this impact to less than significant.

Significance after Mitigation: Less than Significant

4.5.6 Alternative F – No Action Alternative

Less than Significant Impact

Under the No Action Alternative, the PSA would not be developed as described in the alternatives in the near-term, and the impacts described for Alternatives A through E would not occur. Long-

term, proposed trust parcels zoned “General Industrial” or “Business Park” (which includes the parcels west and south of the railway) may be developed in a fashion that is similar to that proposed under Alternative E. This may include business parks, commercial development, industrial/warehouse development, or similar land uses. Proposed trust parcels zoned “Public/Quasi-Public” (which includes the parcels east and north of the railway) may also be developed in a fashion similar to the proposed alternatives (through an expansion of the City of Cloverdale’s existing wastewater treatment facility), or may remain in agricultural production.

4.6 Cultural and Paleontological Resources

4.6.1 Alternative A – Proposed Action

Impact 4.6.1-1: Effects to Historic Properties (Less than Significant)

Archival and field inspection of the project site included a records search conducted at the Northwest Information Center of the California Historical Resources Information System at Sonoma State University on March 24, 2008, Native American Heritage Commission consultation, and an intensive survey of the project area conducted on April 10, 2008 and May 7, 2008. No cultural resources eligible for the National Register of Historic Places (NRHP) were identified during the field survey or records search. Based upon these findings, no historic properties would be affected by the Proposed Action. The BIA agrees with these findings in consultation correspondence with the State Historic Preservation Office (under Section 106 of the National Historic Preservation Act) and has determined that no historic properties will be affected by the Proposed Action (**Appendix L**).

Significance after Mitigation: Less than Significant

Impact 4.6.1-2: Effects to Cultural and Paleontological Resources (Potentially Significant)

Because no eligible cultural resources were identified, the project would result in no impact to known cultural resources. However, there is the possibility for accidental discovery of archaeological resources during earth moving activities. The destruction or disturbance of these resources would result in a significant impact; however, implementation of **Mitigation Measures 5.6.1** and **5.6.2** would result in a less than significant impact to archaeological resources.

No known paleontological resources have been identified within the project area. However, as paleontological resources have been identified within Sonoma County, there is the potential for the accidental discovery of paleontological remains during earth moving activities within the project area. The destruction or disturbance of these resources would result in a significant impact; however, implementation of **Mitigation Measure 5.6.1** and **5.6.2** would result in a less than significant impact to paleontological resources.

The possibility of encountering human remains cannot be entirely discounted. In the unlikely event that human remains were discovered during subsurface activities, including those interred outside of formal cemeteries, the human remains could be inadvertently damaged, which could be a significant impact. However, this impact would be minimized by implementation of the **Mitigation Measures 5.6.1** through **5.6.3**, resulting in a less than significant impact to human remains.

Significance after Mitigation: Less than Significant

4.6.2 Alternative B – Reduced Hotel and Casino

Impact 4.6.2-1: Effects to Historic Properties (Less than Significant)

As described under Alternative A, no cultural resources eligible for the NRHP were identified during the field survey or records search. Based upon these findings, no historic properties would be affected by the implementation of Alternative B.

Impact 4.6.2-2: Effects to Cultural and Paleontological Resources (Potentially Significant)

There is the possibility for accidental discovery of archaeological or paleontological resources during earth moving activities. The destruction or disturbance of these resources would result in a significant impact; however, implementation of **Mitigation Measures 5.6.1** through **5.6.3** would result in a less than significant impact to cultural and paleontological resources.

Significance after Mitigation: Less than Significant

4.6.3 Alternative C – Reduced Casino

Impact 4.6.3-1: Effects to Historic Properties (Less than Significant)

As described under Alternative A, no cultural resources eligible for the NRHP were identified during the field survey or records search. Based upon these findings, no historic properties would be affected by the implementation of Alternative C.

Impact 4.6.3-2: Effects to Cultural and Paleontological Resources (Potentially Significant)

There is the possibility for accidental discovery of archaeological or paleontological resources during earth moving activities. The destruction or disturbance of these resources would result in a significant impact; however, implementation of **Mitigation Measures 5.6.1** through **5.6.3** would result in a less than significant impact to cultural and paleontological resources.

Significance after Mitigation: Less than Significant

4.6.4 Alternative D – Casino Only

Impact 4.6.4-1: Effects to Historic Properties (Less than Significant)

As described under Alternative A, no cultural resources eligible for the National NRHP were identified during the field survey or records search. Based upon these findings, no historic properties would be affected by the implementation of Alternative D.

Impact 4.6.4-2: Effects to Cultural and Paleontological Resources (Potentially Significant)

There is the possibility for accidental discovery of archaeological or paleontological resources during earth moving activities. The destruction or disturbance of these resources would result in a significant impact; however, implementation of **Mitigation Measures 5.6.1** through **5.6.3** would result in a less than significant impact to cultural and paleontological resources.

Significance after Mitigation: Less than Significant

4.6.5 Alternative E – Commercial Retail-Office Space

Impact 4.6.5-1: Effects to Historic Properties (Less than Significant)

As described under Alternative A, no cultural resources eligible for the NRHP were identified during the field survey or records search. Based upon these findings, no historic properties would be affected by the implementation of Alternative E.

Impact 4.6.5-2: Effects to Cultural and Paleontological Resources (Potentially Significant)

There is the possibility for accidental discovery of archaeological or paleontological resources during earth moving activities. The destruction or disturbance of these resources would result in a significant impact; however, implementation of **Mitigation Measures 5.6.1** through **5.6.3** would result in a less than significant impact to cultural and paleontological resources.

Significance after Mitigation: Less than Significant

4.6.6 Alternative F – No Action Alternative

Impact 4.6.6-1: Effects to Historic Properties (Less than Significant)

As described under Alternative A, no cultural resources eligible for the NRHP were identified during the field survey or records search. Based upon these findings, no historic properties would be affected by the implementation of Alternative F.

Impact 4.6.6-2: Effects to Cultural and Paleontological Resources (Less than Significant)

Under the No Action Alternative, the project site would remain in agricultural and rural residential use in the near term, with future development presumed to fall under General Industrial, Business Park, and/or Public, Quasi-Public zoning. Development of these future facilities would result in similar changes and impacts as described above, and would require evaluation under CEQA. These potential impacts would therefore be mitigated in fashion similar to those under the action alternatives. A less than significant impact would occur.

4.7 Socioeconomic Conditions

This section analyzes the potential socioeconomic effects of each alternative. Effects evaluated include the short-term employment and revenue changes in the economy during the project's construction phase as well as the subsequent long-term effects to the regions. The section also evaluates the effects to the City of Cloverdale and County of Sonoma's revenues, expenditures, community infrastructure, and housing. The potential social effects of gambling are also evaluated.

4.7.1 Alternative A – Proposed Action

Impact 4.7.1-1: Direct Economic Effects from Construction and Operation (Beneficial Impact)

Construction Spending

Major construction would be necessary to build the Proposed Action. This construction work would generate considerable local employment and new spending within Sonoma County and other counties within the Bay Area. The direct spending impacts consist primarily of expenditures to local construction and engineering firms for construction of the project facilities.

The total future construction cost for the development of each alternative was projected to determine the nature and magnitude of potential spending effects to the Sonoma County economy. The future construction costs were estimated based on per square foot cost estimates for other, similar casino projects recently completed or proposed in Northern California. The estimates were adjusted to be applicable to the size and configurations of each alternative. The estimates represent the expected total cost of construction and design, including furniture, fixtures and equipment (FF&E), but exclude any land costs.

Construction costs for larger “destination” casino/resorts are generally greater than typical construction projects since the design and facilities are of a very high quality to attract visitors. Consequently, development estimates include a considerable amount of additional costs from higher FF&E costs for gaming fixtures, other visitor amenities, and build quality.

The estimated construction costs of other recent casino developments in Northern California vary. In 2004, the development cost for the Cache Creek Casino was approximately \$482 per square foot, which would be equivalent to \$550 per square foot in 2008 dollar terms.¹ Estimates for the proposed Enterprise Rancheria Casino were in a similar cost range - varying from \$472 per square foot for the hotel and casino resort alternative and increasing up to nearly \$540 per square foot for the casino-only option. Planning studies for the proposed Graton Casino in 2006 projected construction costs of \$590 per square foot which would be equivalent to \$630 per square foot in 2008 dollars terms (Bay Area Economics [BAE], 2006). For the proposed North Fork Casino, the estimated future construction cost was nearly \$760 per square foot. The per square foot costs estimates were even higher for the casino-only development alternatives.

¹ Unless stated otherwise, all cost and revenue figures have been normalized into 2008 dollar terms.

A conservative construction cost estimate of \$550 per square foot in 2008 dollars has been used for all of the future casino-related facilities (i.e., all proposed facilities except for the tribal government offices). Since the tribal office building would not be a visitor-related facility, more typical office construction costs of \$150 per square foot were used for the proposed 20,000 square foot building. Similarly reduced construction cost estimates are used for Alternative E (Commercial Retail-Office Space). The projected total construction cost and employment for all the development alternatives are shown in **Table 4.7-1**.

**TABLE 4.7-1
PROJECTED CONSTRUCTION COSTS AND EMPLOYMENT BY ALTERNATIVE**

	Facility	Cost	Employment
Alt. A	595,600 sq.ft.	\$319,600,000	1,065
Alt. B	426,170 sq.ft.	\$226,400,000	755
Alt. C	406,554 sq.ft.	\$215,600,000	720
Alt. D	168,772 sq.ft.	\$84,300,000	280
Alt. E	364,000 sq.ft.	\$45,200,000	300

SOURCE: ESA, 2009.

Construction of Alternative A would generate substantial economic activity within Sonoma County and the Bay Area region. Direct impacts consist primarily of expenditures to local construction and engineering firms for construction of the project facilities. As shown in **Table 4.7-1**, ESA estimated the total construction cost for Alternative A would be approximate \$319.6 million. This is a beneficial economic impact to the Sonoma County and the region. No mitigation is required.

Construction Employment

A primary component of the project's direct economic impacts to the local economy would be from local construction employment.² Direct project-related employment includes not only construction laborers but also pre- and post-construction management and engineering staff (i.e., for project design, permitting, and administration).³

Employment projections for the proposed construction were partly based on recent estimates from other similar developed or proposed casino projects. IMPLAN employment estimates were also derived and considered. However, the construction employment estimates varied considerably and more widely than the construction cost estimates. Most strikingly, the construction employment estimates for the Graton casino were far lower than those for the North Fork and Enterprise casino developments. On a construction spending per employee per basis, Graton projected approximately one job generated per \$630,000 in construction spending (in 2008 dollars) – a rate roughly twice that projected for a hotel and casino resort development at North Fork. At the Enterprise Rancheria Casino, one construction worker was employed per \$115,000 of construction spending – a proportion more than a fifth less than Graton.

² Spending on other construction components (e.g. materials, equipment or services) are mostly business to business transactions and as such represent *indirect* economic impacts. Similarly, local spending impacts from construction employees or by supplier businesses typically represent *induced* economic impacts.

³ Unless stated otherwise, employment estimates are expressed as full time equivalents (FTE).

IMPLAN's projections for the proposed project are based on its representation of the County's specific economic characteristics. Based on a \$327.6 million construction cost estimate and the most recent Sonoma County data, IMPLAN estimates that approximately 2,200 Sonoma County residents could be employed by the proposed project.⁴ This would correspond to approximately one construction job for every \$150,000 in construction spending. The IMPLAN employment estimate is based on new construction of typical non-residential commercial properties. However, as discussed earlier (and as represented by a far higher estimated cost per square foot), the build quality and necessary FF&E expenses for the proposed casino are expected to be greater than those for general use commercial buildings (e.g. offices or health care facilities). Consequently, higher material, equipment and per-employee wage costs would contribute to the project's higher cost. As a result, it is expected that the IMPLAN employment projections would overestimate the future project-related construction jobs since they are based on more typical and less expensive construction projects.

As a conservative assumption for the socioeconomic impact analysis, the proposed casino's construction employment was instead projected based on a future employment rate of one construction worker per \$300,000 of construction spending. This employment projection is considerably more conservative than IMPLAN's and is comparable to the North Fork Casino employment estimates. Assuming an average "burdened" construction wage of \$60,000 to \$70,000 per employee, construction wage spending for the project would represent a reasonable 20 to 25 percent proportion of the project's total construction cost (and an even higher proportion if the up to 25 percent FF&E cost is also considered).

A central factor determining the magnitude of the project's actual employment impact is the proportion of jobs performed by county residents. The local job impacts are a function of the match between the project's labor needs and the availability of qualified local workers. The greater the number of county residents hired by the project, the greater the economic benefit to the county's economy. While non-county residents employed by the project would also offer some benefits to the county's economy (e.g., from food and fuel sales), these benefits would be more limited since much of their earnings would likely be spent outside the county.

Local employment availability is analyzed in **Impact 4.7.1-3** below. Due to the project's location and the relatively large available labor force within the County, most of the site construction work can be expected to be performed by Sonoma County residents. Sonoma County has both a comparatively large population of working age adults and a relatively high proportion of currently unemployed individuals who would be qualified and able to work on the project. Furthermore, the significant commute distances and small labor force populations living within the neighboring areas within Mendocino and Lake Counties also suggest that relatively few individuals working on the construction project would reside outside Sonoma County.

⁴ As represented by the 2007 data for Sonoma County, IMPLAN Sector 34 – Construction of Non-Residential Commercial and Healthcare Structures.

As shown in **Table 4.7-1**, future construction of Alternative A is projected to result in the future employment of up to 1,065 local residents. This would be a beneficial economic impact to Sonoma County. No mitigation is required.

Operations Revenues

Future project operations would generate major employment and sales revenues within Sonoma County. The extent that these future sales would benefit the local economy depends on the extent that sales are net or “new” revenues for Sonoma County’s economy. Sales that the project obtains from existing businesses within Sonoma County would have little, if any, economic benefit to the County’s economy. However, future visitor spending at the casino that otherwise would not have occurred within the County would represent a net economic benefit. These new sales could be from out of county visitors or local residents that would otherwise have travelled out of Sonoma County for their entertainment purposes.

Future revenue projections for the project were estimated based on the Innovation Group marketing analysis (2007). Each alternative’s future operating sales were determined with adjustments for their specific facility configurations. The sales projections represent the average annual financial performance for the project’s future stabilized operations in 2008 dollars.⁵ **Table 4.7-2** shows the estimated annual revenues and employment projected for each of the proposed alternatives.

**TABLE 4.7-2
PROJECTED OPERATIONS TOTAL SALES AND EMPLOYMENT BY ALTERNATIVE**

Alternative	Facility Size (Square Feet)	Annual Sales	Employment
Alt. A	595,600 sq.ft.	\$179,800,000	1,610
Alt. B	426,170 sq.ft.	\$151,200,000	1,350
Alt. C	406,554 sq.ft.	\$130,500,000	1,170
Alt. D	168,772 sq.ft.	\$107,200,000	960
Alt. E	364,000 sq.ft.	\$106,400,000	935

SOURCE: Innovation Group, 2007 and 2008; ESA, 2009.

Substitution Project Net Revenues

As shown in **Table 4.7-3**, based on the financial projections performed by the Innovation Group, it is projected that the Alternative A would generate approximately \$179.8 million per year in sales revenues.

Currently the only casino operating in Sonoma County is the River Rock Casino. The River Rock Casino is located in Geyserville, approximately 12 miles south of the proposed project site, and has 1,600 slot machines and 16 gaming tables operating in a 35,500 square foot facility. In addition, the Federated Indians of Graton Rancheria have proposed a casino and resort hotel for development in southern Sonoma County near Rohnert Park.

⁵ Major changes in customer demand, local competition or other market conditions could alter the future projections.

**TABLE 4.7-3
PROJECTED SALES BY CATEGORY – ALTERNATIVE A**

Revenue Category	Projected Sales
Casino	Gambling \$155,900,000
	Food & Beverage \$10,100,000
	Retail \$1,600,000
	Total Casino \$167,600,000
Hotel + Conference Center	Lodging \$8,100,000
	Food & Beverage \$2,000,000
	Retail \$200,000
	Total Hotel + Conference Center \$10,300,000
Entertainment Center	\$1,900,000
	Total Revenues \$179,800,000

SOURCE: Innovation Group, 2007 and 2008; ESA, 2009.

Marketing analysis for the project estimates that approximately 23 percent of the casino's future gambling revenues would be generated from Sonoma County residents. This is equivalent to approximately \$35.9 million in annual gambling revenues (Innovation Group, 2008). In which case, the net gaming sales that would represent new revenues for Sonoma County would be at least \$120.0 million. If gambling related food and retail earnings are also included, the total gambling related net sales under Alternative A would be approximately \$129.1 million per year. **Table 4.7-4** shows Alternative A's net casino resort sales by category. These portions of the future casino sales would represent new net revenues to Sonoma County's economy.

**TABLE 4.7-4
PROJECTED NET SALES IN SONOMA COUNTY – ALTERNATIVE A**

	Total Sales	New Sonoma County Sales			Total
		Casino	Hotel	Entertainment Center	
		77%	58%	68%	
Gambling / Entertainment	\$157,800,000	\$120,000,000		\$1,300,000	\$121,300,000
Hotel	\$8,100,000		\$4,700,000		\$4,700,000
Food / Retail	\$13,900,000	\$9,100,000	\$1,300,000		\$10,400,000
TOTAL	\$179,800,000	\$129,100,000	\$6,000,000	\$1,300,000	\$136,400,000

SOURCE: Innovation Group, 2008; ESA, 2009.

As a conservative assumption for the impact analysis, it is assumed that all of the \$38.5 million in casino spending by local residents' would in effect be "cannibalized" from the River Rock Casino or other local entertainment destinations' revenues. Under this assumption, these sales would not represent any new local revenues, and so would not add any new economic benefits to Sonoma County's economy. In actuality, a portion of the \$38.5 million in potential gambling revenues from local residents spending would indeed be sales that currently may be spent outside the County at

other casinos or entertainment destinations. Alternative A would have an even greater beneficial effect on local sales within Sonoma County if it could recapture this lost spending by local residents.

Within the hotel sector, the marketing analysis projects that approximately 58 percent of the lodging revenues would be derived from project visitors and only a very minor proportion would be from local residents (approximately 2 percent of sales). The Innovation Group analysis of a proposed hotel concludes that the new facility “would have a minimally dilutive impact on demand for other hotels in the market... (and) would reflect a cannibalization of approximately 70 rooms per night by the Cloverdale casino hotel.”⁶ For the purpose of this impact analysis, it is conservatively assumed that 42 percent of the total hotel revenues for the proposed 275-room hotel and conference center development could be “cannibalized” revenues (i.e., casino revenues that represent “sales substitutions” from existing local businesses). This sales substitution effect is equivalent to the projected annual revenue earnings for 110 hotel rooms. Under this sales substitution projection, annual lodging-related revenues of up to approximately \$4.3 million (including lodging-related food and retail sales) could be obtained from existing hotel businesses in Sonoma. In which case, Alternative A’s net lodging-related revenues would be approximately \$6 million.

The proposed entertainment center would attract new visitors and serve local residents. Using a mid-point value of the local revenue generation estimates for the casino and hotel sales, it is conservatively assumed that 32 percent of the entertainment center’s annual \$1.9 million sales may be obtained from existing local entertainment business. In which case, Alternative A’s net lodging-related revenues would be approximately \$1.3 million.

Based on this evaluation, it is projected that, at a minimum, \$137.1 million of the casino’s projected \$179.8 million future annual sales would represent new net sales to the Sonoma County economy annually. This would be a beneficial economic impact. No mitigation is required.

Operations Employment

Future operating employment for the project was based on IMPLAN estimates and verified from comparisons with similar recently completed and proposed casino projects. As shown in **Table 4.7-2**, the project’s total annual employment was conservatively estimated to correspond to one job per approximately \$0.11 million of revenues. Under Alternative A, it is estimated that the proposed hotel and casino resort would employ a total of approximately 1,610 employees.

The proposed project would offer a variety of new employment opportunities ranging from management to entry-level positions. The proposed casino and hotel operations will require staff for its gaming, lodging, entertainment, sales, marketing, security and food and beverage operations. The skills and experience requirements for these jobs will vary but it is expected that onsite training will be sufficient for the majority of positions. Consequently, most of the project’s future jobs should be suitable for the region’s labor force.

⁶ The marketing analysis did not offset its projected hotel cannibalization findings of 70 room nights per day (i.e. approximately annual 21,500 room night stays) with the more than 9,700 room night stays for other local hotels that might be expected from future Casino visitors.

The project's future job allocations and wages are expected to be comparable with those at other gambling facilities and casino hotels. **Table 4.7-5** shows the projected employment for the major job categories based on the most current available national employment data for gambling industries (NAICS 713200) and casino hotels (NAICS 721120) (BLS, 2009).

**TABLE 4.7-5
JOB CATEGORY AND WAGE PROJECTIONS – ALTERNATIVE A**

Job Category	SOC Groups ^a	Alt A		Average Wage ^c
		Est. % ^b	Est. Jobs	(2008 \$)
Management	11, 13, 15, 27	6.0%	97	\$67,800
Office	43	10.0%	161	\$27,760
Sales	41	10.5%	169	\$23,640
Service	39	32.0%	515	\$26,420
Food & Beverage	35	22.5%	362	\$25,150
Security	33	7.0%	113	\$27,980
Maintenance	37, 49, 51, 53	12.0%	193	\$26,230
Total		100.0%	1,610	\$27,850^d

a Principal occupations reported for Gambling Industries (NAICS 713200) and Casino Hotels (NAICS 721120).

b Approximate weighted average of job distribution for Gambling Industries and Casino Hotels.

c Approximate weighted average of SOC Groups' wages.

d Reported Total Average Wage for Gambling Industries and Casino Hotels

SOURCE: U.S. Bureau of Labor Statistics, 2009

Table 4.7-5 also shows the national average wages for casinos and casino hotels by job category. Wages for most job categories at casino hotels are generally slightly higher than those for stand alone casino operations. California employment data reports that the average weekly pay in 2007 was \$586 for gambling industries (NAICS 713200) and \$666 for casino hotels (NAICS 721120) (EDD, 2009). These weekly wage levels are equivalent to annual salaries of \$32,900 and \$37,400 respectively in 2009 dollar terms. The equivalent hourly wage for these workers would be \$14.65 and \$16.65 per hour.

By contrast, California employment data also reports that the average wage for the combined lodging and food service sector was \$352 per week. Wages within the lodging industry are generally higher than those for the food service industry. In 2007, the average weekly wage for the fast food restaurant workers was \$278 per week – less than half that for casino workers and almost 40 percent of that for casino hotel workers. The average wage for hotel workers was estimated to be \$527 per week but lower than the average wage for both casino and casino hotel workers. The minimum wage in California was raised to \$8 per hour in 2008.

For the impact analysis, it is conservatively assumed that future wages for the project's employees would at least be comparable to the national stand alone wages for casino operations. Based on the national average casino worker wage of \$27,850 for 2008, the average employee wage for project employees is expected to be \$28,900 per year (adjusted for inflation into 2009 dollar terms). This wage rate is equivalent to approximately \$14.15 per hour which is substantially higher than the minimum wage in California which is currently \$8 per hour. While entry-level wages will likely

be lower than the average wages estimated for each job category, the comparably high average wage indicates that permanent employees will be able to earn annual salaries substantially higher than other typical service industries and is comparable to the prevailing wage rate in Sonoma County for most of the other local employment opportunities where a post-secondary degree is not required (SCEDB, 2008). A wage rate of \$14.15 per hour may be considered a “living” wage in Sonoma County given the past Living Wage Ordinances passed in Sebastopol, Sonoma, and Petaluma which mandate a wage of \$11.70 an hour with benefits (or \$13.20 without) for workers employed by the city, city contractors, and firms receiving economic development assistance.

The project’s future job opportunities will be attractive for unemployed or “underemployed” residents.⁷ The size of the proposed casino should ensure a wide variety of job opportunities and work schedules that may be conducive for many Sonoma County residents. Unemployed residents will likely gain the greatest benefit from the new employment opportunities. Currently employed local or County residents may choose to switch their place of employment to the proposed casino (perhaps to reduce their existing commute or improve their work situation). Faced with the project’s new employment opportunities, currently underemployed individuals may also benefit by being able to increase their personal earnings. Sonoma County will also benefit from reduced service demand as previously unemployed individuals will reduce their dependence on public assistance. Increased income earnings would also lead to higher retail sales and other tax gains.

However, future employment benefits to Sonoma County would be affected by potential substitution effects determined for future sales. Consequently, the net future employment benefits to the County may similarly be expected to be less than the total employment and correspond with the sales substitution effects. Consequently, it is conservatively estimated that at least 1,225 of these jobs would represent net new employment opportunities benefiting county residents and the Sonoma County economy. This would be a beneficial economic impact. No mitigation is required.

Impact 4.7.1-2: Indirect Economic Effects from Construction and Operation (Beneficial Impact)

The project’s total construction cost represents the magnitude of overall economic activity directly associated with the project’s development. However, the extent that the construction spending and employment benefits Sonoma County’s economy would primarily depend on the proportion of the spending and employment occurring within the County. For example, materials purchased or equipment leased from non-County businesses would generate little direct economic benefit to Sonoma County, since that spending “leaks out” to benefit neighboring counties’ economies.

IMPLAN input-output modeling is a widely accepted tool for estimating the indirect economic effects of spending changes to an area’s economy such as those resulting from a major construction project or new business activity. The IMPLAN model represents the structure of the local economy and

⁷ “Underemployed” includes part-time employed or non-employed individuals (e.g. homemakers) not included in the unemployment estimates that are willing to work more if suitable work opportunities and conditions are available.

economic interrelationships among its firms and industry sectors. The IMPLAN economic model and data provides a representation of Sonoma County's specific economic characteristics and relationships from which the proportion and type of project-related spending impacts to the Sonoma County economy are projected.

The project's secondary economic impacts include: (1) indirect effects resulting from the procurement of construction-related supplies, services, materials, and equipment; and (2) induced effects of construction workers or the construction support businesses (and their employees) future spending for goods or services within Sonoma County. The model can predict both the indirect (i.e., business to business) and induced (i.e., individuals local spending of project related earnings/income) impacts. IMPLAN can also be used to predict indirect impacts on local employment levels and income for individual industry sectors. These impacts are estimated using IMPLAN multipliers that represent the typical flow of indirect and induced spending within the county's economy.

A project's economic effects can include changes in spending (i.e. which affect the output/sales of local businesses) and employment. These economic effects are generally measured in three ways: direct, indirect and induced impacts.

- *Direct* economic impacts are those economic changes directly related to the economic activity. For example, direct employment would represent those individuals paid by the developer or casino operator to work on the project. Typically, most of these project employees would work on site and examples would include construction laborers, card dealers, casino managers and other staff.
- *Indirect* employment represents workers providing support services for the casino but who are not directly paid/employed by the casino. Generally these are supply jobs or sales created by the casino operations and examples would include wholesalers delivering food or laundry services.
- *Induced* employment or sales represent the other economic activity generated by the new spending. For example, construction workers' lunch purchases would be an induced spending benefit to a local sandwich shop. Generally, induced effects are predominantly sales or jobs created by the spent earnings of local residents directly or indirectly employed by the casino. For example, home groceries bought by the sandwich shop employee (an indirect casino construction job) could be an induced sales impact.

IMPLAN estimates the multiplier effect of spending changes (such as new construction or visitor sales) on Sonoma County's economy based on county-level data that represents the existing economic interrelationships of the county's businesses and their customers. The IMPLAN data includes information on the types and magnitudes of the economic output of the industries within Sonoma County to account for local business productivity. IMPLAN also considers the average prices and demand for goods from County businesses and households to determine its indirect and induced impacts. Local and regional commuting patterns are also factors in its employment estimates.

IMPLAN estimates the various indirect and induced spending effects and aggregates them to determine the total indirect or induced impact to business output and employment. The specific nature of the initial business would partly determine the resulting indirect and induced impacts. A comparatively low indirect and induced impacts (e.g. less than 50 percent of the initial spending)

indicates that there is considerable sales leakage occurring. Such leakage is typical for more rural or smaller economies where goods or services must frequently be imported.

Materials, services and equipment that have to be imported would provide minimal economic benefit to Sonoma County. The extent of the construction spending benefits leaking out of the Sonoma County would depend on the type of the construction expenditures and the availability of existing Sonoma businesses that can provide the necessary materials, services or equipment. Highly specialized equipment (such as slot machines) is unlikely to be manufactured or sold by businesses within Sonoma County. However, more common construction equipment (such as forklift trucks) or activities (surveying services) are likely to be available for lease or purchase from local businesses.

As discussed above, the IMPLAN model estimates the proportion of the future spending expected to be captured by businesses within the County based on the current economic relationships and conditions of Sonoma County's businesses and residents. The estimated indirect and induced economic impacts associated with the proposed development alternatives are identified below.

Indirect and Induced Impacts from Construction Spending

Output

The total indirect and induced spending impacts associated with construction of the proposed development alternatives are presented in **Table 4.7-6**. It is expected that the \$319.6 million in total construction spending for Alternative A would generate approximately \$82.4 million in indirect spending and \$125.1 million of induced spending for businesses in Sonoma County. The total secondary economic spending benefits generated by future construction of Alternative A would be \$207.5 million. This would be a temporary, beneficial impact to Sonoma County that would last only for the duration of the construction period. No mitigation is required.

**TABLE 4.7-6
ESTIMATED INDIRECT AND INDUCED SPENDING FROM CONSTRUCTION BY ALTERNATIVE**

Impact	Alt. A	Alt. B	Alt. C	Alt. D	Alt. E
Construction Spending					
Indirect	\$82,429,000	\$56,394,000	\$55,611,000	\$21,879,000	\$11,665,000
Induced	\$125,074,000	\$88,603,000	\$84,381,000	\$33,198,000	\$17,700,000
Total	\$207,503,000	\$144,997,000	\$139,992,000	\$55,077,000	\$29,365,000

SOURCE: IMPLAN, 2009; ESA, 2009.

Employment

The project's indirect and induced spending would also generate increased employment within Sonoma County businesses. The total indirect and induced employment impacts associated with construction of all the project alternatives are presented in **Table 4.7-7**. Alternative A's total construction spending would not only create 1,065 direct construction jobs but it is also expected to generate approximately 349 indirect jobs and 605 induced jobs within Sonoma County businesses. The total employment benefits generated by Alternative A construction would be 2,019 jobs.

This would be a temporary beneficial impact to Sonoma County that would last only for the duration of the construction period. No mitigation is required.

**TABLE 4.7-7
ESTIMATED INDIRECT AND INDUCED EMPLOYMENT FROM CONSTRUCTION BY ALTERNATIVE**

Impact	Alt. A	Alt. B	Alt. C	Alt. D	Alt. E
Construction Employment					
Indirect	349	247	235	83	83
Induced	605	428	406	161	144
Total	954	675	641	244	227

SOURCE: IMPLAN, 2009; ESA, 2009.

Indirect and Induced Impacts from Operations

Output

The total indirect and induced spending impacts associated with Alternative A's future operations are presented in **Table 4.7-8**. Although it is expected that the project would generate \$179.8 million in total operating revenues, the impact analysis also conservatively assumes that up to \$43.8 million of these sales may be obtained from other existing Sonoma County business. Therefore, Alternative A is projected to generate at least net sales of \$136.4 million annually. No net indirect or induced sales benefits would be gained on future casino sales obtained from other local businesses. As a result, it is estimated that the \$136.4 million in net sales would generate at least \$34.4 million in net indirect spending and \$36.3 million of net induced spending for businesses in Sonoma County annually.

**TABLE 4.7-8
ESTIMATED INDIRECT AND INDUCED SPENDING FROM OPERATIONS BY ALTERNATIVE**

Impact	Alt. A	Alt. B	Alt. C	Alt. D	Alt. E
Operations Spending					
Indirect	\$34,429,000	\$30,825,000	\$26,586,000	\$21,995,000	\$30,673,000
Induced	\$36,347,000	\$31,045,000	\$26,779,000	\$22,136,000	\$32,693,000
Total	\$70,776,000	\$61,870,000	\$53,365,000	\$44,131,000	\$63,366,000

SOURCE: IMPLAN, 2009; ESA, 2009.

The total economic spending benefits generated by Alternative A operations would be \$70.8 million annually. This would be a long term beneficial impact to Sonoma County that would last for the duration of the project's future operating period.⁸ No mitigation is required.

Employment

The project's future indirect and induced employment impacts for the proposed development alternatives are presented in **Table 4.7-9**. Alternative A's future indirect and induced employment

⁸ Unless major changes in customer demand, local competition or other market conditions alter the future operational performance.

impacts are based only on its expected net sales of \$136.4 million. No net indirect or induced employment benefits would be gained from future casino sales obtained from other local business. As discussed above, the direct *net* employment benefits to Sonoma County are projected to be 1,225 jobs. In addition, the Alternative A operations are also expected to generate approximately 255 indirect jobs and 221 induced jobs within Sonoma County businesses. Therefore, Alternative A's future operations would generate total employment benefits of 1,701 new jobs. This would be a long term beneficial impact to Sonoma County that would last for the duration of the project's operating period. No mitigation is required.

**TABLE 4.7-9
ESTIMATED INDIRECT AND INDUCED EMPLOYMENT FROM OPERATIONS BY ALTERNATIVE**

Impact	Alt. A	Alt. B	Alt. C	Alt. D	Alt. E
Operations Employment					
Indirect	255	221	191	159	249
Induced	221	228	197	164	266
Total	476	449	388	323	515

SOURCE: IMPLAN, 2009; ESA, 2009.

Impact 4.7.1-3: Effects to Housing Supply (Less than Significant)

Employment Absorption by Current County Labor Force

The extent that project-generated employment benefits are captured by the Sonoma County economy would depend on the County's ability to provide the necessary workers for the project. As discussed in **Section 3.7** (Socioeconomic Conditions), in 2008 Sonoma County's total labor force was estimated to be approximately 270,500, with a county-wide unemployment rate of 6.5 percent. This rate is much higher than its historical average of 4.2 percent. This suggests that of the 17,800 Sonoma County residents who are currently unemployed, there are at least 6,220 residents (i.e. 2.3 percent of the total labor force) who are likely readily employable and available to work. The current economy's weakness also suggests that unemployment rates may increase further in the future which increase the job demand by Sonoma County's residents.

Although the total currently unemployed population is approximately 17,800 residents, in practice there is a natural and "healthy" minimum proportion of the labor force expected to remain unemployed. This base unemployment generally represents those residents in the midst of job-transitions such as changing jobs, leaving or re-entering the work force for training, or family reasons. Generally, a base unemployment rate of 2 or 3 percent is considered healthy. Applying a 2.5 percent minimum unemployment rate (comparable to Sonoma County's historic low unemployment rate of 2.6 percent), it is estimated that 10,820 current residents are available for potential employment by the project. **Table 4.7-10** shows this potentially employable labor force within Sonoma County by their place of residence.

**TABLE 4.7-10
SONOMA COUNTY LABOR FORCE, UNEMPLOYMENT RATE AND POTENTIALLY EMPLOYABLE
LABOR FORCE (2008)**

Location	Labor Force (2008)	Unemployment Rate (2008)	Rate of Potential Employable Residents (2008) ^a	Potential Employable Labor Force (2008) ^a
Sonoma County	270,500	6.5%	4.0%	10,820
<i>Cloverdale</i>	3,800	9.0%	6.5%	247
Cotati	4,100	6.4%	3.9%	160
Healdsburg	6,100	7.2%	4.7%	287
Petaluma	33,200	5.9%	3.4%	1,129
Rohnert Park	26,400	6.4%	3.9%	1,030
Santa Rosa	85,900	6.5%	4.0%	3,436
Sebastopol	4,500	3.8%	1.3%	59
Sonoma	5,000	4.7%	2.2%	110
Windsor	13,000	5.3%	2.8%	364
Unincorporated County	88,500	7.0%	4.5%	3,983

a Assuming a necessary minimum unemployment rate of 2.5 percent.

SOURCE: California EED, 2008.

The project's location in northern Sonoma County is well served by Highway 101 as a primary transportation route. This would enable most County residents the opportunity of a reasonable commute for work at the project site. Currently, just over three quarters of Sonoma County residents live and work within the County. Santa Rosa is the most popular commuter destination. In recent years, the average commute time for Sonoma County residents has decreased to its lowest level in over a decade – averaging approximately 25 minutes one-way. In 2000, the average commute time for Sonoma County residents was approximately 35 minutes. Downtown Santa Rosa is approximately 30 miles from the project site. Given Santa Rosa's accessibility from Highway 101, most future casino employees may be expected to be commuters from Santa Rosa and the other cities north of Santa Rosa along Highway 101. In addition, implementation of **Mitigation Measure 5.7-2** would create an employee Commuter Program that will provide shuttle service for employee commuters from the Santa Rosa/Rohnert Park area to the project site.

While Highway 101 is likely to remain a key transportation route, construction of the Sonoma Marin Area Rail Transit (SMART) is planned by 2014. The Cloverdale Station is located on the south side of Citrus Fair Road at its intersection with Asti Road just north of the project site. Once completed, the rail system will further improve public transportation for both casino visitors and workers which would further facilitate workers commuting to work at the casino.

As shown in **Table 4.7-10** there are major populations of potentially employable residents in Santa Rosa, Rohnert Park and the County's unincorporated areas (most of whose inhabitants live close to the County's cities). The available workforce in these communities and elsewhere within northern Sonoma County far exceeds both the project's short-term construction workforce requirements of 1,065 workers and its subsequent casino employment needs of 1,255 new workers (i.e. the net new employment associated with the proposed project recognizing the potential for some substitution

effects on other local businesses). This suggests that few (if any) of the new jobs created by the project would be staffed by out-of-county residents or workers relocating to Sonoma County.

The project's indirect and induced jobs would be more widely dispersed within Sonoma County and therefore would be even more accessible to Sonoma County residents. Consequently, the project's total employment impacts (i.e. including the indirect and induced employment) can be expected to be met by local residents and therefore it is considered unlikely that any significant worker migration or relocation to Sonoma County would occur as a result of the project.

Future County Labor Force Growth

Sonoma County's population is projected to increase annually by 0.7 percent (as shown in **Table 3.7-7**). This growth may be expected to result in similar County labor force growth and add over 1,890 new workers annually. By the time that the project would begin to operate in 2011 (at the earliest), at least two years of labor force growth would have occurred, resulting in more than 3,780 newly available workers within Sonoma County – of which approximately 1,200 would live in Santa Rosa alone. Such annual labor force growth would further increase the potentially employable labor force available for the project. Consequently, labor force growth within mid and northern Sonoma County is expected to be a major source of potential employees for the proposed project. The new labor force growth will also likely provide additional supply of “new” workers suitable for the project's entry-level positions.

Housing Vacancy

Employee Housing

As discussed above, the large population of unemployed (and underemployed) residents within Sonoma County suggests that the proposed project's future jobs will be predominately staffed by individuals currently living within Sonoma County. In which case, there will be little if any in-migration of new residents. Consequently, there would be little impact on local housing since there would be minimal (if any) project-related population growth in the area. Instead, most of the casino workers are expected to live in Santa Rosa and elsewhere within the Highway 101 accessible areas of mid and northern Sonoma County.

In any case, Sonoma County has considerable unoccupied housing. In 2008, Sonoma County had 197,907 housing units with a vacancy rate of 5.8 percent. This suggests that there are up to 11,480 housing units currently empty that could potentially be occupied. Although many of these homes may currently be vacation properties or otherwise currently unavailable as additional housing for new County residents, the existing house supply conditions nonetheless suggest that considerable potential underused housing capacity existing within Sonoma County. Assuming a base vacancy rate of 2 percent (which corresponds to several of the cities in Sonoma's current housing conditions), up to 7,520 housing units could be occupied within Sonoma County. Of these, approximately 6,625 homes (88 percent) are located in unincorporated areas of the County. In Santa Rosa, up to 450 homes could be re-occupied and in Cloverdale approximately 90 homes are currently vacant.

Consequently, in the unlikely event that relocating workers or new County residents need additional housing, their housing needs could be potentially absorbed by existing vacant homes in the Sonoma County. This further suggests that the project's future employment needs can be adequately met

without new housing construction. Most housing absorption would occur within the unincorporated areas since that is where most of the potential available vacant homes are located.

The project's new employment opportunities could encourage some relocation of population to the northern Sonoma Region by employees wishing to reduce their commute. The extent that such relocation would occur is primarily dependent on the availability of current vacant housing for sale or rent. The project's new job opportunities might also encourage some local area residents currently commuting for work in Santa Rosa to switch jobs. In which case, depending on non-project factors, there could be some redistribution of residents within the region. However, the net effect of any such local population shifts within the County is nonetheless expected to have little impact at the county level.

Affordable Housing

The availability of affordable housing is frequently a concern for many communities. As a result of the recent economic downturn, Sonoma County property values have declined substantially from their peak values in 2006 when the median sales price for homes sales was over \$600,000. In 2008, the average home sales price was approximately \$349,000 and in April 2009, the median sold home price was \$290,000. Although the weakened economy has also increased local unemployment rates, the declining home prices have improved the relative affordability of homes in Sonoma County.

Adjusted for inflation, rental rates within Sonoma have remained relatively stable between 2003 and 2008 – averaging \$900 for a one bedroom apartment and \$1,600 for a three bedroom apartment. These rental rates are comparatively low by Bay Area standards and would require average hourly earnings per household of \$17.30 and \$30.80 respectively to meet U.S. Housing and Urban Development guidelines. Although partly affected by household size, this indicates that rental housing in Sonoma County should be relatively affordable for individuals employed in a wide variety of occupations. Given that average future wages for many casino jobs are expected to roughly comparable to these hourly earning requirements, it also indicates most casino employees should be able to afford housing in Sonoma County. In addition the relatively high level of local unemployment also suggests the casino will provide much needed employment opportunities for many current residents that will reduce their reliance on county and state assistance.

Affordable housing remains a concern for most Bay Area counties and cities. The most recent inventory of affordable rental housing identifies 9,740 total rental units (including senior housing). Nearly half of the rental units are located in Santa Rosa (4,756 units of non-senior housing) which suggests that there is considerable existing affordable housing within a reasonable commute distance from the proposed casino (SCCDC, 2009). Sonoma County has implemented several initiatives and programs as part of its Affordable Housing Program to meet its affordable housing needs. Since the 2001 Sonoma County Housing Element was approved, Sonoma County has adopted several land use ordinances to encourage development of affordable housing within the County. In addition, in June 2005 the County implemented inclusionary housing requirements / development fees for both new residential and non-residential development. Sonoma County also has an enhanced density bonus program allowing greater residential development for qualified residential projects with afford housing components.

Over the last few years, new housing production in Sonoma County has been close to meeting its 2001 Quantified Objectives for affordable housing. Between 2001 and 2008, 2,482 new housing units were permitted within the unincorporated areas of the County - of which 1,028 were affordable units. However, due to the real estate appreciation and rising contraction during that period, the affordable housing development was insufficient to meet the Regional Housing Needs Allocation (RHNA) set for the Sonoma County. The revised RHNA requirement for 2007-2014 is 1,364 units of which 800 need to be “affordable” units (SCCDC, 2008). These efforts to continue to promote the development of more affordable housing options will improve the County’s ability to ensure there are sufficient local housing options.

Consequently, based on the above analysis, Alternative A’s future job creation is projected to have a less than significant impact on housing in Sonoma County. No mitigation is required.

Impact 4.7.1-4: Fiscal Effects to Sonoma County and the City of Cloverdale (Less than Significant)

As the project site would be taken into trust, the proposed future development would be exempt from many of the taxes and fees that businesses operating within the City or County’s jurisdiction would typically incur, which generate revenues for the jurisdiction or other local assessment districts.

Principal Tax Revenue Sources

Property Tax Revenues

Once the land is placed in trust, it would no longer be subject to property taxes. As discussed in **Section 3.7**, the project site currently generates approximately \$155,600 in annual property taxes and fees of which Sonoma County directly receives \$146,300 in property taxes. Sonoma County would permanently lose these annual tax revenues under all the development alternatives.

Only one of the six parcels (APN 166-310-020) is located within the City of Cloverdale’s jurisdiction. As discussed in **Section 3.7**, the City of Cloverdale currently receives approximately \$8,000 in annual tax revenues from the single property under its jurisdiction. The City of Cloverdale would permanently lose the annual tax revenue from this property under all the development alternatives.

Business Personal Property Tax Revenues

Business Personal Property (BPP) includes all supplies, equipment and any fixtures used in the operation of a business. Tribal owned businesses operating on trust land would be exempt from paying any BPP taxes. However, non-tribal businesses operating on trust lands are still fully liable for BPP taxes. Consequently, relocation of any County business onto tribal property would have no BPP tax revenue implications.

BPP taxes are based on the assessed value of the business and levied at the same rate as the local property rate (i.e. 1 to 1.25 percent). The County of Sonoma and/or City of Cloverdale would lose some BPP revenues if local businesses’ assessed values decreased as result of the project’s sales

shift effects. BBP taxes are collected by the County on behalf of the State of California which returns a portion of the revenues to County and local school districts.

Sales and Use Tax Revenues

Retail businesses in California are required to collect sales taxes on most goods purchased from them. Goods exempt from sales tax include grocery items and some pharmacy items. In addition, a “use tax” is also applicable for many purchases from retailers not subject to sales tax (such as retail and meal sales by Native American tribes).

One percent of the state-wide 7.25 percent sales and use tax rate provide local (city and county) funding, of which 0.25 percent is allocated for County transportation funds. Local governments and districts can (subject to voter approval) add additional taxes to this statewide base rate.

Within most of Sonoma County the sales tax rate is 7.75 percent as a result of an additional 0.25 percent district rate for the Sonoma County Open Space Authority (SCOS) and also for the Sonoma County Transportation Authority (SNTA). The Cities of Santa Rosa and Sebastopol both have additional 0.25 percent city taxes.

Since the Tribe would pay “use taxes” for retail and meal sales in lieu of sales taxes, any retail or dining “sales shifts” between the local business and the tribe would not result in any net sales revenue losses to Sonoma County. However, local cities may experience some sales tax revenue decreases if food or retail sales by businesses within their jurisdiction relocate to the casino.

In addition, the County of Sonoma and other local city governments could lose some net local sales tax revenues to the extent that the casino redirects taxable good spending by local residents to non-taxable gambling purchases. Although little data is available on the source of gambling spending, casino spending will generally be a recreational and discretionary purchase. As such it is more likely to substitute for other recreational activities than for retail spending.

Transient Occupancy Taxes

Sonoma County levies taxes of 9 percent on lodging and camping facilities operating within the unincorporated areas of the county. Similarly, the City of Cloverdale has 10 percent transient occupancy tax assessment on lodging within its jurisdiction. Similarly all of the cities in Sonoma County also assess transient occupancy taxes for overnight lodging within their jurisdiction. The County of Sonoma would be unable to collect any transient occupancy taxes on future lodging revenues on trust lands. Consequently, Sonoma County and other local cities could lose some of their current transient occupancy taxes from any **net** loss of overnight stays associated with the proposed project.⁹

Business Permit Fees

Businesses are not required to obtain a business permit to operate within unincorporated areas of Sonoma County although generally cities within Sonoma County require businesses operating

⁹ However, there could also be some countervailing positive spillover effects from visitors attracted by the proposed project to stay at non-casino hotels in the area.

within their jurisdictions to purchase an annual license or permit. Although, the permit fees vary they are typically very minor (\$50 to \$300 per year).

Estimated Indirect Business Tax Revenues Impacts from Construction

The IMPLAN model was used to estimate the total business tax impacts associated with the proposed construction of the proposed alternatives. The tax impacts include the direct, indirect and induced spending associated with the project. **Table 4.7-11** present the results for the five development alternatives for the construction activities.

TABLE 4.7-11

STATE AND LOCAL TAX IMPACTS TO BUSINESSES FROM CONSTRUCTION – ALL ALTERNATIVES

State and Local Indirect Business Taxes	Alt. A	Alt. B	Alt. C	Alt. D	Alt. E
Sales / Use Tax	\$5,612,000	\$3,975,500	\$3,786,000	\$1,489,500	\$794,000
Property Tax	\$4,329,000	\$3,066,500	\$2,920,500	\$1,149,000	\$612,500
Other Tax	\$1,250,500	\$886,000	\$843,500	\$332,000	\$17,700
State and Local Non Taxes	\$472,000	\$334,500	\$318,500	\$122,500	\$67,000
Total	\$11,663,500	\$8,262,500	\$7,868,500	\$3,093,000	\$1,491,200

SOURCE: IMPLAN, 2009; ESA, 2009.

In addition to the state and local impacts show in the table, the construction spending also generated major additional federal and personal tax benefits for the state and federal governments.

Under Alternative A, it is projected that approximately \$5.6 million in sales taxes benefits would be generated for the State of California and local Sonoma County jurisdictions and assessment districts. Since these taxes are generated from new additional spending within Sonoma County, the resulting tax revenues will represent a net increase to the recipients and hence will represent beneficial tax impacts.

The majority of these tax revenues would be kept by the State of California. Conservatively assuming an applicable County sales tax rate of 7.75 percent, based on its sales tax revenue allocation (6.25 percent of taxable sales), it can be expected that the State would receive approximately \$4.52 million of the sales tax revenues generated by project construction activity. Similarly it may be projected that Sonoma County transportation funding, SCOS and SNTA would each receive approximately \$180,600 in sales taxes based on their revenue allocation (0.25 percent). The remaining \$540,000 in sales tax revenues would be shared by Sonoma County or city governments depending on the location of the sales purchases. Altogether, county and other local government agencies in the County are projected to gain \$1.08 million in sales tax revenues.

The property tax revenues identified below would include both BPP taxes and household property taxes.¹⁰ Therefore, these taxes include direct revenue benefits to the State of California and the local governments within Sonoma County. Other taxes would likely include transient occupancy taxes

¹⁰ Household spending is considered a business within the IMPLAN model.

and motor vehicle taxes amongst others. These revenues would likely be shared by both the State and local governments. The “non tax” category would include fees and donations.

Although the proportion of County and local government tax revenues from the Alternative A construction can not be precisely determined, the magnitude and nature of the aggregate impacts indicate that one time construction related tax benefits would be appreciable.

Estimated Indirect Business Tax Revenues Impacts from Operations

The IMPLAN model was used to estimate the total business tax impacts associated with the proposed operations. The tax impacts include the direct, indirect and induced spending associated with the project’s future operations and are based on the net revenue impacts projected for Alternative A (i.e. it thereby does not projected future tax benefits for any casino revenues potentially “cannibalized” from other existing Sonoma County businesses). While sales transferred from River Rock Casino would be relocated they would not represent any new spending and therefore would not have any net economic impact. Consequently, the taxes estimated below represent only the additional new tax revenue effects to state, county and local agencies generated by the proposed future casino operations.

Table 4.7-12 shows the estimated tax impacts results for future operations. Unlike the construction spending tax impacts, the operations effects would continue annually for the duration of the development future operations. The tax benefit estimates shown below are for future “stabilized” casino operations (i.e. when the casino is fully operational and integrated into the regional casino and entertainment market). The sales tax revenues are expressed in 2009 dollar terms. Therefore, the actual tax benefits when the casino is fully optional (i.e. 2013 or 2014) will be higher in nominal terms since they will be accrued in 2013 or 2014 dollar terms and therefore will be subject to inflation effects during the interim period.

The tax impacts for the proposed project have been adjusted to recognize that the proposed casino will not generate sales or business property taxes for Sonoma County from its gambling business. **Table 4.7-12** primarily shows the aggregate sales, property and other tax revenues for the State, County and other local jurisdictions (such as Cloverdale and other cities in the county) from the taxed sales at the casino (i.e. retail and dining) as well as the indirect and induced tax revenues supported by the casino worker’s wages and the casino’s supplier businesses. However, the tax impact estimate does not include the annual revenue contribution that the project would generate for the State of California under its future gambling compact.

It is project that the State would receive approximately \$1.6 million of the sales tax revenues generated by future project operations. Similarly it may be projected that Sonoma County transportation funding, SCOS and SNTA would each receive approximately \$64,000 in sales taxes based on their revenue allocation (0.25 percent each). The remaining \$248,000 in sales tax revenues would be shared by Sonoma County or city governments depending on the location of the sales purchases. Altogether, county and other local government agencies in the County are projected to gain approximately \$0.38 million in sales tax revenues.

**TABLE 4.7-12
ANNUAL STATE AND LOCAL TAX IMPACTS TO BUSINESSES FROM OPERATIONS
– ALL ALTERNATIVES**

State and Local Indirect Business Taxes	Alt. A	Alt. B	Alt. C	Alt. D	Alt. E
Sales / Use Tax	\$1,976,000	\$1,782,716	\$1,535,529	\$1,282,550	\$1,208,394
Property Tax	\$1,524,500	\$1,375,210	\$1,184,523	\$989,315	\$932,109
Other Tax	\$1,558,500	\$1,406,000	\$1,211,000	\$1,011,500	\$953,000
State and Local Non Taxes	\$588,000	\$530,500	\$457,000	\$382,000	\$359,500
Total	\$5,647,000	\$5,094,426	\$4,388,051	\$3,665,365	\$3,453,003

SOURCE: IMPLAN, 2009; ESA, 2009.

The property tax benefits estimated in **Table 4.7-12** would also predominantly benefit Sonoma County. The other tax revenue benefits identified above will include future transient occupancy tax benefits (with solely benefit the county and local governments) that may be expected from increased local overnight accommodation both directly attracted from the proposed project and through the project's more indirect payroll and local business effects. It should be noted that the impact analysis has been very conservative by basing the impact analysis on net revenue projections that assume major substitution impacts that reduce Alternative A's annual revenues by \$43.4 million – more than a 24 percent reduction in total revenues. The adjustment also ensures that the tax impacts estimated above are net impacts and therefore represent estimated tax benefits to state and local government.

It is conservatively estimated that up to \$43.4 million of the proposed casino earning (i.e. sales shifts) would be obtained from existing Sonoma County businesses. The majority of the sales impacts will be casino revenues which are projected to be up to \$38.5 million. As a direct competitor, River Rock casino may be expected to be a primary source of these future sales as some of its customers may be attracted to the new casino with its additional amenities (including lodging). The transferred lodging sales are estimated to be approximately \$4.3 million. As discussed earlier the limited (\$0.6 million) expected retail and dining revenues will still generated sales/use tax benefits for Sonoma County and therefore there would be no net tax impact.

The project's potential greatest tax impacts will be from lost transient occupancy tax revenues on the transferred lodging sales to Sonoma County and the other cities. Local transient occupancy tax rates vary within Sonoma County from 8 percent in Windsor to as high as 12 percent in Healdsburg and Rohnert Park. The transient occupancy tax rate is 9 percent in both Santa Rosa and unincorporated areas of Sonoma County. The City of Cloverdale has a 10 percent transient occupancy rate. Conservatively assuming a 10 percent average transient occupancy tax rate, the \$4.3 million in projected lodging sales shift impacts would represent approximately \$430,000 in lost transient occupancy tax revenues. This will represent a maximum transient occupancy tax estimate, since it is conservative in the extent of lodging substitution by the casino and it does not include any beneficial indirect transient occupancy tax gains from the spillover effects from the casino spending or its customers staying locally at non-casino lodging. The projected \$430,000 tax impact would

represent approximately a relatively minor 2.1 percent reduction of the \$20.3 million in 2008 total annual transient occupancy tax receipts within the Sonoma County.

The distribution of the potential transient occupancy tax impacts among Sonoma County and the other local communities will depend on lodging market conditions. However, since Sonoma County currently collects approximately 38 percent of total countywide transient occupancy taxes, it may be expected to bear a majority of the impact along with the other major lodging locations within the northern / mid-county area (Santa Rosa (18.3 percent) and Healdsburg (9.1 percent)). Although neighboring the project, Cloverdale typically collects less than 0.9 percent of the countywide total (approximately \$175,000 in annual tax revenues). Consequently, while Cloverdale's tax revenues might be reduced by the casino, some portion of Cloverdale's lodging guests would be expected to nonetheless prefer to stay at its lodging facilities. In addition, due to its proximity Cloverdale's lodging would also be well position to capture "spillover" benefits of added overnight stays from casino customers during busy periods such as weekends and holidays. Consequently, although difficult to project, even under the most conservative of assumption, if Cloverdale would experience a disproportionate degree of the lost lodging revenues, they would not be expected to be more than a 50 percent decrease in its transient occupancy tax receipts (i.e. approximately \$86,000 and 20 percent of the maximum countywide impact).

In fact most of the lodging sales shift impacts would be expected to be absorbed at the mid-county's major lodging locations due to the quantity of competing inventory (i.e. affordable/non-destinational lodging). Conservatively assuming that all \$430,000 in transient occupancy impacts are distributed proportionately among the three primary locations, then Sonoma County would lose up to \$250,000 (58 percent), Santa Rosa would lose \$120,000 (28 percent) and Healdsburg would lose \$60,000 (14 percent). In each of these cases, any such tax impacts would represent a relatively minor proportion (less than 3.5 percent) of their total annual transient occupancy tax receipts.

The potential for any sales tax impacts from the projected \$38.5 million of sales shift for gambling revenues will depend on the source of the revenues. If majority of these sales are "cannibalized" from Red Rock casino then there would be minimal sales tax impacts. Similarly sales substituted from many alternative recreational spending activities (e.g. movie, sports, performances) will be non-sales taxes generating and therefore will not generate any sales tax losses. Project related sales tax impacts will only be associated with existing retail spending that would be redirected to gambling sales. Very conservatively projecting that only 50 percent of the sales shifts for gambling would be obtained from the Red Rock casino and other recreational spending, would translate to \$19.25 million of taxable retail sales converted to gambling sales. Given that the total taxable sales within Sonoma County was \$7,877 million, the county sales loss would be comparatively negligible at a county level as the sales tax revenue loss would be at most \$192,500 (i.e. 1 percent of the taxable sales amount).

Although the proportion of County and local government tax revenues from Alternative A's future operations can not be precisely determined, the magnitude and nature of the estimated total tax impacts indicate that total annual tax benefits from the proposed development's operations would exceed the identified lost property taxes from the site's transfer into tribal trust lands

(\$146,000). Even adding very conservative estimates of the maximum expected project related transient occupancy tax losses (\$250,000) and potential sale tax losses (\$192,500) would be roughly offset by the sales and property tax gains generated by the project. Consequently, the net tax impact on Sonoma County would be less than significant.

The lost property taxes from the site's transfer into tribal trust lands for Cloverdale would be \$8,000 per year. In addition, there could be some transient occupancy and sales tax losses for the City. Very conservative estimates project maximum transient occupancy tax losses up to at most \$86,000 from potential sales shift to casino lodging.¹¹ However, compensating spillover effects could offset the lodging occupancy decreases especially during peak periods. Cloverdale has a very small retail economy - in 2007 the total taxable retail sales at businesses within the City were less than \$56 million dollars. As a result, any sales shift impacts from the project would predominantly occur in Sonoma County, Santa Rosa and elsewhere in the County that have larger retail and residential uses. Consequently, retail sales shift impacts from Cloverdale will be limited and offset by additional incidental sales by project visitors.

As discussed above, the proposed project will provide considerable new employment opportunities for local residents. Given Cloverdale's relatively high unemployment rate and potentially employable available workforce of nearly 250 residents, these jobs will bring considerable new wage earnings into the local economy that will benefit local residents and existing local businesses. While the proportion of the project's sales and property tax benefits estimated in **Table 4.7-12** that would be gained by Cloverdale can not be precisely determined, even a relatively small proportion of the project's indirect and induced spending benefits could more than offset the actual future tax impacts to Cloverdale. In any case, even in the unlikely circumstances that the maximum transient occupancy tax losses occur, the impacts to the Cloverdale City General Fund will likely be minimal and limited to at most the \$8,000 in lost property tax revenues of parcel 116-310-020.

Therefore the net tax impact on the City of Cloverdale would be less than significant. No mitigation is required.

Impact 4.7.1-5: Effects to Community Infrastructure (Less than Significant)

The majority of service demands on local community infrastructure can be expected to be from the local residential population, the predominant service users. However, visitor (and non-local employee) service demands could also impact local community services in some circumstances.

Service Demand by Local Residents

As discussed previously in the employment and housing analysis, it is expected that the project's employment needs can be met by existing Sonoma County residents. Consequently, the proposed

¹¹ In 2006, only 42.3 percent of Cloverdale transient occupancy tax revenues were used for its General Fund. Most of the tax revenues were used for tourism promotion. The proposed project would include major local advertising that would consequently reduce the City's own tourism promotion needs. As a result, even if transient occupancy taxes were reduced by 50%, the City of Cloverdale's General Fund would not need to be financially impacted.

project's employment effects would not be expected to increase Sonoma County's residential population and hence would not increase the demand for community services by County residents.

No new housing development is expected to be associated with the proposed project. However, some population relocation could occur as currently underused homes might be occupied. While the net revenue impacts would likely be minor (i.e. since new property tax gains would be limited to any home sales), there could be some increase in service levels if local service demand shifts significantly. The extent of the impact on specific community services would primarily depend on each agency's specific circumstance and service capabilities.

Overall, it is important to recognize that any resulting additional service demand resulting from lower local housing vacancy rates would not in itself be a service impact, as service provision and infrastructure should have already been in place based on the amount of local housing.

Service Demand by Casino Visitors and Employment

Since the proposed development would be located on federal trust lands, technically there would be no increase in the local service population for the County of Sonoma or the City of Cloverdale since the site would be outside the County's and City's jurisdiction.

Visitors and non-local employees to the proposed casino could under some circumstances add additional service demands. However, the visitors and non-local employees would likely have limited impacts on local services since their primary demand for most services would occur at their location of residence. For example, visitors would be relatively unlikely to use local library or recreation facilities. Even if they relocate some of their service use, it may be expected that in most cases there would be a corresponding reduction in their home demand.

The specific project impacts on key community services are analyzed below or in **Section 4.10**, (Public Services). The subsequent discussions and analyses focus on determining the extent that any future additional service impacts can be specifically attributed to the proposed project.

Schools

As discussed previously in the employment and housing analysis, it is expected that the project's employment needs can be met by existing Sonoma County residents. Consequently, the proposed project's employment effects would not be expected to increase Sonoma County's residential population and hence would not affect local school enrollment.

Libraries and Parks

Project-related increases in service demand and facility use levels would be necessary for any significant impacts to occur to local libraries and parks. Such demand and use increases are generally most clearly associated with new residential development within the area and are generally met from development fees and future property tax increases associated with the new housing.

Visitors would not be expected to frequent local libraries or parks, and therefore would not have any significant use impacts to these public service operations or its facilities. Local residents are

the predominant users of these public services and facilities. As discussed previously in the employment and housing analysis, the proposed casino development is not expected to result in any significant new local housing development as the casino's future employment needs are expected to be met by current Sonoma County residents. Consequently, there would be no net increase in the service demand or facility use from new housing.

Furthermore, the City of Cloverdale has nearly 83 acres of operating parkland – more than twice the standard required by the City's General Plan. As a result, there is more than a sufficient number of existing local park and recreation facilities in the area to absorb any service demand and facility use increase.

Overall, no significant increase in new service demand and facility use is projected and no mitigation is necessary.

Roads

The transportation analysis in **Section 3.8** evaluated the potential for traffic change impacts on the local road network. The analysis estimates future traffic load changes and when necessary proposes roadway improvements necessary to maintain adequate levels of service for traffic for the major routes in the region.

In addition to these major roadways, additional project related traffic may also be expected to be dispersed on more minor roadways maintained by the County of Sonoma and other local city governments. Impacts to these County and City maintained roads would be primarily related to local resident's potential trip travel patterns changes – possibly as part of their local commute for work at the casino or alternate routing to avoid traffic changes on major routes. Given the dispersed and unknown nature of any the employment changes amongst local residents (and therefore any local traffic re-routing) it is not possible to locate or quantify the changes to the local road infrastructure. However, given that there is no significant net County population increase associated with the proposed project, any roadway use increases may reasonably be expected to be offset by reduced use on existing routes. Furthermore, the project's location would likely encourage most local residents (whether they are commuting or visiting the project) to use Highway 101 to access the site. As result, the net impact on the community's local road infrastructure is projected to be less than significant.

Impact 4.7.1-6: Social Costs Associated with Problem Gambling (Potentially Significant)

Problem Gambling

For most people, gambling is generally a positive experience. However, for a minority, gambling is associated with social difficulties of a varying severity and duration. Some habitual gamblers can develop significant, debilitating problems that may also result in harm to people around them and to the wider community.

Identification of Pathological and Problem Gamblers

Pathological gambling is defined by the American Psychiatric Association (APA) as an impulse control disorder characterized by “persistent and recurrent maladaptive gambling behavior that disrupts personal, family or vocational pursuits. The gambling pattern may be regular or episodic, and the course of the disorder is typically chronic (National Gambling Impact Study Commission [NGISC], 1999). The APA has identified ten diagnostic criteria which include preoccupation, tolerance, withdrawal, escape, chasing, lying, loss of control, illegal acts, risked significant relationships and financial bailout. Generally, pathological gamblers would meet at least five of these criteria. Individuals that meet three to five of these criteria are generally identified as problem gamblers. “Problem gambling” is commonly used to refer to both pathological and problem gamblers.

Gambling problems exist on a continuum and there is increasing evidence that shows such problems may not necessarily be chronic or a chronically relapsing disorder. A growing number of studies suggest that there are high rates of natural recovery among problem gamblers, particularly when their problems are less severe, do not co-occur with alcohol problems and/or are associated with gaming machine participation. This small body of research indicates that subclinical problem gambling, in particular, is a highly transitional state and also suggest that brief early intervention and preventive measures may be effective in reducing problem gambling impacts.

In a study of problem gambling in New Mexico, Volberg & Bernhard report that although it is difficult to determine the number of individuals who recover on their own, research suggests that natural recovery “is likely to be much higher than the number of problem gamblers who access professional treatment (Abbot & Volberg, 1996; Abbot, Williams & Volberg, 2004, Smith, Volberg & Wynne, 1994). Research has begun to shed some light on natural recovery from pathological gambling” (Volberg & Bernhard, 2006).

The study further states that “[p]rospective studies of adolescents, college students, casino employees and problem gamblers in the community have all found high rates of “Problem resolution” over periods ranging from one to seven years (Abbot et al, 2004; Hodgins & el-Guebaly, 2000; Shaffer & Hall, 2002; Slutske, Jackson & Sher, 2003). These studies challenge the notion enshrined in the DSM of pathological gambling as a chronic and inevitably progressive disorder. The data further suggest that natural recovery may be the rule rather than the exception particularly among subclinical problem gamblers” (Volberg & Bernhard, 2006).

Problem Gambling Research

Extensive sociological research has been performed to evaluate the prevalence of problem gambling and social costs associated with gambling. However, review of the varied literature and analyses on the subject reveals that the findings and conclusions of the studies can differ greatly and many issues are contentious. Both negative and positive impacts have been attributed to casino operations.

Most fundamentally, the basic causality and correlation of casino and social problems is highly complex and as yet poorly understood. Similar to most other social impacts, the causal relationship between casinos and problem gambling are difficult to measure. Considerable debate remains within the public health community on the causal link between gambling addiction and the prevalence

of casinos. One factor contributing to the difficulty in evaluating this relationship is that pathological gambling often occurs in conjunction with other behavioral problems including substance abuse, mood disorders and personality disorders. Public health experts generally agree that gambling addiction is very frequently correlated with depression and substance abuse problems

Even if the effects specific to an individual's problem gambling can be isolated, it remains difficult to distinguish effects specific to casino gambling from other prevalent forms of gambling such as lotto, scratch cards, internet gambling and card rooms.

The most comprehensive analysis to date of the social impacts of gambling was the "National Gambling Impact Study Commission Report" by the NGISC (1999). The NGISC commissioned two companion reports focused on the issues of problem gambling: "Pathological Gambling: A Critical Review" by the National Research Council (NRC); and "Gambling Impact and Behavior Study" by the National Opinion Research Center (NORC) at the University of Chicago (1999). The NGISC national research effort includes extensive public hearings, testimony on key issues, and review of thousands of articles and comments, as well as extensive academic research.

More recently, the California State Office of Problem Gambling (OPG) completed extensive analysis of gambling behavior and treatment within California with two major research efforts. Its "Situational Assessment of Problem Gambling Services in California (2005)" analyzed the issues and challenges related to problem gambling treatment in California. The "2006 Adult Problem Gambling Prevalence Study" was specifically designed to identify the current scope and nature of problem gambling in California.

The fundamental issue for most of these studies is determining the extent that increases in opportunities to gamble are linked to increases in the prevalence of problem gambling. Most of the major studies have concluded, with varying degrees of qualification that increased availability leads to more gambling and more problem gambling. Two national survey analyses quantified the increase in problem gambling prevalence. The NORC study determined that problem gambling is twice as prevalent amongst residents living within 50 miles of a casino (1999) while Welte estimates the effect to be more limited to a 90 percent increase for those individuals living within 10 miles of a casino (2004).

The issue is however complicated by observed declines and changes in gambling participation. OPG's 2006 study concludes:

"With respect to problem gambling, some of these jurisdictions saw significant increases in prevalence while others saw significant decreases and still other saw little or no change. Taken together, the evidence suggests that changes in the proportion of the population that gambles regularly are not sufficient to explain increases or decreases in problem gambling prevalence... (I)n addition to behavioral changes and provision of problem gambling services, there are likely other, as-yet-unidentified cultural, social and economic forces that contribute to changes in problem gambling prevalence."

This finding undercuts the causal assertion that increases in gambling opportunities in and of themselves result in problem gambling impacts.

Problem Gambling Population Estimates

The NGISC study found that most Americans report past participation in some form of gambling (including lotteries, poker, betting, internet or casino gambling). According to the study's findings, 86 percent of Americans stated that they have gambled at least once in their lifetime and 63 percent reported having gambled within the previous year (NGISC, 1999). The study also reported on previous studies which estimated the percentage of American adults classified as pathological gamblers ranged from 1.2 to 1.6 percent. The NGISC study itself more conservatively concluded that 0.6 percent of adults were pathological, while 0.7 percent were problem gamblers. Analysis by the American Gaming Association projects that nationwide 1.14 percent of adults were compulsive gamblers, and 2.8 percent were problem gamblers.

OPG's "2006 Adult Problem Gambling Prevalence Study" was specifically designed to identify the current scope and nature of problem gambling in California. The study determined that the proportion of problem gamblers in California had increased to 1.3 percent in 2006 - a 0.5 percent increase from the previous estimated statewide prevalence rate of 0.8 percent, from the first prevalence study specifically performed in California in 1990. This increase may be largely attributable to the widespread introduction of tribal gaming throughout the state during the intervening period.

However, the presence of several other casinos in the region combined with the increasing prevalence of other forms of gambling (e.g. lottery games, card rooms and internet gambling) also suggests that the addition of the proposed new casino development would have a limited if any impact on the number of pathological gamblers in the community. It is likely that the great majority of people predisposed to pathological gambling already have ample opportunities to gamble either near their place of residence or place of work. Gaming is already relatively accessible to most Sonoma County residents. In which case, the addition of another casino would have little effect in increasing the incidence of pathological gambling behavior since it is likely those individuals predisposed to such behavior would have already been fully exposed to many other gambling opportunities.

A very conservative estimate of the potential problem gambling service population can be estimated using OPG's prevalence rate of 1.3 percent with the more inclusive NORC estimate of 100 percent prevalence impact increase for all adults living within 50 miles of the casino. The potential customer base living within 50 miles of the Cloverdale casino in 2011 is 369,400 (Innovation Group, 2007) and consequently the increase in problem gamblers would be up to 4,800 individuals. Given the existing presence of the River Rock Casino is located 12 miles south of Cloverdale and closer to this customer market it seems reasonable to share any such new problem gambler impact equally between the two casinos. In which case, at most 2,400 problem gamblers might be associated with the proposed Cloverdale casino.

OPG's reports that approximately three percent of those with severe gambling problems are referred to specialized treatment in a given year (OPG, 2005). This treatment rate would result in a problem gambling service demand of up to 72 individuals annually. Recent data from the Association of Problem Gambling Service Administrators (APGSA) indicates that counselor to patient ratios for publicly funded programs vary widely. In 2003, the Oregon Problem Gambling Service Program

had approximately 60 clients per counselor while the Nebraska Gamblers assistance Program served approximately 40 clients per counselor. Using an average of 1 counselor per 50 clients, it is estimated that Sonoma County would need to employ at least 1.4 licensed counselors to treat the potential increased problem gambling population due to the development of Alternative A.

Effectiveness of Problem Gambling Treatment

While OPG’s “Situational Assessment of Problem Gambling Services in California” acknowledges that the existing research evaluating the efficacy of treatment programs and options is far from conclusive, it confirms the positive and consistent treatment outcomes by counselors who have received some specialized training and who are based within larger addiction or mental health treatment programs (2005).

The study also suggests that problem gambling may be attenuated, or possibly reversed through implementation of effective gambling treatment services. The report cites evidence from research performed in Montana, Oregon, North Dakota and Washington – all of which had recently opened tribal casinos and have other forms of legal gambling available. According to the report:

“With respect to problem gambling, significant increases in prevalence were found in Montana and North Dakota. Significant decreases were found in Oregon and Washington. The major difference between states with increased and decreased gambling problems was the availability of services for problem gamblers.”

Consequently, it recommends that a much larger number of individuals might be helped through brief interventions and public awareness campaigns than through formal, clinically-based treatment programs. These findings suggest that future problem gambler treatment services should be able to reduce the adverse social impacts associated with problem gambling.

Conclusion

Due to the potential increase in problem gambling and need for licensed counselors this impact is considered potentially significant. **Mitigation Measure 5.7-1** is recommended to reduce impacts to a less than significant level.

Crime

A literature review was conducted to assess research findings on the link between casinos and crime rates. The studies represent a range of analyses with different methods and different geographical study areas. In each case the studies attempt to analyze whether the presence of a casino in particular community increases crime rates in that respective community. It should be noted that in nationwide studies include data from high concentration gaming areas such as Atlantic City and Las Vegas. Incorporation of data from these areas may skew results specific to development of a casino in a semi-urban or more rural setting.

National Gambling Impact Study Commission Report (1999)

The NGISC conducted a comprehensive literature review and commissioned NORC to evaluate the impacts of casinos upon crime. NORC found insufficient data to quantify or determine the relationship between casinos and crime rates. The findings of NGISC stated that “[t]aken as a whole,

the literature shows that communities with casinos are just as safe as communities that do not have casinos.”

Casinos, Crime and Community Costs (Grinols and Mustard, 2004)

Grinols and Mustard developed a nationwide model using county-level data from 1977 to 1996 for examining crime related to casinos. The results of the model suggest that the effect on crime is low shortly after a casino opens and grows over time. The authors put forth that most factors that reduce crime occur before or shortly after a casino opens, while those that increase crime, including problem and pathological gambling occur over time.

Socio-Economic Impact Study for the Proposed Graton Rancheria Hotel/Casino Project (BAE, 2006)

BAE studied five California casino communities for the proposed Graton Rancheria Casino project. BAE contacted local law enforcement agencies to discuss the perceived impacts on the local community. Law enforcement officials reported increases in law enforcement service demand from the opening of the casino and expressed that they felt the increased concentrations of people within the local area led to the increase in crime. When compared to overall County crime rates, three of the communities experienced lower crime rates, one experienced comparable crime rates and one experienced greater crime rates. The results of the analysis were inconclusive as to whether the opening of a casino increases local crime rates beyond a similar scale non-casino development.

Rohnert Park Department of Public Safety Inter-Office Memorandum Regarding Thunder Valley Casino Trip (Sweeney, 2006)

Police Sergeant Art Sweeney from the Rohnert Park Department of Public Safety met with Placer County law enforcement officials who provide primary law enforcement services to the Thunder Valley Casino. The memorandum reported that the presence of video technology led to an increase in detective follow-ups. The Placer County Sheriff’s Office noted that they experienced more service demand from the County’s growth rate than the casino itself and that casino calls were similar to what would be expected from the opening of a tourist attraction.

Conclusion

While results vary as to the degree of correlation between crime and casinos, impacts from crime are considered potentially significant. These impacts and suggested mitigation are analyzed further in **Section 4.10** (Public Services).

Bankruptcy

Numerous research efforts have sought to establish whether casino gambling increases local bankruptcy rates. While some studies have suggested that there may be some limited effects of casino gambling contributing to higher local bankruptcy rates (Barron, 2000; Evans, 2002), the U.S. Department of the Treasury has researched the issue and found “no connection between state bankruptcy rates and either the extent of or introduction of casino gaming.” The NORC study also concurred that bankruptcies were no more common within communities with casinos than those without casino gaming. Consequently, no adverse social impact from project-related increases in personal bankruptcies is projected to occur. No mitigation is required.

Significance after Mitigation: Less than Significant

Impact 4.7.1-7: Effects to the Cloverdale Rancheria of Pomo Indians (Beneficial Impact)

Tribal Attitudes, Expectations, Lifestyle and Culture

A key purpose of the proposed project is to attract new local business as economic development assistance for the Tribe. The proposed hotel and casino development would provide several important socioeconomic benefits to both the Tribe as a whole and also to its individual Tribal members.

The proposed development would provide major employment and revenue benefits to Tribal members. As discussed in **Section 3.7** (Socioeconomic Conditions), unemployment rates amongst Tribal members far exceed county averages. The jobs and earning generated by the proposed casino development would greatly improve the individual Tribal members' standard of living. The personal earnings and tribal revenues may also be expected to greatly improve the educational opportunities for the Tribe's younger members.

Tribal members would also gain particular benefit from the development of major employment opportunities within their current community. The development would ensure current and future members are provided with local employment opportunities, long-term economic security and greater self-reliance. The proposed development would enable Tribal members to remain and thrive within the same community where they have a long standing historical heritage. Tribal elders would also have the added confidence that there would be long-term employment and economic development opportunities for their children that would enable them to continue to live within the area.

The nature and magnitude of the proposed development would also ensure that Tribal members would be able to work together which in turn would help foster and develop their shared Tribal identity. The Tribe's community bonds may be expected to be strengthened from their partnering together for the success of their shared Tribal enterprise. Coupled with the economic benefits to its members and the economic development of the Tribe as whole, the proposed development is expected to greatly enhance the Tribe's capacity for self-governance and self-determination.

In addition to the internal cultural and social benefits to Tribal members, the proposed project would also greatly enhance both awareness of the Tribe and respect for its role in the local community. The project gives the Tribe an opportunity for a greater presence and participation in the local economy and local community. This should enhance the Tribe's long-standing tradition of positive coexistence with the environment and cooperation with its non-Indian neighbors in the region.

Alternative A would have a beneficial socioeconomic impact on the Tribe and its members. No mitigation required.

4.7.2 Alternative B – Reduced Hotel and Casino

The facilities under Alternative B would be similar to those proposed for Alternative A, but on a reduced scale; additionally, no convention center would be constructed. As described under Alternative A, the development of the proposed gaming facility at the project site would result in economic effects from both the facility's initial construction and its subsequent future operations.

Impact 4.7.2-1: Direct Economic Effects from Construction and Operation (Beneficial Impact)

Construction Spending

Construction required for Alternative B would generate substantial economic activity within Sonoma County and the Bay Area region. Direct impacts consist primarily of expenditures to local construction and engineering firms for construction of the project facilities. As shown in **Table 4.7-1**, ESA estimates the total construction cost for the proposed Alternative B project would be approximate \$226.4 million. This is a beneficial economic impact to the Sonoma County and the region. No mitigation required.

Construction Employment

Fewer jobs are expected to be generated by Alternative B construction activity due to the reduced scale of proposed facilities compared to Alternative A. As shown in **Table 4.7-1**, it is projected that approximately 755 construction jobs would be created. This is a beneficial economic impact to the Sonoma County and the region. No mitigation required.

Operations Revenues

Alternative B's future hotel and casino resort operations would generate lower annual future sales than those that would occur under Alternative A. Nonetheless, as shown in **Table 4.7-2**, the proposed Alternative B facilities are projected to generate approximately \$151.2 million in total annual revenues. Based on marketing analysis of the project and conservative assessments of its future customer base, the impact analysis conservatively projects that up to \$36.1 million of these future sales may be obtained from other existing businesses in Sonoma County. As a result, it is projected that net sales revenue impact of Alternative B future operations would be \$115.1 million to Sonoma County. This is a beneficial economic impact to the Sonoma County and the region. No mitigation is required.

Operations Employment

Alternative B's future operations are expected to generate fewer jobs than Alternative A due to the reduced scale of the proposed development under the alternative. It is projected that a total of approximately 1,350 casino jobs would be created by the project's future casino resort operations. Based on marketing analysis and conservative assessments of the project's customer base, it is projected that the proposed casino facility future operations would be have a net impact of creating 1,028 new jobs within Sonoma County. This is a beneficial economic impact to the Sonoma County and the region. No mitigation is required.

Impact 4.7.2-2: Indirect Economic Effects from Construction and Operation (Beneficial Impact)

Indirect and Induced Impacts from Construction Spending

The indirect and induced construction spending impacts of Alternative B on Sonoma County's economy would be similar to those of Alternative A although lesser in magnitude given the reduced construction necessary to build the smaller proposed casino and hotel facility. The total indirect and induced spending impacts associated with construction of Alternative B are presented in **Table 4.7-6**. It is expected that the \$226.4 million in total construction spending would generate approximately \$56.4 million in indirect spending and \$88.6 million of induced spending for businesses in Sonoma County. The total secondary economic spending benefits generated by construction would be \$145.0 million. This would be a temporary beneficial impact to Sonoma County that would last only for the duration of the construction period. No mitigation is required.

Sonoma County would also gain additional indirect and induced employment from the indirect and induced spending from construction of Alternative B. The total indirect and induced employment impacts from Alternative B's construction are presented in **Table 4.7-7**. As discussed earlier, besides the direct job impact of generating 755 construction jobs, the construction spending would also create approximately 247 indirect jobs and 428 induced jobs within Sonoma County businesses. The total employment benefits generated by Alternative B construction would be 1,430 jobs. This would be a temporary beneficial impact to Sonoma County that would last only for the duration of the construction period. No mitigation is required.

Indirect and Induced Impacts from Operations

Alternative B's indirect and induced operating spending impacts on Sonoma County's economy would be similar to those of Alternative A but lesser in magnitude given the reduced size of the proposed facility which would generate less annual sales revenues.

The total indirect and induced spending impacts associated with Alternative B are presented in **Table 4.7-8**. Although it is expected that Alternative B would generate approximately \$151.2 million in total operating revenues, the impact analysis also conservatively assumes that up to \$36.1 million of these future sales may be obtained from existing businesses in Sonoma County. Therefore, it is estimated that Alternative B would generate annual net sales of \$115.1 million which would also create at least \$30.8 million in net indirect spending and \$31.0 million of net induced spending for businesses in Sonoma County annually. The total secondary economic spending benefits generated by Alternative B's future hotel and casino resort operations would be \$61.8 million annually. This would be a long term beneficial impact to Sonoma County that would last for the duration of the casino's future operating period. No mitigation is required.

Sonoma County would also gain additional indirect and induced employment benefits from the indirect and induced spending created by the future casino operations. The total indirect and induced employment impacts associated with Alternative B are presented in **Table 4.7-9**. As discussed

earlier, is expected that project's future operations not only generate 1,028 direct jobs but would also create approximately 221 indirect jobs and 228 induced jobs within Sonoma County businesses. The total employment benefits generated by Alternative B would be 1,477 jobs. This would be a long term beneficial impact to Sonoma County that would last for the duration of the casino's operating period. No mitigation is required.

Impact 4.7.2-3: Effects to Housing Supply (Less than Significant)

The future employment associated with both the future construction and subsequent casino resort operations for Alternative B would be less than that projected for Alternative A. As a result, Alternative B's potential housing impact would be less than that associated with Alternative A. Therefore, Alternative B is projected to have a less than significant impact on housing in Sonoma County. No mitigation is required.

Impact 4.7.2-4: Fiscal Effects to Sonoma County and the City of Cloverdale (Less than Significant)

Overall, as shown in **Table 4.7-11**, future total tax revenues generated for Sonoma County from Alternative B's indirect business tax changes are expected to offset the projected tax losses to the Sonoma County and the City of Cloverdale from the future transfer of the project site into trust lands. Therefore the adverse impact to Sonoma County and the City of Cloverdale is less than significant. No mitigation is required.

Impact 4.7.2-5: Effects to Community Infrastructure (Less than Significant)

The future employment associated with both the construction and subsequent casino resort operations for Alternative B would be less than that projected for Alternative A. Similarly, under Alternative B future casino visitation would be less than that projected to occur under Alternative A. As a result, Alternative B's potential community infrastructure impact would be less than that associated with Alternative A. Therefore, Alternative B is projected to have a less than significant impact on community infrastructure in Sonoma County. No mitigation is required.

Impact 4.7.2-6: Social Costs Associated with Problem Gambling (Potentially Significant)

As discussed for Alternative A, it is conservatively estimated that Sonoma County would need to employ 1.4 licensed counselors to treat the potential increased problem gambling population from the development of a casino at the project site. This impact is potentially significant and **Mitigation Measure 5.7-1** is recommended to reduce impacts to a less than significant level. Impacts

to crime are analyzed further in **Section 4.10** (Public Services). As discussed for Alternative A, no adverse social impact from project-related increases in personal bankruptcies is projected to occur.

Significance after Mitigation: Less than Significant

Impact 4.7.2-7: Effects to the Cloverdale Rancheria of Pomo Indians (Beneficial Impact)

The annual revenues projected from Alternative B operations would be less than those projected to occur under Alternative A. Therefore, the magnitude of the project-related benefits to the Tribe and its members generated by Alternative B would be less than would be created by Alternative A. However, Alternative B is still expected to generate over \$151.2 million in total annual revenues and provide more than 1,350 local jobs. As a result, Alternative B is expected to have a beneficial impact on the Tribe. No mitigation is required.

4.7.3 Alternative C – Reduced Casino

The facilities under Alternative C would be similar to those proposed for Alternative A, but on a reduced scale; additionally, no convention center would be constructed. The casino component proposed under this alternative is smaller than both Alternative A and Alternative B. As described under Alternative A, the development of the proposed gaming facility at the project site would result in economic effects from both the facility's initial construction and its subsequent future operations.

Impact 4.7.3-1: Direct Economic Effects from Construction and Operation (Beneficial Impact)

Construction Spending

Construction of Alternative C would generate substantial economic activity within Sonoma County and the Bay Area region. Direct impacts consist primarily of expenditures to local construction and engineering firms for construction of the project facilities. As shown in **Table 4.7-1**, ESA estimated the total construction cost for the proposed Alternative C project would be approximate \$215.6 million, only \$10.8 million less than Alternative B's estimated total construction cost. This is a beneficial economic impact to the Sonoma County and the region. No mitigation is required.

Construction Employment

Fewer jobs are expected to be generated by Alternative C construction activity due to the reduced scale of the proposed development compared to Alternatives A and B. As shown in **Table 4.7-1**, it is projected that approximately 720 construction jobs would be created. This is a beneficial economic impact to the Sonoma County and the region. No mitigation is required.

Operations Revenues

Alternative C would result in reduced annual future sales than those that would occur under Alternative A and B. As shown in **Table 4.7-2**, the proposed Alternative C development is estimated to generate approximately \$130.5 million in total future annual revenues. Based on market analysis and conservative assessments of the project's future customer base, the impact analysis conservatively assumes that up to \$31.3 million of these future sales may be obtained from other existing businesses in Sonoma County. As a result, Alternative C's proposed casino facilities are projected to have a net revenue impact of \$99.2 million to Sonoma County. This is a beneficial economic impact to the Sonoma County and the region. No mitigation is required.

Operations Employment

Alternative C's future operations are expected to generate fewer jobs than Alternatives A and B due to the reduced scale of the proposed development proposed. It is projected that approximately 1,170 total casino jobs would be created by the project's future casino resort operations. Based on marketing analysis and conservative assessments of the project's customer, it is projected that future operation of the Alternative C casino facility would have a net impact of creating approximately 890 new jobs within Sonoma County. This is a beneficial economic impact to the Sonoma County and the region. No mitigation is required.

Impact 4.7.3-2: Indirect Economic Effects from Construction and Operation (Beneficial Impact)

Indirect and Induced Impacts from Construction Spending

Alternative C's indirect and induced construction spending impacts on Sonoma County's economy would be similar to those of Alternatives A and B although lesser in magnitude given the reduced construction necessary to built its smaller casino and hotel facilities. The total indirect and induced spending impacts associated with construction of Alternative C are presented in **Table 4.7-6**. It is expected that the \$215.6 million in total construction spending would generate approximately \$55.6 million in indirect spending and \$84.4 million of induced spending for businesses in Sonoma County. The total secondary economic spending benefits generated by construction would be \$140.0 million. This would be a temporary beneficial impact to Sonoma County that would last only for the duration of the construction period. No mitigation is required.

Sonoma County would also gain additional indirect and induced employment from the indirect and induced spending created by the Alternative C construction. The total indirect and induced employment impacts from Alternative C's construction are presented in **Table 4.7-7**. As discussed earlier, the project's construction spending would generate 755 direct construction jobs and also approximately 235 indirect jobs and 406 induced jobs within Sonoma County businesses. The total employment benefits generated by the future Alternative C construction would be 1,396 jobs. This would be a temporary beneficial impact to Sonoma County that would last only for the duration of the construction period. No mitigation is required.

Indirect and Induced Impacts from Operations

Alternative C's indirect and induced operating spending impacts on Sonoma County's economy would be similar to those of Alternative A and Alternative B but lesser in magnitude given the reduced size of its proposed facilities which would generate less annual sales revenues.

Alternative C operation's projected total indirect and induced spending impacts are presented in **Table 4.7-8**. Although it is expected that Alternative C would generate \$130.5 million in total operating revenues, the impact analysis also conservatively projects that up to \$31.3 million of its future sales may be obtained from existing businesses in Sonoma County. In which case, Alternative C would generate annual net sales of \$99.2 million for Sonoma County. The project's net sales would also create at least \$26.6 million in net indirect spending and \$26.8 million of net induced spending for businesses in Sonoma County annually. The total secondary economic spending benefits generated by Alternative C's future hotel and casino resort operations would be \$53.4 million annually. This would be a long term beneficial impact to Sonoma County that would last for the duration of the casino's future operating period. No mitigation is required.

Sonoma County would also gain additional indirect and induced employment associated with the casino operation's indirect and induced spending. The total indirect and induced employment impacts associated with Alternative C are presented in **Table 4.7-9**. As discussed earlier, it is expected that project's future operations not only generate 890 direct jobs but also approximately 191 indirect jobs and 197 induced jobs within Sonoma County businesses. The total employment benefits generated by the future Alternative C would be 1,278 jobs. This would be a long term beneficial impact to Sonoma County that would last for the duration of the casino's operating period. No mitigation is required.

Impact 4.7.3-3: Effects to Housing Supply (Less than Significant)

The future employment associated with both the future construction and subsequent casino resort operations for Alternative C would be less than that projected for Alternative A. As a result, Alternative C's potential housing impact would be less than that associated with Alternative A. Therefore, Alternative C is projected to have a less than significant impact on housing in Sonoma County. No mitigation is required.

Impact 4.7.3 -4: Fiscal Effects to Sonoma County and the City of Cloverdale (Less than Significant)

Overall, as shown in **Table 4.7-11**, future total tax revenues generated for Sonoma County from Alternative C's indirect business tax changes are expected to offset the projected tax losses to the Sonoma County and the City of Cloverdale from the future transfer of the project site into trust lands. Therefore the adverse impact to Sonoma County and the City of Cloverdale is less than significant. No mitigation is required.

Impact 4.7.3-5: Effects to Community Infrastructure (Less than Significant)

The future employment associated with both the construction and subsequent casino resort operations for Alternative C would be less than that projected for Alternative A. Similarly, under Alternative C future casino visitation would be less than that projected to occur under Alternative A. As a result, Alternative C's potential community infrastructure impact would be less than that associated with Alternative A. Therefore, Alternative C is projected to have a less than significant impact on community infrastructure in Sonoma County. No mitigation is required.

Impact 4.7.3-6: Social Costs Associated with Problem Gambling (Potentially Significant)

As discussed for Alternative A, it is conservatively estimated that Sonoma County would need to employ 1.4 licensed counselors to treat the potential increased problem gambling population from the development of a casino at the project site. This impact is potentially significant and **Mitigation Measure 5.7-1** is recommended to reduce impacts to a less than significant level. Impacts to crime are analyzed further in **Section 4.10** (Public Services). As discussed for Alternative A, no adverse social impact from project-related increases in personal bankruptcies is projected to occur.

Significance after Mitigation: Less than Significant

Impact 4.7.3-7: Effects to the Cloverdale Rancheria of Pomo Indians (Beneficial Impact)

The annual revenues projected from Alternative C would be less than those projected to occur under Alternative A. Therefore, the magnitude of the project-related benefits to the Tribe and its members generated by Alternative C would be less than would be created by Alternative A. However, Alternative C is still expected to generate over \$130.5 million in total annual revenues and provide more than 1,170 local jobs. As a result, Alternative C is expected to have a beneficial impact on the Tribe. No mitigation is required.

4.7.4 Alternative D – Casino Only

The casino component proposed under this alternative is smaller than all the other casino developments (Alternatives A, B and C). Alternative D does not include any hotel, conference or entertainment center facilities. The casino facilities proposed under Alternative D are also smaller than those planned under Alternative C. As described under Alternative A, development of the proposed casino facility would result in economic effects from both the facility's initial construction and its subsequent future operations.

Impact 4.7.4-1: Direct Economic Effects from Construction and Operation (Beneficial Impact)***Construction Spending***

Construction required for Alternative D would generate substantial economic activity within Sonoma County and the Bay Area region. Direct impacts consist primarily of expenditures to local construction and engineering firms for construction of the project facilities. As shown in **Table 4.7-1**, ESA estimated the total construction cost for the proposed Alternative D project would be approximate \$84.3 million, approximately \$131.3 million less than Alternative C's estimated total construction cost. This is a beneficial economic impact to the Sonoma County and the region. No mitigation is required.

Construction Employment

Fewer jobs are expected to be generated by Alternative D construction activity due to the reduced scale of the proposed development compared to the other casino development alternatives. As shown in **Table 4.7-1**, it is projected that approximately 280 construction jobs would be created. Nonetheless, this is a beneficial economic impact to the Sonoma County and the region. No mitigation is required.

Operations Revenues

Alternative D would result in reduced annual future sales than those that would occur under Alternatives A, B or C. As shown in **Table 4.7-2**, Alternative D is projected to generate approximately \$107.2 million in total annual revenues. Based on marketing analysis and conservative assessments of its future customer base, the impact analysis conservatively projects that up to \$24.6 million of its future sales may be obtained from other existing businesses in Sonoma County. As a result, the net revenue impact of the proposed Alternative D casino facility is projected to be \$82.6 million. This is a beneficial economic impact to the Sonoma County and the region. No mitigation is required.

Operations Employment

Alternative D's future operations are expected to generate fewer jobs compared to the other casino development alternatives given the limited size of its proposed casino facilities. It is projected that approximately a total 960 casino jobs would be created by its future operations. Based on market analysis and conservative assessments of its future customer base, it is projected that the proposed casino facility's future operations would be have a net impact of creating approximately 740 new jobs within Sonoma County. This is a beneficial economic impact to the Sonoma County and the region. No mitigation is required.

Impact 4.7.4-2: Indirect Economic Effects from Construction and Operation (Beneficial Impact)

Indirect and Induced Impacts from Construction Spending

Alternative D's indirect and induced construction spending impacts on Sonoma County's economy would be similar to those of the other casino development alternatives but lesser in magnitude given the reduced construction necessary to build the smaller proposed casino. The total indirect and induced spending impacts associated with construction of Alternative D are presented in **Table 4.7-6**. It is expected that the \$84.3 million in total construction spending would generate approximately \$21.9 million in indirect spending and \$33.2 million of induced spending for businesses in Sonoma County. The total secondary economic spending benefits generated by construction would be \$55.1 million. This would be a temporary beneficial impact to Sonoma County that would last only for the duration of the construction period. No mitigation is required.

In conjunction with the secondary economic benefits from the construction spending, Sonoma County would also gain additional indirect and induced employment associated with the indirect and induced spending. The total indirect and induced employment impacts associated with construction of Alternative D are presented in **Table 4.7-7**. As discussed earlier, is expected that project's construction spending not only generate 280 direct construction jobs but also approximately 83 indirect jobs and 161 induced jobs within Sonoma County businesses. The total employment benefits generated by the future Alternative D construction would be 524 jobs. This would be a temporary beneficial impact to Sonoma County that would last only for the duration of the construction period. No mitigation is required.

Indirect and Induced Impacts from Operations

The indirect and induced operating spending impacts of Alternative D on Sonoma County's economy would be similar to those of the other casino development Alternatives but lesser in magnitude given the lower annual sales revenues generated at the its smaller casino facilities.

The projected indirect and induced spending impacts associated with Alternative D's future operations are presented in **Table 4.7-8**. Although Alternative D's proposed casino development is expected to generate total annual revenues of \$107.2 million, the impact analysis also conservatively projects that up to \$24.6 million of these future sales may be obtained from other existing businesses in Sonoma County. Therefore, it is estimated that Alternative D operations would generate annual net sales of \$82.6 million which would also create at least \$22.0 million in net indirect spending and \$22.1 million of net induced spending for businesses in Sonoma County annually. As a result, the total secondary economic spending benefits generated by Alternative D's future casino operations would be \$44.1 million annually. This would be a long term beneficial impact to Sonoma County that would last for the duration of the casino's future operating period. No mitigation is required.

Sonoma County would also gain additional indirect and induced employment associated with the indirect and induced spending from its future operations. The total indirect and induced employment impacts from Alternative D's are presented in **Table 4.7-9**. As discussed earlier, is expected that

project's future operations not only generate 740 net new jobs but also approximately 159 indirect jobs and 164 induced jobs within Sonoma County businesses. The total employment benefits generated by the future Alternative D would be 1,063 jobs. This would be a long term beneficial impact to Sonoma County that would last for the duration of the casino's operating period. No mitigation is required.

Impact 4.7.4-3: Effects to Housing Supply (Less than Significant)

The future employment associated with both the future construction and subsequent casino operations for Alternative D would be less than that projected for Alternative A. As a result, Alternative D's potential housing impact would be less than that associated with Alternative A. Therefore, Alternative D is projected to have a less than significant impact on housing in Sonoma County. No mitigation is required.

Impact 4.7.4-4: Fiscal Effects to Sonoma County and the City of Cloverdale (Less than Significant)

Overall, as shown in **Table 4.7-11**, future total tax revenues generated for Sonoma County from Alternative D's indirect business tax changes are expected to offset the projected tax losses to the Sonoma County and the City of Cloverdale from the future transfer of the project site into trust lands. Therefore the adverse impact to Sonoma County and the City of Cloverdale is less than significant. No mitigation is required.

Impact 4.7.4-5: Effects to Community Infrastructure (Less than Significant)

The future employment associated with both the construction and subsequent casino operations for Alternative D would be less than that projected for Alternative A. Similarly, under Alternative D future casino visitation would be less than that projected to occur under Alternative A. As a result, Alternative D's potential community infrastructure impact would be less than that associated with Alternative A. Therefore, Alternative D is projected to have a less than significant impact on community infrastructure in Sonoma County. No mitigation is required.

Impact 4.7.4-6: Social Costs Associated with Problem Gambling (Potentially Significant)

As discussed for Alternative A, it is conservatively estimated that Sonoma County would need to employ 1.4 licensed counselors to treat the potential increased problem gambling population from the development of a casino at the project site. This impact is potentially significant and **Mitigation Measure 5.7-1** is recommended to reduce impacts to a less than significant level. Impacts to crime

are analyzed further in **Section 4.10** (Public Services). As discussed for Alternative A, no adverse social impact from project-related increases in personal bankruptcies is projected to occur.

Significance after Mitigation: Less than Significant

Impact 4.7.4-7: Effects to the Cloverdale Rancheria of Pomo Indians (Beneficial Impact)

The annual revenues projected from Alternative D casino resort operations would be less than those projected to occur under Alternative A. Therefore, the magnitude of the project-related benefits to the Tribe and its members generated by Alternative D would be less than would be created by Alternative A. However, Alternative D is still expected to generate over \$107.2 million in total annual revenues and provide more than 960 local jobs. As a result, Alternative D is expected to have a beneficial impact on the Tribe. No mitigation is required.

4.7.5 Alternative E – Commercial Retail-Office Space

The facilities under Alternative E would be developed as a commercial retail and office center with light industrial warehouse space. Alternative E does not include any casino, hotel, conference or entertainment center facilities. However, development of the proposed office/warehouse facility would result in economic effects from both the facility's initial construction and its subsequent future operations.

Impact 4.7.5-1: Direct Economic Effects from Construction and Operation (Beneficial Impact)

Construction Spending

Construction required for Alternative E would generate substantial economic activity within Sonoma County and the Bay Area region. Direct impacts consist primarily of expenditures to local construction and engineering firms for construction of the project facilities. The construction cost estimates for the business park development alternative were \$150 per square for the office and restaurant facilities while the warehouse / industrial development was projected to cost \$100 per square foot. As shown in **Table 4.7-1**, ESA estimated the total construction cost for the proposed Alternative E project would be approximate \$45.2 million, approximately \$39.1 million less than Alternative D's estimated total construction cost. This is a beneficial economic impact to the Sonoma County and the region. No mitigation is required.

Construction Employment

For Alternative E, IMPLAN employment estimates have been used since the proposed new business park development would conform to a standard general use commercial building.

Fewer jobs are expected to be generated by Alternative E construction activity due to the reduced scale of the proposed development compared to most of the casino development alternatives.

However, as shown in **Table 4.7-1**, it is projected that approximately 300 construction jobs would be created – which would be a comparable amount of employment as that projected to be generated under Alternative D. In this case, this is a beneficial economic impact to the Sonoma County and the region. No mitigation is required.

Operations Revenues

Alternative E would result in lower annual future sales than those that would occur under the larger casino development Alternatives. As shown in **Table 4.7-2**, Alternative E is projected to generate approximately \$106.4 million in total annual revenues which is comparable to Alternative D's projected annual revenues.

For potential tenants of the proposed Alternative E office/warehouse development there are few potential benefits differentiating it from other similar non-Indian office/warehouse parks. Therefore, the extent of the proposed development attracting new business to Sonoma County is likely to be relatively limited. As a result, the commercial office and warehouse space would likely compete directly with other similar developments within Sonoma County for local tenants and customers. Consequently, most of the Tribe's projected future revenues under Alternative E may be expected to be obtained from other existing business parks in the Sonoma County or absorb future commercial / office space demand that could otherwise occur elsewhere in Sonoma County.¹²

As a result, while the future operations of the proposed commercial development and its tenants would generate business revenues and employment opportunities for Sonoma County, compared with the casino development alternatives, Alternative E would generate minimal direct net economic benefit for Sonoma County.

However, Alternative E would not generate any significant financial loss in sales or related tax revenues. Non-Indian owned businesses tenants at the proposed facility would pay the same sales and business property taxes. Alternative E is projected to generate annual revenues of up to \$106.4 million. This is a beneficial economic impact to the Sonoma County and the region. No mitigation is required.

Operations Employment

Alternative E's future operations are expected to generate fewer jobs compared to the other large casino development alternatives but its employment would be comparable to Alternative D. It is projected that approximately a total 935 commercial development jobs would be created by the future Alternative E operations. Although a major proportion of these jobs might not necessarily represent new employment for Sonoma County, as discussed above in the corresponding Operations Revenues impact discussion, the 935 future jobs projected to be created under Alternative E would represent a beneficial economic impact to the Sonoma County and the region. No mitigation is required.

¹² Under NEPA, the No Change Alternative F conditions have important distinction and clarification for this analysis. If the businesses that would occupy the Alternative E facility would not be relocating from other existing sites in Sonoma (i.e. they are from other Counties, or part of future or currently unmet real estate demand), then it is most appropriate for the analysis to represent their revenues as project-related economic benefits

Impact 4.7.5-2: Indirect Economic Effects from Construction and Operation (Beneficial Impact)

Indirect and Induced Impacts from Construction Spending

Alternative E's indirect and induced construction spending impacts on Sonoma County's economy would be similar to those of the other casino development alternatives but lesser in magnitude given the reduced construction involved for the commercial development. The total indirect and induced spending impacts associated with construction of Alternative E are presented in **Table 4.7-6**. It is expected that the \$45.2 million in total construction spending would generate approximately \$11.7 million in indirect spending and \$17.7 million of induced spending for businesses in Sonoma County. The total secondary economic spending benefits generated by the future Alternative A construction would be \$29.4 million. This would be a temporary beneficial impact to Sonoma County that would last only for the duration of the construction period. No mitigation is required.

In conjunction with the secondary economic benefits from the construction spending, Sonoma County would also gain additional indirect and induced employment associated with the indirect and induced spending. The total indirect and induced employment impacts associated with construction of Alternative E are presented in **Table 4.7-7**. As discussed earlier, is expected that project's construction spending not only generate 280 direct construction jobs but also approximately 83 indirect jobs and 144 induced jobs within Sonoma County businesses. The total employment benefits generated by the future Alternative E construction would be 524 jobs. This would be a temporary beneficial impact to Sonoma County that would last only for the duration of the construction period. No mitigation is required.

Indirect and Induced Impacts from Operations

The indirect and induced operating spending impacts of Alternative E on Sonoma County's economy would be similar other development alternatives. Although the Alternative E base sales are lower, the greater multiplier effects of its businesses result in comparable levels of secondary revenue and employment impacts to Sonoma County.

The projected indirect and induced spending impacts associated with Alternative E's future operations are presented in **Table 4.7-8**. Alternative E's development is expected to generate total annual revenues of \$106.4 million. Although it is possible that a major proportion of these jobs might not necessarily represent new employment for Sonoma County, as discussed above in the corresponding Operations Revenues impact discussion. Therefore, it is estimated that Alternative E would generate annual net sales of \$106.4 million which would also create at least \$30.7 million in net indirect spending and \$32.7 million of net induced spending for businesses in Sonoma County annually. As a result, the total secondary economic spending benefits generated by Alternative E's would be \$63.4 million annually. This would be a long term beneficial impact to Sonoma County that would last for the duration of operating period. No mitigation is required.

Sonoma County would also gain additional indirect and induced employment associated with the indirect and induced spending from its future operations. The total indirect and induced employment impacts from Alternative E's future operations are presented in **Table 4.7-9**. As discussed earlier,

is expected that project's future operations not only generate 935 new jobs but also approximately 249 indirect jobs and 266 induced jobs within Sonoma County businesses. The total employment benefits generated by Alternative E would be 1,450 jobs. This would be a long term beneficial impact to Sonoma County that would last for the duration of the casino's operating period. No mitigation is required.

Impact 4.7.5-3: Effects to Housing Supply (Less than Significant)

The future employment associated with both the future construction and subsequent office and warehouse operations for Alternative E would be less than that projected for Alternative A. As a result, Alternative E's potential housing impact would be less than that associated with Alternative A. Therefore, Alternative E is projected to have a less than significant impact on housing in Sonoma County. No mitigation is required.

Impact 4.7.5-4: Fiscal Effects to Sonoma County and the City of Cloverdale (Less than Significant)

Overall, as shown in **Table 4.7-11**, future total tax revenues generated for Sonoma County from Alternative E's indirect business tax changes are expected to offset the projected tax losses to the Sonoma County and the City of Cloverdale from the future transfer of the project site into trust lands. Therefore the adverse impact to Sonoma County and the City of Cloverdale is less than significant. No mitigation is required.

Impact 4.7.5-5: Effects to Community Infrastructure (Less than Significant)

The future employment associated with both the construction and subsequent office and warehouse operations for Alternative E would be less than that projected for Alternative A. Under Alternative E future local visitation would be far less than that projected to occur under the casino development alternatives. As a result, Alternative E's potential community infrastructure impact would be less than that associated with casino development alternatives. Therefore, Alternative E is projected to have a less than significant impact on community infrastructure in Sonoma County. No mitigation is required.

Impact 4.7.5-6: Social Costs Associated with Problem Gambling (No Impact)

No casino operations are proposed under Alternative E. Therefore, Alternative E would have no effect on problem gambling in Sonoma County. No mitigation is required.

Impact 4.7.5-7: Effects to the Cloverdale Rancheria of Pomo Indians (Beneficial Impact)

The annual revenues projected from Alternative E commercial operations would be less than those projected to occur under Alternative A. Therefore, the magnitude of the project-related benefits to the Tribe and its members generated by Alternative E would be less than would be created by Alternative A. However, Alternative E is still expected to generate over \$106.4 million in total annual revenues and provide more than 935 local jobs. As a result, Alternative E is expected to have a beneficial impact on the Tribe. No mitigation is required.

4.7.6 Alternative F – No Action

Under Alternative F it is foreseeable that the project site would be developed with business park and industrial uses similar to Alternative E. Direct and indirect economic effects could be comparable to Alternative E depending on the scale and uses on site. The development would have a beneficial impact on the economy during the construction and operation of the facilities. As with Alternative E, it is anticipated that the existing housing supply would be adequate. Fiscal impacts to the City and County would be positive from incurred property and sales tax. It is anticipated that impacts to community infrastructure would be similar to Alternative E and less than significant.

4.7.7 References

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4.8 Transportation

The following sections present analysis of potential effects associated with the Proposed Action and alternatives on transportation conditions under a short-term (2015) scenario, including changes to key intersections and roadways, and pedestrian, bicycle, and public transit facilities. Measures necessary to mitigate significant impacts are identified in **Section 5.8**. Potential effects under the buildout (2030) scenario are presented in **Section 4.16** (Cumulative Effects). The analyses rely on a transportation impact analysis prepared by Whitlock & Weinberger Transportation, Inc. (W-Trans) for this EIS (see **Appendix G** for technical documentation in support of the analysis).

As described in **Section 3.8**, standard intersection analyses use Level of Service (LOS) to rate traffic operation on various types of facilities based on the Highway Capacity Manual, which contains methodologies for various types of intersection control (e.g., stop signs, traffic signals, and roundabout), all of which are related to a measurement of delay in average number of seconds per vehicle. Potential need for installing traffic signals or other traffic controls measures such as roundabouts at stop-controlled intersections are evaluated using peak-hour warrants adopted by the California Department of Transportation (Caltrans). Freeway analysis methodologies contained in the HCM uses variables such as traffic volumes, geometric configuration of the freeway (i.e., number of lanes, widths of lanes and shoulders), topography, the percentage of heavy vehicles, and free-flow speeds to determine LOS criteria including the “service flow rate”, indicative of the travel demand on a freeway facility.

4.8.1 Alternative A – Proposed Action

Site Access

Access to the project site is proposed via five driveways that would connect to Asti Road. The two most southern access points combine into one entrance to the project site. The site plans (see **Section 2.0**, Alternatives) show the most southern driveway as being limited to right turns, inbound only and the second southernmost driveway as an egress from the site only. The third driveway, found in the middle of the site’s frontage, is proposed to have full access, as would the remaining two driveways to the north of the center driveway. The northern and southern boundaries of the project site have potential sight distance constraints due to road curvature and vegetation. Therefore, for the purposes of this analysis and to provide the most conservative assessment, all of the traffic associated with Alternative A was assigned to one central access point.

Project Trip Generation

The anticipated vehicle trip generation for new development is generally based on standard trip generation rates published in Trip Generation (ITE, 2003). However, because Trip Generation does not contain rates for casinos, the rates for Alternatives A through D also utilized data contained in the Graton Rancheria Casino and Hotel Traffic Impact Study (KHA, 2007). Also, because Trip Generation includes limited data on land uses like the entertainment and convention portions of Alternative A, trip generation data published by SANDAG (San Diego Association of Governments) was used (SANDAG, 2003). ITE’s Trip Generation was used to obtain trip rates

for the proposed restaurant, retail uses, and hotel. It was assumed that some, if not most, of the trips to the ancillary facilities and hotel would also be visitors to the gaming facility. Therefore, a reduction rate of 67 percent was applied to the non-gaming functions to better simulate actual vehicle trips to the project site as a whole. Although traffic associated with concerts at the event center would either occur outside of the peak traffic period or be attended predominantly by patrons of the casino and hotel, to ensure that potential impacts were not underestimated, trips generated by the event and convention center were added to the total trip generation (with the same 67-percent deduction applied). As shown in **Table 4.8-1**, Alternative A is estimated to generate an average of about 9,553 daily vehicle trips, which includes about 909 trips during the weekday p.m. peak hour and 1,318 trips during the weekend midday peak hour.

**TABLE 4.8-1
TRIP GENERATION SUMMARY – ALTERNATIVE A**

Land Use	Units	Weekday Daily			Weekday PM Peak Hour			Weekend Peak Hour			
		Rate	Trips	Rate	Trips	In	Out	Rate	Trips	In	Out
Casino	80 ksf	39.43	3,154	5.15	412	210	202	5.53	443	235	208
High-Turnover (Sit-Down) Restaurant	52.5 ksf	127.15	6,675	10.92	573	350	223	20.00	1,050	662	388
Specialty Retail	99.5 ksf	44.32	4,410	2.71	270	119	151	8.67	863	449	414
Hotel	244 rooms	8.92	2,176	0.70	171	84	87	0.87	212	119	93
Entertainment Center	28.1 ksf	80.00	2,240	6.40	180	108	72	6.87	192	102	90
Convention Center	48.6 ksf	80.00	3,888	6.40	311	187	124	6.87	334	177	157
Subtotal (non-gaming)			19,389		1,505	848	657		2,651	1,509	1,142
Internal capture	-67%		-12,990		-1,008	-568	-440		-1,776	-1,011	-765
Net total (non-gaming)			6,399		497	280	217		875	498	377
Total Net Vehicle Trips			9,553		909	490	419		1,318	733	585

ksf = 1,000 square feet

SOURCES: W-Trans, using trip generation rates from ITE, *Trip Generation*; SANDAG, *Traffic Generation Manual*; and KHA, *Graton Rancheria Casino and Hotel Traffic Impact Study*

Project Trip Distribution and Assignment

Trip distribution assumptions were primarily based upon the Gaming and Hotel Market Assessment for Cloverdale Rancheria (The Innovation Group, June 2007), as well as existing traffic patterns and locations of potential trip origins throughout the City. The market assessment included a breakdown of the potential Cloverdale regional market related to gamer visits. Percentages of gamer visits by location were then categorized into site specific routes for the project site and correlated to anticipated routes. The applied trip distribution assumptions are summarized in **Table 4.8-2**.

It is likely that some visitors to the project site would also drive into other areas of Cloverdale for highway commercial uses and other tourism ventures as part of their visit. These trips are most likely to occur when visitors are leaving the site and before they get back onto the freeway.

**TABLE 4.8-2
TRIP DISTRIBUTION – ALTERNATIVE A**

Route	Percent
U.S. 101 South via South Cloverdale Interchange	63%
U.S. 101 South via Citrus Fair Drive Interchange	27%
U.S. 101 North via Citrus Fair Drive Interchange	7%
SR 128 West via Citrus Fair & Cloverdale Blvd	1%
First Street East	2%
Total	100%

SOURCES: W-Trans, and The Innovation Group

Therefore, it was assumed that 10 percent of the total traffic anticipated to head south on U.S. 101 would first divert to one of several destinations including Downtown Cloverdale, Cloverdale Boulevard (via Citrus Fair Drive), Cloverdale Boulevard (via South Cloverdale), and Treadway Drive. **Figure 4.8-1** shows Alternative A trips at the study intersections.

Impact 4.8.1-1: Peak Hour Intersection Performance (Potentially Significant)

As shown in **Table 4.8-3**, with the addition of traffic volumes generated by Alternative A to the baseline Year 2015 (described in **Section 3.8**), operations at three unsignalized intersections would operate unacceptably during one or both of the peak periods; one would degrade to unacceptable levels of service, the unacceptable service level at another one would worsen, and the newly created project access intersection would operate unacceptably.¹ The U.S. 101 Northbound Ramps / South Interchange intersection, which would operate at an unacceptable LOS D under baseline conditions during the weekday p.m. peak hour, would degrade to an unacceptable LOS F. The Asti Road / South Interchange intersection would degrade from an acceptable LOS A to an unacceptable LOS F during both the weekday p.m. peak hour and the weekend peak hour. The Asti Road / Project Access intersection would operate at LOS F during the weekend peak hour. The LOS calculation sheets are provided in **Appendix G**. This is a potentially significant impact. **Mitigation Measures 5.8-1, 5.8-2 and 5.8-3** (signalization option) would reduce this impact to less than significant. Alternatively, **Mitigation Measures 5.8-1 and 5.8-4** (roundabout option) would reduce this impact to less than significant.

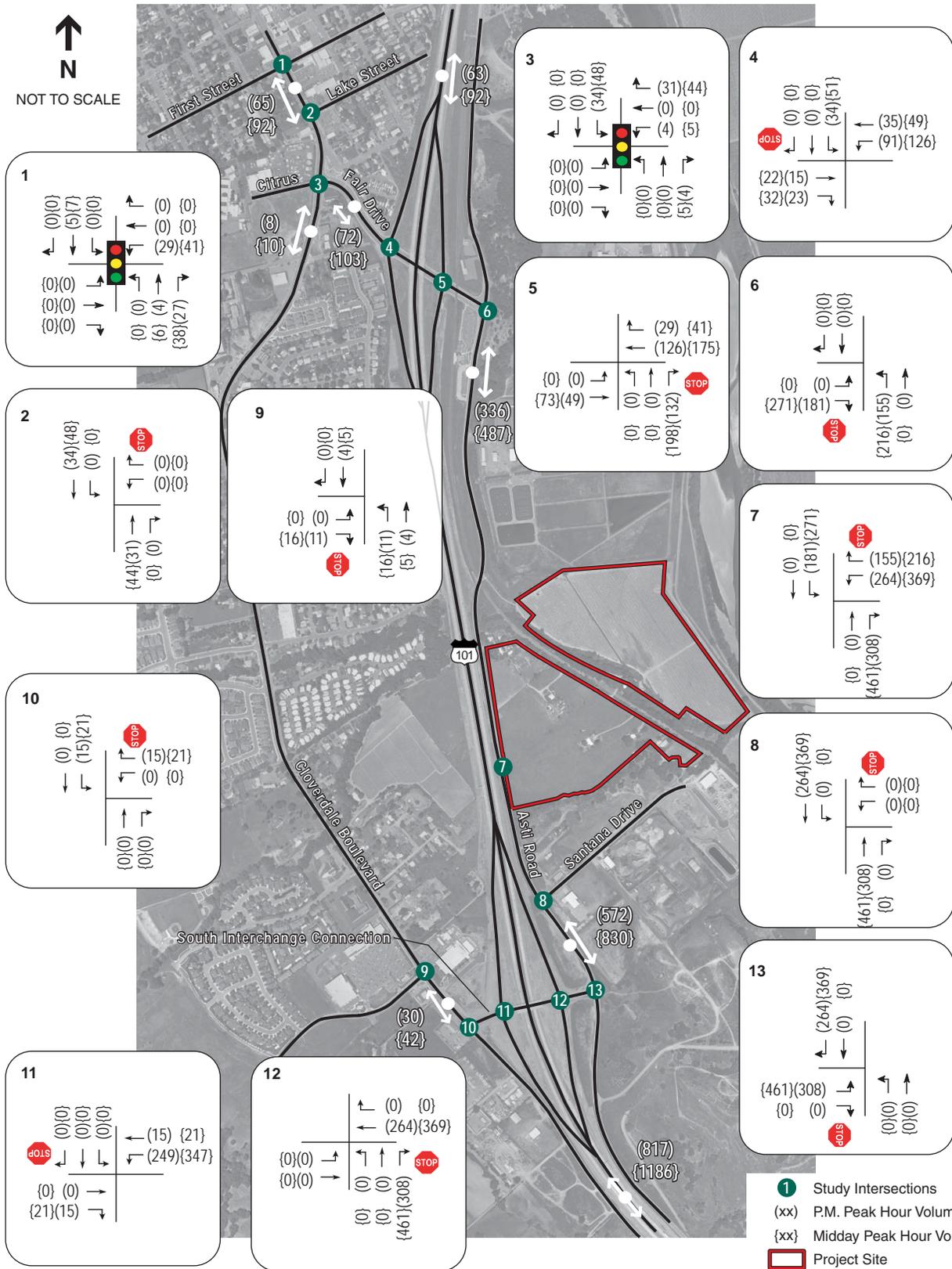
Traffic signal warrants would be met for the following intersections under the projected 2015 plus Alternative A volumes.

- Asti Road / Project Access
- U.S. 101 Northbound Ramps / South Interchange
- Asti Road / South Interchange

Significance after Mitigation: Less than Significant

¹ As stated in Section 3.8 (LOS Standards), the mid-LOS D standards established by the City of Cloverdale are to be applied to the average intersection delay, and not for any single movement or approach. The approach LOS shown in Table 4.8-3 (and LOS summary tables for Alternatives B through E) for side street Stop-controlled intersections is presented for information purposes only.

↑
N
NOT TO SCALE



SOURCE: w-trans, 2009; and ESA, 2011

Cloverdale Rancheria Resort Casino Project EIS . 207737

Figure 4.8-1
Alternative A Traffic Volumes

**TABLE 4.8-3
SUMMARY OF INTERSECTION AVERAGE DELAY AND LEVELS OF SERVICE – ALTERNATIVE A**

Intersection	Existing Conditions		Short-Term (2015) Baseline		Short-Term (2015) plus Alternative A	
	PM Peak	Weekend Peak	PM Peak	Weekend Peak	PM Peak	Weekend Peak
1. Cloverdale Blvd / First Street	11.6/B	11.2/B	12.0/B	11.7/B	12.7/B	12.7/B
2. Cloverdale Blvd / Lake Street	2.3/A	2.0/A	2.0/A	1.7/A	2.1/A	1.6/A
<i>Westbound Approach</i>	19.3/C	16.0/C	20.1/C	14.1/B	21.6/C	15.1/C
3. Cloverdale Blvd / Citrus Fair Drive	13.3/B	19.0/C	14.6/B	21.4/C	14.8/B	22.0/C
4. U.S. 101 S. Ramps / Citrus Fair Dr.	0.9/A	1.0/A	1.1/A	1.2/A	2.3/A	3.1/A
<i>Southbound Approach</i>	9.8/A	9.0/A	10.4/B	9.3/A	14.6/B	13.7/B
5. U.S. 101 N. Ramps / Citrus Fair Dr	8.5/A	6.6/A	9.1/A	6.6/A	8.3/A	5.6/A
<i>Northbound Approach</i>	10.6/B	9.8/A	12.2/B	10.2/B	13.5/B	10.9/B
6. Asti Road / Citrus Fair Drive	5.0/A	3.4/A	4.8/A	4.0/A	7.4/A	7.7/A
<i>Eastbound Approach</i>	9.8/A	9.0/A	10.3/B	9.3/A	11.3/B	10.5/B
7. Asti Road / Project Access	NA	NA	NA	NA	25.6/C	**/F
<i>Westbound Approach</i>	NA	NA	NA	NA	63.5/F	**/F
<i>Mitigated (Signalized)</i>					20.6/C	25.1/C
8. Asti Road / Santana Drive	2.0/A	0.4/A	1.4/A	0.3/A	0.6/A	0.1/A
<i>Westbound Approach</i>	9.2/A	8.5/A	9.7/A	8.6/A	15.3/C	11.5/B
9. Cloverdale Boulevard / Treadway Drive	3.3/A	3.5/A	3.1/A	3.4/A	3.2/A	3.6/A
<i>Eastbound Approach</i>	12.1/B	11.1/B	12.3/B	12.3/B	12.3/B	12.5/B
10. Cloverdale Boulevard / South Interchange	9.7/A	8.0/A	10.8/B	7.7/A	11.1/B	7.9/A
<i>Westbound Approach</i>	13.4/B	10.6/B	16.1/C	11.1/B	16.6/C	11.4/B
11. U.S. 101 SB Ramps / So. Interchange	1.1/A	0.9/A	2.5/A	2.3/A	5.2/A	5.8/A
<i>Southbound Approach</i>	12.3/B	10.6/B	17.3/C	12.8/B	37.2/E	31.7/D
12. U.S. 101 NB Ramps / So. Interchange	13.7/B	9.3/A	30.2/D	8.0/A	71.5/F	12.5/B
<i>Northbound Approach</i>	19.0/C	13.2/B	51.9/F	14.7/B	**/F	23.0/C
<i>Mitigated (Signalized)</i>					26.2/C	26.2/C
<i>Mitigated (Roundabout)</i>					7.8/A	6.1/A
13. Asti Road / South Interchange	4.3/A	4.2/A	7.9/A	7.6/A	67.3/F	**/F
<i>Eastbound Approach</i>	9.5/A	9.3/A	13.5/B	12.0/B	**/F	**/F
<i>Mitigated (Signalized)</i>					33.4/C	37.7/D
<i>Mitigated (Roundabout)</i>					7.8/A	6.1/A

Results are shown as Delay/LOS; Delay is measured in average seconds per vehicle; LOS = Level of Service
 Bold=Deficient LOS (relevant to impact determination); Shaded Cells=Queuing exceeds available storage capacity; the designation **/F signifies that delay is projected to be greater than 120 seconds per vehicle, and delays of that magnitude are less precise.

SOURCE: W-Trans, 2009

Impact 4.8.1-2: Freeway Segment Performance (Less than Significant)

With the addition of traffic volumes generated by Alternative A to the baseline Year 2015 Short-term traffic (described in **Section 3.8**), all of the study freeway segments of U.S. 101 from the Sonoma-Mendocino County Line to the Dry Creek Road Interchange in Healdsburg would continue to operate at an acceptable LOS B or better in both the northbound and southbound directions during the weekday p.m. peak hour. Results of the freeway analysis are included in **Appendix G**. This impact would be less than significant.

Impact 4.8.1-3: Bicycle, Pedestrian and Public Transit Impacts (Potentially Significant)

Bicycle Traffic. The SMART rail line and proposed SMART Path bisect the project site. Once constructed, the SMART Path would create a direct pathway connection between the project site and the Cloverdale Transit Depot, providing convenient access for patrons and employees who ride transit or are headed to downtown Cloverdale via the Citrus Fair Drive undercrossing of U.S. 101. It is recommended that the project coordinate onsite access improvements with the SMART Rail and Pathway project to ensure safe and convenient access to and from the path for its employees and patrons.

The project would be expected to generate a small volume of bicycle traffic, with primary orientation to either the Cloverdale Transit Depot/SMART train station or the downtown area. Access to both of these destinations is already served by bicycle lanes, which are expected to operate adequately and safely with the addition of project-generated bicycle traffic, and therefore, no significant impacts (and no required mitigation measures) related to bicycle traffic are anticipated. However, bicyclists heading north on Asti Road from the project site must cross the SMART tracks at an oblique angle. While it is assumed that SMART will be upgrading all at-grade railroad crossings as a component of its efforts to rehabilitate the rail line and restore train service, it is recommended that the bicycle crossings of the rail line be upgraded with compliant crossing gates, tread surfaces, and other appropriate measures to ensure safety for non-motorized users.

Bicycle Recommendations

- Proposed project frontage improvements should include bike lane rehabilitation including signs and markings per the California Manual on Uniform Traffic Control Devices.
- Per the City's Bicycle and Pedestrian Master Plan, secure short-term bicycle parking (bicycle racks) should be provided convenient to the project's entry locations.
- Long-term bicycle parking in the form of (bicycle lockers) should be provided at a convenient location for project employees.
- Adequate storage and locker facilities for bicycle commuters should be provided, and shower facilities should be considered per the City's Bicycle and Pedestrian Master Plan.
- The project should provide a small fleet of loaner or rental bicycles to encourage non-motorized access between the project site and destinations in Cloverdale.

- The project should provide right-of-way or an easement as appropriate to accommodate the proposed Cloverdale River Trail along the eastern edge of the project fronting the Russian River.
- All bicycle crossings of the SMART rail line should be retrofit with compliant crossing gates, tread surfaces, and other appropriate measures to ensure safety for non-motorized users.
- The project should coordinate onsite access improvements with the SMART Rail and Pathway project to ensure safe and convenient access to and from the path for its employees and patrons

Pedestrian Traffic. Alternative A would be expected to generate a small volume of pedestrian traffic, with primary orientation to the Cloverdale Transit Depot/SMART train station and/or the Citrus Fair Drive undercrossing of US 101 leading to downtown Cloverdale. Currently, there are no pedestrian facilities serving the Asti Road corridor. However, the SMART rail improvements would include the creation of a multi-use trail paralleling the tracks, which can serve both bicyclists and pedestrians. The railroad tracks and proposed path bisect the project property and extend north to the Cloverdale Transit Depot and south to neighboring communities and beyond. While the exact location of the SMART path in the vicinity of the proposed project has yet to be determined, preliminary analysis indicates that it may be located along the east side of the tracks. The path would cross Asti Road approximately one-quarter mile north of the project site. Therefore, any pedestrians walking between the train station and project site would not have any pedestrian facilities along this short section, an adverse effect for those pedestrians. This is a potentially significant impact.

Mitigation Measure 5.8-5 would reduce this impact to less than significant.

While it is assumed that SMART will be upgrading all at-grade railroad crossings as a component of its efforts to rehabilitate the rail line and restore train service, it is recommended that the pedestrian crossings of the rail line be upgraded with compliant crossing gates, tread surfaces, and other appropriate measures to ensure safety for non-motorized users.

Pedestrian Recommendations

- Project frontage improvements along Asti Road should include sidewalks.
- All pedestrian crossings of the SMART rail line should be retrofit with compliant crossing gates, tread surfaces, and other appropriate measures to ensure safety for non-motorized users.

Public Transit. Existing local and regional transit service are expected to serve the proposed project adequately. With train service anticipated to begin in the Year 2014, and with the station located approximately 0.6 miles from the project site, the SMART system would be expected to generate ridership related to Alternative A, including both employees and casino patrons. There are currently no plans for a shuttle bus serving the Cloverdale station; therefore, connections between the train and the project site would take place via bicycle and pedestrian modes that are discussed above. It would be beneficial if the Casino provided a shuttle as that could reduce the amount of vehicle traffic generated compared to what is projected in this study.

Transit Recommendations

- Shuttle service between the proposed project and the Cloverdale Transit Depot is recommended as a measure to increase transit ridership to the project site. Shuttle service between downtown Cloverdale and the proposed project should also be considered.
- The project should implement standard Transportation Demand Management (TDM) measures to encourage employee carpooling, transit, and bicycle and pedestrian trips to work. There are a variety of standard measures and incentives that are commonly implemented at employment sites throughout the County that could be utilized including parking practices, transit subsidies, shift schedules, and others.

Significance after Mitigation: Less than Significant

Impact 4.8.1-4: Intersection Safety (Potentially Significant)

Alternative A would add significant traffic volumes to the U.S. 101 Northbound Ramps / South Interchange and Asti Road / South Interchange intersections. These intersections currently have collision rates that are somewhat greater than the Statewide Average rates (see Table 3.8-4, **Section 3.8**). This is a potentially significant impact. At other intersections, such as at the Citrus Fair interchange and downtown Cloverdale, traffic volumes generated by Alternative A would be lower and would not affect the collision rates, and a less than significant impact would occur. **Mitigation Measures 5.8-1, 5.8-2 and 5.8-3** (signalization option) would reduce this impact to less than significant. Alternatively, **Mitigation Measures 5.8-1 and 5.8-4** (roundabout option) would reduce this impact to less than significant.

Significance after Mitigation: Less than Significant

Impact 4.8.1-5: Parking Capacity (No Impact)

Using methodologies contained in Shared Parking (ULI, 2006), Alternative A would generate a peak parking demand of about 3,182 spaces, and the proposed 3,400 space onsite supply would be sufficient.² No impact would result.

Impact 4.8.1-6: Construction Impacts (Less than Significant)

Construction activities associated with Alternative A would generate off-site traffic that would include the initial delivery of construction vehicles and equipment to the project site, the daily arrival and departure of construction workers, and the delivery of materials throughout the construction

² The ULI shared parking methodology focuses heavily on temporal data, determining when the overall peak demand for various land uses would occur, including what time of day, whether it is a weekday or weekend, and what month of the year it is. The recommended parking supply is then tied to that maximum demand period. The base input data includes the proposed mix of land uses, including quantities of each type of use.

period and removal of construction debris. Deliveries would include shipments of concrete, lumber, and other building materials for onsite structures, utilities (e.g., plumbing equipment and electrical supplies) and paving and landscaping materials.

Construction-generated traffic would be temporary, and therefore, would not result in any long-term degradation in operating conditions on roadways in the project area. The impact of construction-related traffic would be a temporary and intermittent, lessening of the capacities of streets in the project site vicinity because of the slower movements and larger turning radii of construction trucks compared to passenger vehicles. However, given the proximity of the project site to regional roadway network (i.e., U.S. 101), use of local roads by construction trucks would be minimal. Most construction traffic would be dispersed throughout the day. Thus, the temporary increase would not significantly disrupt daily traffic flow on roadways in the project site vicinity, and a less than significant impact would result.

4.8.2 Alternative B – Reduced Hotel and Casino

Site Access

Access to the project site is proposed via five driveways that would connect to Asti Road. The two most southern access points combine into one entrance to the project site. The site plans (see **Section 2.0**, Alternatives) show the most southern driveway as being limited to right-turns inbound only and the second southernmost driveway as an egress from the site only. The third driveway, found in the middle of the site's frontage, is proposed to have full access, as would the remaining two driveways to the north of the center driveway. The northern and southern boundaries of the property have potential sight distance issues due to road curvature and vegetation. Therefore, for the purposes of this analysis and to provide the most conservative assessment, all of the traffic associated with Alternative B was assigned to one central access point.

Project Trip Generation

The anticipated vehicle trip generation for new development is generally based on standard trip generation rates published in Trip Generation (ITE, 2003). However, because Trip Generation does not contain rates for casinos, the rates for Alternatives A through D also utilized data contained in the Graton Rancheria Casino and Hotel Traffic Impact Study (KHA, 2007). Also, because Trip Generation includes limited data on land uses like the entertainment and convention portions of Alternative A, trip generation data published by SANDAG (San Diego Association of Governments) was used (SANDAG, 2003). ITE's Trip Generation was used to obtain trip rates for the proposed restaurant, retail uses, and hotel. It was assumed that some, if not most, of the trips to the ancillary facilities and hotel would also be visitors to the gaming facility. Therefore, a reduction rate of 67 percent was applied to the non-gaming functions to better simulate actual vehicle trips to the project site as a whole. Although traffic associated with concerts at the event center would either occur outside of the peak traffic period or be attended predominantly by patrons of the casino and hotel, to ensure that potential impacts were not underestimated, trips generated by the event center were added to the total trip generation (with the same 67-percent deduction applied).

As shown in **Table 4.8-4**, Alternative B is estimated to generate about 6,691 daily vehicle trips, which includes about 686 trips during the weekday p.m. peak hour and 985 trips during the weekend midday peak hour.

Project Trip Distribution and Assignment

Trip distribution assumptions were primarily based upon the Gaming and Hotel Market Assessment for Cloverdale Rancheria (The Innovation Group, June 2007), as well as existing traffic patterns and locations of potential trip origins throughout the City. The market assessment included a breakdown of the potential Cloverdale regional market related to gamer visits. Percentages of gamer visits by location were then categorized into site specific routes for the project site and correlated to anticipated routes. The applied trip distribution assumptions are summarized in **Table 4.8-5**.

**TABLE 4.8-4
TRIP GENERATION SUMMARY – ALTERNATIVE B**

Land Use	Units	Weekday Daily			Weekday PM Peak Hour			Weekend Peak Hour			
		Rate	Trips	Rate	Trips	In	Out	Rate	Trips	In	Out
Casino	67.5 ksf	39.43	2,662	5.62	379	193	186	5.53	374	198	176
High-Turnover (Sit-Down) Restaurant	37.8 ksf	127.15	4,806	10.92	413	252	161	20.00	756	476	280
Specialty Retail	87.9 ksf	44.32	3,896	2.71	238	105	133	9.06	796	414	382
Hotel	141 rooms	8.92	1,258	0.70	99	49	50	0.87	123	69	54
Entertainment Center	28.1 ksf	80.00	2,248	6.40	180	108	72	6.30	177	94	83
Subtotal (non-gaming)			12,208		930	514	416		1,852	1,053	799
Internal capture	-67%		-8,179		-623	-344	-279		-1,241	-706	-535
Net total (non-gaming)			4,029		307	170	137		611	347	264
Total Net Vehicle Trips			6,691		686	363	323		985	545	440

ksf = 1,000 square feet

SOURCES: W-Trans, using trip generation rates from ITE, Trip Generation; SANDAG, Traffic Generation Manual; and KHA, Graton Rancheria Casino and Hotel Traffic Impact Study

**TABLE 4.8-5
TRIP DISTRIBUTION – ALTERNATIVE B**

Route	Percent
U.S. 101 South via South Cloverdale Interchange	63%
U.S. 101 South via Citrus Fair Drive Interchange	27%
U.S. 101 North via Citrus Fair Drive Interchange	7%
SR 128 West via Citrus Fair & Cloverdale Blvd	1%
First Street East	2%
Total	100%

SOURCES: W-Trans, and The Innovation Group

The market assessment projected that 90 percent of the visitors would arrive from destinations to and from the south with the majority of the balance from the north and east. Traffic to and from the

south would have two options in traveling to and from the project site, either via the South Interchange (located approximately 0.50 mile south of the site) or the Citrus Fair Interchange (located approximately 0.60 mile north of the site). Because the applicant intends to market patron site access via the Citrus Fair Interchange, but access to and from the south would be more convenient via the South Interchange, it was assumed that only 30 percent of the vehicle trips oriented to and from U.S. 101 south of Cloverdale, or 27 percent of the total trips (30% of 90%=27%), would occur via the Citrus Fair Drive interchange, with the balance (70% of 90% = 63%) utilizing the South Interchange. All of the trips oriented to and from the north on U.S. 101 were assumed to use the Citrus Fair Drive interchange.

It is likely that some visitors to the project site would also drive into other areas of Cloverdale for highway commercial uses and other tourism ventures as part of their visit. These trips are most likely to occur when visitors are leaving the site and before they get back onto the freeway. Therefore, it was assumed that 10 percent of the total traffic anticipated to head south on U.S. 101 would first divert to one of several destinations including Downtown Cloverdale, Cloverdale Boulevard (via Citrus Fair Drive), Cloverdale Boulevard (via South Cloverdale), and Treadway Drive. **Figure 4.8-2** shows Alternative B trips at the study intersections.

Impact 4.8.2-1: Peak Hour Intersection Performance (Potentially Significant)

As shown in **Table 4.8-6**, with the addition of traffic volumes generated by Alternative B to the baseline Year 2015 Short-term traffic (described in **Section 3.8**), operations at three unsignalized intersections would operate unacceptably during one of the peak periods; one would degrade to unacceptable levels of service, the unacceptable service level at another one would worsen, and the newly created project access intersection would operate unacceptably.³ The U.S. 101 Northbound Ramps / South Interchange intersection, which would operate at an unacceptable LOS D under baseline conditions during the weekday peak hour, would degrade to an unacceptable LOS F. The Asti Road / South Interchange intersection would degrade from an acceptable LOS A to an unacceptable LOS F during the weekend peak hour. The Asti Road / Project Access intersection would operate at LOS F during the weekend peak hour. The LOS calculation sheets are provided in **Appendix G**. This is a potentially significant impact. **Mitigation Measures 5.8-1, 5.8-2 and 5.8-3** (signalization option) would reduce this impact to less than significant. Alternatively, **Mitigation Measures 5.8-1 and 5.8-4** (roundabout option) would reduce this impact to less than significant.

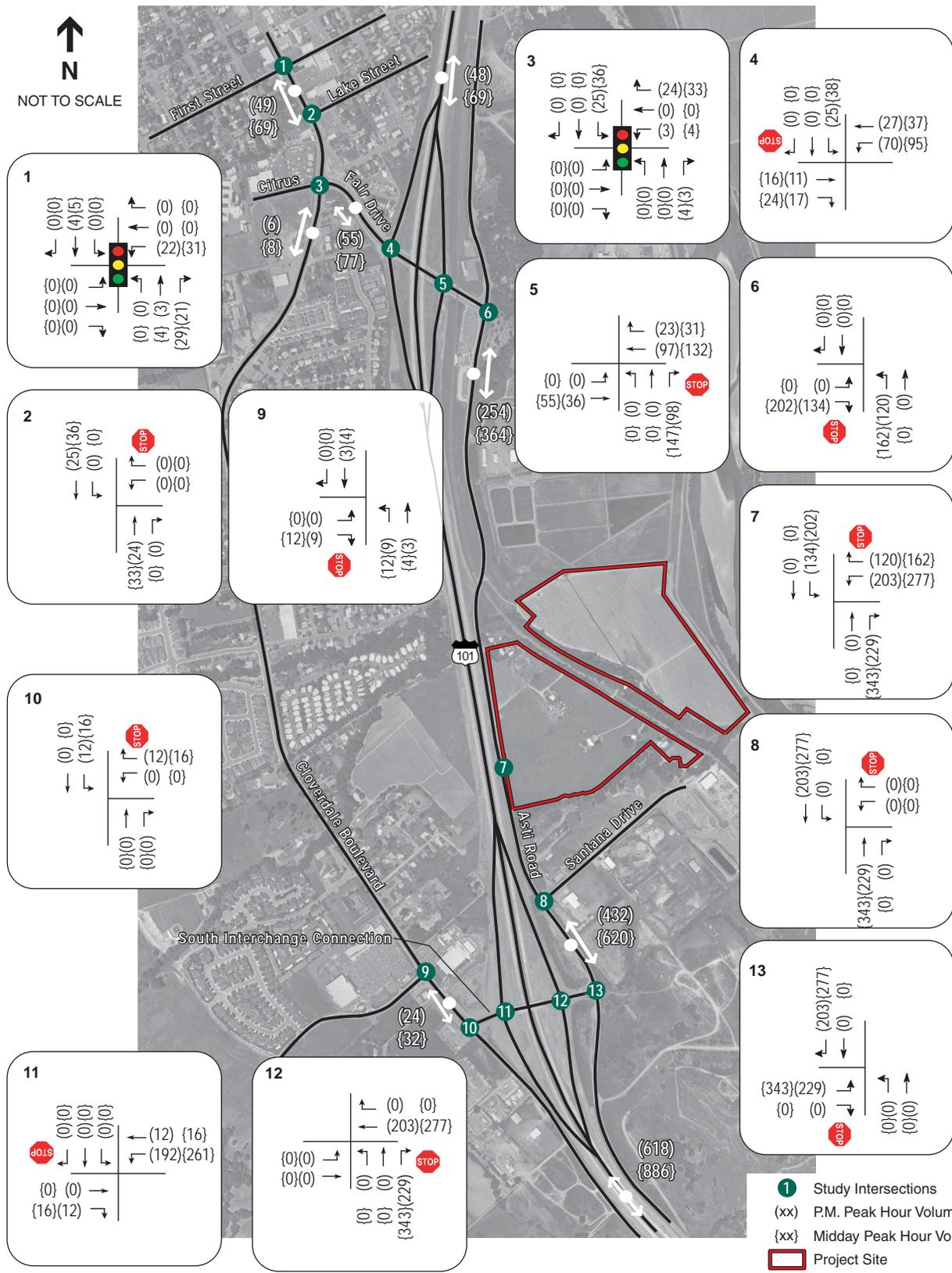
Traffic signal warrants would be met for the following intersections under the projected 2015 plus Alternative B volumes.

- Asti Road / Project Access
- U.S. 101 Northbound Ramps / South Interchange
- Asti Road / South Interchange.

Significance after Mitigation: Less than Significant

³ See Footnote 1, page 4.8-3.

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SOURCE: w-trans, 2009; and ESA, 2011

Cloverdale Rancheria Resort Casino Project EIS . 207737

Figure 4.8-2
Alternative B Traffic Volumes

**TABLE 4.8-6
SUMMARY OF INTERSECTION AVERAGE DELAY AND LEVELS OF SERVICE – ALTERNATIVE B**

Intersection	Existing Conditions		Short-Term (2015) Baseline		Short-Term (2015) plus Alternative B	
	PM Peak	Weekend Peak	PM Peak	Weekend Peak	PM Peak	Weekend Peak
1. Cloverdale Blvd / First Street	11.6/B	11.2/B	12.0/B	11.7/B	12.5/B	12.5/B
2. Cloverdale Blvd / Lake Street	2.3/A	2.0/A	2.0/A	1.7/A	2.1/A	1.6/A
<i>Westbound Approach</i>	19.3/C	16.0/C	20.1/C	14.1/B	21.2/C	14.8/B
3. Cloverdale Blvd / Citrus Fair Drive	13.3/B	19.0/C	14.6/B	21.4/C	14.8/B	21.9/C
4. U.S. 101 S. Ramps / Citrus Fair Dr.	0.9/A	1.0/A	1.1/A	1.2/A	2.0/A	2.7/A
<i>Southbound Approach</i>	9.8/A	9.0/A	10.4/B	9.3/A	13.2/B	12.1/B
5. U.S. 101 N. Ramps / Citrus Fair Dr	8.5/A	6.6/A	9.1/A	6.6/A	8.4/A	5.6/A
<i>Northbound Approach</i>	10.6/B	9.8/A	12.2/B	10.2/B	13.1/B	10.6/B
6. Asti Road / Citrus Fair Drive	5.0/A	3.4/A	4.8/A	4.0/A	6.9/A	7.1/A
<i>Eastbound Approach</i>	9.8/A	9.0/A	10.3/B	9.3/A	11.0/B	10.1/B
7. Asti Road / Project Access	NA	NA	NA	NA	9.3/A	32.6/D
<i>Westbound Approach</i>	NA	NA	NA	NA	21.6/C	79.1/F
<i>Mitigated (Signalized)</i>					19.5/B	21.2/C
8. Asti Road / Santana Drive	2.0/A	0.4/A	1.4/A	0.3/A	0.7/A	0.1/A
<i>Westbound Approach</i>	9.2/A	8.5/A	9.7/A	8.6/A	13.4/B	10.6/B
9. Cloverdale Boulevard / Treadway Drive	3.3/A	3.5/A	3.1/A	3.4/A	3.2/A	3.6/A
<i>Eastbound Approach</i>	12.1/B	11.1/B	12.3/B	12.3/B	12.3/B	12.4/B
10. Cloverdale Boulevard / South Interchange	9.7/A	8.0/A	10.8/B	7.7/A	11.0/B	7.9/A
<i>Westbound Approach</i>	13.4/B	10.6/B	16.1/C	11.1/B	16.5/C	11.3/B
11. U.S. 101 SB Ramps / So. Interchange	1.1/A	0.9/A	2.5/A	2.3/A	4.4/A	4.7/A
<i>Southbound Approach</i>	12.3/B	10.6/B	17.3/C	12.8/B	29.3/D	22.9/C
12. U.S. 101 NB Ramps / So. Interchange	13.7/B	9.3/A	30.2/D	8.0/A	61.1/F	10.4/B
<i>Northbound Approach</i>	19.0/C	13.2/B	51.9/F	14.7/B	108.6/F	19.1/C
<i>Mitigated (Signalized)</i>					24.8/C	22.9/C
<i>Mitigated (Roundabout)</i>					7.9/A	6.2/A
13. Asti Road / South Interchange	4.3/A	4.2/A	7.9/A	7.6/A	28.5/D	53.8/F
<i>Eastbound Approach</i>	9.5/A	9.3/A	13.5/B	12.0/B	60.8/F	109.9/F
<i>Mitigated (Signalized)</i>					31.2/C	31.7/D
<i>Mitigated (Roundabout)</i>					7.9/A	6.2/A

Results are shown as Delay/LOS; Delay is measured in average seconds per vehicle; LOS = Level of Service
 Bold=Deficient LOS (relevant to impact determination); Shaded Cells=Queuing exceeds available storage capacity.

SOURCE: W-Trans, 2009

Impact 4.8.2-2: Freeway Segment Performance (Less than Significant)

With the addition of traffic volumes generated by Alternative B to the baseline Year 2015 Short-term traffic (described in **Section 3.8**), all of the study freeway segments of U.S. 101 from the

Sonoma-Mendocino County Line to the Dry Creek Road Interchange in Healdsburg would continue to operate at an acceptable LOS B or better in both the northbound and southbound directions during the weekday p.m. peak hour. Results of the freeway analysis are included in **Appendix G**. This impact would be less than significant.

Impact 4.8.2-3: Bicycle, Pedestrian and Public Transit Impacts (Potentially Significant)

Bicycle Traffic. The SMART rail line and proposed SMART Path bisect the project site. Once constructed, the SMART Path would create a direct pathway connection between the project site and the Cloverdale Transit Depot, providing convenient access for patrons and employees who ride transit or are headed to downtown Cloverdale via the Citrus Fair Drive undercrossing of U.S. 101. It is recommended that the project coordinate onsite access improvements with the SMART Rail and Pathway project to ensure safe and convenient access to and from the path for its employees and patrons.

The project would be expected to generate a small volume of bicycle traffic, with primary orientation to either the Cloverdale Transit Depot/SMART train station or the downtown area. Access to both of these destinations is already served by bicycle lanes, which are expected to operate adequately and safely with the addition of project-generated bicycle traffic, and therefore, no significant impacts (and no required mitigation measures) related to bicycle traffic are anticipated. However, bicyclists heading north on Asti Road from the project site must cross the SMART tracks at an oblique angle. While it is assumed that SMART will be upgrading all at-grade railroad crossings as a component of its efforts to rehabilitate the rail line and restore train service, it is recommended that the bicycle crossings of the rail line be upgraded with compliant crossing gates, tread surfaces, and other appropriate measures to ensure safety for non-motorized users.

Bicycle Recommendations

- Proposed project frontage improvements should include bike lane rehabilitation including signs and markings per the California Manual on Uniform Traffic Control Devices.
- Per the City's Bicycle and Pedestrian Master Plan, secure short-term bicycle parking (bicycle racks) should be provided convenient to the project's entry locations.
- Long-term bicycle parking in the form of (bicycle lockers) should be provided at a convenient location for project employees.
- Adequate storage and locker facilities for bicycle commuters should be provided, and shower facilities should be considered per the City's Bicycle and Pedestrian Master Plan.
- The project should provide a small fleet of loaner or rental bicycles to encourage non-motorized access between the project site and destinations in Cloverdale.
- The project should provide right-of-way or an easement as appropriate to accommodate the proposed Cloverdale River Trail along the eastern edge of the project fronting the Russian River.
- All bicycle crossings of the SMART rail line should be retrofit with compliant crossing gates, tread surfaces, and other appropriate measures to ensure safety for non-motorized users.

- The project should coordinate onsite access improvements with the SMART Rail and Pathway project to ensure safe and convenient access to and from the path for its employees and patrons

Pedestrian Traffic. Alternative B would be expected to generate a very small volume of pedestrian traffic, with primary orientation to the Cloverdale Transit Depot/SMART train station and/or the Citrus Fair Drive undercrossing of US 101 leading to downtown Cloverdale. Currently, there are no pedestrian facilities serving the Asti Road corridor. However, the SMART rail improvements would include the creation of a multi-use trail paralleling the tracks, which can serve both bicyclists and pedestrians. The railroad tracks and proposed path bisect the project property and extend north to the Cloverdale Transit Depot and south to neighboring communities and beyond. While the exact location of the SMART path in the vicinity of the proposed project has yet to be determined, preliminary analysis indicates that it may be located along the east side of the tracks. The path would cross Asti Road approximately one-quarter mile north of the project site. Therefore, any pedestrians walking between the train station and project site would not have any pedestrian facilities along this short section, an adverse effect for those pedestrians. This is a potentially significant impact. **Mitigation Measure 5.8-5** would reduce this impact to less than significant.

While it is assumed that SMART will be upgrading all at-grade railroad crossings as a component of its efforts to rehabilitate the rail line and restore train service, it is recommended that the pedestrian crossings of the rail line be upgraded with compliant crossing gates, tread surfaces, and other appropriate measures to ensure safety for non-motorized users.

Pedestrian Recommendations

- Project frontage improvements along Asti Road should include sidewalks.
- All pedestrian crossings of the SMART rail line should be retrofit with compliant crossing gates, tread surfaces, and other appropriate measures to ensure safety for non-motorized users.

Public Transit. Existing local and regional transit service are expected to serve the proposed project adequately. With train service anticipated to begin in the Year 2014, and with the station located approximately 0.6 miles from the project site, the SMART system would be expected to generate ridership related to Alternative B, including both employees and casino patrons. There are currently no plans for a shuttle bus serving the Cloverdale station; therefore, connections between the train and the project site would take place via bicycle and pedestrian modes that are discussed above. It would be beneficial if the Casino provided a shuttle as that could reduce the amount of vehicle traffic generated compared to what is projected in this study.

Transit Recommendations

- Shuttle service between the proposed project and the Cloverdale Transit Depot is recommended as a measure to increase transit ridership to the project site. Shuttle service between downtown Cloverdale and the proposed project should also be considered.
- The project should implement standard Transportation Demand Management (TDM) measures to encourage employee carpooling, transit, and bicycle and pedestrian trips to work. There are a variety of standard measures and incentives that are commonly implemented at employment sites throughout the County that could be utilized including parking practices, transit subsidies, shift schedules, and others.

Significance after Mitigation: Less than Significant

Impact 4.8.2-4: Intersection Safety (Potentially Significant)

Alternative B would add significant traffic volumes to the U.S. 101 Northbound Ramps / South Interchange and Asti Road / South Interchange intersections. These intersections currently have collision rates that are somewhat greater than the Statewide Average rates (see Table 3.8-4, **Section 3.8**). This is a potentially significant impact. At other intersections, such as at the Citrus Fair interchange and downtown Cloverdale, traffic volumes generated by Alternative B would be lower and would not affect the collision rates, and a less than significant impact would occur. **Mitigation Measures 5.8-1, 5.8-2 and 5.8-3** (signalization option) would reduce this impact to less than significant. Alternatively, **Mitigation Measures 5.8-1 and 5.8-4** (roundabout option) would reduce this impact to less than significant.

Significance after Mitigation: Less than Significant

Impact 4.8.2-5: Parking Capacity (No Impact)

Using methodologies contained in Shared Parking (ULI, 2006), Alternative B would generate a peak parking demand of about 2,652 spaces, and the proposed 2,900 space onsite supply would be sufficient.⁴ No impact would result.

Impact 4.8.2-6: Construction Impacts (Less than Significant)

Construction activities associated with Alternative B would generate off-site traffic that would include the initial delivery of construction vehicles and equipment to the project site, the daily arrival and departure of construction workers, and the delivery of materials throughout the construction period and removal of construction debris. Deliveries would include shipments of concrete, lumber, and other building materials for onsite structures, utilities (e.g., plumbing equipment and electrical supplies) and paving and landscaping materials.

Construction-generated traffic would be temporary, and therefore, would not result in any long-term degradation in operating conditions on roadways in the project area. The impact of construction-related traffic would be a temporary and intermittent, lessening of the capacities of streets in the project site vicinity because of the slower movements and larger turning radii of construction trucks compared to passenger vehicles. However, given the proximity of the project site to regional roadway network (i.e., U.S. 101), use of local roads by construction trucks would be minimal. Most construction traffic would be dispersed throughout the day. Thus, the temporary increase would not significantly disrupt daily traffic flow on roadways in the project site vicinity, and a less than significant impact would result.

⁴ See Footnote 2, page 4.8-10.

4.8.3 Alternative C – Reduced Casino

Site Access

Access to the project site is proposed via five driveways that would connect to Asti Road. The two most southern access points combine into one entrance to the project site. The site plans (see **Section 2.0**, Alternatives) show the most southern driveway as being limited to right-turns inbound only and the second southernmost driveway as an egress from the site only. The third driveway, found in the middle of the site's frontage, is proposed to have full access, as would the remaining two driveways to the north of the center driveway. The northern and southern boundaries of the property have potential sight distance issues due to road curvature and vegetation. Therefore, for the purposes of this analysis and to provide the most conservative assessment, all of the traffic associated with Alternative C was assigned to one central access point.

Project Trip Generation

The anticipated vehicle trip generation for new development is generally based on standard trip generation rates published in Trip Generation (ITE, 2003). However, because Trip Generation does not contain rates for casinos, the rates for Alternatives A through D also utilized data contained in the Graton Rancheria Casino and Hotel Traffic Impact Study (KHA, 2007). Also, because Trip Generation includes limited data on land uses like the entertainment portions of Alternative C, trip generation data published by SANDAG (San Diego Association of Governments) was used (SANDAG, 2003). ITE's Trip Generation was used to obtain trip rates for the proposed restaurant, retail uses, and hotel. It was assumed that some, if not most, of the trips to the ancillary facilities and hotel would also be visitors to the gaming facility. Therefore, a reduction rate of 67 percent was applied to the non-gaming functions to better simulate actual vehicle trips to the project site as a whole. Although traffic associated with concerts at the event center would either occur outside of the peak traffic period or be attended predominantly by patrons of the casino and hotel, to ensure that potential impacts were not underestimated, trips generated by the event center were added to the total trip generation (with the same 67-percent deduction applied). As shown in **Table 4.8-7**, Alternative C is estimated to generate about 6,160 daily vehicle trips, which includes about 649 trips during the weekday p.m. peak hour and 906 trips during the weekend midday peak hour.

Project Trip Distribution and Assignment

Trip distribution assumptions were primarily based upon the Gaming and Hotel Market Assessment for Cloverdale Rancheria (The Innovation Group, June 2007), as well as existing traffic patterns and locations of potential trip origins throughout the City. The market assessment included a breakdown of the potential Cloverdale regional market related to gamer visits. Percentages of gamer visits by location were then categorized into site specific routes for the project site and correlated to anticipated routes. The applied trip distribution assumptions are summarized in **Table 4.8-8**.

The market assessment projected that 90 percent of the visitors would arrive from destinations to and from the south with the majority of the balance from the north and east. Traffic to and from the south would have two options in traveling to and from the project site, either via the South Interchange (located approximately 0.50 mile south of the site) or the Citrus Fair Interchange (located approximately 0.60 mile north of the site). Because the applicant intends to market patron

site access via the Citrus Fair Interchange, but access to and from the south would be more convenient via the South Interchange, it was assumed that only 30 percent of the vehicle trips oriented to and from U.S. 101 south of Cloverdale, or 27 percent of the total trips (30% of 90%=27%), would occur via the Citrus Fair Drive interchange, with the balance (70% of 90% = 63%) utilizing the South Interchange. All of the trips oriented to and from the north on U.S. 101 were assumed to use the Citrus Fair Drive interchange.

**TABLE 4.8-7
TRIP GENERATION SUMMARY – ALTERNATIVE C**

Land Use	Units	Weekday Daily			Weekday PM Peak Hour			Weekend Peak Hour			
		Rate	Trips	Rate	Trips	In	Out	Rate	Trips	In	Out
Casino	57.7 ksf	39.43	2,275	6.08	351	179	172	5.53	319	169	150
High-Turnover (Sit-Down) Restaurant	37.8 ksf	127.15	4,806	10.92	413	252	161	20.00	756	476	280
Specialty Retail	78.1 ksf	44.32	3,461	2.71	212	93	119	9.44	737	383	354
Hotel	141 rooms	8.92	1,258	0.70	99	49	50	0.87	123	69	54
Entertainment Center	28.1 ksf	80.00	2,240	6.40	180	108	72	5.82	164	87	77
<i>Subtotal (non-gaming)</i>			11,773		904	502	402		1,780	1,015	765
<i>Internal capture</i>	-67%		-7,888		-606	-337	-269		-1,193	-680	-513
<i>Net total (non-gaming)</i>			3,885		298	165	133		587	335	252
Total Net Vehicle Trips			6,160		649	344	305		906	504	402

ksf = 1,000 square feet

SOURCES: W-Trans, using trip generation rates from ITE, Trip Generation; SANDAG, Traffic Generation Manual; and KHA, Graton Rancheria Casino and Hotel Traffic Impact Study

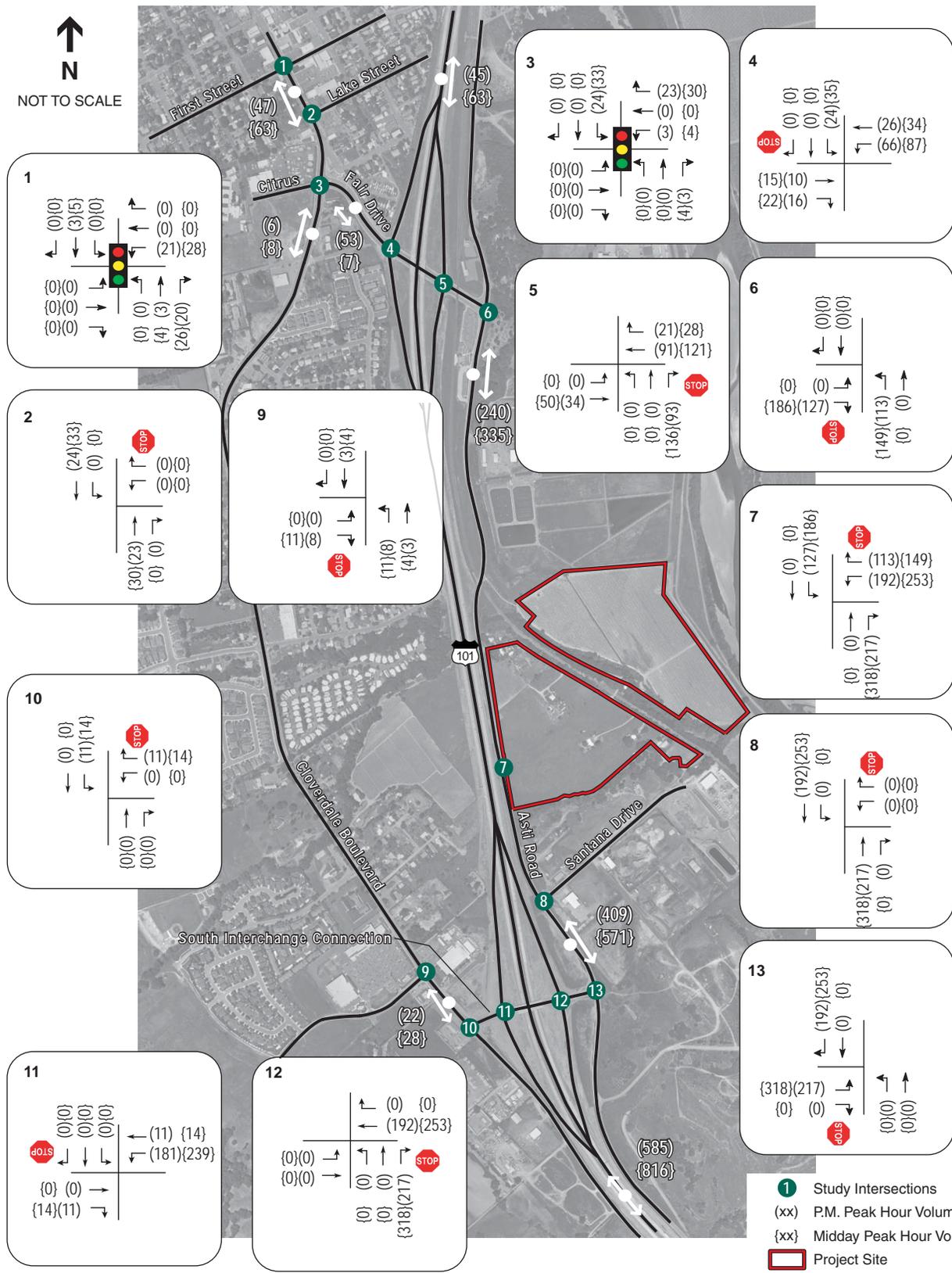
**TABLE 4.8-8
TRIP DISTRIBUTION – ALTERNATIVE C**

Route	Percent
U.S. 101 South via South Cloverdale Interchange	63%
U.S. 101 South via Citrus Fair Drive Interchange	27%
U.S. 101 North via Citrus Fair Drive Interchange	7%
SR 128 West via Citrus Fair & Cloverdale Blvd	1%
First Street East	2%
Total	100%

SOURCES: W-Trans, and The Innovation Group

It is likely that some visitors to the project site would also drive into other areas of Cloverdale for highway commercial uses and other tourism ventures as part of their visit. These trips are most likely to occur when visitors are leaving the site and before they get back onto the freeway. Therefore, it was assumed that 10 percent of the total traffic anticipated to head south on U.S. 101 would first divert to one of several destinations including Downtown Cloverdale, Cloverdale Boulevard (via Citrus Fair Drive), Cloverdale Boulevard (via South Cloverdale), and Treadway Drive. **Figure 4.8-3** shows Alternative C trips at the study intersections.

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SOURCE: w-trans, 2009; and ESA, 2011

Cloverdale Rancheria Resort Casino Project EIS . 207737

Figure 4.8-3
Alternative C Traffic Volumes

Impact 4.8.3-1: Peak Hour Intersection Performance (Potentially Significant)

As shown in **Table 4.8-9**, with the addition of traffic volumes generated by Alternative C to the baseline Year 2015 (described in **Section 3.8**), operations at two unsignalized intersections would operate unacceptably during one of the peak periods; one would degrade to unacceptable levels of service, and the unacceptable service level at another one would worsen.⁵

The U.S. 101 Northbound Ramps / South Interchange intersection, which would operate at an unacceptable LOS D under baseline conditions during the weekday p.m. peak hour, would degrade to an unacceptable LOS F. The Asti Road / South Interchange intersection would degrade from an acceptable LOS A to an unacceptable LOS E during the weekend peak hour. The LOS calculation sheets are provided in **Appendix G**. This is a potentially significant impact. **Mitigation Measures 5.8-2** and **5.8-3** (signalization option) would reduce this impact to less than significant. Alternatively, **Mitigation Measure 5.8-4** (roundabout option) would reduce this impact to less than significant.

Traffic signal warrants would be met for the following intersections under the projected 2015 plus Alternative C volumes.

- Asti Road/ Project Access
- U.S. 101 Northbound Ramps / South Interchange
- Asti Road/ South Interchange.

Significance after Mitigation: Less than Significant

Impact 4.8.3-2: Freeway Segment Performance (Less than Significant)

With the addition of traffic volumes generated by Alternative C to the baseline Year 2015 Short-term traffic (described in **Section 3.8**), all of the study freeway segments of U.S. 101 from the Sonoma-Mendocino County Line to the Dry Creek Road Interchange in Healdsburg would continue to operate at an acceptable LOS B or better in both the northbound and southbound directions during the weekday p.m. peak hour. Results of the freeway analysis are included in **Appendix G**. This impact would be less than significant.

Impact 4.8.3-3: Bicycle, Pedestrian and Public Transit Impacts (Potentially Significant)

Bicycle Traffic. The SMART rail line and proposed SMART Path bisect the project site. Once constructed, the SMART Path would create a direct pathway connection between the project site and the Cloverdale Transit Depot, providing convenient access for patrons and employees who ride transit or are headed to downtown Cloverdale via the Citrus Fair Drive undercrossing of U.S. 101. It is recommended that the project coordinate onsite access improvements with the SMART

⁵ See Footnote 1, page 4.8-3.

Rail and Pathway project to ensure safe and convenient access to and from the path for its employees and patrons.

**TABLE 4.8-9
SUMMARY OF INTERSECTION AVERAGE DELAY AND LEVELS OF SERVICE – ALTERNATIVE C**

Intersection	Existing Conditions		Short-Term (2015) Baseline		Short-Term (2015) plus Alternative C	
	PM Peak	Weekend Peak	PM Peak	Weekend Peak	PM Peak	Weekend Peak
1. Cloverdale Blvd / First Street	11.6/B	11.2/B	12.0/B	11.7/B	12.5/B	12.4/B
2. Cloverdale Blvd / Lake Street	2.3/A	2.0/A	2.0/A	1.7/A	2.1/A	1.6/A
<i>Westbound Approach</i>	19.3/C	16.0/C	20.1/C	14.1/B	21.2/C	14.8/B
3. Cloverdale Blvd / Citrus Fair Drive	13.3/B	19.0/C	14.6/B	21.4/C	14.8/B	21.8/C
4. U.S. 101 S. Ramps / Citrus Fair Dr.	0.9/A	1.0/A	1.1/A	1.2/A	1.9/A	2.5/A
<i>Southbound Approach</i>	9.8/A	9.0/A	10.4/B	9.3/A	13.1/B	11.8/B
5. U.S. 101 N. Ramps / Citrus Fair Dr	8.5/A	6.6/A	9.1/A	6.6/A	8.4/A	5.7/A
<i>Northbound Approach</i>	10.6/B	9.8/A	12.2/B	10.2/B	13.0/B	10.6/B
6. Asti Road / Citrus Fair Drive	5.0/A	3.4/A	4.8/A	4.0/A	6.8/A	7.0/A
<i>Eastbound Approach</i>	9.8/A	9.0/A	10.3/B	9.3/A	10.9/B	10.0/B
7. Asti Road / Project Access	NA	NA	NA	NA	8.4/A	19.3/C
<i>Westbound Approach</i>	NA	NA	NA	NA	19.7/C	46.2/E
8. Asti Road / Santana Drive	2.0/A	0.4/A	1.4/A	0.3/A	0.7/A	0.1/A
<i>Westbound Approach</i>	9.2/A	8.5/A	9.7/A	8.6/A	13.2/B	10.4/B
9. Cloverdale Boulevard / Treadway Drive	3.3/A	3.5/A	3.1/A	3.4/A	3.2/A	3.6/A
<i>Eastbound Approach</i>	12.1/B	11.1/B	12.3/B	12.3/B	12.3/B	12.4/B
10. Cloverdale Boulevard / South Interchange	9.7/A	8.0/A	10.8/B	7.7/A	11.0/B	7.8/A
<i>Westbound Approach</i>	13.4/B	10.6/B	16.1/C	11.1/B	16.5/C	11.3/B
11. U.S. 101 SB Ramps / So. Interchange	1.1/A	0.9/A	2.5/A	2.3/A	4.2/A	4.5/A
<i>Southbound Approach</i>	12.3/B	10.6/B	17.3/C	12.8/B	28.1/D	21.3/C
12. U.S. 101 NB Ramps / So. Interchange	13.7/B	9.3/A	30.2/D	8.0/A	59.2/F	10.0/A
<i>Northbound Approach</i>	19.0/C	13.2/B	51.9/F	14.7/B	105.0/F	18.4/C
<i>Mitigated (Signalized)</i>					24.6/C	22.4/C
<i>Mitigated (Roundabout)</i>					8.0/A	6.2/A
13. Asti Road / South Interchange	4.3/A	4.2/A	7.9/A	7.6/A	24.9/C	40.8/E
<i>Eastbound Approach</i>	9.5/A	9.3/A	13.5/B	12.0/B	52.8/F	82.8/F
<i>Mitigated (Signalized)</i>					30.9/C	30.8/C
<i>Mitigated (Roundabout)</i>					8.0/A	6.2/A

Results are shown as Delay/LOS; Delay is measured in average seconds per vehicle; LOS = Level of Service
 Bold=Deficient LOS (relevant to impact determination); Shaded Cells=Queuing exceeds available storage capacity.

SOURCE: W-Trans, 2009

The project would be expected to generate a small volume of bicycle traffic, with primary orientation to either the Cloverdale Transit Depot/SMART train station or the downtown area. Access to both of these destinations is already served by bicycle lanes, which are expected to operate adequately and safely with the addition of project-generated bicycle traffic, and therefore, no significant impacts (and no required mitigation measures) related to bicycle traffic are anticipated. However, bicyclists heading north on Asti Road from the project site must cross the SMART tracks at an oblique angle. While it is assumed that SMART will be upgrading all at-grade railroad crossings as a component of its efforts to rehabilitate the rail line and restore train service, it is recommended that the bicycle crossings of the rail line be upgraded with compliant crossing gates, tread surfaces, and other appropriate measures to ensure safety for non-motorized users.

Bicycle Recommendations

- Proposed project frontage improvements should include bike lane rehabilitation including signs and markings per the California Manual on Uniform Traffic Control Devices.
- Per the City's Bicycle and Pedestrian Master Plan, secure short-term bicycle parking (bicycle racks) should be provided convenient to the project's entry locations.
- Long-term bicycle parking in the form of (bicycle lockers) should be provided at a convenient location for project employees.
- Adequate storage and locker facilities for bicycle commuters should be provided, and shower facilities should be considered per the City's Bicycle and Pedestrian Master Plan.
- The project should provide a small fleet of loaner or rental bicycles to encourage non-motorized access between the project site and destinations in Cloverdale.
- The project should provide right-of-way or an easement as appropriate to accommodate the proposed Cloverdale River Trail along the eastern edge of the project fronting the Russian River.
- All bicycle crossings of the SMART rail line should be retrofit with compliant crossing gates, tread surfaces, and other appropriate measures to ensure safety for non-motorized users.
- The project should coordinate onsite access improvements with the SMART Rail and Pathway project to ensure safe and convenient access to and from the path for its employees and patrons

Pedestrian Traffic. Alternative C would be expected to generate a small volume of pedestrian traffic, with primary orientation to the Cloverdale Transit Depot/SMART train station and/or the Citrus Fair Drive undercrossing of US 101 leading to downtown Cloverdale. Currently, there are no pedestrian facilities serving the Asti Road corridor. However, the SMART rail improvements would include the creation of a multi-use trail paralleling the tracks, which can serve both bicyclists and pedestrians. The railroad tracks and proposed path bisect the project property and extend north to the Cloverdale Transit Depot and south to neighboring communities and beyond. While the exact location of the SMART path in the vicinity of the proposed project has yet to be determined, preliminary analysis indicates that it may be located along the east side of the tracks. The path would cross Asti Road approximately one-quarter mile north of the project site. Therefore, any pedestrians walking between the train station and project site would not have any pedestrian facilities along this short section, an adverse effect for those pedestrians. This is a potentially significant impact. **Mitigation Measure 5.8-5** would reduce this impact to less than significant.

While it is assumed that SMART will be upgrading all at-grade railroad crossings as a component of its efforts to rehabilitate the rail line and restore train service, it is recommended that the pedestrian crossings of the rail line be upgraded with compliant crossing gates, tread surfaces, and other appropriate measures to ensure safety for non-motorized users.

Pedestrian Recommendations

- Project frontage improvements along Asti Road should include sidewalks.
- All pedestrian crossings of the SMART rail line should be retrofit with compliant crossing gates, tread surfaces, and other appropriate measures to ensure safety for non-motorized users.

Public Transit. Existing local and regional transit service are expected to serve the proposed project adequately. With train service anticipated to begin in the Year 2014, and with the station located approximately 0.6 miles from the project site, the SMART system would be expected to generate ridership related to Alternative C, including both employees and casino patrons. There are currently no plans for a shuttle bus serving the Cloverdale station; therefore, connections between the train and the project site would take place via bicycle and pedestrian modes that are discussed above. It would be beneficial if the Casino provided a shuttle as that could reduce the amount of vehicle traffic generated compared to what is projected in this study.

Transit Recommendations

- Shuttle service between the proposed project and the Cloverdale Transit Depot is recommended as a measure to increase transit ridership to the project site. Shuttle service between downtown Cloverdale and the proposed project should also be considered.
- The project should implement standard Transportation Demand Management (TDM) measures to encourage employee carpooling, transit, and bicycle and pedestrian trips to work. There are a variety of standard measures and incentives that are commonly implemented at employment sites throughout the County that could be utilized including parking practices, transit subsidies, shift schedules, and others.

Significance after Mitigation: Less than Significant

Impact 4.8.3-4: Intersection Safety (Potentially Significant)

Alternative C would add significant traffic volumes to the U.S. 101 Northbound Ramps / South Interchange and Asti Road / South Interchange intersections. These intersections currently have collision rates that are somewhat greater than the Statewide Average rates (see **Table 3.8-4, Section 3.8**). This is a potentially significant impact. At other intersections, such as at the Citrus Fair interchange and downtown Cloverdale, traffic volumes generated by Alternative C would be lower and would not affect the collision rates, and a less than significant impact would occur. **Mitigation Measures 5.8-2** and **5.8-3** (signalization option) would reduce this impact to less than significant. Alternatively, **Mitigation Measure 5.8-4** (roundabout option) would reduce this impact to less than significant.

Significance after Mitigation: Less than Significant

Impact 4.8.3-5: Parking Capacity (Less than Significant)

Using methodologies contained in Shared Parking (ULI, 2006), Alternative C would generate a peak parking demand of about 2,355 spaces, using about 98 percent of the proposed 2,400 space onsite supply.⁶ While a maximum occupancy rate of 95 percent is recommended to account for some parking inefficiencies and turnover, Alternative C currently contains a sufficient number of spaces for design purposes. A less than significant impact would result.

Impact 4.8.3-6: Construction Impacts (Less than Significant)

Construction activities associated with Alternative C would generate off-site traffic that would include the initial delivery of construction vehicles and equipment to the project site, the daily arrival and departure of construction workers, and the delivery of materials throughout the construction period and removal of construction debris. Deliveries would include shipments of concrete, lumber, and other building materials for onsite structures, utilities (e.g., plumbing equipment and electrical supplies) and paving and landscaping materials.

Construction-generated traffic would be temporary, and therefore, would not result in any long-term degradation in operating conditions on roadways in the project area. The impact of construction-related traffic would be a temporary and intermittent, lessening of the capacities of streets in the project site vicinity because of the slower movements and larger turning radii of construction trucks compared to passenger vehicles. However, given the proximity of the project site to regional roadway network (i.e., U.S. 101), use of local roads by construction trucks would be minimal. Most construction traffic would be dispersed throughout the day. Thus, the temporary increase would not significantly disrupt daily traffic flow on roadways in the project site vicinity, and a less than significant impact would result.

4.8.4 Alternative D – Casino Only

Site Access

Site access to the project site is proposed via five driveways that would connect to Asti Road. The two most southern access points combine into one entrance to the project site. The site plans (see **Section 2.0**, Alternatives) show the most southern driveway as being limited to right-turns inbound only and the second southernmost driveway as an egress from the site only. The third driveway, found in the middle of the site's frontage, is proposed to have full access, as would the remaining two driveways to the north of the center driveway. The northern and southern boundaries of the property

⁶ See Footnote 2, page 4.8-10.

have potential sight distance issues due to road curvature and vegetation. Therefore, for the purposes of this analysis and to provide the most conservative assessment, all of the traffic associated with Alternative D was assigned to one central access point.

Project Trip Generation

The anticipated vehicle trip generation for new development is generally based on standard trip generation rates published in Trip Generation (ITE, 2003). However, because Trip Generation does not contain rates for casinos, the rates for the Cloverdale Rancheria casino also utilized data contained in the Graton Rancheria Casino and Hotel Traffic Impact Study (KHA, 2007). ITE's Trip Generation was used to obtain trip rates for the project's proposed restaurant and retail uses. It was assumed that some, if not most, of the trips to the ancillary facilities would also be visitors to the Casino gaming facility. Therefore, a reduction rate of 67 percent was applied to the non-gaming functions to better simulate actual vehicle trips to the casino project as a whole. As shown in **Table 4.8-10**, Alternative D is estimated to generate approximately 4,933 daily vehicle trips, which includes 553 trips during the weekday p.m. peak hour and 802 trips during the weekend midday peak hour.

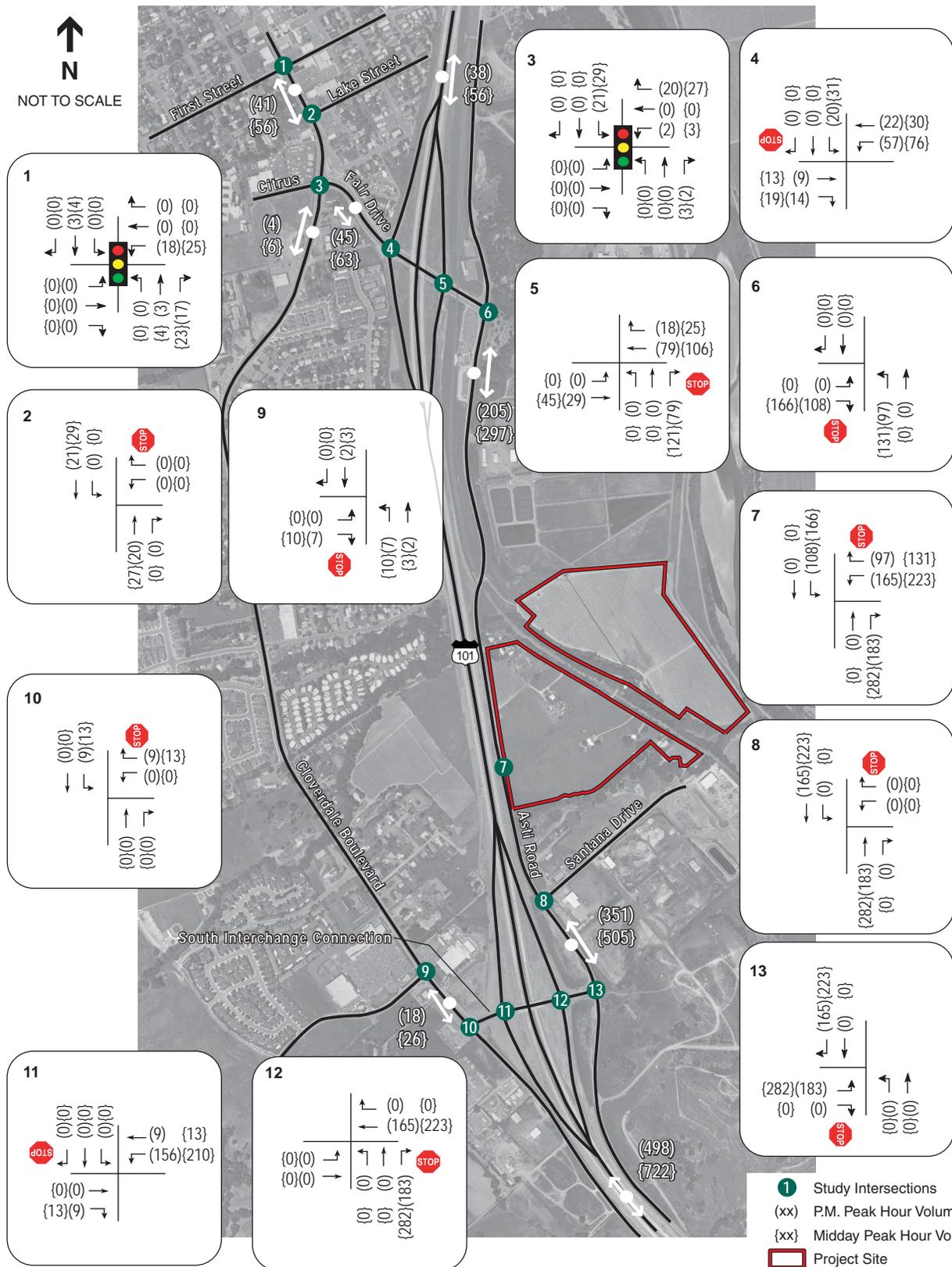
Project Trip Distribution

Trip distribution assumptions were primarily based upon the Gaming and Hotel Market Assessment for Cloverdale Rancheria (The Innovation Group, June 2007), as well as existing traffic patterns and locations of potential trip origins throughout the City. The market assessment included a breakdown of the potential Cloverdale regional market related to gamer visits. Percentages of gamer visits by location were then categorized into site specific routes for the project site and correlated to anticipated routes. The applied trip distribution assumptions are summarized in **Table 4.8-11**.

The market assessment projected that 90 percent of the visitors would arrive from destinations to and from the south with the majority of the balance from the north and east. Traffic to and from the south would have two options in traveling to and from the project site, either via the South Interchange (located approximately 0.50 mile south of the site) or the Citrus Fair Interchange (located approximately 0.60 mile north of the site). Because the applicant intends to market patron site access via the Citrus Fair Interchange, but access to and from the south would be more convenient via the South Interchange, it was assumed that only 30 percent of the vehicle trips oriented to and from U.S. 101 south of Cloverdale, or 27 percent of the total trips ($30\% \text{ of } 90\% = 27\%$), would occur via the Citrus Fair Drive interchange, with the balance ($70\% \text{ of } 90\% = 63\%$) utilizing the South Interchange. All of the trips oriented to and from the north on U.S. 101 were assumed to use the Citrus Fair Drive interchange.

It is likely that some visitors to the project site would also drive into other areas of Cloverdale for highway commercial uses and other tourism ventures as part of their visit. These trips are most likely to occur when visitors are leaving the site and before they get back onto the freeway. Therefore, it was assumed that 10 percent of the total traffic anticipated to head south on U.S. 101 would first divert to one of several destinations including Downtown Cloverdale, Cloverdale Boulevard (via Citrus Fair Drive), Cloverdale Boulevard (via South Cloverdale), and Treadway Drive. **Figure 4.8-4** shows Alternative D trips at the study intersections.

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NOT TO SCALE



SOURCE: w-trans, 2009; and ESA, 2011

Cloverdale Rancheria Resort Casino Project EIS . 207737

Figure 4.8-4
Alternative D Traffic Volumes

**TABLE 4.8-10
TRIP GENERATION SUMMARY – ALTERNATIVE D**

Land Use	Units	Weekday Daily			Weekday PM Peak Hour			Weekend Peak Hour			
		Rate	Trips	Rate	Trips	In	Out	Rate	Trips	In	Out
Casino	57.7 ksf	39.43	2,275	6.08	351	179	172	5.53	319	169	150
High-Turnover (Sit-Down) Restaurant	37.8 ksf	127.15	4,806	10.92	413	252	161	20.00	756	476	280
Specialty Retail	73.3 ksf	44.32	3,249	2.71	199	87	112	9.65	707	368	339
<i>Subtotal (non-gaming)</i>			8,055		612	339	273		1,463	844	619
<i>Internal capture</i>	-67%		-5,397		-410	-227	-183		-980	-565	-415
<i>Net total (non-gaming)</i>			2,658		202	112	90		483	279	204
Total Net Vehicle Trips			4,933		553	291	262		802	448	354

ksf = 1,000 square feet

SOURCES: W-Trans, using trip generation rates from ITE, Trip Generation; and KHA, Graton Rancheria Casino and Hotel Traffic Impact Study

**TABLE 4.8-11
TRIP DISTRIBUTION CASINO ASSUMPTIONS**

Route	Percent
U.S. 101 South via South Cloverdale Interchange	63%
U.S. 101 South via Citrus Fair Drive Interchange	27%
U.S. 101 North via Citrus Fair Drive Interchange	7%
SR 128 West via Citrus Fair & Cloverdale Blvd	1%
First Street East	2%
Total	100%

SOURCES: W-Trans, and The Innovation Group

Impact 4.8.4-1: Peak Hour Intersection Performance (Potentially Significant)

As shown in **Table 4.8-12**, with the addition of traffic volumes generated by Alternative D to the baseline Year 2015 (described in **Section 3.8**), one intersection would operate at an unacceptable level of service.⁷ The U.S. 101 Northbound Ramps / South Interchange intersection, which would operate at an unacceptable LOS D under baseline conditions during the weekday p.m. peak hour, would degrade to an unacceptable LOS F. The LOS calculation sheets are provided in **Appendix G**. This is a potentially significant impact. **Mitigation Measure 5.8-2** (signalization option) would reduce this impact to less than significant. Alternatively, **Mitigation Measure 5.8-4** (roundabout option) would reduce this impact to less than significant.

Traffic signal warrants were met under the volumes for this scenario for the following intersections.

- Asti Road/ Project Access
- U.S. 101 Northbound Ramps / South Interchange
- Asti Road/ South Interchange.

⁷ See Footnote 1, page 4.8-3.

Significance after Mitigation: Less than Significant

**TABLE 4.8-12
SUMMARY OF INTERSECTION AVERAGE DELAY AND LEVELS OF SERVICE – ALTERNATIVE D**

Intersection	Existing Conditions		Short-Term (2015) Baseline		Short-Term (2015) plus Alternative D	
	PM Peak	Weekend Peak	PM Peak	Weekend Peak	PM Peak	Weekend Peak
1. Cloverdale Blvd / First Street	11.6/B	11.2/B	12.0/B	11.7/B	12.4/B	12.3/B
2. Cloverdale Blvd / Lake Street	2.3/A	2.0/A	2.0/A	1.7/A	2.1/A	1.6/A
<i>Westbound Approach</i>	19.3/C	16.0/C	20.1/C	14.1/B	21.0/C	14.7/B
3. Cloverdale Blvd / Citrus Fair Drive	13.3/B	19.0/C	14.6/B	21.4/C	14.7/B	21.8/C
4. U.S. 101 S. Ramps / Citrus Fair Dr.	0.9/A	1.0/A	1.1/A	1.2/A	1.8/A	2.4/A
<i>Southbound Approach</i>	9.8/A	9.0/A	10.4/B	9.3/A	12.6/B	11.4/B
5. U.S. 101 N. Ramps / Citrus Fair Dr.	8.5/A	6.6/A	9.1/A	6.6/A	8.4/A	5.7/A
<i>Northbound Approach</i>	10.6/B	9.8/A	12.2/B	10.2/B	12.9/B	10.5/B
6. Asti Road / Citrus Fair Drive	5.0/A	3.4/A	4.8/A	4.0/A	6.6/A	6.8/A
<i>Eastbound Approach</i>	9.8/A	9.0/A	10.3/B	9.3/A	10.8/B	9.8/A
7. Asti Road / Project Access	NA	NA	NA	NA	6.8/A	11.9/B
<i>Westbound Approach</i>	NA	NA	NA	NA	16.0/C	27.6/D
8. Asti Road / Santana Drive	2.0/A	0.4/A	1.4/A	0.3/A	0.7/A	0.1/A
<i>Westbound Approach</i>	9.2/A	8.5/A	9.7/A	8.6/A	12.5/B	10.2/B
9. Cloverdale Boulevard / Treadway Drive	3.3/A	3.5/A	3.1/A	3.4/A	3.2/A	3.5/A
<i>Eastbound Approach</i>	12.1/B	11.1/B	12.3/B	12.3/B	12.3/B	12.4/B
10. Cloverdale Boulevard / South Interchange	9.7/A	8.0/A	10.8/B	7.7/A	10.9/B	7.8/A
<i>Westbound Approach</i>	13.4/B	10.6/B	16.1/C	11.1/B	16.4/C	11.3/B
11. U.S. 101 SB Ramps / So. Interchange	1.1/A	0.9/A	2.5/A	2.3/A	3.9/A	4.2/A
<i>Southbound Approach</i>	12.3/B	10.6/B	17.3/C	12.8/B	25.7/D	19.6/C
12. U.S. 101 NB Ramps / So. Interchange	13.7/B	9.3/A	30.2/D	8.0/A	54.7/F	9.6/A
<i>Northbound Approach</i>	19.0/C	13.2/B	51.9/F	14.7/B	96.8/F	17.6/C
<i>Mitigated (Signalized)</i>					24.1/C	21.9/C
<i>Mitigated (Roundabout)</i>					8.0/A	6.3/A
13. Asti Road / South Interchange	4.3/A	4.2/A	7.9/A	7.6/A	17.9/C	27.5/D
<i>Eastbound Approach</i>	9.5/A	9.3/A	13.5/B	12.0/B	37.2/E	55.1/F

Results are shown as Delay/LOS; Delay is measured in average seconds per vehicle; LOS = Level of Service
 Bold=Deficient LOS (relevant to impact determination); Shaded Cells=Queuing exceeds available storage capacity.

SOURCE: W-Trans, 2009

Impact 4.8.4-2: Freeway Segment Performance (Less than Significant)

With the addition of traffic volumes generated by Alternative D to the baseline Year 2015 Short-term traffic (described in **Section 3.8**), all of the study freeway segments of U.S. 101 from the Sonoma-Mendocino County Line to the Dry Creek Road Interchange in Healdsburg would continue to operate at an acceptable LOS B or better in both the northbound and southbound directions during the weekday p.m. peak hour. Results of the freeway analysis are included in **Appendix G**. This impact would be less than significant.

Impact 4.8.4-3: Bicycle, Pedestrian and Public Transit Impacts (Potentially Significant)

Bicycle Traffic. The SMART rail line and proposed SMART Path bisect the project site. Once constructed, the SMART Path would create a direct pathway connection between the project site and the Cloverdale Transit Depot, providing convenient access for patrons and employees who ride transit or are headed to downtown Cloverdale via the Citrus Fair Drive undercrossing of U.S. 101. It is recommended that the project coordinate onsite access improvements with the SMART Rail and Pathway project to ensure safe and convenient access to and from the path for its employees and patrons.

The project would be expected to generate a small volume of bicycle traffic, with primary orientation to either the Cloverdale Transit Depot/SMART train station or the downtown area. Access to both of these destinations is already served by bicycle lanes, which are expected to operate adequately and safely with the addition of project-generated bicycle traffic, and therefore, no significant impacts (and no required mitigation measures) related to bicycle traffic are anticipated. However, bicyclists heading north on Asti Road from the project site must cross the SMART tracks at an oblique angle. While it is assumed that SMART will be upgrading all at-grade railroad crossings as a component of its efforts to rehabilitate the rail line and restore train service, it is recommended that the bicycle crossings of the rail line be upgraded with compliant crossing gates, tread surfaces, and other appropriate measures to ensure safety for non-motorized users.

Bicycle Recommendations

- Proposed project frontage improvements should include bike lane rehabilitation including signs and markings per the California Manual on Uniform Traffic Control Devices.
- Per the City's Bicycle and Pedestrian Master Plan, secure short-term bicycle parking (bicycle racks) should be provided convenient to the project's entry locations.
- Long-term bicycle parking in the form of (bicycle lockers) should be provided at a convenient location for project employees.
- Adequate storage and locker facilities for bicycle commuters should be provided, and shower facilities should be considered per the City's Bicycle and Pedestrian Master Plan.
- The project should provide a small fleet of loaner or rental bicycles to encourage non-motorized access between the project site and destinations in Cloverdale.

- The project should provide right-of-way or an easement as appropriate to accommodate the proposed Cloverdale River Trail along the eastern edge of the project fronting the Russian River.
- All bicycle crossings of the SMART rail line should be retrofit with compliant crossing gates, tread surfaces, and other appropriate measures to ensure safety for non-motorized users.
- The project should coordinate onsite access improvements with the SMART Rail and Pathway project to ensure safe and convenient access to and from the path for its employees and patrons

Pedestrian Traffic. Alternative D would be expected to generate a small volume of pedestrian traffic, with primary orientation to the Cloverdale Transit Depot/SMART train station and/or the Citrus Fair Drive undercrossing of US 101 leading to downtown Cloverdale. Currently, there are no pedestrian facilities serving the Asti Road corridor. However, the SMART rail improvements would include the creation of a multi-use trail paralleling the tracks, which can serve both bicyclists and pedestrians. The railroad tracks and proposed path bisect the project property and extend north to the Cloverdale Transit Depot and south to neighboring communities and beyond. While the exact location of the SMART path in the vicinity of the proposed project has yet to be determined, preliminary analysis indicates that it may be located along the east side of the tracks. The path would cross Asti Road approximately one-quarter mile north of the project site. Therefore, any pedestrians walking between the train station and project site would not have any pedestrian facilities along this short section, an adverse effect for those pedestrians. This is a potentially significant impact. **Mitigation Measure 5.8-5** would reduce this impact to less than significant.

While it is assumed that SMART will be upgrading all at-grade railroad crossings as a component of its efforts to rehabilitate the rail line and restore train service, it is recommended that the pedestrian crossings of the rail line be upgraded with compliant crossing gates, tread surfaces, and other appropriate measures to ensure safety for non-motorized users.

Pedestrian Recommendations

- Project frontage improvements along Asti Road should include sidewalks.
- All pedestrian crossings of the SMART rail line should be retrofit with compliant crossing gates, tread surfaces, and other appropriate measures to ensure safety for non-motorized users.

Public Transit. Existing local and regional transit service are expected to serve the proposed project adequately. With train service anticipated to begin in the Year 2014, and with the station located approximately 0.6 miles from the project site, the SMART system would be expected to generate ridership related to Alternative D, including both employees and casino patrons. There are currently no plans for a shuttle bus serving the Cloverdale station; therefore, connections between the train and the project site would take place via bicycle and pedestrian modes that are discussed above. It would be beneficial if the Casino provided a shuttle as that could reduce the amount of vehicle traffic generated compared to what is projected in this study.

Transit Recommendations

- Shuttle service between the proposed project and the Cloverdale Transit Depot is recommended as a measure to increase transit ridership to the project site. Shuttle service between downtown Cloverdale and the proposed project should also be considered.
- The project should implement standard Transportation Demand Management (TDM) measures to encourage employee carpooling, transit, and bicycle and pedestrian trips to work. There are a variety of standard measures and incentives that are commonly implemented at employment sites throughout the County that could be utilized including parking practices, transit subsidies, shift schedules, and others.

Significance after Mitigation: Less than Significant

Impact 4.8.4-4: Intersection Safety (Potentially Significant)

Alternative D would add significant traffic volumes to the U.S. 101 Northbound Ramps / South Interchange intersection, which has a collision rate that is somewhat greater than the Statewide Average rates (see **Table 3.8-4, Section 3.8**). This is a potentially significant impact. At other intersections, such as at the Citrus Fair interchange and downtown Cloverdale, traffic volumes generated by Alternative D would be lower and would not affect the collision rates, and a less than significant impact would occur. **Mitigation Measure 5.8-2** (signalization option) would reduce this impact to less than significant. Alternatively, **Mitigation Measure 5.8-4** (roundabout option) would reduce this impact to less than significant.

Significance after Mitigation: Less than Significant

Impact 4.8.4-5: Parking Capacity (Potentially Significant)

Using methodologies contained in Shared Parking (ULI, 2006), Alternative D would generate a peak parking demand of about 1,945 spaces, exceeding the currently proposed 1,900 space onsite supply.⁸ A maximum occupancy rate of 95 percent is recommended to account for some parking inefficiencies and turnover, and therefore, the design of Alternative D should provide an additional 135 parking spaces. This is a potentially significant impact. **Mitigation Measure 5.8-6** would reduce this impact to less than significant.

Significance after Mitigation: Less than Significant

⁸ See Footnote 2, page 4.8-10.

Impact 4.8.4-6: Construction Impacts (Less than Significant)

Construction activities associated with Alternative D would generate off-site traffic that would include the initial delivery of construction vehicles and equipment to the project site, the daily arrival and departure of construction workers, and the delivery of materials throughout the construction period and removal of construction debris. Deliveries would include shipments of concrete, lumber, and other building materials for onsite structures, utilities (e.g., plumbing equipment and electrical supplies) and paving and landscaping materials.

Construction-generated traffic would be temporary, and therefore, would not result in any long-term degradation in operating conditions on roadways in the project area. The impact of construction-related traffic would be a temporary and intermittent, lessening of the capacities of streets in the project site vicinity because of the slower movements and larger turning radii of construction trucks compared to passenger vehicles. However, given the proximity of the project site to regional roadway network (i.e., U.S. 101), use of local roads by construction trucks would be minimal. Most construction traffic would be dispersed throughout the day. Thus, the temporary increase would not significantly disrupt daily traffic flow on roadways in the project site vicinity, and a less than significant impact would result.

4.8.5 Alternative E – Commercial Retail-Office Space

Site Access

Site access to the project site is proposed via five driveways that would connect to Asti Road. The northern and southern boundaries of the property have potential sight distance issues due to road curvature and vegetation. Therefore, for the purposes of this analysis and to provide the most conservative assessment, all of the traffic associated with the project was assigned to one central access point.

Project Trip Generation

The anticipated vehicle trip generation for Alternative E was based on standard trip generation rates as published in Trip Generation (ITE, 2003). Trip Generation was also used to establish trip reductions due to “pass-by trips” (trips that would already be on the road, but would go to the discount store and/or one of the restaurants proposed for the project site). As shown in **Table 4.8-13**, Alternative E would generate about 8,378 daily vehicle trips, which includes about 753 trips during the weekday p.m. peak hour and 730 trips during the weekend midday peak hour.

Project Trip Distribution

Trip distribution assumptions for Alternative E was based upon existing traffic patterns and locations of potential trip origins throughout the City. These trip distribution assumptions, which are consistent with those assumptions used in the General Plan traffic analysis, are summarized in **Table 4.8-14**. **Figure 4.8-5** shows Alternative E trips at the study intersections.

**TABLE 4.8-13
TRIP GENERATION SUMMARY – ALTERNATIVE E**

Land Use	Units	Weekday Daily		Weekday PM Peak Hour				Weekend Peak Hour			
		Rate	Trips	Rate	Trips	In	Out	Rate	Trips	In	Out
Industrial Park	150 ksf	6.96	1,044	0.86	129	27	102	0.14	21	7	14
General Office Building	125 ksf	12.67	1,584	1.49	186	31	155	0.41	51	27	24
Discount Store	45 ksf	56.02	2,521	5.06	228	114	114	7.58	341	174	167
Pass-By Trips	-19%		-479		-44	-22	-22		-65	-33	-32
Specialty Retail	30 ksf	44.32	1,330	2.71	81	35	46	2.71	81	35	46
High-Turnover (Sit-Down) Restaurant	7 ksf	127.15	890	10.92	76	47	29	20.00	140	88	52
Pass-By Trips	-45.5%		-405		-35	-21	-14		-64	-40	-24
Fast Food w/ Drive Thru	7 ksf	496.12	3,473	34.64	242	126	116	59.20	414	211	203
Pass-By Trips	-45.5%		-1,580		-110	-57	-53		-189	-97	-92
Total Net Vehicle Trips			8,378		753	280	473		730	372	358

ksf = 1,000 square feet

SOURCES: W-Trans, using trip generation rates from ITE, *Trip Generation*

**TABLE 4.8-14
TRIP DISTRIBUTION – ALTERNATIVE E**

Route	Percent
U.S. 101 South via South Cloverdale Interchange	40%
U.S. 101 North via South Cloverdale Interchange	15%
U.S. 101 North via Citrus Fair Drive Interchange	5%
SR 128 West via Citrus Fair Drive & Cloverdale Blvd	10%
Cloverdale Boulevard South via Citrus Fair Drive	5%
First Street East	5%
First Street West	5%
Treadway Drive via South Interchange	5%
Cloverdale Boulevard North via South Interchange	10%
Total	100%

SOURCE: W-Trans

Impact 4.8.5-1: Peak Hour Intersection Performance (Potentially Significant)

As shown in **Table 4.8-15**, with the addition of traffic volumes generated by Alternative E to the baseline Year 2015 traffic (described in **Section 3.8**), one intersection would operate at an unacceptable level of service.⁹ The U.S. 101 Northbound Ramps / South Interchange intersection, which would operate at an unacceptable LOS D under baseline conditions during the weekday p.m. peak hour, would degrade to an unacceptable LOS F. The LOS calculation sheets are provided in **Appendix G**. This is a potentially significant impact. **Mitigation Measure 5.8-2** (signalization option) would reduce this impact to less than significant. Alternatively, **Mitigation Measure 5.8-4** (roundabout option) would reduce this impact to less than significant.

⁹ See Footnote 1, page 4.8-3.

Traffic signal warrants would be met for the following intersections under the projected 2015 plus Alternative E volumes.

- Asti Road / Project Access
- U.S. 101 Northbound Ramps / South Interchange

Significance after Mitigation: Less than Significant

Impact 4.8.5-2: Freeway Segment Performance (Less than Significant)

With the addition of traffic volumes generated by Alternative E to the baseline Year 2015 Short-term traffic (described in **Section 3.8**), all of the study freeway segments of U.S. 101 from the Sonoma-Mendocino County Line to the Dry Creek Road Interchange in Healdsburg would continue to operate at an acceptable LOS B or better in both the northbound and southbound directions during the weekday p.m. peak hour. Results of the freeway analysis are included in **Appendix G**. This impact would be less than significant.

**TABLE 4.8-15
SUMMARY OF INTERSECTION AVERAGE DELAY AND LEVELS OF SERVICE – ALTERNATIVE E**

Intersection	Existing Conditions		Short-Term (2015) Baseline		Short-Term (2015) plus Alternative E	
	PM Peak	Weekend Peak	PM Peak	Weekend Peak	PM Peak	Weekend Peak
1. Cloverdale Blvd / First Street	11.6/B	11.2/B	12.0/B	11.7/B	11.8/B	11.8/B
2. Cloverdale Blvd / Lake Street	2.3/A	2.0/A	2.0/A	1.7/A	2.2/A	1.6/A
<i>Westbound Approach</i>	19.3/C	16.0/C	20.1/C	14.1/B	24.4/C	15.8/C
3. Cloverdale Blvd / Citrus Fair Drive	13.3/B	19.0/C	14.6/B	21.4/C	15.4/B	22.2/C
4. U.S. 101 S. Ramps / Citrus Fair Dr.	0.9/A	1.0/A	1.1/A	1.2/A	1.8/A	2.1/A
<i>Southbound Approach</i>	9.8/A	9.0/A	10.4/B	9.3/A	14.8/B	12.1/B
5. U.S. 101 N. Ramps / Citrus Fair Dr	8.5/A	6.6/A	9.1/A	6.6/A	8.0/A	4.4/A
<i>Northbound Approach</i>	10.6/B	9.8/A	12.2/B	10.2/B	16.9/C	12.6/B
6. Asti Road / Citrus Fair Drive	5.0/A	3.4/A	4.8/A	4.0/A	7.6/A	6.9/A
<i>Eastbound Approach</i>	9.8/A	9.0/A	10.3/B	9.3/A	12.6/B	10.0/A
7. Asti Road / Project Access	NA	NA	NA	NA	16.4/B	10.8/B
<i>Westbound Approach</i>	NA	NA	NA	NA	30.6/D	22.5/C
8. Asti Road / Santana Drive	2.0/A	0.4/A	1.4/A	0.3/A	0.7/A	0.1/A
<i>Westbound Approach</i>	9.2/A	8.5/A	9.7/A	8.6/A	13.2/B	9.7/A
9. Cloverdale Boulevard / Treadway Drive	3.3/A	3.5/A	3.1/A	3.4/A	3.2/A	3.6/A
<i>Eastbound Approach</i>	12.1/B	11.1/B	12.3/B	12.3/B	12.8/B	12.9/B
10. Cloverdale Boulevard / South Interchange	9.7/A	8.0/A	10.8/B	7.7/A	12.4/B	8.3/A

**TABLE 4.8-15
SUMMARY OF INTERSECTION AVERAGE DELAY AND LEVELS OF SERVICE – ALTERNATIVE E**

Intersection	Existing Conditions		Short-Term (2015) Baseline		Short-Term (2015) plus Alternative E	
	PM Peak	Weekend Peak	PM Peak	Weekend Peak	PM Peak	Weekend Peak
<i>Westbound Approach</i>	13.4/B	10.6/B	16.1/C	11.1/B	18.7/C	11.8/B
11. U.S. 101 SB Ramps / So. Interchange	1.1/A	0.9/A	2.5/A	2.3/A	4.5/A	3.4/A
<i>Southbound Approach</i>	12.3/B	10.6/B	17.3/C	12.8/B	34.2/D	18.4/C
12. U.S. 101 NB Ramps / So. Interchange	13.7/B	9.3/A	30.2/D	8.0/A	88.8/F	9.6/A
<i>Northbound Approach</i>	19.0/C	13.2/B	51.9/F	14.7/B	**/F	20.2/C
<i>Mitigated (Signalized)</i>					26.6/C	21.1/C
<i>Mitigated (Roundabout)</i>					8.4/A	7.0/A
13. Asti Road / South Interchange	4.3/A	4.2/A	7.9/A	7.6/A	16.5/C	14.9/B
<i>Eastbound Approach</i>	9.5/A	9.3/A	13.5/B	12.0/B	39.4/E	29.9/D

Results are shown as Delay/LOS; Delay is measured in average seconds per vehicle; LOS = Level of Service
 Bold=Deficient LOS (relevant to impact determination); Shaded Cells=Queuing exceeds available storage capacity; the designation **/F signifies that delay is projected to be greater than 120 seconds per vehicle, and delays of that magnitude are less precise.

SOURCE: W-Trans, 2009

Impact 4.8.5-3: Bicycle, Pedestrian and Public Transit Impacts (Potentially Significant)

Bicycle Traffic. The SMART rail line and proposed SMART Path bisect the project site. Once constructed, the SMART Path would create a direct pathway connection between the project site and the Cloverdale Transit Depot, providing convenient access for patrons and employees who ride transit or are headed to downtown Cloverdale via the Citrus Fair Drive undercrossing of U.S. 101. It is recommended that the project coordinate onsite access improvements with the SMART Rail and Pathway project to ensure safe and convenient access to and from the path for its employees and patrons.

The project would be expected to generate a small volume of bicycle traffic, with primary orientation to either the Cloverdale Transit Depot/SMART train station or the downtown area. Access to both of these destinations is already served by bicycle lanes, which are expected to operate adequately and safely with the addition of project-generated bicycle traffic, and therefore, no significant impacts (and no required mitigation measures) related to bicycle traffic are anticipated. However, bicyclists heading north on Asti Road from the project site must cross the SMART tracks at an oblique angle. While it is assumed that SMART will be upgrading all at-grade railroad crossings as a component of its efforts to rehabilitate the rail line and restore train service, it is recommended that the bicycle crossings of the rail line be upgraded with compliant crossing gates, tread surfaces, and other appropriate measures to ensure safety for non-motorized users.

Bicycle Recommendations

- Proposed project frontage improvements should include bike lane rehabilitation including signs and markings per the California Manual on Uniform Traffic Control Devices.

- Per the City's Bicycle and Pedestrian Master Plan, secure short-term bicycle parking (bicycle racks) should be provided convenient to the project's entry locations.
- Long-term bicycle parking in the form of (bicycle lockers) should be provided at a convenient location for project employees.
- Adequate storage and locker facilities for bicycle commuters should be provided, and shower facilities should be considered per the City's Bicycle and Pedestrian Master Plan.
- The project should provide a small fleet of loaner or rental bicycles to encourage non-motorized access between the project site and destinations in Cloverdale.
- The project should provide right-of-way or an easement as appropriate to accommodate the proposed Cloverdale River Trail along the eastern edge of the project fronting the Russian River.
- All bicycle crossings of the SMART rail line should be retrofit with compliant crossing gates, tread surfaces, and other appropriate measures to ensure safety for non-motorized users.
- The project should coordinate onsite access improvements with the SMART Rail and Pathway project to ensure safe and convenient access to and from the path for its employees and patrons

Pedestrian Traffic. Alternative E would be expected to generate a small volume of pedestrian traffic, with primary orientation to the Cloverdale Transit Depot/SMART train station and/or the Citrus Fair Drive undercrossing of US 101 leading to downtown Cloverdale. Currently, there are no pedestrian facilities serving the Asti Road corridor. However, the SMART rail improvements would include the creation of a multi-use trail paralleling the tracks, which can serve both bicyclists and pedestrians. The railroad tracks and proposed path bisect the project property and extend north to the Cloverdale Transit Depot and south to neighboring communities and beyond. While the exact location of the SMART path in the vicinity of the proposed project has yet to be determined, preliminary analysis indicates that it may be located along the east side of the tracks. The path would cross Asti Road approximately one-quarter mile north of the project site. Therefore, any pedestrians walking between the train station and the project site would not have any pedestrian facilities along this short section, an adverse effect for those pedestrians. This is a potentially significant impact. **Mitigation Measure 5.8-5** would reduce this impact to less than significant.

While it is assumed that SMART will be upgrading all at-grade railroad crossings as a component of its efforts to rehabilitate the rail line and restore train service, it is recommended that the pedestrian crossings of the rail line be upgraded with compliant crossing gates, tread surfaces, and other appropriate measures to ensure safety for non-motorized users.

Pedestrian Recommendations

- Project frontage improvements along Asti Road should include sidewalks.
- All pedestrian crossings of the SMART rail line should be retrofit with compliant crossing gates, tread surfaces, and other appropriate measures to ensure safety for non-motorized users.

Public Transit. Existing local and regional transit service are expected to serve the proposed project adequately. With train service anticipated to begin in the Year 2014 and with the station located approximately 0.6 miles from the project site, the SMART system would be expected to generate

a small number of riders to the Alternative E development, including both employees and customers/visitors. There are currently no plans for a shuttle bus serving the Cloverdale station; therefore, connections between the train and the development would take place via bicycle and pedestrian modes that are discussed above. It would be beneficial if the developer of Alternative E provided a shuttle as that could reduce the amount of vehicle traffic generated compared to what is projected in this study.

Transit Recommendations

- Shuttle service between the proposed project and the Cloverdale Transit Depot is recommended as a measure to increase transit ridership to the project site. Shuttle service between downtown Cloverdale and the proposed project should also be considered.
- The project should implement standard Transportation Demand Management (TDM) measures to encourage employee carpooling, transit, and bicycle and pedestrian trips to work. There are a variety of standard measures and incentives that are commonly implemented at employment sites throughout the County that could be utilized including parking practices, transit subsidies, shift schedules, and others.

Significance after Mitigation: Less than Significant

Impact 4.8.5-4: Intersection Safety (Potentially Significant)

Alternative E would add traffic volumes to the U.S. 101 Northbound Ramps / South Interchange intersection, which has a collision rate that is somewhat greater than the Statewide Average rates (see **Table 3.8-4, Section 3.8**). This is a potentially significant impact. At other intersections, such as at the Citrus Fair interchange and downtown Cloverdale, traffic volumes generated by Alternative E would be lower and would not affect the collision rates, and a less than significant impact would occur. **Mitigation Measure 5.8-2** (signalization option) would reduce this impact to less than significant. Alternatively, **Mitigation Measure 5.8-4** (roundabout option) would reduce this impact to less than significant.

Significance after Mitigation: Less than Significant

Impact 4.8.5-5: Parking Capacity (No Impact)

Using methodologies contained in Shared Parking (ULI, 2006), Alternative E would generate a peak parking demand of about 1,290 spaces, and the proposed 1,600 space onsite supply would be sufficient.¹⁰

¹⁰ See Footnote 2, page 4.8-10.

Impact 4.8.5-6: Construction Impacts (Less than Significant)

Construction activities associated with Alternative E would generate off-site traffic that would include the initial delivery of construction vehicles and equipment to the project site, the daily arrival and departure of construction workers, and the delivery of materials throughout the construction period and removal of construction debris. Deliveries would include shipments of concrete, lumber, and other building materials for onsite structures, utilities (e.g., plumbing equipment and electrical supplies) and paving and landscaping materials.

Construction-generated traffic would be temporary, and therefore, would not result in any long-term degradation in operating conditions on roadways in the project area. The impact of construction-related traffic would be a temporary and intermittent, lessening of the capacities of streets in the project site vicinity because of the slower movements and larger turning radii of construction trucks compared to passenger vehicles. However, given the proximity of the project site to regional roadway network (i.e., U.S. 101), use of local roads by construction trucks would be minimal. Most construction traffic would be dispersed throughout the day. Thus, the temporary increase would not significantly disrupt daily traffic flow on roadways in the project site vicinity, and a less than significant impact would result.

4.8.6 Alternative F – No Action

Under Alternative F, no impact to traffic circulation would occur in the near term. In the long term, site development would occur in a manner consistent with the City and County General Plans. A less than significant impact would result.

4.9 Land Use

Sonoma County and City of Cloverdale land use regulations would not apply to land that is taken into trust. The only applicable land use regulations would be federal or tribal. The Cloverdale Rancheria Tribal Government would guide and regulate land use on trust lands. For the purposes of evaluating consistency with the project, **Table 4.9-1** shows select goals, objectives and policies of the Sonoma County General Plan and City of Cloverdale General Plan in relation to the alternatives. It should be noted that the Project Site is within the Sphere of Influence of the City of Cloverdale. One parcel is located within the City limits and five parcels are located within the unincorporated area of Sonoma County.

4.9.1 Alternative A – Proposed Action

Impact 4.9.1-1 Consistency with Existing Land Use Policies (Less than Significant)

Land Use Designations and Zoning

Table 3.9-1 summarizes the existing land use designations and zoning for the project site.

The eastern portion of the project site, which would be developed with water and wastewater facilities and sprayfield crops, is designated and zoned for Land Intensive Agriculture by Sonoma County. If the Project Site were annexed, it would be designated Conservation by the City of Cloverdale. Consistency would require productive agriculture by the County or agriculture/open space by the City. Public facilities may be consistent as the City currently has a wastewater treatment pond within the area proposed for the Conservation designation. The proposed sprayfield crops would be similar to the use of the site for agriculture. Thus, the proposed uses are generally compatible, although not specifically consistent, with the City and County's designations and zoning.

The western portion of the project site, which would be developed with the casino resort, is designated Limited Industrial and zoned Rural Residential by the County. The western portion would be designated by the City as Business Park and General Industry if it were annexed. While the project site currently contains rural residential it is assumed from the County and City's designation that non-residential uses are envisioned for the site. The proposed commercial development is generally compatible, although not specifically consistent, with the City and County's designations and zoning. The southern parcel within the City, which would be developed with the Tribal administrative building, is designated and zoned for General Industry. Offices are a secondary and allowable use within General Industry areas.

With the exception of the parcel containing the proposed Tribal administrative building, the project site is generally compatible but not specifically consistent with the existing land use designations and zoning. This means the project is not so incompatible as to affect the designation and/or zoning of surrounding uses. In addition, the area surrounding the project site and City in general is not so developed that it precludes the City from obtaining land in the vicinity for uses intended for the project site. For these reasons this impact is considered less than significant.

Sonoma County and City of Cloverdale General Plan

Table 4.9-1 summarizes the consistency of the project with applicable goals, policies and objectives of the Sonoma County and City of Cloverdale General Plan. As discussed in the table, the project is consistent with the exception of development on agricultural soils. Impacts to agriculture are discussed below and found to be less than significant. As the project is consistent with the County and City general plans and agriculture impacts are less than significant, the project is found to be consistent with existing land use policy documents.

Impact 4.9.1-2 Compatibility with Surrounding Uses (Less than Significant)

The eastern portion of the project site is surrounded by the City's wastewater treatment plant to the north, open space and the Russian River to the east, and open space to the south. The use of this portion of the site for water and wastewater treatment facilities and sprayfield irrigation crops is compatible with these surrounding uses. Proposed water and wastewater treatment facilities would be located on the north end of the site next to similar municipal uses while sprayfield areas would be located near off-site open space.

The western portion of the project site is surrounded by light industrial and commercial uses to the south and Highway 101 to the west. Development of the western portion of the project site with proposed commercial facilities would not be incompatible with these surrounding uses. Highway 101 provides a buffer between the project site and rural residential and agricultural uses on the west side of Highway 101.

Development of Alternative A would not preclude these surrounding uses from continuing to operate. As development on the project site would be compatible with surrounding uses this impact would be less than significant.

Impact 4.9.1-3 Consistency with the Airport Land Use Plans (Potentially Significant)

A portion of the project site is located within the northwestern Traffic Pattern Zone (TPZ) of the Cloverdale Municipal Airport. The project is not consistent with the proposed density of uses within the TPZ; however, it is noted in the County's Comprehensive Airport Land Use Plan (CALUP) that this TPZ is not used.

The project site is located beneath the horizontal surface and conical surface of the navigable air space of the airport. The project site boundary is approximately 3,900 feet northwest of the end of the airport runway and project buildings above two stories are proposed conservatively at approximately 4,000 feet from the runway. At this distance the navigable airspace begins at 150 feet above the runway elevation or at 422 feet amsl. The proposed building sites are located conservatively at an elevation of 324 feet amsl (some buildings are located at slightly lower elevations) which leaves approximately 98 feet of clearance at the building sites prior to entering

navigable airspace. The proposed hotels and parking structures would be up to five stories and under 98 feet in height. While the project is not proposed to penetrate the navigable air space of the runway, the project is located at a distance which requires notification of construction under Federal Aviation Regulation (FAR) Part 77. Dust and smoke created by construction activities can penetrate the navigable airspace and potentially interfere with aircraft operations. Although unlikely, construction equipment, such as cranes, may also penetrate navigable airspace during construction. This impact is potentially significant. To protect the safety of aircraft operators and people on the ground from potential intrusions to navigable airspace within the project vicinity, the Tribe has submitted FAA form SF 7460-1, "Notice of Proposed Construction or Alteration" for FAA review. **Mitigation Measure 5.9-1** includes adherence to FAA recommendations concerning construction and lighting and would reduce this impact to a less than significant level.

The development of wastewater treatment ponds could potentially create a hazardous wildlife attractant near the airport. This impact is potentially significant. **Mitigation Measure 5.9-2** would reduce impacts to a less than significant level.

Significance after Mitigation: Less than Significant

Impact 4.9.1-4 Effect on Agriculture (Less than Significant)

Alternative A would result in the conversion of a portion of the project site from land used and/or designated for agriculture to non-agricultural uses. The Farmland Protection Policy Act implemented by the Natural Resource Conservation Service is discussed in **Section 3.9**. The Farmland Conversion Impact Rating Form was created to evaluate the importance of farmland and to minimize the impact of proposed federal actions on unnecessary conversion of farmland to non-agricultural uses. **Table 3.9-2** summarizes the project site's score of 123 out of a possible total of 260 points. The U.S. Department of Agriculture recommends that sites receiving scores of less than 160 need not be evaluated further. The criteria accounts for preservation policies including Williamson Act contracts and agricultural zoning (**Appendix M**). It should be noted that Williamson Act contracts would be removed (through non-renewal or cancellation) prior to any trust acquisition action.

Further, the development of the site would not result in effects to off-site agricultural uses. The nearest agricultural uses are located to the east and the eastern portion of the project site would contain either water/wastewater facilities with alfalfa sprayfields (public water/wastewater option) or would remain in agricultural use (private water/wastewater option). Additionally, the City of Cloverdale has projected future designations for the project site of light industrial and public/quasi-public/institutional – i.e. non-agricultural uses. Considering the above factors, the conversion of farmland is considered less than significant.

4.9.2 Alternative B – Reduced Hotel and Casino

Impact 4.9.2-1 Consistency with Existing Land Use Policies (Less than Significant)

Land Use Designations and Zoning

The facilities under Alternative B would be very similar in type and location to those described for Alternative A and thus consistency with land use designations and zoning would be similar. With the exception of the parcel containing the proposed Tribal administrative building, the project site is generally compatible but not specifically consistent with the existing land use designations and zoning. This means the project is not so incompatible as to affect the designation and/or zoning of surrounding uses. In addition, the area surrounding the project site and City in general is not so developed that it precludes the City from obtaining land in the vicinity for uses intended for the project site. For these reasons this impact is considered less than significant.

Sonoma County and City of Cloverdale General Plan

Table 4.9-1 summarizes the consistency of the project with applicable goals, policies and objectives of the Sonoma County and City of Cloverdale General Plan. As the project is consistent with the County and City general plans and agriculture impacts are less than significant the project is found to be consistent with existing land use policy documents.

Impact 4.9.2-2 Compatibility with Surrounding Uses (Less than Significant)

The facilities under Alternative B would be very similar in type and location to those described for Alternative A and thus compatibility with surrounding uses would be similar. Development of Alternative B would not preclude surrounding uses from continuing to operate. As development on the project site would be compatible with surrounding uses this impact would be less than significant.

Impact 4.9.2-3 Consistency with the Airport Land Use Plans (Potentially Significant)

As with Alternative A, Alternative B is not consistent with the proposed density of uses within the TPZ; however, it is noted in the CALUP that this TPZ is not used. The proposed building heights would be similar to Alternative A and thus would not penetrate navigable air space. The project is located at a distance which requires notification of construction under FAR Part 77. Dust and smoke created by construction activities can penetrate the navigable airspace and potentially interfere with aircraft operations. Although unlikely, construction equipment, such as cranes, may also penetrate navigable airspace during construction. This impact is potentially significant. **Mitigation Measure 5.9-1** is recommended to address the requirement for notification and to reduce this impact to less than significant.

The development of wastewater treatment ponds could potentially create a hazardous wildlife attractant near the airport. This impact is potentially significant. **Mitigation Measure 5.9-2** would reduce impacts to a less than significant level.

Significance after Mitigation: Less than Significant

Impact 4.9.2-4 Effect on Agriculture (Less than Significant)

As with Alternative A, Alternative B would result in the conversion of a portion of the project site from land used and/or designated for agriculture to non-agricultural uses. These uses would be very similar to those described for Alternative A. As discussed for Alternative A, the site's scoring on the Farmland Conversion Impact Rating Form is at a level where further consideration is not needed. Williamson Act contracts would be removed (through non-renewal or cancellation) prior to a trust acquisition action. Additionally, the City envisions future non-agricultural uses for the site and there are no off-site agricultural uses which would be affected by development of this alternative. For these reasons, the effect on agriculture is considered less than significant.

4.9.3 Alternative C – Reduced Casino

Impact 4.9.3-1 Consistency with Existing Land Use Policies (Less than Significant)

Land Use Designations and Zoning

The facilities under Alternative C would be very similar in type and location to those described for Alternative A and thus consistency with land use designations and zoning would be similar. With the exception of the parcel containing the proposed Tribal administrative building, the project site is generally compatible but not specifically consistent with the existing land use designations and zoning. This means the project is not so incompatible as to affect the designation and/or zoning of surrounding uses. In addition, the area surrounding the project site and City in general is not so developed that it precludes the City from obtaining land in the vicinity for uses intended for the project site. For these reasons this impact is considered less than significant.

Sonoma County and City of Cloverdale General Plan

Table 4.9-1 summarizes the consistency of the project with applicable goals, policies and objectives of the Sonoma County and City of Cloverdale General Plan. As the project is consistent with the County and City general plans and agriculture impacts are less than significant the project is found to be consistent with existing land use policy documents.

Impact 4.9.3-2 Compatibility with Surrounding Uses (Less than Significant)

The facilities under Alternative C would be very similar in type and location to those described for Alternative A and thus compatibility with surrounding uses would be similar. Development of Alternative B would not preclude surrounding uses from continuing to operate. As development on the project site would be compatible with surrounding uses this impact would be less than significant.

Impact 4.9.3-3 Consistency with the Airport Land Use Plans (Potentially Significant)

As with Alternative A, Alternative C is not consistent with the proposed density of uses within the TPZ; however, it is noted in the CALUP that this TPZ is not used. The proposed building heights would be similar to Alternative A and thus would not penetrate navigable air space. The project is located at a distance which requires notification of construction under FAR Part 77. Dust and smoke created by construction activities can penetrate the navigable airspace and potentially interfere with aircraft operations. Although unlikely, construction equipment, such as cranes, may also penetrate navigable airspace during construction. This impact is potentially significant. **Mitigation Measure 5.9-1** is recommended to address the requirement for notification and to reduce this impact to less than significant.

The development of wastewater treatment ponds could potentially create a hazardous wildlife attractant near the airport. This impact is potentially significant. **Mitigation Measure 5.9-2** would reduce impacts to a less than significant level.

Significance after Mitigation: Less than Significant

Impact 4.9.3-4 Effect on Agriculture (Less than Significant)

As with Alternative A, Alternative C would result in the conversion of a portion of the project site from land used and/or designated for agriculture to non-agricultural uses. These uses would be very similar to those described for Alternative A. As discussed for Alternative A, the site's scoring on the Farmland Conversion Impact Rating Form is at a level where further consideration is not needed. Williamson Act contracts would be removed (through non-renewal or cancellation) prior to a trust acquisition action. Additionally, the City envisions future non-agricultural uses for the site and there are no off-site agricultural uses which would be affected by development of this alternative. For these reasons, the effect on agriculture is considered less than significant.

4.9.4 Alternative D – Casino Only

Impact 4.9.4-1 Consistency with Existing Land Use Policies (Less than Significant)

Land Use Designations and Zoning

The facilities under Alternative D would be very similar in type and location to those described for Alternative A and thus consistency with land use designations and zoning would be similar. With the exception of the parcel containing the proposed Tribal administrative building, the project site is generally compatible but not specifically consistent with the existing land use designations and zoning. This means the project is not so incompatible as to affect the designation and/or zoning of surrounding uses. In addition, the area surrounding the project site and City in general is not so developed that it precludes the City from obtaining land in the vicinity for uses intended for the project site. For these reasons this impact is considered less than significant.

Sonoma County and City of Cloverdale General Plan

Table 4.9-1 summarizes the consistency of the project with applicable goals, policies and objectives of the Sonoma County and City of Cloverdale General Plan. As the project is consistent with the County and City general plans and agriculture impacts are less than significant the project is found to be consistent with existing land use policy documents.

Impact 4.9.4-2 Compatibility with Surrounding Uses (Less than Significant)

The facilities under Alternative D would be very similar in type and location to those described for Alternative A and thus compatibility with surrounding uses would be similar. This alternative does not contain a hotel, convention center or entertainment center; however, casino, parking and water/wastewater facilities are in similar locations to Alternative A. Development of Alternative D would not preclude surrounding uses from continuing to operate. As development on the project site would be compatible with surrounding uses this impact would be less than significant.

Impact 4.9.4-3 Consistency with the Airport Land Use Plans (Potentially Significant)

As with Alternative A, Alternative D is not consistent with the proposed density of uses within the TPZ; however, it is noted in the CALUP that this TPZ is not used. The proposed building heights would be lower than Alternative A and thus would not penetrate navigable air space. The project is located at a distance which requires notification of construction under FAR Part 77. Dust and smoke created by construction activities can penetrate the navigable airspace and potentially interfere with aircraft operations. Although unlikely, construction equipment, such as cranes, may also penetrate navigable airspace during construction. This impact is potentially significant.

Mitigation Measure 5.9-1 is recommended to address the requirement for notification to reduce this impact to less than significant.

**TABLE 4.9-1
GENERAL PLAN CONSISTENCY**

	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
Sonoma County General Plan Land Use Element (3.2 Cloverdale/Northeast County)					
Goal LU-1 ...Achieve a desirable balance between job opportunities and population growth.	Alternative A is consistent with this goal. Alternative A provides jobs for existing residents of the County as discussed in Section 4.7.	Same as Alternative A			
Goal LU-2 Accommodate the major share of future growth within the nine existing cities and their expansion areas and within selected unincorporated communities, which are planned to have adequate water and sewer capacities.	Alternative A is consistent with this goal. The project is located within the future expansion area of the City and proposes no impact to municipal water and sewer.	Same as Alternative A			
Goal LU-3 Locate future growth within the cities and unincorporated Urban Service Areas in a compact manner using vacant "infill" parcels and lands next to existing development at the edge of these areas.	Alternative A is consistent with this goal. The project is located next to existing development.	Same as Alternative A			
Goal LU-4 Maintain adequate public services in both rural and Urban Service Areas to accommodate projected growth. Authorize additional development only when it is clear that a funding plan or mechanism is in place to provide needed services in a timely manner.	Alternative A is consistent with this goal. Alternative A proposes no significant impacts to public services after mitigation.	Same as Alternative A			
Goal LU-9 Protect lands currently in agricultural production and lands with soils and other characteristics that make them potentially suitable for agricultural use. .Retain large parcel sizes and avoid incompatible non agricultural uses.	Alternative A is not consistent with this goal as it proposes development on soils suitable for agriculture.	Same as Alternative A			
Goal LU- 10 The uses and intensities of any land development shall be consistent with preservation of important biotic resource areas and scenic features.	Biological impacts are assessed in Section 4.5 and impacts would be less than significant after mitigation.	Same as Alternative A			
Objective LU-13.2 Accommodate new commercial uses primarily in Cloverdale and secondarily within Geyserville's urban service boundary.	Alternative A is consistent with this goal.	Same as Alternative A			
Objective LU-13.3 Retain large parcel sizes within Cloverdale's urban boundary to provide for efficient urban residential development. New industrial or urban residential uses within the expansion area may occur only after the full range of public services are available.	Alternative A is consistent with this goal. Alternative A proposes no significant impacts to public services after mitigation.	Same as Alternative A			

**TABLE 4.9-1
GENERAL PLAN CONSISTENCY**

	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
City of Cloverdale General Plan Land Use Element					
Policy LU 1-4 It is the intent of the City to have a substantial reserve of industrial land to the south of the existing City limits, to provide for a balance of commercial and industrial lands on areas reserved for non-residential uses and to insure that there is a buffer between industrial and residential uses so that industrial uses do not affect residential areas.	Alternative A is consistent with this goal. The portion of the project site within the City is proposed to be Tribal offices. This is a secondary allowable use within parcels zoned for General Industry. Highway 101 serves as a buffered between the project and rural residential uses.	Same as Alternative A			
Policy LU 1-6. Provide recreation assets to match the population growth that are appropriate to the various groups who might use recreation facilities.	Alternative A is consistent with this goal.	Same as Alternative A			
Policy LU 2-4 Discourage the creation of retail commercial areas outside the downtown that would adversely affect the viability of the downtown, including freeway frontages south of the City, freeway frontages east of Highway 101, and areas around the central Highway 101 interchange.	Alternative A is consistent with this goal.	Same as Alternative A	Same as Alternative A	Same as Alternative A	Alternative E is not consistent with this goal as it proposes a retail commercial development outside of downtown.
Goal LU 6 New development will be coordinated with the provision of infrastructure and public services.	Alternative A is consistent with this goal. Alternative A proposes no significant impacts to public services after mitigation.	Same as Alternative A			
Goal LU 8 Maintain the Cloverdale Airport and allow only airport-compatible land uses near the airport.	Alternative A is consistent with this goal as discussed in Section 4.9.	Same as Alternative A			

The development of wastewater treatment ponds could potentially create a hazardous wildlife attractant near the airport. This impact is potentially significant. **Mitigation Measure 5.9-2** would reduce impacts to a less than significant level.

Significance after Mitigation: Less than Significant

Impact 4.9.4-4 Effect on Agriculture (Less than Significant)

As with Alternative A, Alternative D would result in the conversion of a portion of the project site from land used and/or designated for agriculture to non-agricultural uses. These uses would be very similar to those described for Alternative A. As discussed for Alternative A, the site's scoring on the Farmland Conversion Impact Rating Form is at a level where further consideration is not needed. Williamson Act contracts would be removed (through non-renewal or cancellation) prior to a trust acquisition action. Additionally, the City envisions future non-agricultural uses for the site and there are no off-site agricultural uses which would be affected by development of this alternative. For these reasons, the effect on agriculture is considered less than significant.

4.9.5 Alternative E – Commercial Retail-Office Space

Impact 4.9.5-1 Consistency with Existing Land Use Policies (Less than Significant)

Land Use Designations and Zoning

The eastern portion of the project site, would be developed with water and wastewater facilities and sprayfield crops, similar to Alternative A. As discussed under Alternative A, the proposed uses are generally compatible, although not specifically consistent, with the City and County's designations and zoning.

The western portion of the project site, which would be developed with the commercial retail/office space and warehousing space, is designated Limited Industrial and zoned Rural Residential by the County. The western portion is designated by the City as Business Park and General Industry. While the project site currently contains rural residential it is assumed from the County and City's designation that non-residential uses are envisioned for the site. The proposed commercial and light industrial development is generally compatible, although not specifically consistent, with the City and County's designations and zoning.

The project is not so incompatible as to affect the designation and/or zoning of surrounding uses. In addition, the area surrounding the project site and City in general is not so developed that it precludes the City from obtaining land in the vicinity for uses intended for the project site. For these reasons this impact is considered less than significant.

Sonoma County and City of Cloverdale General Plan

Table 4.9-1 summarizes the consistency of the project with applicable goals, policies and objectives of the Sonoma County and City of Cloverdale General Plan. As discussed in the table the project is consistent with the exception of development on agricultural soils and retail commercial outside of the downtown area. Impacts to agriculture are discussed below and found to be less than significant. The retail commercial proposed for the project site would likely serve a different function than retail in the downtown area. Alternative E is also a mixed use development with a significant amount of office and warehouse uses in addition to retail. As the retail is a component of a larger mixed-use development and provides space for larger retail stores than would be located in the downtown environment, this impact is considered less than significant.

Impact 4.9.5-2 Compatibility with Surrounding Uses (Less than Significant)

The eastern portion of the project site is surrounded by the City's wastewater treatment plant to the north, open space and the Russian River to the east, and open space to the south. The use of this portion of the site for water and wastewater treatment facilities and sprayfield irrigation crops is compatible with these surrounding uses as discussed for Alternative A.

The western portion of the project site is surrounded by light industrial and commercial uses to the south and Highway 101 to the west. Development of the western portion of the project site with proposed commercial retail/office space and warehouse facilities would not be incompatible with these surrounding uses. Highway 101 provides a buffer between the project site and rural residential and agricultural uses on the west side of Highway 101.

Development of Alternative A would not preclude these surrounding uses from continuing to operate. As development on the project site would be compatible with surrounding uses this impact would be less than significant.

Impact 4.9.5-3 Consistency with the Airport Land Use Plans (Potentially Significant)

As with Alternative A, Alternative E is not consistent with the proposed density of uses within the TPZ; however, it is noted in the CALUP that this TPZ is not used. The proposed building heights would be lower than Alternative A and thus would not penetrate navigable air space. The project is located at a distance which requires notification of construction under FAR Part 77. Dust and smoke created by construction activities can penetrate the navigable airspace and potentially interfere with aircraft operations. Although unlikely, construction equipment, such as cranes, may also penetrate navigable airspace during construction. This impact is potentially significant. **Mitigation Measure 5.9-1** is recommended to address the requirement for notification to reduce this impact to less than significant.

The development of wastewater treatment ponds could potentially create a hazardous wildlife attractant near the airport. This impact is potentially significant. **Mitigation Measure 5.9-2** would reduce impacts to a less than significant level.

Significance after Mitigation: Less than Significant

Impact 4.9.5-4 Effect on Agriculture (Less than Significant)

As with Alternative A, Alternative E would result in the conversion of a portion of the project site from land used and/or designated for agriculture to non-agricultural uses. As discussed for Alternative A, the site's scoring on the Farmland Conversion Impact Rating Form is at a level where further consideration is not needed. Williamson Act contracts would be removed (through non-renewal or cancellation) prior to a trust acquisition action. Additionally, the City envisions future non-agricultural uses for the site and there are no off-site agricultural uses which would be affected by development of this alternative. For these reasons, the effect on agriculture is considered less than significant.

4.9.6 Alternative F – No Action

Under the No Action Alternative, future development would be consistent with local land use and agriculture regulations and thus impacts would be less than significant.

4.10 Public Services

4.10.1 Alternative A – Proposed Action

Impact 4.10.1-1 Effects to Public Water Supply (Potentially Significant)

The following discussion incorporates information from the Utility Report (**Appendix H**) and Water Supply Report (**Appendix I**) prepared for the Proposed Action and alternatives.

Water Demand. The annual water demand for Alternative A is estimated to be 33.6 million gallons. The average daily demand is estimated to be approximately 92,023 gallons with a constant withdrawal rate of 64 gallons per minute (gpm). The peak daily flow is estimated to be 171,500 gallons with a required pump rate of 119 gpm.

Water Demand with Use of Reclaimed Water. The annual water demand for Alternative A with use of reclaimed water is estimated to be 24.3 million gallons. The associated average daily demand is estimated to be approximately 66,639 gallons with a constant withdrawal rate of 46 gpm. The associated peak daily flow is estimated to be 126,147 gallons with a required pump rate of 88 gpm. It is assumed that reclaimed water would be used for toilet flushing, fire protection, and irrigation uses.

Water supply for Alternative A would be obtained from either on-site wells (private option) or the City of Cloverdale (municipal option). The water facilities and improvements proposed for both the private and municipal options are discussed further in **Section 2.2.1**. Irrigation would represent an additional 20,000 gallons per day during the dry season with reduced demands during the wet season. An on-site storage tank for irrigation water would reduce the impact of irrigation demands on peak demands under both the private and municipal option.

Private Option

The site of the proposed well is shown on **Figure 2-1**. Well tests were conducted near the proposed well location. The well was pumped at a rate of 100 gallons per minute for 8 hours and showed total and constant drawdown of 1.7 feet during the test with 100% recovery several minutes after cessation of pumping.

The capacity of the well is calculated to be 59 gpm per foot of drawdown which could supply the project demand of 46 gpm with use of reclaimed water. The test rate at 100 gpm also indicates that the well could supply the peak flow of 88 gpm. Water storage is incorporated to moderate peak demands under the private option. As water under this option would adequately be provided privately, impacts to public water suppliers would be less than significant.

Municipal Option

The Tribe would contract with the City of Cloverdale to supply water to Alternative A under this option. As discussed in **Section 3.10**, the City wells have a capacity of approximately 2,900 gpm with an average demand of 1,180 gpm and thus it is not foreseeable that additional wells would be needed to provide service with or without the use of reclaimed water. Treatment

capacity currently exceeds the capacity of the wells and thus additional treatment capacity would not be needed. As the Tribe does not currently have an agreement to obtain water from the City and the construction of off-site distribution lines would be required to connect the project to the City water system, this impact is considered potentially significant. **Mitigation Measure 5.10-1** is recommended which would reduce the impact to a less than significant level.

On-Site Utility Relocation

Development of Alternative A would require the relocation of 1,750 feet of 8-inch line for the South Cloverdale Water District within the boundaries of the project site. The relocation of distribution facilities would result in temporary service impacts similar to those that would normally occur for improvement or relocation of water distribution lines; thus this impact is considered less than significant.

Significance after Mitigation: Less than Significant

Impact 4.10.1-2 Effects to Public Wastewater Services (Potentially Significant)

The following discussion incorporates information from the Utility Report (**Appendix H**) and Wastewater Treatment and Disposal Report (**Appendix J**) prepared for the Proposed Action and alternatives. The annual wastewater flow for Alternative A is estimated to be 33.6 million gallons with a daily average of 92,023 gallons. The peak daily flow is estimated at 171,500 gallons. Wastewater treatment and disposal would be provided either by facilities on the project site (private option) or by the City of Cloverdale (municipal option). The wastewater facilities and improvements proposed for both the private and municipal options are discussed further in **Section 2.2.1**.

Private Option

The layout of proposed wastewater facilities is shown on **Figure 2-1**. Wastewater would be treated to a tertiary level for reuse and disposal. Treated effluent would be disposed to sprayfields or recycling storage for landscape irrigation and fire suppression. The sprayfield area would be an alfalfa field or similar crop with high evapotranspiration capabilities of approximately 14.6 acres. Considering the size of the field, soil percolation rates, soil holding capacity, depth to groundwater, and evapotranspiration of the chosen crop, the spray field should provide adequate application area for treated effluent, ensuring that surface ponding and runoff would not occur and the underlying soil can accommodate the applied water (ESA, 2009). As wastewater treatment and disposal would be provided privately, impacts to public wastewater services would be less than significant.

Municipal Option

Under the municipal option, the Tribe would contract with the City of Cloverdale for wastewater service and connect to the existing 18-inch sewer main which runs along the southern and northeastern project boundary. As the Tribe does not currently have an agreement to obtain wastewater service from the City, this impact is considered potentially significant. **Mitigation Measure 5.10-2** is recommended, which would reduce the impact to a less than significant level.

Significance after Mitigation: Less than Significant

Impact 4.10.1-3 Effects to Solid Waste Facilities (Less than Significant)

Construction

Construction would result in a temporary increase in waste generation. Construction waste would include, but is not limited to, the following materials: concrete, lumber, glass, plastic, cardboard, insulation, metal, non-hazardous containers, aluminum, and electrical wiring. Construction waste would be taken to a site such as the Healdsburg Transfer Station or Central Disposal Site which accepts construction wastes. As construction waste would be a temporary impact and there is currently capacity for construction waste in the area, this impact would be less than significant.

Operation

During operation, solid waste would be generated by patrons and employees. The California Integrated Waste Management Board (CIWMB) has estimated waste disposal rates for various business types. The development includes business activities which typically generate from 0.9 to 3.1 tons per employee per year as shown in **Table 4.10-1**. Alternative A would employ approximately 1,610 people. Assuming various distributions of staffing between business types, Alternative A would generate approximately 2,000 to 4,000 tons per year. The Tribe would contract with Redwood Empire, or a similar provider, to provide collection services for recycling and solid waste. Solid waste and recycling would be hauled to the Healdsburg Transfer Station and then to one of several out-of-county landfills. As discussed in **Section 3.10**, the County currently transfers solid waste to several landfills and is in the process of updating the County Integrated Waste Management Plan. This amount is not expected to significantly decrease the life expectancy of any single landfill and thus impacts would be less than significant.

**TABLE 4.10-1
SOLID WASTE DISPOSAL RATES**

Business Code	Business Type	Tons/Employee/Year	Alternative
18	Trucking and Warehousing	1.9	E
29	Restaurants	3.1	A-E
30	Retail Trade	1.9	A-E
32	Hotels	2.1	A-C
33	Business Services	1.7	A-E
38	Amusement and Recreation Services	0.9	A-D

SOURCE: CIWMB, 2007. Solid Waste Disposal Rates for Businesses.
<http://www.ciwmb.ca.gov/wastechar/DispRate.htm>; ESA, 2008

Impact 4.10.1-4 Effects to Electricity, Natural Gas and Telecommunications Services (Less than Significant)

Electricity is available to the Proposed Action from Pacific Gas & Electric (PG&E) from lines which currently serve the project site. Natural gas would require installation of a 6-inch gas main, extending from the existing gas main on the east side of Asti Road approximately 2,500 feet south of Santana Drive. PG&E is the certified carrier of electric and gas energy serving the project site and to date has taken no action to close commercial rates to new or additional electric and gas requirements. Extensions and services are made in accordance with approved tariffs with the California Public Utilities Commission; thus, energy would be made available to the site. If natural gas extension is infeasible the project will utilize electric appliances and/or propane gas. Electricity lines and AT&T phone lines on the project site will be relocated underground during the construction process. Accessing cable would require utility extension to the project site; however, several satellite providers are available if cable extension is infeasible.

Impact 4.10.1-5 Effects to Law Enforcement Services (Potentially Significant)

The State of California and local law enforcement have enforcement authority over criminal activities on Tribal land, pursuant to Public Law 280. The project site includes parcels which are located within the jurisdiction of the Sonoma County Sheriff's Office and one parcel located within the jurisdiction of the City of Cloverdale Police Department. It is anticipated that the Tribe will contract with the City of Cloverdale Police Department; however, without an agreement in place enforcement authority would defer to the Sheriff's Office under Public Law 280.

The development of the project site would increase calls for service to local law enforcement. The development would generate increases in calls from the volume of people entering the community, similar to a tourist attraction or a shopping mall. In addition, research has been done on whether or not casinos increase crime in the general community over time. The results of these studies have been inconclusive as summarized in **Section 4.7**. Mitigation recommended below would lessen potential increased demands in the overall community.

The Tribe would provide security on site which would deter some illegal activities but there would still be increased demands on the primary law enforcement provider. The increased service demands would primarily affect patrol operations and detective functions. Increased demands affect each police department differently. The department may have the capacity to provide services or may have existing needs not created by the development. If the City of Cloverdale provided services it is likely that additional patrol officers (2 to 2.5 sworn officer positions based on City comments) would be needed so that existing staff could fulfill a detective position as the casino would likely bring calls requiring follow-ups and potentially out of City investigations. If Sonoma County provided services it is assumed that the Tribe would need to fund similar increased patrol responses to the project site to maintain existing levels of service. Whether the County or City provides services, the increased demand without compensation could have a potentially significant impact on the department. Additionally, if the City should propose to construct a new police facility it

is recommended that the Tribe fund a fair share of this development. **Mitigation Measure 5.10-3** is recommended to reduce impacts to a less than significant level.

Significance after Mitigation: Less than Significant

Impact 4.10.1-6 Effects to Fire Protection Services (Potentially Significant)

Construction

Construction of the project would increase the risk of fire on the project site. Equipment could create sparks which could ignite vegetation. The project site is not located in an area at high risk for wildland fires (Elliott, pers. comm., 2009). The risk for construction fires is similar to those found at other construction sites and would be lessened with standard best management practices including the use of spark arresters for construction equipment and clearing dried vegetation from the area; thus, the fire risk during construction would be less than significant.

Operation

The building incorporates fire protection features including indoor sprinkler systems and fire-resistant construction. On-site defibrillators would be located onsite and staff would be trained to operate defibrillator equipment prior to emergency service provider arrival. The project site is within the service area of the Cloverdale Fire Protection District and it is anticipated that it would provide fire suppression services and a portion of emergency medical services to the site. Development of the site would increase the number of calls for the site, particularly emergency medical assists. The development of the hotel and parking structures would also exceed the height of buildings in the area creating additional demands for an aerial apparatus as the nearest ladder truck is approximately 17 miles away. The District also has existing equipment needs (i.e. the daily use of a fire engine from 1975) and would need regional training for fighting multi-story fires. An aerial apparatus was identified as a need for the proposed Alexander Valley Resort project located just south of the project site so it is anticipated that the Tribe could fund a proportionate share of this need rather than the full cost of the apparatus. The increased demands without compensation could have a potentially significant impact on the District. This impact is potentially significant and would be reduced to less than significant with **Mitigation Measure 5.10-4**, a service contract with the District. A letter of intent between the District and the Tribe has been signed by both parties stating the intent to enter into good faith negotiations for an agreement for services (**Appendix N**).

Significance after Mitigation: Less than Significant

Impact 4.10.1-7 Effects to Emergency Medical Services (Potentially Significant)

Ambulance services and hospitals bill individual patients for service and do not typically require contracts with individual businesses. It is assumed that increased demand would pay for additional staff, facility and equipment needs. As emergency medical services are provided by private companies and additional costs would be paid for by persons receiving service, it is anticipated

that any increased services needs could be adequately funded; however, without an agreement for ambulance service this impact is potentially significant and would be reduced to less than significant with **Mitigation Measure 5.10-5**.

Significance after Mitigation: Less than Significant

4.10.2 Alternative B – Reduced Hotel and Casino

Impact 4.10.2-1 Effects to Public Water Supply (Potentially Significant)

Water Demand. The annual water demand for Alternative B is estimated to be 24.9 million gallons. The average daily demand is estimated to be approximately 68,303 gallons with a constant withdrawal rate of 47 gallons per minute (gpm). The peak daily flow is estimated to be 126,700 gallons with a required pump rate of 88 gpm. Irrigation would represent up to 20,000 gallons per day during the dry season with reduced demands during the wet season.

Water Demand with Use of Reclaimed Water. The annual water demand for Alternative B with use of reclaimed water is estimated to be 17.8 million gallons. The associated average daily demand is estimated to be approximately 48,697 gallons with a constant withdrawal rate of 34 gpm. The associated peak daily flow is estimated to be 92,101 gallons with a required pump rate of 64 gpm. If wastewater service is provided privately, the project would use tertiary treated wastewater for toilet flushing, fire protection and irrigation uses.

Water supply for Alternative B would be obtained through either a private or municipal arrangement.

Private Option

The site of the proposed well is shown on **Figure 2-3**. As well tests indicate that a private well in this area could supply average and peak demands for Alternative A, and Alternative B has a lower water demand than Alternative A, it is reasonable to assume that under this option adequate water could be privately provided. Thus, impacts to public water suppliers would be less than significant.

Municipal Option

As with Alternative A, Alternative B would require a service agreement with the City and construction of off-site distribution lines. This impact is considered potentially significant and **Mitigation Measure 5.10-1** is recommended, which would reduce the impact to a less than significant level.

On-Site Utility Relocation

The relocation of distribution facilities for the South Cloverdale Water District would result in temporary service impacts similar to those that would normally occur for improvement or relocation of water distribution lines; thus, this impact is considered less than significant.

Significance after Mitigation: Less than Significant

Impact 4.10.2-2 Effects to Public Wastewater Services (Potentially Significant)

The annual wastewater flow for Alternative B is estimated to be 24.9 million gallons with a daily average of 68,303 gallons. The peak daily flow is estimated at 126,700 gallons. Wastewater treatment and disposal would be provided through either the private or municipal option.

Private Option

The layout of proposed wastewater facilities is shown on **Figure 2-3**. As with Alternative A wastewater would be treated to a tertiary level for reuse and disposal. Alternative B would produce less wastewater flows than Alternative A and thus at most 14.6 acres of sprayfield would be required for effluent disposal. As wastewater treatment and disposal would be provided privately, impacts to public wastewater services would be less than significant.

Municipal Option

As with Alternative A, Alternative B would require a service agreement with the City. As the Tribe does not currently have an agreement to obtain wastewater service from the City, this impact is considered potentially significant. **Mitigation Measure 5.10-2** is recommended, which would reduce the impact to a less than significant level.

Significance after Mitigation: Less than Significant

Impact 4.10.2-3 Effects to Solid Waste Facilities (Less than Significant)

As construction waste would be a temporary impact and there is currently capacity for construction waste in the area, this impact would be less than significant. During operation, solid waste would be generated by patrons and employees. The development includes business activities which typically generate from 0.9 to 3.1 tons per employee per year as shown in **Table 4.9-1**. Alternative B would employ approximately 1,350 people. Assuming various distributions of staffing between business types, Alternative B would generate approximately 1,500 to 3,500 tons per year. As discussed for Alternative A, this is not expected to significantly decrease the life expectancy of any single landfill and thus impacts would be less than significant.

Impact 4.10.2-4 Effects to Electricity, Natural Gas and Telecommunications Services (Less than Significant)

Impacts to electricity, natural gas, and telecommunications services would be the same as Alternative A, although energy demands may be slightly lower for Alternative B. This impact is less than significant.

Impact 4.10.2-5 Effects to Law Enforcement Services (Potentially Significant)

It is anticipated that the Tribe will contract with the City of Cloverdale Police Department; however, without an agreement in place enforcement authority would defer to the Sheriff's Office under Public Law 280. Increased demands would be similar although slightly less than those discussed for Alternative A. Whether the County or City provides services, the increased demand without compensation could have a potentially significant impact on the department. **Mitigation Measure 5.10-3** is recommended to reduce impacts to a less than significant level.

Significance after Mitigation: Less than Significant

Impact 4.10.2-6 Effects to Fire Protection Services (Potentially Significant)

The risk for construction fires is similar to those found at other construction sites and would be less than significant with the use of standard best management practices. Increased demands would be similar although slightly less than those discussed for Alternative A. The increased demands without compensation could have a potentially significant impact on the District. **Mitigation Measure 5.10-4** is recommended to reduce impacts to a less than significant level.

Significance after Mitigation: Less than Significant

Impact 4.10.2-7 Effects to Emergency Medical Services (Potentially Significant)

As emergency medical services are provided by private companies and additional costs would be paid for by persons receiving service, it is anticipated that any increased services needs could be adequately funded; however, without an agreement for ambulance service this impact is potentially significant and would be reduced to less than significant with **Mitigation Measure 5.10-5**.

Significance after Mitigation: Less than Significant

4.10.3 Alternative C – Reduced Casino

Impact 4.10.3-1 Effects to Public Water Supply (Potentially Significant)

Water Demand. The water demand for Alternative C is estimated to be 22.3 million gallons. The average daily demand is estimated to be approximately 61,194 gallons with a constant withdrawal rate of 42 gallons per minute (gpm). The peak daily flow is estimated to be 114,500 gallons with a required pump rate of 79 gpm. Irrigation would represent up to 20,000 gallons per day during the dry season with reduced demands during the wet season.

Water Demand with Use of Reclaimed Water. The annual water demand for Alternative C with use of reclaimed water is estimated to be 16.0 million gallons. The associated average daily demand is estimated to be 43,849 gallons with a constant withdrawal rate of 30 gpm. The associated peak daily flow is estimated to be approximately 82,691 gallons with a required pump rate of 57 gpm. If wastewater service is provided privately, the project would use tertiary treated wastewater for toilet flushing, fire protection and irrigation uses.

Water supply for Alternative C would be obtained through either the private or municipal option.

Private Option

The site of the proposed well is shown on **Figure 2-5**. As well tests indicate that a private well in this area could supply average and peak demands for Alternative A, and Alternative C has a lower water demand than Alternative A, it is reasonable to assume that under this option adequate water could be privately provided. Thus, impacts to public water suppliers would be less than significant.

Municipal Option

As with Alternative A, Alternative C would require a service agreement with the City and construction of off-site distribution lines. This impact is considered potentially significant and **Mitigation Measure 5.10-1** is recommended, which would reduce the impact to a less than significant level.

On-Site Utility Relocation

The relocation of distribution facilities for the South Cloverdale Water District would result in temporary service impacts similar to those that would normally occur for improvement or relocation of water distribution lines; thus, this impact is considered less than significant.

Significance after Mitigation: Less than Significant

Impact 4.10.3-2 Effects to Public Wastewater Services (Potentially Significant)

The annual wastewater flow for Alternative C is estimated to be 22.3 million gallons with a daily average of 61,194 gallons. The peak daily flow is estimated at 114,500 gallons. Wastewater treatment and disposal would be provided through either the private or municipal option.

Private Option

The layout of proposed wastewater facilities is shown on **Figure 2-5**. As with Alternative A wastewater would be treated to a tertiary level for reuse and disposal. Alternative C would produce less wastewater flows than Alternative A and thus at most 14.6 acres of sprayfield would be required for effluent disposal. As wastewater treatment and disposal would be provided privately, impacts to public wastewater services would be less than significant.

Municipal Option

As with Alternative A, Alternative C would require a service agreement with the City. As the Tribe does not currently have an agreement to obtain wastewater service from the City, this impact is considered potentially significant. **Mitigation Measure 5.10-2** is recommended, which would reduce the impact to a less than significant level.

Significance after Mitigation: Less than Significant

Impact 4.10.3-3 Effects to Solid Waste Facilities (Less than Significant)

As construction waste would be a temporary impact and there is currently capacity for construction waste in the area, this impact would be less than significant. During operation, solid waste would be generated by patrons and employees. The development includes business activities which typically generate from 0.9 to 3.1 tons per employee per year as shown in **Table 4.9-1**. Alternative C would employ approximately 1,170 people. Assuming various distributions of staffing between business types, Alternative C would generate approximately 1,500 to 3,000 tons per year. As discussed for Alternative A, this is not expected to significantly decrease the life expectancy of any single landfill and thus impacts would be less than significant.

Impact 4.10.3-4 Effects to Electricity, Natural Gas and Telecommunications Services (Less than Significant)

Impacts to electricity, natural gas, and telecommunications services would be the same as Alternative A, although energy demands may be slightly lower for Alternative C. This impact is less than significant.

Impact 4.10.3-5 Effects to Law Enforcement Services (Potentially Significant)

It is anticipated that the Tribe will contract with the City of Cloverdale Police Department; however, without an agreement in place enforcement authority would defer to the Sheriff's Office under Public Law 280. Increased demands would be similar although slightly less than those discussed for Alternative A. Whether the County or City provides services, the increased demand without compensation could have a potentially significant impact on the department. **Mitigation Measure 5.10-3** is recommended to reduce impacts to a less than significant level.

Significance after Mitigation: Less than Significant

Impact 4.10.3-6 Effects to Fire Protection Services (Potentially Significant)

The risk for construction fires is similar to those found at other construction sites and would be less than significant with the use of standard best management practices. Increased demands would be similar although slightly less than those discussed for Alternative A. The increased demands without compensation could have a potentially significant impact on the District. **Mitigation Measure 5.10-4** is recommended to reduce impacts to a less than significant level.

Significance after Mitigation: Less than Significant

Impact 4.10.3-7 Effects to Emergency Medical Services (Potentially Significant)

As emergency medical services are provided by private companies and additional costs would be paid for by persons receiving service, it is anticipated that any increased services needs could be adequately funded; however, without an agreement for ambulance service this impact is potentially significant and would be reduced to less than significant with **Mitigation Measure 5.10-5**.

Significance after Mitigation: Less than Significant

4.10.4 Alternative D – Casino Only

Impact 4.10.4-1 Effects to Public Water Supply (Potentially Significant)

Water Demand. The annual water demand for Alternative D is estimated to be 13.5 million gallons. The average daily demand is estimated to be approximately 36,968 gallons with a constant withdrawal rate of 26 gallons per minute (gpm). The peak daily flow is estimated to be 63,900 gallons with a required pump rate of 44 gpm. Irrigation would represent up to 20,000 gallons per day during the dry season with reduced demands during the wet season.

Water Demand with Use of Reclaimed Water. The annual water demand for Alternative D with use of reclaimed water is estimated to be 9.3 million gallons. The associated average daily demand is estimated to be approximately 25,369 gallons with a constant withdrawal rate of 18 gpm. The associated peak daily flow is estimated to be 44,495 gallons with a required pump rate of 31 gpm. If wastewater service is provided privately, the project would use tertiary treated wastewater for toilet flushing, fire protection and irrigation uses.

Water supply for Alternative D would be obtained through either the private or municipal option.

Private Option

The site of the proposed well is shown on **Figure 2-7**. As well tests indicate that a private well in this area could supply average and peak demands for Alternative A, and Alternative D has a lower water demand than Alternative A, it is reasonable to assume that under this option adequate water could be privately provided. Thus, impacts to public water suppliers would be less than significant.

Municipal Option

As with Alternative A, Alternative D would require a service agreement with the City and construction of off-site distribution lines. This impact is considered potentially significant and **Mitigation Measure 5.10-1** is recommended, which would reduce the impact to a less than significant level.

On-Site Utility Relocation

The relocation of distribution facilities for the South Cloverdale Water District would result in temporary service impacts similar to those that would normally occur for improvement or relocation of water distribution lines; thus, this impact is considered less than significant.

Significance after Mitigation: Less than Significant

Impact 4.10.4-2 Effects to Public Wastewater Services (Potentially Significant)

The annual wastewater flow for Alternative D is estimated to be 13.5 million gallons with a daily average of 36,968 gallons. The peak daily flow is estimated at 63,900 gallons. Wastewater treatment and disposal would be provided through either the private or municipal option.

Private Option

The layout of proposed wastewater facilities is shown on **Figure 2-7**. As with Alternative A wastewater would be treated to a tertiary level for reuse and disposal. Alternative D would produce substantially less wastewater flows than Alternative A and thus less than 14.6 acres of sprayfield would be required for effluent disposal. As wastewater treatment and disposal would be provided privately, impacts to public wastewater services would be less than significant.

Municipal Option

As with Alternative A, Alternative D would require a service agreement with the City. As the Tribe does not currently have an agreement to obtain wastewater service from the City, this impact is considered potentially significant. **Mitigation Measure 5.10-2** is recommended, which would reduce the impact to a less than significant level.

Significance after Mitigation: Less than Significant

Impact 4.10.4-3 Effects to Solid Waste Facilities (Less than Significant)

As construction waste would be a temporary impact and there is currently capacity for construction waste in the area, this impact would be less than significant. During operation, solid waste would be generated by patrons and employees. The development includes business activities which typically generate from 0.9 to 3.1 tons per employee per year as shown in **Table 4.9-1**. Alternative D would employ approximately 960 people. Assuming various distributions of staffing between business types, Alternative D would generate approximately 1,000 to 2,500 tons per year. As discussed for Alternative A, this is not expected to significantly decrease the life expectancy of any single landfill and thus impacts would be less than significant.

Impact 4.10.4-4 Effects to Electricity, Natural Gas and Telecommunications Services (Less than Significant)

Impacts to electricity, natural gas, and telecommunications services would be the same as Alternative A, although energy demands would be lower for Alternative D. This impact is less than significant.

Impact 4.10.4-5 Effects to Law Enforcement Services (Potentially Significant)

It is anticipated that the Tribe will contract with the City of Cloverdale Police Department; however, without an agreement in place enforcement authority would defer to the Sheriff's Office under Public Law 280. Increased demands would be similar although slightly less than those discussed for Alternative A. While Alternative D does not include a hotel it is anticipated that the increased demands would result primarily from the casino. Whether the County or City provides services, the increased demand without compensation could have a potentially significant impact on the department. **Mitigation Measure 5.10-3** is recommended to reduce impacts to a less than significant level.

Significance after Mitigation: Less than Significant

Impact 4.10.4-6 Effects to Fire Protection Services (Potentially Significant)

The risk for construction fires is similar to those found at other construction sites and would be less than significant with the use of standard best management practices. While the project would increase demands to local fire protection services, this alternative does not include a multi-story hotel and thus it is anticipated that the project would not increase the need for an aerial apparatus. The increased demands without compensation could have a potentially significant impact on the District. **Mitigation Measure 5.10-4** is recommended to reduce impacts to a less than significant level.

Significance after Mitigation: Less than Significant

Impact 4.10.4-7 Effects to Emergency Medical Services (Potentially Significant)

As emergency medical services are provided by private companies and additional costs would be paid for by persons receiving service, it is anticipated that any increased services needs could be adequately funded; however, without an agreement for ambulance service this impact is potentially significant and would be reduced to less than significant with **Mitigation Measure 5.10-5**.

Significance after Mitigation: Less than Significant

4.10.5 Alternative E – Commercial Retail-Office Space

Impact 4.10.5-1 Effects to Public Water Supply (Potentially Significant)

Water Demand. The water demand for Alternative E is estimated to be 11.7 million gallons. The average daily demand is estimated to be approximately 32,028 gallons with a constant withdrawal rate of 22 gallons per minute (gpm). The peak daily flow is estimated to be 42,400 gallons with a required pump rate of 29 gpm. Irrigation would represent up to 20,000 gallons per day during the dry season with reduced demands during the wet season.

Water Demand with Use of Reclaimed Water. The annual water demand for Alternative E with use of reclaimed water is estimated to be 9.3 million gallons. The associated average daily demand is estimated to be approximately 25,428 gallons with a constant withdrawal rate of 18 gpm. The associated peak daily flow is estimated to be 33,313 gallons with a required pump rate of 23 gpm. If wastewater service is provided privately, the project would use tertiary treated wastewater for toilet flushing, fire protection and irrigation uses.

Water supply for Alternative E would be obtained through either the private or municipal option.

Private Option

The site of the proposed well is shown on **Figure 2-9**. As well tests indicate that a private well in this area could supply average and peak demands for Alternative A, and Alternative E has a lower

water demand than Alternative A, it is reasonable to assume that under this option adequate water could be privately provided. Thus, impacts to public water suppliers would be less than significant.

Municipal Option

As with Alternative A, Alternative E would require a service agreement with the City and construction of off-site distribution lines. This impact is considered potentially significant and **Mitigation Measure 5.10-1** is recommended, which would reduce the impact to a less than significant level.

On-Site Utility Relocation

The relocation of distribution facilities for the South Cloverdale Water District would result in temporary service impacts similar to those that would normally occur for improvement or relocation of water distribution lines; thus, this impact is considered less than significant.

Significance after Mitigation: Less than Significant

Impact 4.10.5-2 Effects to Public Wastewater Services (Potentially Significant)

The annual wastewater flow for Alternative E is estimated to be 11.7 million gallons with a daily average of 32,028 gallons. The peak daily flow is estimated at 42,400 gallons. Wastewater treatment and disposal would be provided through either the private or municipal option.

Private Option

The layout of proposed wastewater facilities is shown on **Figure 2-9**. As with Alternative A wastewater would be treated to a tertiary level for reuse and disposal. Alternative E would produce substantially less wastewater flows than Alternative A and thus less than 14.9 acres of sprayfield would be required for effluent disposal. As wastewater treatment and disposal would be provided privately, impacts to public wastewater services would be less than significant.

Municipal Option

As with Alternative A, Alternative E would require a service agreement with the City. As the Tribe does not currently have an agreement to obtain wastewater service from the City, this impact is considered potentially significant. **Mitigation Measure 5.10-2** is recommended, which would reduce the impact to a less than significant level.

Significance after Mitigation: Less than Significant

Impact 4.10.5-3 Effects to Solid Waste Facilities (Less than Significant)

As construction waste would be a temporary impact and there is currently capacity for construction waste in the area, this impact would be less than significant. During operation, solid waste would be generated by patrons and employees. The development includes business activities which typically generate from 1.7 to 3.1 tons per employee per year as shown in **Table 4.9-1**. Alternative E would

employ approximately 935 people. Assuming various distributions of staffing between business types, Alternative E would generate approximately 2,000 to 2,500 tons per year. As discussed for Alternative A, this is not expected to significantly decrease the life expectancy of any single landfill and thus impacts would be less than significant.

Impact 4.10.5-4 Effects to Electricity, Natural Gas and Telecommunications Services (Less than Significant)

Impacts to electricity, natural gas, and telecommunications services would be the same as Alternative A, although energy demands would be lower for Alternative E. This impact is less than significant.

Impact 4.10.5-5 Effects to Law Enforcement Services (Potentially Significant)

It is anticipated that the Tribe will contract with the City of Cloverdale Police Department; however, without an agreement in place enforcement authority would defer to the Sheriff's Office under Public Law 280. Increased demands would be less than those discussed for Alternative A, as Alternative E does not include a gaming or hotel component; however, it is anticipated that due to the scale of development there would be additional need for law enforcement staff (a new 0.5 sworn officer position based on reduced demands from Alternatives A through D). Whether the County or City provides services, the increased demand without compensation could have a potentially significant impact on the department. **Mitigation Measure 5.10-3** is recommended to reduce impacts to a less than significant level.

Significance after Mitigation: Less than Significant

Impact 4.10.5-6 Effects to Fire Protection Services (Potentially Significant)

The risk for construction fires is similar to those found at other construction sites and would be less than significant with the use of standard best management practices. While the project would increase demands to local fire protection services, this alternative does not include a multi-story hotel and thus it is anticipated that the project would not increase the need for an aerial apparatus. The increased demands without compensation could have a potentially significant impact on the District. **Mitigation Measure 5.10-4** is recommended to reduce impacts to a less than significant level.

Significance after Mitigation: Less than Significant

Impact 4.10.5-7 Effects to Emergency Medical Services (Potentially Significant)

As emergency medical services are provided by private companies and additional costs would be paid for by persons receiving service, it is anticipated that any increased services needs could be adequately funded; however, without an agreement for ambulance service this impact is potentially significant and would be reduced to less than significant with **Mitigation Measure 5.10-5**.

Significance after Mitigation: Less than Significant

4.10.6 Alternative F – No Action

Alternative F would have no impact to public services in the near term. In the long term, any new development would be required to pay a fair share of the cost of providing public services to the project site and thus impacts to public services would be less than significant. These fees may be paid through property taxes (including improvements) or through fee programs developed by the City and County.

4.10.7 References

ESA, 2009. Technical Memorandum Supplemental Evaluation of Dispersal by Spray Irrigation, Sirrah Property, Cloverdale Rancheria EIS Project, Cloverdale, CA. July 30, 2009.

4.11 Noise

In general, a long-term increase in noise is considered potentially significant if it substantially increases ambient noise levels at noise-sensitive locations in the vicinity of the project site or along roads serving project-related traffic. Some guidance as to the significance of changes in ambient noise levels is provided by the 1992 findings of the Federal Interagency Committee on Noise (FICON), which assessed the annoyance effects of changes in ambient noise levels resulting from aircraft operations. The recommendations are based on studies that relate aircraft noise levels to the percentage of persons highly annoyed by the noise. Annoyance is a summary measure of the general adverse reaction of people to noise that generates speech interference, sleep disturbance, or interference with the desire for a tranquil environment. Although the FICON recommendations were specifically developed to assess aircraft noise impacts, it has been asserted that they are applicable to all sources of noise described in terms of cumulative noise exposure metrics such as the Ldn or CNEL.

The rationale for the **Table 4.11-1** criteria is that as ambient noise levels increase, the noise resulting from a project is sufficient to cause significant annoyance. The quieter the ambient noise level is, the more increase of noise is allowable before it may cause significant annoyance.

**TABLE 4.11-1
MEASURES OF SUBSTANTIAL INCREASE FOR TRANSPORTATION NOISE EXPOSURE**

Ambient Noise Level Without Project (Ldn/CNEL)	Significant Impact Assumed to Occur if the Project Increases Ambient Noise Levels By:
<60 dB	+ 5.0 dB or more
60–65 dB	+ 3.0 dB or more
>65 dB	+ 1.5 dB or more

Source: Federal Interagency Committee on Noise (FICON), 1992.

While projects located on tribal trust land are exempt from local noise-related standards and policies, a discussion of local noise standards and policies is appropriate for potential off-site noise impacts. Specifically, the Noise Element of the *City of Cloverdale General Plan (2009)* uses the Land Use and Noise Compatibility Standards from the State of California General Plan Guidelines as their Exterior noise limits as shown in **Figure 4.11-1**. The City requires construction activity to be limited to the daytime hours of 7:00 a.m. to 6:00 p.m. Monday through Friday, and construction activity is prohibited weekends and holidays.

LAND USE CATEGORY	COMMUNITY NOISE EXPOSURE - Ldn or CNEL (dBA)							
	50	55	60	65	70	75	80	
Residential – Low Density Single Family, Duplex, Mobile Home	Normally Acceptable				Conditionally Acceptable		Normally Unacceptable	
Residential – Multi-Family	Normally Acceptable				Conditionally Acceptable		Normally Unacceptable	
Transient Lodging – Motel/Hotel	Normally Acceptable				Conditionally Acceptable		Normally Unacceptable	
Schools, Libraries, Churches, Hospitals, Nursing Homes	Normally Acceptable				Conditionally Acceptable		Normally Unacceptable	
Auditorium, Concert Hall, Amphitheaters	Conditionally Acceptable				Normally Unacceptable			
Sports Arena, Outdoor Spectator Sports	Conditionally Acceptable				Normally Unacceptable			
Playgrounds, Neighborhood Parks	Normally Acceptable				Conditionally Acceptable		Normally Unacceptable	
Golf Courses, Riding Stables, Water Recreation, Cemeteries	Normally Acceptable				Conditionally Acceptable		Normally Unacceptable	
Office Buildings, Business, Commercial and Professional	Normally Acceptable				Conditionally Acceptable		Normally Unacceptable	
Industrial, Manufacturing, Utilities, Agriculture	Normally Acceptable				Conditionally Acceptable		Normally Unacceptable	
	Normally Acceptable Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements.							
	Conditionally Acceptable New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features are included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning will normally suffice.							
	Normally Unacceptable New construction or development should be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirement must be made and needed noise insulation features included in the design.							
	Clearly Unacceptable New construction or development generally should not be undertaken.							

SOURCE: State of California, Governor's Office of Planning and Research, 1998. *General Plan Guidelines*.

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Figure 4.11-1
Land Use and Noise Compatibility Standards (Exterior)

Noise impacts are assessed based on a comparative analysis of the noise levels resulting from the Proposed Action and alternatives and the noise levels under baseline or existing conditions. Analysis of temporary construction noise effects is based on typical construction phases and equipment noise levels and attenuation of those noise levels due to distances between sensitive receptors in the vicinity and the construction activity. Non-transportation-related noise impacts were assessed by examining the proposed uses on-site. Lastly, traffic noise impacts were estimated using spreadsheets based on the Federal Highway Administration (FHWA) Highway Noise Prediction Model (RD-77-108), for calculating traffic noise levels.

Vibration from construction can be evaluated for potential impacts at sensitive receptors. Typical activities evaluated for potential building damage due to construction vibration include demolition, pile driving, and drilling or excavation in close proximity to structures. The ground-borne vibration can also be evaluated for perception to eliminate annoyance. Vibration propagates according to the following expression, based on point sources with normal propagation conditions:

$$PPV_{equip} = PPV_{ref} \times (25/D)^{1.5}$$

where:

PPV (equip) is the peak particle velocity in in/sec of the equipment adjusted for distance
 PPV (ref) is the reference vibration level in in/sec at 25 feet
 D is the distance from the equipment to the receiver

The peak particle velocity (PPV) is defined as the maximum instantaneous positive or negative peak of the vibration and is often used in monitoring of blasting vibration because it is related to the stresses experienced by structures.

In order to determine potential for annoyance, the vibration level (L_v) at any distance (D) shall be estimated based on the following equation:

$$L_v(D) = L_v(25 \text{ ft}) - 30 \log(D/25)$$

4.11.1 Alternative A – Proposed Action

Impact 4.11.1-1: Construction Noise and Vibration (Potentially Significant)

Construction activity noise levels at and near the site would fluctuate depending on the particular type, number, and duration of uses of various pieces of construction equipment. Construction activities associated with Alternative A would involve excavation, grading, and earth movement. Lastly, construction-related material haul trips would raise ambient noise levels along haul routes. The level of increase would depend on the number of haul trips made and types of vehicles used. **Table 4.11-2** shows typical noise levels during different construction stages. **Table 4.11-3** shows typical noise levels produced by various types of construction equipment.

**TABLE 4.11-2
TYPICAL CONSTRUCTION NOISE LEVELS**

Construction Phase	Noise Level (dBA, Leq) a
Ground Clearing	84
Excavation	89
Foundations	78
Erection	85
Finishing	89

a Average noise levels correspond to a distance of 50 feet from the noisiest piece of equipment associated with a given phase of construction and 200 feet from the rest of the equipment associated with that phase.

SOURCE: U.S. Environmental Protection Agency, Noise from Construction Equipment and Operations, Building Equipment, and Home Appliances, 1971.

**TABLE 4.11-3
TYPICAL NOISE LEVELS FROM CONSTRUCTION EQUIPMENT**

Construction Phase	Noise Level (dBA, Leq) a
Dump Truck	88
Portable Air Compressor	81
Concrete Mixer (Truck)	85
Scraper	88
Jack Hammer	88
Dozer	87
Paver	89
Generator	76
Backhoe Finishing	85

SOURCE: Cunniff, Environmental Noise Pollution, 1977.

Construction of Alternative A would generate significant amount of noise corresponding to the appropriate phase of building construction and the noise generating equipment used during those phases. The nearest sensitive receptor to the proposed action is a residence approximately 250 feet away on Santana Drive. There are also residences located across Highway 101, the nearest being approximately 500 feet on Otto Boni Drive. Noise from construction activities generally attenuates at a rate of 6 to 7.5 dBA per doubling of distance and thus other sensitive receptors in the vicinity would be exposed to construction noise at incrementally lower levels. Assuming an attenuation rate of 6 dBA per doubling of distance, the residence at 250 feet to construction would be exposed to approximately 75 dBA Leq during excavation, the loudest of the activities that would occur during construction. The residences located about 500 feet on Otto Boni Drive would be exposed to approximately 69 dBA Leq during excavation. This increase in noise due to construction of the proposed action would result in a 10-15 dBA or more increase over existing noise levels at the nearest residence on Santana Drive, and residences located across Highway 101. These construction noise levels would also exceed the City of Cloverdale exterior noise standards. Construction noise would therefore be considered a potentially significant impact without mitigation. However, **Mitigation Measures 5.11.1a** and **5.11.1b** would reduce this impact to less than significant.

Ground-borne vibration from activities that involve the use of heavy equipment for project construction could produce substantial vibration at nearby sensitive receptors. Vibration levels for large bulldozers are typically 0.089 inches/second PPV and 87 RMS at 25 feet (FTA, 2006). Under normal propagation conditions, vibration levels at residences 250 feet from the construction would be 0.003 in/sec PPV and 57 RMS, which are well below the FTA threshold of 0.20 in/sec and the annoyance threshold of 80 RMS; resulting in a less than significant impact.

Lastly, construction-related material haul trips and vehicle traffic to and from construction sites could raise ambient noise levels along construction haul routes, thus affecting sensitive receptors along these routes. In particular, trucks generate noise levels of approximately 85 dBA at 50 feet. At the same time, these trips and their associated noise would be short-term in duration and intermittent over the course of any day where there is construction activity, as opposed to occurring in a constant stream throughout the day. A less than significant impact would result.

Significance after Mitigation: Less than Significant

Impact 4.11.1-2: Operational Noise (Potentially Significant)

Transportation-Related Noise Effects

Alternative A would result in additional traffic on local roadways (see Section 4.8). To assess the impact of traffic on roadside noise levels, noise level projections were made using spreadsheets based on the Federal Highway Administration's (FHWA) Noise Prediction Model for those road segments that would experience the greatest increase in traffic volume and/or that would pass through residential areas.

The results of the modeling effort are shown in **Table 4.11-4** and **4.11-5** for the Existing, Short Term, Short Term Plus Alternatives, Buildout, and Buildout Plus Alternatives scenarios. Weekday peak hour trips were modeled because of the higher amount of traffic that occurs in the area during the weekdays. In analyzing the effects of traffic noise, the general rule is applied that in areas where traffic dominates the noise environment, the L_{eq} during the peak-hour is roughly equivalent (within about 2 dBA) to the L_{dn} at that location.

As seen in **Table 4.11-4** and **4.11-5**, potentially significant noise levels (shown in bold) occur on all instances of Asti Road north of Santana Drive. The nearest residence is located approximately 310 feet from Asti Road; noise levels at the residence would be approximately between 52 and 53 dBA, which is the lower end of the measured ambient noise levels in the area as shown in **Table 3.11-1**. Potentially significant noise increases also occur from when the comparison between short term and existing and the comparison of buildout and existing.

However, these potential impacts would not be caused by Alternative A, but instead by the rise in general traffic in the area, and are further discussed in the cumulative impact analysis (Section 4.16). Thus, future noise levels resulting from the increased traffic would not be substantially greater than the existing ambient noise levels, and the impact associated with increased traffic noise at these residences would be considered less than significant for Alternative A.

**TABLE 4.11-4
EXISTING AND SHORT TERM (2015) PM PEAK HOUR TRAFFIC NOISE LEVELS ALONG ROADWAYS IN THE PROJECT VICINITY**

Roadway Segment ¹	Weekday Peak-Hour Noise Level, 50 ft from centerline, dBA, Leq												
	Existing	Short Term (2015)	Difference	Alt A +Short Term	Difference between Short Term and Short Term +Alt A	Alt B + Short Term	Difference between Short Term and Short Term + Alt B	Alt C + Short Term	Difference between Short Term and Short Term +Alt C	Alt D + Short Term	Difference between Short Term and Short Term + Alt D	Alt E + Short Term	Difference between Short Term and Short Term + Alt E
Treadway Dr. West of Cloverdale Blvd.	62	62	0	62	0	62	0	62	0	62	0	63	1
Asti Rd. North of Santana Dr.	45	47	2	53	6	52	5	52	5	52	5	52	5
Santana Dr. East of Asti Rd.	53	53	0	53	0	53	0	53	0	53	0	53	0
US 101 South Ramps North of Citrus Fair Dr.	51	53	2	56	3	55	2	55	2	55	2	57	4
US 101 South Ramps South of Citrus Fair Dr.	57	60	3	62	2	61	1	61	1	61	1	60	0
Cloverdale Blvd. South of Citrus Fair Dr.	67	67	0	67	0	67	1	67	1	67	1	68	1
Citrus Fair Dr. East of Cloverdale Blvd.	64	65	1	66	1	65	0	65	0	65	0	66	1

1 Noise levels were determined using spreadsheets based upon the FHWA Traffic Noise Prediction Model (FHWA RD-77-108) (Barry, T.M. and Regan, J.A., 1978).

2 As described in Table 4.11-1, traffic noise is considered significant if the incremental increase in noise is greater than 5 dBA Leq in a noise environment of 60 dBA CNEL or less, an increase of 3 dBA Leq in a noise environment greater than 60 dBA CNEL, or an increase of 1.5 dBA Leq in a noise environment greater than 65 dBA CNEL.

3 Numbers shown in Bold are considered potentially significant.

4 Asti road was measured 310 feet from the centerline to nearest sensitive receptor

SOURCE: ESA, 2009

**TABLE 4.11-5
EXISTING AND BUILDOUT (2030) PM PEAK HOUR TRAFFIC NOISE LEVELS ALONG ROADWAYS IN THE PROJECT VICINITY**

Roadway Segment ¹	Weekday Peak-Hour Noise Level, 50 ft from centerline, dBA, Leq												
	Existing	Buildout (2030)	Difference	Alt A + Buildout	Difference between Buildout and Alt A + Buildout	Alt B + Buildout	Difference between Buildout and Buildout + Alt B	Alt C + Buildout	Difference between Buildout and Buildout + Alt C	Alt D + Buildout	Difference between Buildout and Buildout + Alt D	Alt E + Buildout	Difference between Buildout and Buildout + Alt E
Treadway Dr. West of Cloverdale Blvd.	62	63	1	63	0	63	0	63	0	63	0	63	0
Asti Rd. North of Santana Dr.	45	50	5	54	4	54	4	54	4	53	3	54	4
Santana Dr. East of Asti Rd.	53	53	0	53	0	53	0	53	0	53	0	53	0
US 101 South Ramps North of Citrus Fair Dr.	51	56	5	57	1	57	1	57	1	57	1	58	2
US 101 South Ramps South of Citrus Fair Dr.	57	63	6	64	1	64	1	64	1	64	1	63	0
Cloverdale Blvd. South of Citrus Fair Dr.	67	69	2	69	0	69	0	69	0	69	0	69	0
Citrus Fair Dr. East of Cloverdale Blvd.	64	67	3	68	1	68	1	68	1	68	1	68	1

1 Noise levels were determined using spreadsheets based upon the FHWA Traffic Noise Prediction Model (FHWA RD-77-108) (Barry, T.M. and Regan, J.A., 1978).

2 As described in Table 4.11-1, traffic noise is considered significant if the incremental increase in noise is greater than 5 dBA Leq in a noise environment of 60 dBA CNEL or less, an increase of 3 dBA Leq in a noise environment greater than 60 dBA CNEL, or an increase of 1.5 dBA Leq in a noise environment greater than 65 dBA CNEL.

3 Numbers shown in Bold are considered potentially significant.

4 Asti road was measured 310 feet from the centerline to nearest sensitive receptor

SOURCE: ESA, 2009

Non-Transportation Related Noise Effects

An approximate 40 foot landscaped area, 30 foot slope, and a retaining wall will be located in between the proposed hotel/spa garden and the nearest residence on Santana Drive for Alternative A that would attenuate increases in noise associated with operation of Alternative A.

The HVAC system for maintaining comfortable temperatures within the proposed buildings would consist of packaged rooftop air conditioning systems. Such rooftop HVAC units typically generate noise levels of approximately 55 dB at a reference distance of 100 feet from the operating units during maximum heating or air conditioning operations. The noise level of the HVAC if on the edge of the building nearest the sensitive receptors (about 70 feet) would be about 59 dBA at the sensitive receptors. This is a potentially significant impact. **Mitigation Measure 5.11.2** would reduce this impact to less than significant.

Significance after Mitigation: Less than Significant

4.11.2 Alternative B – Reduced Hotel and Casino

Impact 4.11.2-1: Construction Noise and Vibration (Potentially Significant)

Construction activity noise levels for Alternative B would be similar to Alternative A. Construction of Alternative B would generate significant amount of noise corresponding to the appropriate phase of building construction and the noise generating equipment used during those phases. As discussed for Alternative A, the nearest sensitive receptor to the proposed action is a residence approximately 250 feet away on Santana Drive. There are also residences located across Highway 101, the nearest being approximately 500 feet on Otto Boni Drive. Noise from construction activities generally attenuates at a rate of 6 to 7.5 dBA per doubling of distance and thus other sensitive receptors in the vicinity would be exposed to construction noise at incrementally lower levels. Assuming an attenuation rate of 6 dBA per doubling of distance, the residence at 250 feet to construction would be exposed to approximately 75 dBA Leq during excavation, the loudest of the activities that would occur during construction. The residences located about 500 feet on Otto Boni Drive would be exposed to approximately 69 dBA Leq during excavation. This increase in noise due to construction of the proposed action would result in a 10-15 dBA or more increase over existing noise levels at the nearest residence on Santana Drive, and residences located across Highway 101. These construction noise levels would also exceed the City of Cloverdale exterior noise standards. Construction noise would therefore be considered a potentially significant impact without mitigation. However, **Mitigation Measures 5.11.1a** and **5.11.1b** would reduce this impact to less than significant.

Ground-borne vibration from activities that involve the use of heavy equipment for project construction could produce substantial vibration at nearby sensitive receptors. Vibration levels for large bulldozers are typically 0.089 inches/second PPV and 87 RMS at 25 feet (FTA, 2006). Under normal propagation conditions, vibration levels at residences 250 feet from the construction would be 0.003 in/sec PPV and 57 RMS, which are well below the FTA threshold of 0.20 in/sec and the annoyance threshold of 80 RMS; resulting in a less than significant impact.

Lastly, construction-related material haul trips and vehicle traffic to and from construction sites could raise ambient noise levels along construction haul routes, thus affecting sensitive receptors along these routes. In particular, trucks generate noise levels of approximately 85 dBA at 50 feet. At the same time, these trips and their associated noise would be short-term in duration and intermittent over the course of any day where there is construction activity, as opposed to occurring in a constant stream throughout the day. A less than significant impact would result.

Significance after Mitigation: Less than Significant

Impact 4.11.2-2: Operational Noise (Potentially Significant)

Transportation-Related Noise Effects

As with Alternative A, Alternative B would result in additional traffic on local roadways (see Section 4.8). **Table 4.11-4** and **4.11-5** summarize the Existing, Short Term, Short Term Plus Alternatives, Buildout, and Buildout Plus Alternatives scenarios. Weekday peak hour trips were modeled because of the higher amount of traffic that occurs in the area during the weekdays. In analyzing the effects of traffic noise, the general rule is applied that in areas where traffic dominates the noise environment, the L_{eq} during the peak-hour is roughly equivalent (within about 2 dBA) to the L_{dn} at that location.

As seen in **Table 4.11-4** and **4.11-5**, potentially significant noise levels (shown in bold) occur on all instances of Asti Road north of Santana Drive. The nearest residence is located approximately 310 feet from Asti Road; noise levels at the residence would be approximately between 52 and 53 dBA, which is the lower end of the measured ambient noise levels in the area as shown in **Table 3.11-1**. Potentially significant noise increases also occur from when the comparison between short term and existing and the comparison of buildout and existing.

However, these potential impacts would not be caused by Alternative B, but instead by the rise in general traffic in the area, and are further discussed in the cumulative impact analysis (Section 4.16). Thus, future noise levels resulting from the increased traffic would not be substantially greater than the existing ambient noise levels, and the impact associated with increased traffic noise at these residences would be considered less than significant for Alternative B.

Non-Transportation Related Noise Effects

As with Alternative A, an approximate 40 foot landscaped area, 30 foot slope, and a retaining wall will be located in between the proposed hotel/spa garden and the nearest residence on Santana Drive for Alternative B that would attenuate any potential increase in sound associated with operation.

The HVAC system for maintaining comfortable temperatures within the proposed buildings would consist of packaged rooftop air conditioning systems. Such rooftop HVAC units typically generate noise levels of approximately 55 dB at a reference distance of 100 feet from the operating units during maximum heating or air conditioning operations. The noise level of the HVAC if on the edge of the building nearest the sensitive receptors (about 70 feet) would be about 59 dBA at the

sensitive receptors. This is a potentially significant impact. **Mitigation Measure 5.11.2** would reduce this impact to less than significant.

Significance after Mitigation: Less than Significant

4.11.3 Alternative C –Reduced Casino

Impact 4.11.3-1: Construction Noise and Vibration (Potentially Significant)

Construction activity noise levels for Alternative C would be similar to Alternative A. Construction of Alternative C would generate significant amount of noise corresponding to the appropriate phase of building construction and the noise generating equipment used during those phases. As discussed for Alternative A, the nearest sensitive receptor to the proposed action is a residence approximately 250 feet away on Santana Drive. There are also residences located across Highway 101, the nearest being approximately 500 feet on Otto Boni Drive. Noise from construction activities generally attenuates at a rate of 6 to 7.5 dBA per doubling of distance and thus other sensitive receptors in the vicinity would be exposed to construction noise at incrementally lower levels. Assuming an attenuation rate of 6 dBA per doubling of distance, the residence at 250 feet to construction would be exposed to approximately 75 dBA Leq during excavation, the loudest of the activities that would occur during construction. The residences located about 500 feet on Otto Boni Drive would be exposed to approximately 69 dBA Leq during excavation. This increase in noise due to construction of the proposed action would result in a 10-15 dBA or more increase over existing noise levels at the nearest residence on Santana Drive, and residences located across Highway 101. These construction noise levels would also exceed the City of Cloverdale exterior noise standards. Construction noise would therefore be considered a potentially significant impact without mitigation. However, **Mitigation Measures 5.11.1a** and **5.11.1b** would reduce this impact to less than significant.

Ground-borne vibration from activities that involve the use of heavy equipment for project construction could produce substantial vibration at nearby sensitive receptors. Vibration levels for large bulldozers are typically 0.089 inches/second PPV and 87 RMS at 25 feet (FTA, 2006). Under normal propagation conditions, vibration levels at residences 250 feet from the construction would be 0.003 in/sec PPV and 57 RMS, which are well below the FTA threshold of 0.20 in/sec and the annoyance threshold of 80 RMS; resulting in a less than significant impact.

Lastly, construction-related material haul trips and vehicle traffic to and from construction sites could raise ambient noise levels along construction haul routes, thus affecting sensitive receptors along these routes. In particular, trucks generate noise levels of approximately 85 dBA at 50 feet. At the same time, these trips and their associated noise would be short-term in duration and intermittent over the course of any day where there is construction activity, as opposed to occurring in a constant stream throughout the day. A less than significant impact would result.

Significance after Mitigation: Less than Significant

Impact 4.11.3-2: Operational Noise (Potentially Significant)

Transportation-Related Noise Effects

As with Alternative A, Alternative C would result in additional traffic on local roadways (see Section 4.8). **Table 4.11-4** and **4.11-5** summarize the Existing, Short Term, Short Term Plus Alternatives, Buildout, and Buildout Plus Alternatives scenarios. Weekday peak hour trips were modeled because of the higher amount of traffic that occurs in the area during the weekdays. In analyzing the effects of traffic noise, the general rule is applied that in areas where traffic dominates the noise environment, the L_{eq} during the peak-hour is roughly equivalent (within about 2 dBA) to the L_{dn} at that location.

As seen in **Table 4.11-4** and **4.11-5**, potentially significant noise levels (shown in bold) occur on all instances of Asti Road north of Santana Drive. The nearest residence is located approximately 310 feet from Asti Road; noise levels at the residence would be approximately between 52 and 53 dBA, which is the lower end of the measured ambient noise levels in the area as shown in **Table 3.11-1**. Potentially significant noise increases also occur from when the comparison between short term and existing and the comparison of buildout and existing.

However, these potential impacts would not be caused by Alternative C, but instead by the rise in general traffic in the area, and are further discussed in the cumulative impact analysis (Section 4.16). Thus, future noise levels resulting from the increased traffic would not be substantially greater than the existing ambient noise levels, and the impact associated with increased traffic noise at these residences would be considered less than significant for Alternative C.

Non-Transportation Related Noise Effects

As with Alternative A, an approximate 40 foot landscaped area, 30 foot slope, and a retaining wall will be located in between the proposed hotel/spa garden and the nearest residence on Santana Drive for Alternative C that would attenuate increases in noise associated with operation.

The HVAC system for maintaining comfortable temperatures within the proposed buildings would consist of packaged rooftop air conditioning systems. Such rooftop HVAC units typically generate noise levels of approximately 55 dB at a reference distance of 100 feet from the operating units during maximum heating or air conditioning operations. The noise level of the HVAC if on the edge of the building nearest the sensitive receptors (about 70 feet) would be about 59 dBA at the sensitive receptors. This is a potentially significant impact. **Mitigation Measure 5.11.2** would reduce this impact to less than significant.

Significance after Mitigation: Less than Significant

4.11.4 Alternative D –Casino Only

Impact 4.11.4-1: Construction Noise and Vibration (Potentially Significant)

Construction activity noise levels for Alternative D would be similar to Alternative A. Construction of Alternative D would generate significant amount of noise corresponding to the appropriate phase of building construction and the noise generating equipment used during those phases. As discussed for Alternative A, the nearest sensitive receptor to the proposed action is a residence approximately 250 feet away on Santana Drive. There are also residences located across Highway 101, the nearest being approximately 500 feet on Otto Boni Drive. Noise from construction activities generally attenuates at a rate of 6 to 7.5 dBA per doubling of distance and thus other sensitive receptors in the vicinity would be exposed to construction noise at incrementally lower levels. Assuming an attenuation rate of 6 dBA per doubling of distance, the residence at 250 feet to construction would be exposed to approximately 75 dBA Leq during excavation, the loudest of the activities that would occur during construction. The residences located about 500 feet on Otto Boni Drive would be exposed to approximately 69 dBA Leq during excavation. This increase in noise due to construction of the proposed action would result in a 10-15 dBA or more increase over existing noise levels at the nearest residence on Santana Drive, and residences located across Highway 101. These construction noise levels would also exceed the City of Cloverdale exterior noise standards. Construction noise would therefore be considered a potentially significant impact without mitigation. However, **Mitigation Measures 5.11.1a** and **5.11.1b** would reduce this impact to less than significant.

Ground-borne vibration from activities that involve the use of heavy equipment for project construction could produce substantial vibration at nearby sensitive receptors. Vibration levels for large bulldozers are typically 0.089 inches/second PPV and 87 RMS at 25 feet (FTA, 2006). Under normal propagation conditions, vibration levels at residences 250 feet from the construction would be 0.003 in/sec PPV and 57 RMS, which are well below the FTA threshold of 0.20 in/sec and the annoyance threshold of 80 RMS; resulting in a less than significant impact.

Lastly, construction-related material haul trips and vehicle traffic to and from construction sites could raise ambient noise levels along construction haul routes, thus affecting sensitive receptors along these routes. In particular, trucks generate noise levels of approximately 85 dBA at 50 feet. At the same time, these trips and their associated noise would be short-term in duration and intermittent over the course of any day where there is construction activity, as opposed to occurring in a constant stream throughout the day. A less than significant impact would result.

Significance after Mitigation: Less than Significant

Impact 4.11.4-2: Operational Noise (Potentially Significant)

Transportation-Related Noise Effects

As with Alternative A, Alternative D would result in additional traffic on local roadways (see Section 4.8). **Table 4.11-4** and **4.11-5** summarize the Existing, Short Term, Short Term Plus Alternatives, Buildout, and Buildout Plus Alternatives scenarios. Weekday peak hour trips were

modeled because of the higher amount of traffic that occurs in the area during the weekdays. In analyzing the effects of traffic noise, the general rule is applied that in areas where traffic dominates the noise environment, the L_{eq} during the peak-hour is roughly equivalent (within about 2 dBA) to the L_{dn} at that location.

As seen in **Table 4.11-4** and **4.11-5**, potentially significant noise levels (shown in bold) occur on all instances of Asti Road north of Santana Drive. The nearest residence is located approximately 310 feet from Asti Road; noise levels at the residence would be approximately between 52 and 53 dBA, which is the lower end of the measured ambient noise levels in the area as shown in **Table 3.11-1**. Potentially significant noise increases also occur from when the comparison between short term and existing and the comparison of buildout and existing.

However, these potential impacts would not be caused by Alternative D, but instead by the rise in general traffic in the area, and are further discussed in the cumulative impact analysis (Section 4.16). Thus, future noise levels resulting from the increased traffic would not be substantially greater than the existing ambient noise levels, and the impact associated with increased traffic noise at these residences would be considered less than significant for Alternative D.

Non-Transportation Related Noise Effects

An approximate 190 foot landscaped area, and a 30 foot slope located between the casino and the nearest residence on Santana Drive for Alternative D that would attenuate increases in noise associated with operation.

The HVAC system for maintaining comfortable temperatures within the proposed buildings would consist of packaged rooftop air conditioning systems. Such rooftop HVAC units typically generate noise levels of approximately 55 dB at a reference distance of 100 feet from the operating units during maximum heating or air conditioning operations. The noise level of the HVAC if on the edge of the building nearest the sensitive receptor (about 120 feet) would be about 53 dBA. This is a potentially significant impact. **Mitigation Measure 5.11.2** would reduce this impact to less than significant.

Significance after Mitigation: Less than Significant

4.11.5 Alternative E – Commercial Retail-Office Space

Impact 4.11.5-1: Construction Noise and Vibration (Potentially Significant)

Construction activity noise levels for Alternative E would be similar to Alternative A. Construction of Alternative E would generate significant amount of noise corresponding to the appropriate phase of building construction and the noise generating equipment used during those phases. As discussed for Alternative A, the nearest sensitive receptor to the proposed action is a residence approximately 250 feet away on Santana Drive. There are also residences located across Highway 101, the nearest being approximately 500 feet on Otto Boni Drive. Noise from construction activities generally attenuates at a rate of 6 to 7.5 dBA per doubling of distance and thus other sensitive receptors in

the vicinity would be exposed to construction noise at incrementally lower levels. Assuming an attenuation rate of 6 dBA per doubling of distance, the residence at 250 feet to construction would be exposed to approximately 75 dBA Leq during excavation, the loudest of the activities that would occur during construction. The residences located about 500 feet on Otto Boni Drive would be exposed to approximately 69 dBA Leq during excavation. This increase in noise due to construction of the proposed action would result in a 10-15 dBA or more increase over existing noise levels at the nearest residence on Santana Drive, and residences located across Highway 101. These construction noise levels would also exceed the City of Cloverdale exterior noise standards. Construction noise would therefore be considered a potentially significant impact without mitigation. However, **Mitigation Measures 5.11.1a** and **5.11.1b** would reduce this impact to less than significant.

Ground-borne vibration from activities that involve the use of heavy equipment for project construction could produce substantial vibration at nearby sensitive receptors. Vibration levels for large bulldozers are typically 0.089 inches/second PPV and 87 RMS at 25 feet (FTA, 2006). Under normal propagation conditions, vibration levels at residences 250 feet from the construction would be 0.003 in/sec PPV and 57 RMS, which are well below the FTA threshold of 0.20 in/sec and the annoyance threshold of 80 RMS; resulting in a less than significant impact.

Lastly, construction-related material haul trips and vehicle traffic to and from construction sites could raise ambient noise levels along construction haul routes, thus affecting sensitive receptors along these routes. In particular, trucks generate noise levels of approximately 85 dBA at 50 feet. At the same time, these trips and their associated noise would be short-term in duration and intermittent over the course of any day where there is construction activity, as opposed to occurring in a constant stream throughout the day. A less than significant impact would result.

Significance after Mitigation: Less than Significant

Impact 4.11.5-2: Operational Noise (Potentially Significant)

Transportation-Related Noise Effects

As with Alternative A, Alternative E would result in additional traffic on local roadways (see Section 4.8). **Table 4.11-4** and **4.11-5** summarize the Existing, Short Term, Short Term Plus Alternatives, Buildout, and Buildout Plus Alternatives scenarios. Weekday peak hour trips were modeled because of the higher amount of traffic that occurs in the area during the weekdays. In analyzing the effects of traffic noise, the general rule is applied that in areas where traffic dominates the noise environment, the L_{eq} during the peak-hour is roughly equivalent (within about 2 dBA) to the L_{dn} at that location.

As seen in **Table 4.11-4** and **4.11-5**, potentially significant noise levels (shown in bold) occur on all instances of Asti Road north of Santana Drive. The nearest residence is located approximately 310 feet from Asti Road; noise levels at the residence would be approximately between 52 and 53 dBA, which is the lower end of the measured ambient noise levels in the area as shown in **Table 3.11-1**. Potentially significant noise increases also occur from when the comparison between short term and existing and the comparison of buildout and existing.

However, these potential impacts would not be caused by Alternative E, but instead by the rise in general traffic in the area, and are further discussed in the cumulative impact analysis (Section 4.16). Thus, future noise levels resulting from the increased traffic would not be substantially greater than the existing ambient noise levels, and the impact associated with increased traffic noise at these residences would be considered less than significant for Alternative E.

Non-Transportation Related Noise Effects

There would be approximately 260 feet of landscaped area between the proposed warehouse and the nearest residence on Santana Dive for Alternative E that would attenuate increases in noise associated with the operation.

The HVAC system for maintaining comfortable temperatures within the proposed buildings would consist of packaged rooftop air conditioning systems. Such rooftop HVAC units typically generate noise levels of approximately 55 dB at a reference distance of 100 feet from the operating units during maximum heating or air conditioning operations. The noise level of the HVAC if on the edge of the building nearest the sensitive receptor (about 260 feet) would be about 45 dBA. This is a potentially significant impact. **Mitigation Measure 5.11.2** would reduce this impact to less than significant.

Significance after Mitigation: Less than Significant

4.11.6 References

Caltrans, Technical Noise Supplement, 1998.

City of Cloverdale, 2009. City of Cloverdale General Plan. Adopted by the City Council of the City of Cloverdale by Resolution 022-2009, May 13, 2000. Last amended November 10, 2010. Available online at: <http://www.cloverdale.net/DocumentView.aspx?DID=454>.

City of Cloverdale Planning Department, Phone Note, January 27 2009.

Cunnif, Patrick, Environmental Noise Pollution, 1977.

Federal Transit Administration, Transit Noise and Vibration Impact Assessment, May 2006.

U.S. Environmental Protection Agency, Noise from Construction Equipment and Operations, Building Equipment, and Home Appliances, 1971.

4.12 Hazardous Materials

4.12.1 Alternative A – Proposed Action

Impact 4.12.1-1: Effects from Existing Sources of Hazardous Materials (Less than Significant)

As discussed in **Section 3.12**, available information and data reviewed does not suggest that ongoing or historical site uses have caused significant soil or groundwater contamination on the site (**Appendix K**). This impact is less than significant.

Impact 4.12.1-2: Hazardous Materials during Construction (Potentially Significant)

The potential exists for previously unidentified soil and/or groundwater contamination to be encountered during site preparation and construction activities. This impact is considered potentially significant. **Mitigation Measure 5.12-1** would reduce this impact to a less than significant level.

Significance after Mitigation: Less than Significant

Impact 4.12.1-3: Hazardous Materials during Operation (Less than Significant)

No significant quantities of hazardous materials will be used during operation of the project. Chemicals such as chlorine for the pool, industrial strength cleaning products, fertilizers, and pesticides may be used. These products would be kept in locked areas and accessed only by employees trained in their use and knowledgeable of the products instructions. The amount and type of chemical products used or stored on site would be similar to other commercial sites and would not introduce unusual storage, handling or disposal issues. The Tribe would also conform to federal Occupational Safety and Health Administration (OSHA) standards for the management, use and storage of hazardous materials in the workplace and thus impacts would be less than significant.

4.12.2 Alternative B – Reduced Hotel and Casino

Impact 4.12.2-1: Effects from Existing Sources of Hazardous Materials (Less than Significant)

As discussed in **Section 3.12**, available information and data reviewed does not suggest that ongoing or historical site uses have caused significant soil or groundwater contamination on the site (**Appendix K**). This impact is less than significant.

Impact 4.12.2-2: Hazardous Materials during Construction (Potentially Significant)

The potential exists for previously unidentified soil and/or groundwater contamination to be encountered during site preparation and construction activities. This impact is considered potentially significant. **Mitigation Measure 5.12-1** would reduce this impact to a less than significant level.

Significance after Mitigation: Less than Significant

Impact 4.12.2-3: Hazardous Materials during Operation (Less than Significant)

Chemicals such as chlorine for the pool, industrial strength cleaning products, fertilizers, and pesticides may be used. These products would be kept in locked areas and accessed only by employees trained in their use and knowledgeable of the products instructions. The Tribe would conform to federal OSHA standards for hazardous materials and thus impacts would be less than significant.

4.12.3 Alternative C – Reduced Casino

Impact 4.12.3-1: Effects from Existing Sources of Hazardous Materials (Less than Significant)

As discussed in **Section 3.12**, available information and data reviewed does not suggest that ongoing or historical site uses have caused significant soil or groundwater contamination on the site (**Appendix K**). This impact is less than significant.

Impact 4.12.3-2: Hazardous Materials during Construction (Potentially Significant)

The potential exists for previously unidentified soil and/or groundwater contamination to be encountered during site preparation and construction activities. This impact is considered potentially significant. **Mitigation Measure 5.12-1** would reduce this impact to a less than significant level.

Significance after Mitigation: Less than Significant

Impact 4.12.3-3: Hazardous Materials during Operation (Less than Significant)

Chemicals such as chlorine for the pool, industrial strength cleaning products, fertilizers, and pesticides may be used. These products would be kept in locked areas and accessed only by employees trained in their use and knowledgeable of the products instructions. The Tribe would conform to federal OSHA standards for hazardous materials and thus impacts would be less than significant.

4.12.4 Alternative D – Casino Only

Impact 4.12.4-1: Effects from Existing Sources of Hazardous Materials (Less than Significant)

As discussed in **Section 3.12**, available information and data reviewed does not suggest that ongoing or historical site uses have caused significant soil or groundwater contamination on the site (**Appendix K**). This impact is less than significant.

Impact 4.12.4-2: Hazardous Materials during Construction (Potentially Significant)

The potential exists for previously unidentified soil and/or groundwater contamination to be encountered during site preparation and construction activities. This impact is considered potentially significant. **Mitigation Measure 5.12-1** would reduce this impact to a less than significant level.

Significance after Mitigation: Less than Significant

Impact 4.12.4-3: Hazardous Materials during Operation (Less than Significant)

Chemicals such as industrial strength cleaning products, fertilizers, and pesticides may be used. These products would be kept in locked areas and accessed only by employees trained in their use and knowledgeable of the products instructions. The Tribe would conform to federal OSHA standards for hazardous materials and thus impacts would be less than significant.

4.12.5 Alternative E – Commercial Retail-Office Space

Impact 4.12.5-1: Effects from Existing Sources of Hazardous Materials (Less than Significant)

As discussed in **Section 3.12**, available information and data reviewed does not suggest that ongoing or historical site uses have caused significant soil or groundwater contamination on the site (**Appendix K**). This impact is less than significant.

Impact 4.12.5-2: Hazardous Materials during Construction (Potentially Significant)

The potential exists for previously unidentified soil and/or groundwater contamination to be encountered during site preparation and construction activities. This impact is considered potentially significant. **Mitigation Measure 5.12-1** would reduce this impact to a less than significant level.

Significance after Mitigation: Less than Significant

Impact 4.12.5-3: Hazardous Materials during Operation (Less than Significant)

Chemicals such as industrial strength cleaning products, fertilizers, and pesticides may be used. These products would be kept in locked areas and accessed only by employees trained in their use and knowledgeable of the products instructions. The Tribe would conform to federal OSHA standards for hazardous materials and thus impacts would be less than significant.

4.12.6 Alternative F – No Action

Impact 4.12.6-1: Effects from Existing Sources of Hazardous Materials (Less than Significant)

There are no sources on the project site or in the vicinity which would affect the continued use of the project site for residential and agricultural uses or eventually commercial and/or industrial uses. Any future development in the long term would comply with State and local environmental laws, thereby ensuring the risk of exposure to hazardous materials is minimized. A less than significant impact would occur.

4.13 Visual Resources

4.13.1 Alternative A – Proposed Action

Impact 4.13.1-1: Changes to Scenic Character (Potentially Significant)

Alternative A would result in the development of an urban setting in a primarily rural environment. Vistas in the area consist of the rolling hills to steep slopes of the Alexander Valley, some of which are developed with vineyards, pastures, and manmade structures. The proposed casino and associated buildings are located partially within the Sphere of Influence of the City of Cloverdale and partially within Sonoma County jurisdiction. The City of Cloverdale has zoned the project site as half Business Park and half General Industry within the western parcels. Anticipated uses for parcels within these zones include professional office and research and development, limited light industry, industrial parks, wineries, warehouses, lumber mills, assembly, and nurseries. The eastern parcels have been designated by Sonoma County to be zoned as Conservation. Anticipated uses of parcels within this zone include river/stream-related recreation, open space buffers, and agricultural production. The City has designated these parcels as Public/Quasi-Public.

As noted in Section 3, the project site is located immediately adjacent to Highway 101, which is a County-designated scenic corridor, as well as a designated scenic road within the Cloverdale General Plan. Highway 101 within Sonoma County is not, however, considered a Scenic Highway by Caltrans.

Similar to the proposed Alexander Valley Resort, a multi-story hotel, residential, and golf course complex which has been approved by Sonoma County and will be located immediately south of the project site, the proposed project would introduce new manmade features which can be seen from surrounding public areas, including Highway 101, recreationists on the Russian River, and residences located to the west of Highway 101. The proposed facility, including parking facilities, casino, and hotel, would be visible from Highway 101, and would result in a change from the existing rural residential uses of the area. Views from northbound Highway 101 towards the project site would consist primarily of the hotel (**Figure 4.13-1**). Views from southbound Highway 101 towards the project site would consist primarily of a parking structure and the hotel (**Figure 4.13-2**). Views from the Russian River would be primarily of a parking structure (**Figure 4.13-3**).

To conform with the current viewscape, as well as County and City General Plan regulations, the Tribe has proposed an architectural design that is not out of character for the region (**Figure 2-2**). The massing and design of the structures has been designed to minimize the impact to public views of the ridgeline behind the project site. No project components would be constructed above the existing ridgeline, thereby preserving the skyline. As previously described in Section 3.16, no prominent ridgelines identified by the City of Cloverdale will be impacted by Alternative A.

Alternative A also proposes landscaping to act as a screen for the parking structure, casino, and hotel, effectively obscuring views of these structures from most vantage points (Figures 4.13-1 through 4.13-3). This includes shrubs, lawns, and trees, all of which are within the aesthetic character of the region. With the maturation of the proposed landscaping, the views of passing motorists

on Highway 101 and nearby residents of the project site from nearby points on the valley floor and from nearby highways would remain reasonably consistent with current structures and views on the site. **Figure 4.13-4** displays the project site after the landscaping has grown for approximately 15 years.

While Alternative A includes landscaping and architectural treatments that minimizes potential impacts to the scenic character of the region, proposed structures may still impact visual resources if they are painted in a fashion that does not blend in with landscaping and background coloration. This is considered to be a potentially significant impact. **Mitigation Measure 5.13-1** would reduce this impact to less than significant.

Significance after Mitigation: Less than Significant

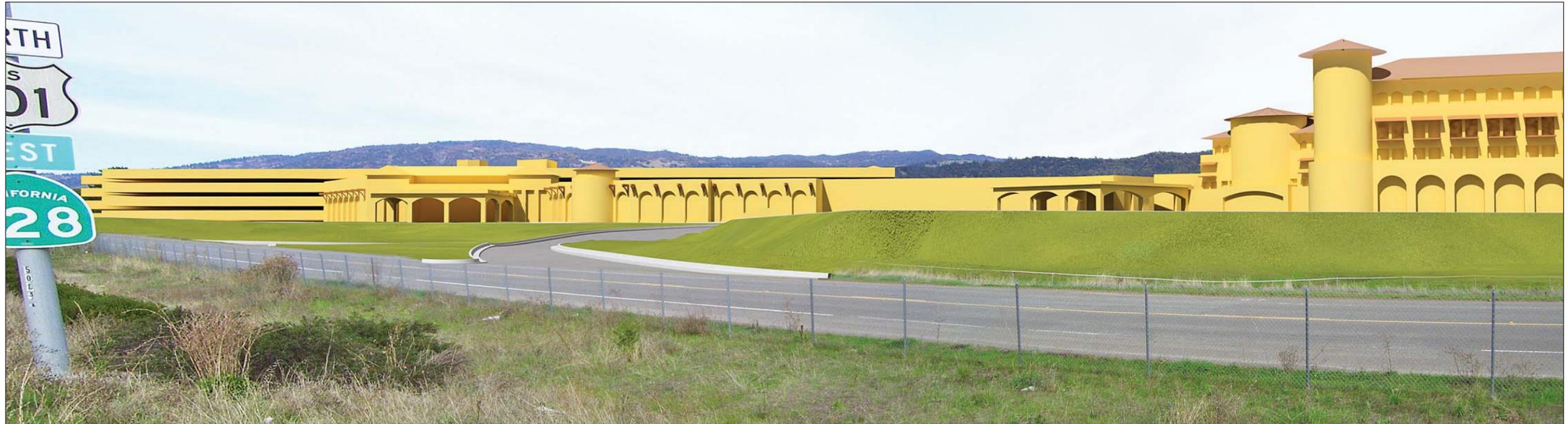
Impact 4.13.1-2: Night Lighting (Potentially Significant)

The project site is located in an area with relatively dark nighttime conditions. The glare from exterior lighting could be considered disruptive to the character of the area. Excessive or poorly directed illumination can be intrusive to nearby residences.

The proposed structures would contain indoor and outdoor lighting features as part of its design. The most apparent lighting would be associated with the hotel, casino, and parking structure that face Highway 101. With the addition of new lighting features, the proposed project has the potential to significantly increase the intensity of nighttime lighting on the project site.

Using architectural and landscape treatments, efforts would be made to minimize light pollution impacts to the surrounding area. Project design includes the requirement that all outdoor lighting for the proposed facilities shall prevent direct upward illumination. Proposed landscaping would also aid in screening light generated from the project site. Despite the measures taken within the project design to minimize light or glare, the potential exists that nighttime lighting would still impact night skies. This impact is considered to be potentially significant. **Mitigation Measures 5.13-2, 5.13-3, and 5.13-4** would reduce this impact to less than significant.

Significance after Mitigation: Less than Significant



PHOTOGRAPH 3. Northbound State Route 101 without landscaping.



PHOTOGRAPH 4. Northbound State Route 101 with landscaping.



PHOTOGRAPH 5. Southbound State Route 101 without landscaping.



PHOTOGRAPH 6. Southbound State Route 101 with landscaping.



PHOTOGRAPH 1. Looking west from the Russian River without landscaping.



PHOTOGRAPH 2. Looking west from the Russian River with landscaping.



PHOTOGRAPH 4. Northbound State Route 101 with landscaping.



PHOTOGRAPH 5. Southbound State Route 101 with landscaping.

4.13.2 Alternative B – Reduced Hotel and Casino

Impact 4.13.2-1: Changes to Scenic Character (Potentially Significant)

The facilities under Alternative B would be similar as those proposed for Alternative A, but on a reduced scale. The casino and hotel components are smaller in this alternative than Alternative A. Alternative B also does not include a convention center component. As described under Alternative A, the establishment of the proposed facilities on the project site would result in an alteration from the current views of the area; however, the project site is zoned for eventual light industrial/business park development. The proposed facility under Alternative B, similar to Alternative A, would not result in impacts to local ridgelines and would be consist of an architectural design that is not out of character for the region (**Figure 2-4**). Landscaping would be designed to act as a screen for the parking structure, hotel, and casino, effectively obscuring views of these structures from most vantage points.

However, like Alternative A, Alternative B may have structures painted in a fashion that does not blend in with existing and proposed landscaping and background coloration. This is considered to be a potentially significant impact. **Mitigation Measure 5.13-1** would reduce this impact to less than significant.

Significance after Mitigation: Less than Significant

Impact 4.13.2-2: Night Lighting (Potentially Significant)

As described under Alternative A, the addition of the proposed facilities would result in the addition of new sources of illumination in an area with relatively dark nighttime conditions. The reduction in size of the proposed facility would still result in illumination potentially intrusive to nearby residences. Project design includes the requirement that all outdoor lighting for the proposed facilities shall prevent direct upward illumination and that landscape vegetation be planted to aid in screening light generated from the project site. Despite the measures taken within the project design to minimize light or glare, the potential exists that nighttime lighting would still impact night skies. This impact is considered to be potentially significant. **Mitigation Measures 5.13-2, 5.13-3, and 5.13-4** would reduce this impact to less than significant.

Significance after Mitigation: Less than Significant

4.13.3 Alternative C – Reduced Casino

Impact 4.13.3-1: Changes to Scenic Character (Potentially Significant)

The facilities under Alternative C would be similar as those proposed for Alternative A, but on a reduced scale. The casino component is further reduced when compared to Alternative B. As described under Alternative A, the establishment of the proposed facilities on the project site would result in an alteration from the current views of the area; however, the project site is zoned for eventual light industrial/business park development. The proposed facility under Alternative C, similar to Alternative A, would not result in impacts to local ridgelines and would be consist of an architectural design that is not out of character for the region (**Figure 2-6**). Landscaping would be designed to act as a screen for the parking structure, hotel, and casino, effectively obscuring views of these structures from most vantage points.

However, like Alternative A, Alternative C may have structures painted in a fashion that does not blend in with existing and proposed landscaping and background coloration. This is considered to be a potentially significant impact. **Mitigation Measure 5.13-1** would reduce this impact to less than significant.

Significance after Mitigation: Less than Significant

Impact 4.13.3-2: Night Lighting (Potentially Significant)

As described under Alternative A, the addition of the proposed facilities would result in the addition of new sources of illumination in an area with relatively dark nighttime conditions. The reduction in size of the proposed facility would still result in illumination potentially intrusive to nearby residences. Project design includes the requirement that all outdoor lighting for the proposed facilities shall prevent direct upward illumination and that landscape vegetation be planted to aid in screening light generated from the project site. Despite the measures taken within the project design to minimize light or glare, the potential exists that nighttime lighting would still impact night skies. This impact is considered to be potentially significant. **Mitigation Measures 5.13-2, 5.13-3, and 5.13-4** would reduce this impact to less than significant.

Significance after Mitigation: Less than Significant

4.13.4 Alternative D – Casino Only

Impact 4.13.4-1: Changes to Scenic Character (Potentially Significant)

The facilities under Alternative D would be similar as those proposed for Alternative A, but on a reduced scale. No hotel, convention center, or entertainment center would be developed under this alternative. As described under Alternative A, the establishment of the proposed facilities

on the project site would result in an alteration from the current views of the area; however, the project site is zoned for eventual light industrial/business park development. The proposed facility under Alternative D, similar to Alternative A, would not result in impacts to local ridgelines and would be consist of an architectural design that is not out of character for the region (**Figure 2-8**). Landscaping would be designed to act as a screen for the parking structure, hotel, and casino, effectively obscuring views of these structures from most vantage points.

However, like Alternative A, Alternative D may have structures painted in a fashion that does not blend in with existing and proposed landscaping and background coloration. This is considered to be a potentially significant impact. **Mitigation Measure 5.13-1** would reduce this impact to less than significant.

Significance after Mitigation: Less than Significant

Impact 4.13.4-2: Night Lighting (Potentially Significant)

As described under Alternative A, the addition of the proposed facilities would result in the addition of new sources of illumination in an area with relatively dark nighttime conditions. The reduction in size of the proposed facility would still result in illumination potentially intrusive to nearby residences. Project design includes the requirement that all outdoor lighting for the proposed facilities shall prevent direct upward illumination and that landscape vegetation be planted to aid in screening light generated from the project site. Despite the measures taken within the project design to minimize light or glare, the potential exists that nighttime lighting would still impact night skies. This impact is considered to be potentially significant. **Mitigation Measures 5.13-2, 5.13-3, and 5.13-4** would reduce this impact to less than significant.

Significance after Mitigation: Less than Significant

4.13.5 Alternative E – Commercial Retail-Office Space

Impact 4.13.5-1: Changes to Scenic Character (Potentially Significant)

Under Alternative E, the project site would be developed as a commercial retail and office center with light industrial warehouse space. This development would be consistent with local land uses and current zoning. The proposed facilities under Alternative E, similar to Alternative A, would not result in impacts to local ridgelines and would be consist of an architectural design that is not out of character for the region (**Figure 2-10**). Landscaping would be designed to act as a screen for the center, effectively obscuring views of the facility from most vantage points.

However, like Alternative A, Alternative E may have structures painted in a fashion that does not blend in with existing and proposed landscaping and background coloration. This is considered to

be a potentially significant impact. **Mitigation Measure 5.13-1** would reduce this impact to less than significant.

Impact 4.13.5-2: Night Lighting (Potentially Significant)

As described under Alternative A, the addition of the proposed facilities would result in the addition of new sources of illumination in an area with relatively dark nighttime conditions. The development of a commercial retail and office center may result in less nighttime illumination than a 24-hour operation, although security and structural lighting would still be utilized. The proposed facility would still result in illumination potentially intrusive to nearby residences. Project design includes the requirement that all outdoor lighting for the proposed facilities shall prevent direct upward illumination and that landscape vegetation be planted to aid in screening light generated from the project site. Despite the measures taken within the project design to minimize light or glare, the potential exists that nighttime lighting would still impact night skies. This impact is considered to be potentially significant. **Mitigation Measures 5.13-2, 5.13-3, and 5.13-4** would reduce this impact to less than significant.

Significance after Mitigation: Less than Significant

4.13.6 Alternative F – No Action Alternative

Under the No Action Alternative, the project site would remain in agricultural and rural residential use in the near term, with future development presumed to fall under the General Industrial or Business Park zoning. This future development has similar potential to impact local ridgelines and convert the rural character to a more urban setting, as well as create a source of additional light and glare. Development of commercial facilities may also introduce new sources of lighting and glare. If this light would result in illumination potentially intrusive to nearby residences, it would be considered a potentially significant impact. However, because any proposed development would be subject to local regulations regarding visual resources and nighttime lighting, a less than significant impact would result.

4.14 Environmental Justice

This section analyzes the distribution patterns of high-minority and low-income populations on a regional basis and characterizes the distribution of such populations in the vicinity of the project site. This analysis focuses mainly on whether the Proposed Action or alternatives have the potential to affect area(s) of high-minority population(s) and low-income communities disproportionately and, thus would create an adverse environmental justice impact. According to Executive Order 12898, an environmental justice impact would be considered significant and would require mitigation if the construction or operation of the project would cause any minority or low-income population to bear a disproportionate share of an adverse impact.

4.14.1 Alternative A – Proposed Action

Impact 4.14.1-1: Effects to Minority or Low-Income Populations (No Impact)

As discussed in **Section 3.14**, demographic analysis of the local population indicates that no minority or low-income communities of concern are located within the affected environment for the Proposed Action that warrant environmental justice analysis. Consequently, no environmental justice impacts are associated with the Proposed Action.

4.14.2 Alternative B – Reduced Hotel and Casino

Impact 4.14.2-1: Effects to Minority or Low-Income Populations (No Impact)

No impacts would occur as there were no minority or low-income communities of concern identified within the affected environment.

4.14.3 Alternative C – Reduced Casino

Impact 4.14.3-1: Effects to Minority or Low-Income Populations (No Impact)

No impacts would occur as there were no minority or low-income communities of concern identified within the affected environment.

4.14.4 Alternative D – Casino Only

Impact 4.14.4-1: Effects to Minority or Low-Income Populations (No Impact)

No impacts would occur as there were no minority or low-income communities of concern identified within the affected environment.

4.14.5 Alternative E – Commercial Retail-Office Space

Impact 4.14.5-1: Effects to Minority or Low-Income Populations (No Impact)

No impacts would occur as there were no minority or low-income communities of concern identified within the affected environment.

4.14.6 Alternative F – No Action

Impact 4.14.6-1: Effects to Minority or Low-Income Populations (No Impact)

No impacts would occur as there were no minority or low-income communities of concern identified within the affected environment.

4.15 Indirect Effects

The Council on Environmental Quality Regulations for Implementing NEPA define indirect effects as effects “which are caused by the action and are later in time or farther removed in the distance, but are still reasonably foreseeable. Indirect effects may include growth inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems” (40 CFR 1508.8(b)). **Section 4.15.1** assesses the potential for growth-inducing effects. **Section 4.15.2** assesses effects cause by utility and traffic improvements. Many indirect and off-site effects are also analyzed in **Sections 4.2** through **4.14**, such as indirect effects related to pollutant discharges and downstream resources, increases in human activity, and other effects that may occur later in time.

4.15.1 Growth-Inducing Effects

Growth-inducing effects are a subset of indirect effects. A growth-inducing effect is an effect which fosters (or removes a barrier to) economic or population growth either directly or indirectly. An example of direct growth inducement would be the construction of new housing. Examples of indirect growth inducement include establishing substantial new permanent employment opportunities and removing obstacles to population growth (e.g. the expansion or improvement of utilities which allows for more growth within the service area). Growth inducement itself is not an environmental effect, but it could lead to physical environmental effects such as increased demand on public services and infrastructure, increased traffic and noise, degradation of air or water quality, or degradation or loss of special-status species habitat over time.

Potential Residential Growth

Employment Growth

The direct employment associated with the project alternatives has been addressed within **Section 4.7**. In addition to the direct employment generated by the Proposed Action and alternatives, indirect and induced employment would also occur as a result of increased expenditures for goods and services. **Table 4.14-1** provides a summary of the net full-time equivalent employment impacts for each of the project alternatives. The data provided in **Table 4.14-1** takes into account the “substitution effect” which assumes that the net job and economic effects from the casino alternatives are expected to be reduced due to the substitution of patrons from other similar business located within Sonoma County, primarily the River Rock Casino and other entertainment venues and destinations. Thus, the economic impacts resulting from the alternatives would not all be “new” to the County but would represent a percentage of transfers of spending within the County. Please refer to **Section 4.7** (Socioeconomic Conditions) for a detailed discussion of the substitution effect for each project Alternative.

**TABLE 4.15-1
ESTIMATED NET DIRECT, INDIRECT, AND INDUCED EMPLOYMENT**

Classification	Alternatives				
	A	B	C	D	E
Direct Jobs within Sonoma County	2,675	2,105	1,890	1,240	1,235
Indirect and Induced Jobs within Sonoma County	1,430	1,124	1,029	567	742
Total Jobs	4,105	3,229	2,919	1,807	1,977

ESA, 2009

The extent to which direct, indirect, and induced employment growth is captured by the Sonoma County economy will depend on the County's ability to provide the necessary labor force. As discussed in **Section 3.7**, in 2008 Sonoma County's total labor force was estimated to be approximately 270,500 with a county-wide unemployment rate of 6.5 percent, a rate much higher than its historical average of 4.2 percent. This suggests that currently there are at least 6,220 Sonoma County currently unemployed residents (i.e. 2.3 percent of the total labor force) likely highly available for employment by the project. The current economy's weakness also suggests that future unemployment rates may increase thereby adding greater job demand amongst Sonoma County's residents. While it is not expected that the direct, indirect, and induced employment growth will be able to utilize the entirety of the existing unemployed labor pool for the new job growth, the data suggests that a sufficient labor force exists within the County to eliminate the need to substantially draw employees from other regions.

Sonoma County's population is projected to increase by 0.7 percent annually. This rate of growth may be expected to result in similar growth to the County labor force which would add over 1,890 new workers annually. By the time that the proposed project would begin to operate in 2011 (at the earliest), at least two years of labor force growth may be expected to have occurred which would add more than 3,780 new workers. Such annual labor force growth can be expected to further increase the potential employable labor force for the project.

Potential Housing Growth

As described in **Section 4.7**, Sonoma County had 197,907 housing units with a vacancy rate of 5.8 percent in 2008. This suggests that up to 11,480 housing units were unoccupied. While some of the unoccupied units may serve as secondary homes or are unavailable for occupancy, the existing housing supply conditions suggest that there is potential underused housing capacity within Sonoma County. Assuming a base vacancy rate of 2 percent (which corresponds to several of the cities in Sonoma's current housing conditions), there would be up to 7,520 housing units could be occupied. Of these approximately 6,625 homes (88 percent) are located in unincorporated areas of the County. In Santa Rosa, up to 450 homes could be occupied by new homeowners and in Cloverdale approximately 90 homes could be occupied.

Consequently, in the event that relocating workers or new County residents need additional housing, there is a strong potential for their housing needs to be absorbed by the existing housing supply.

As a result, the project's future direct, indirect, and induced employment needs could be adequately met through the existing housing supply and not require the construction of new housing to support population and employment growth.

Potential Commercial Growth

The increased demand for goods and services from the proposed alternatives would result in the need for increased commercial services from the surrounding cities and counties. Examples of goods and services include fresh produce, wholesale goods, marketing, and maintenance products and services. Commercial growth would also occur as the result of new employee wages, which would be used to provide the workers with housing, clothes, food, health care, and a range of other goods and services. Visitors who are attracted to the region as a result of the proposed alternatives can be expected to spend money on food, transportation, accommodation and entertainment elsewhere in the region. For example, casino patrons may also stop at a local shopping center or service station. As is the case with the indirect/induced employment, commercial growth is expected to occur over a wide geographical area, due to the diversity of the business affected and the dispersed location of the potential labor force. It is not anticipated that new commercial development will be required to support the proposed alternatives.

Potential Growth from Infrastructure or Utility Improvements

Proposed improvements which could be considered growth-inducing include increasing traffic capacity on roadways, increasing capacity of public services, and or extension of public services to areas which are not currently served. The improvements proposed by the Proposed Action and alternatives are designed to specifically mitigate impacts for the respective alternatives without creating unnecessary additional capacity. Mitigation proposed for roadways and intersections would serve to mitigate the impacts of project alternatives on area roadway networks only, not to increase capacity of roadways to accommodate future unplanned growth. In addition, utility upgrades and extensions may be needed if municipal water, municipal wastewater, and/or natural gas are used. The project would work with the provider to ensure adequate improvements in coordination with surrounding growth. For each of these utilities, feasible alternatives have been provided should the project decide not to utilize municipal water, municipal wastewater and/or natural gas. It is not anticipated that infrastructure and utility improvements would create or support unplanned growth in the area.

4.15.2 Other Indirect Effects

The project alternatives recommend off-site traffic mitigation and off-site utility improvements (optional improvements for connection to municipal water, municipal wastewater, and/or natural gas). Because most of the identified improvements are common to all the alternatives and because the nature and scope of the effects are similar, the following analysis is provided for all the alternatives. It should be noted that some of the mitigation may require more thorough environmental analysis through the California Environmental Quality Act, which would further analyze impacts and recommend appropriate mitigation.

Land Resources

The construction of roadway improvements would require grading and the introduction of fill material to extend the existing shoulders and roadbed. Earthwork could result in erosion of soils. Local jurisdictions would require the use of stable fill material, engineered embankments, and erosion control features to reduce the potential for the slope instability, subsidence and erosion. In accordance with the Clean Water Act, construction of roadway improvements over one acre in area would be required to comply with the National Pollutant Discharge Elimination System General Construction Permit Program (NPDES). To comply with the program, a Stormwater Pollution Prevention Plan would be developed that would include soil erosion and sediment control practices to reduce the amount of exposed soil, prevent runoff from flowing across disturbed areas, slow runoff from the site, and remove sediment from the runoff. With standard construction practices and specifications required by the NPDES permit program, the roadway improvements identified under the project alternatives would result in less than significant indirect effects to land resources.

Water Resources

The development of roadway improvements could affect water resources due to grading and construction activities, relocation of drainage features, and an increase in impervious surfaces. Potential effects include an increase of surface runoff and increased erosion that could adversely affect surface water quality due to increases in sediment and roadway pollutants such as grease and oil. As discussed above, a SWPPP would be developed to comply with the NPDES General Construction Permit Program, which includes soil erosion and sediment control practices. Drainage features along the improved roadways would be sized to accommodate any increase in runoff. With the incorporation of best management practices (BMPs) identified in the SWPPP, for construction projects resulting in over one acre of disturbance, effects to water resources would be less than significant.

Air Quality

Development of the off-site improvements would result in short-term construction-related air pollution emissions. The construction phase would produce two types of air contaminants: exhaust emissions from construction equipment and fugitive dust generated as a result of demolition and soil movement. Exhaust emissions from construction activities include those associated with the transport of workers and machinery to the site, as well as those produced on site as the equipment is used. Construction of improvements would be limited in scope and duration and BMPs similar to those proposed as mitigation for the project alternatives would be utilized. Thus, a less than significant indirect effect would result.

Long-term effects from roadway improvements could result if the roadway improvements resulted in localized increases in carbon monoxide (CO) concentrations and/or if the improvements contributed to traffic congestion at large intersections. The proposed improvements would reduce congestion and improve traffic flow. This would reduce emissions from the idling vehicles at these intersections and roadway segments. Indirect effects would therefore be less than significant.

Biological Resources

Construction of the roadway and utility improvements can be expected to result in the loss of some existing vegetation and modification of drainage channels. Due to the degraded condition of the roadside areas, habitat quality is generally low and expansion of the existing facilities would not result in a significant effect to sensitive species. Off-site improvements would occur in uplands and areas outside of suitable habitat for federally listed anadromous salmonids. In order to minimize water quality effects to local waterways from construction related run-off, a number of BMPs and avoidance measures would be required and incorporated in the proposed construction, thereby reducing potential effects.

To address effects to sensitive habitat and species, biological surveys may be required to comply with the Federal Endangered Species Act and likely with CEQA before encroachment permits are issued. The lead agency under CEQA would be required to mitigate potential impacts to a less than significant level or to issue a finding of fact and statement of overriding considerations if significant impacts could not be mitigated. Due to the limited nature of proposed improvements, the degraded condition of existing habitat, and the requirements of other regulations (Endangered Species act and CEQA) to address impacts to biological resources, the effects of the off-site improvements would be less than significant.

Cultural Resources

The construction of the roadway improvements has the potential to disturb previously undiscovered cultural resources. Due to prior grading of existing roadways it is likely that resources remaining in these areas are highly disturbed and lack integrity, thus diminishing the significance of the remaining resources. Cultural surveys may be required to comply with CEQA before encroachment permits are issued. The lead agency under CEQA would be required to mitigate potential impacts to a less than significant level or to issue a finding of fact and statement of overriding considerations if significant impacts could not be mitigated. Mitigation may include the avoidance of resources, the preservation of a key historical feature, or the removal, documentation, and curation of cultural resources.

Socioeconomic Conditions

A potentially significant fiscal impact would result if local jurisdictions were required to pay the full cost of traffic improvements. As discussed in **Section 5.0** (Mitigation Measure), the Tribe would pay either a full share or fair share for recommended improvements. Therefore, a less than significant indirect socioeconomic effect would result.

Land Use

As noted, construction of roadway improvements with no or minimal additional property requirements is not expected to cause a long-term disruption of surrounding land uses. Improvements that require land acquisition, such as realignment and expansion of roadways, could convert land from its current use. However, the amount of land required would be a narrow strip on the end of the property and should not affect the land use for the remaining property. Therefore, a less than significant indirect effect would result.

Agriculture

Construction of roadway improvements that require additional property, such as realignment and expansion of roadways, are not proposed in areas that are currently used for agriculture. If agricultural land is needed for improvements the amount would be small in comparison to the available agricultural land in the region. Therefore, a less than significant indirect effect to agriculture would result.

Public Services

Traffic improvements may require relocation of utilities. On-site improvements would require the relocation of a water line for the South Cloverdale Water District. Relocation of these lines could result in a temporary break in service to some homes and businesses in the area. However, because these effects are common when upgrading and maintaining utility services, and because potential service breaks would be temporary, these effects are considered to be less than significant. No significant effects to police, fire, or emergency medical services are expected as access to homes and businesses would be maintained during the construction period.

Noise

Construction activities associated with roadway improvements would result in short-term increases in the local ambient noise environments. However, because construction activities would be temporary in nature and are expected to occur during normal daytime hours, a less than significant effect is expected.

Hazardous Materials

Hazards, which are common to construction activities, such as the transport of fuels, would be minimized with adherence to standard operating procedures, such as refueling in designated areas, storing hazardous materials in approved containers, and clearing dried vegetation. Such procedures are commonly required by local agencies as part of a permit review and/or CEQA review for roadway improvements. These potential hazards would therefore be less than significant.

Visual Resources

Visual effects would occur as the result of modification and expansion of existing roadways. The proposed road and utility improvements would be at or below grade and thus would not create significant impacts to viewers.

Environmental Justice

As discussed in **Section 3.14**, there are no minority or low-income communities of concern identified within the affected environment and thus environmental justice impacts would be less than significant.

4.16 Cumulative Effects

4.16.1 Introduction

Cumulative effects analysis broadens the scope of analysis to include effects beyond those directly attributable to the implementation of the Proposed Action and alternatives. Cumulative effects are defined as the effects "...on the environment which result from the incremental effect of the action when added to other past, present, and reasonably foreseeable future actions regardless what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative effects can result from individually minor but collectively significant actions taking place over a period of time (40 CFR Sec. 1508.7)".

The analysis in this section expands the geographic and temporal borders to include the effects on specific resources, ecosystems, and human communities that occur incrementally when combined with other actions, projects and trends. The purpose of cumulative effects analysis, as stated by the Council on Environmental Quality (CEQ) "is to ensure that federal decisions consider the full range of consequences" (1997).

The cumulative analysis begins with defining the geographic borders and time frame of the analysis. Secondly, the cumulative environment is described in terms of expected growth as well as past, present and future actions and projects that may affect the status of the resources, ecosystems, and human communities in the project area. The discussion of the cumulative environment includes a summary of project growth and a list related actions and projects.

Geographic Boundary and Time Frame

The cumulative effects analysis in this EIS considers the geographic and temporal boundaries relevant to each resource under investigation. The geographic boundaries for individual cumulative resource topics have been determined by the nature of the resource and the distance the effects may travel. For example, cumulative impacts to area waterways are typically limited to the watershed in which they are situated. However, air quality emissions have the potential to travel over great distances and necessitate a large geographic boundary such as a county, region or air basin. For the purpose of this analysis, the cumulative effects boundary or zone will be limited to Sonoma County. However, varying natural or cultural boundaries may be used depending on the resource type.

The time frame of the cumulative effects analysis extends to 2030. Beyond this planning horizon, information on growth patterns and future activities becomes scarce and uncertainties increase, limiting the usefulness of a more extended analysis.

Cumulative Projects

As recommended by CEQ's Considering Cumulative Effects, not all potential cumulative effects issues have been included in this EIS; only those considered to be relevant or consequential have been discussed in depth (CEQ, 1997).

The cumulative scenario includes buildout of the City of Cloverdale General Plan and buildout of the Sonoma County General Plan 2020. The discussion of the cumulative environment also includes a list of specific projects (**Table 4.16-1**). Focus on specific actions or programs known or suspected to potentially result in adverse impacts facilitates the cumulative impact analysis.

**TABLE 4.16-1
CUMULATIVE PROJECTS**

Project Name	Project Description
Alexander Valley Resort	<p>The Alexander Valley Resort project includes the developments of an 18-hole golf course, 100 to 150 room resort hotel with conference facilities, spa and restaurant, 40 fractional ownership villas, 105 detached single-family homes, 25 estate homes and 2.4 acre commercial site (approved for wine tasting and a restaurant). The project is proposed on 254 acres, just south of the proposed Cloverdale Resort and Casino project analyzed in this DEIS.</p> <p>The Final Environmental Impact Report and Specific Plan have been approved by the City as of September 2009 (Alexander Valley Resort, 2009).</p>
Graton Casino and Hotel	<p>The Graton Casino and Hotel project includes the development of a casino and hotel on 252 acres. The project site is located on the western edge of the City of Rohnert Park. A small portion of the site is located within the City of Rohnert Park. The project includes a 300-room hotel, restaurants, entertainment venue, banquet/meeting space, pool, spa and parking structure. The project would employ approximately 2,400 people. The casino and hotel development includes 762,300 square feet. Alternative sites analyzed include an adjacent site (360 acres) and a site at the intersection of Lakeville Highway and State Route 37 (322 acres) (AES, 2009).</p> <p>The Final Environmental Impact Statement has been published; however no Agency decision has been made. In general, the distance from the Graton Casino Project limits the extent of cumulative impacts.</p>
Saggio Hills	<p>Saggio Hills is a resort and residential neighborhood proposed on approximately 259 acres in the community of Healdsburg. The LEED certified resort includes a 130 rooms, spa and conference facility. The residential component includes 70 single family residences. A 37-acre community park, fire substation, 14.3 acres of affordable housing and hiking trails are planned (Saggio Hills, 2009).</p> <p>The project has been approved by the City of Healdsburg however it is currently delayed by a lawsuit on the environmental study.</p>

SOURCE:
AES, 2009. Final Environmental Impact Statement Graton Rancheria Casino and Hotel. Viewed online at: <<http://www.gratoneis.com/>> on September 25, 2009.
Alexander Valley Resort, 2009. September 2009 Main Page. Viewed online at: <http://www.alexandervalleyresort.com/avr_update.html> on September 25, 2009.
Saggio Hills, 2009. Project Overview. Viewed online at: <<http://www.saggiohills.com/index.html>> on September 25, 2009.

4.16.2 Cumulative Analysis for Alternatives A through E

Land Resources

Effects to land resources are expected to be limited to Sonoma County, due to the location of the project, other cumulative projects, and the specific topography, soil type, and seismic character of the region.

Cumulative effects to land resources may take place as the result of future developments.

Examples of effects include:

- Changes to topography
- Soil loss
- Increased seismic hazards
- Loss of mineral resources

Development of the Proposed Action or development alternatives would result in minimal changes to topography and all proposed cut volumes would remain onsite. Other developments are expected to result in minor changes in the topography of the County as well.

The reasonably foreseeable future actions under general plan buildout would result in alteration and removal of land resources to accommodate development in urban areas. It is assumed that the majority of these projects would require local permitting approval from either the City or County and Federal Clean Water Act requirements for construction would address adverse soil erosion and run-off effects associated with grading and earthmoving.

It is also assumed that cumulative development would comply with local and state building codes and ordinances. These required development standards would ensure that cumulative development is constructed to standards appropriate for the level of seismic activity that would occur in the project area.

With respect to mineral resources, the eastern portion of the project site has the potential to contain high quality aggregate resources as identified by the California Geological Survey (2005). A significant amount of land in the vicinity, and outside of the project site, is zoned as MRZ-2b where mineral resources could be further defined and developed; therefore, the potential cumulative loss of mineral resources in the project area is less than significant.

Ultimately, the direct effect on land resources in the study area would not contribute to a cumulative effect on land resources because any patterns of such disturbances to land resources would be subject to local, state, and federal ordinances and requirements designed to limit hazards to health and safety and to avoid pollution of watercourses with hazardous materials, nutrients, sediments, or other earthen materials generated on or caused by surface runoff.

Water Resources

The geographic boundary of the cumulative water resources analysis is defined as the Russian River Watershed, which includes its receiving waters, the San Pablo Bay, and the San Francisco Bay. This boundary has been selected because the project site would principally affect water quality within this geographic area.

Cumulative effects to water resources may take place as the result of future developments.

Examples of effects include:

- Increased sedimentation
- Increased pollution
- Increased stormwater flows

Stormwater discharges from residential and industrial areas are of concern in managing surface water quality. Pollutants that accumulate in the dry summer months such as oil and grease, asbestos, pesticides, and herbicides, create water quality problems due to their presence in high concentrations during the first major autumn storm event. Affected water bodies within the project area are limited

to the Russian River. The Russian River originates in the Inner North Coast Ranges, which include the coastal ranges to the west of Highway 101 north of Lake Mendocino and the Mayacmas Mountains to the east. Segments of these waters are impaired as a result of urban runoff, instream gravel mining, and temperature.

A watershed's runoff characteristics are altered when impervious surfaces replace natural cover. Changes in the quantity of runoff may increase stream volumes, increase stream velocities, increase peak discharges, shorten the time to peak flows, and lessen groundwater contributions to stream base-flows during non-precipitation periods. Urban areas also have significant sources of nonpoint source pollution that can affect regional water quality when examining the entire watershed contribution to receiving waters. Development within the Russian River Watershed and the Bay Area as a whole is expected to gradually increase urban areas, thereby increasing the potential for increased runoff volumes, velocities, and pollution. The Proposed Action or development alternatives could contribute to changes in runoff characteristics (volume, velocity, and hydrograph) and water quality located near the project site as a result of project development; however, the project is designed to mitigation runoff levels to predevelopment flows.

Additional development within the area surrounding the project site could result in cumulatively considerable impacts if off-site flows from these developments flow on the project site, resulting in overload of the storm water facilities leading to adverse impacts to downstream water resources. However, it is expected that the proposed development projects would include erosion control measures in compliance with the National Pollutant Discharge Elimination System (NPDES) permit program and other local ordinances and regulations, such as City and County grading and erosion control ordinances. Compliance with these requirements would reduce cumulative developments potential adverse impacts. With the incorporation of the above features and requirements for other developments to comply with city and county Standards, the selected alternative would not result in or contribute to a significant cumulative water resource effect.

Air Quality

Any project that would individually have a significant air quality impact would also be considered to have a significant cumulative impact. As noted in **Section 4.4** operational emissions of the project would exceed the NSCAQMD and BAAQMD thresholds for NO_x, CO, and PM₁₀ for every alternative. Development of the selected alternative would therefore result in a cumulatively considerable net increase of NO_x, CO, and PM₁₀, and would be considered significant and adverse under local standards.

Greenhouse gas emission impacts are also considered to be cumulative impacts. Mitigation Measures are recommended in **Section 5.4** to reduce emissions to a less-than-significant level.

Biological Resources

The cumulative project area is located west of the Russian River and in the northeastern portion of Sonoma County, California. A complete discussion of special-status species with the potential to occur on the project study area is provided in **Section 3.5** and in **Appendix D**.

Cumulative biological resource effects would occur if the project, in conjunction with other projects, would result in a:

- Negative effect to state or federally-listed species or habitat
- Reduction of the number of unique rare species which would affect the species long term sustainability
- Permanent disturbance to a wildlife corridor
- Effect to sensitive habitat which is of regional significance
- Conflict with city, county, or other regional conservation goals

Wildlife and Habitats

As identified in **Section 4.5** (Biological Resources), most of the impacts are to urban/developed areas, vineyards, and non-native annual grassland, which are either regionally abundant (grasslands/vineyards) or are of little value to plants and wildlife (urban). However, two of the communities, coast live oak woodland and north coast riparian scrub, are considered both important biological communities (in terms of providing habitat) and are less regionally abundant. Based on these factors, impacts to habitat could be cumulatively significant without mitigation. **Mitigation Measure 5.5-1** would reduce this impact to less than significant.

Cumulatively, it is anticipated that the design of other projects in the area will be in accordance with habitat conservation ordinances for Sonoma County and will take into account Priority Fish and Wildlife Habitats designated by the California Department of Fish and Game. As disruption of a small amount of low quality habitat would not result in a significant effect to biological resources, no significant cumulative effects would occur from implementation of the Proposed Action or alternatives.

Federally Listed Species

The Proposed Action and alternatives would not involve direct effects to any Federally-listed species. Provisions of permits issued under the Clean Water Act (CWA) would ensure that impacts to aquatic species are adequately mitigated. It is assumed that the other projects considered in the cumulative analysis would comply with Section 7 or 10 of the Endangered Species Act and applicable State laws to pose less than significant effects on federally-listed species. Therefore, the Proposed Action and alternatives would not result in significant cumulative effects to federally-listed species.

Migratory Birds

The Proposed Action and alternatives would not result in significant cumulative effects to nesting migratory birds. It is assumed that the development of other projects considered in the cumulative analysis will comply with the Migratory Bird and Treaty Act of 1918, and as such would have no adverse effects on migratory birds.

Waters of the U.S.

Project design ensures that the Proposed Action and alternatives would have only minimal direct effects on any “waters of the U.S.”. Adverse indirect effects to “waters of the U.S.” would be avoided

by the implementation of project features designed to minimize impacts and provide buffers to wetlands, control stormwater and wastewater discharges, and protect the quality of runoff water through conditions of the NPDES permit. All potential impacts to wetlands have been fully described in **Section 4.5** and mitigation measures to reduce the impacts associated with wetland loss are described in **Section 5.5** and will be addressed through the U.S. Army Corps of Engineers (USACE) permitting process.

Fish Species

With population increases and the subsequent development of the region, as well as the advent of agriculture and mining activities within the Russian River Basin, the deterioration of salmonid habitat within the Russian River and associated tributaries has led to the decline of native anadromous salmonid populations. The general transformation of the mainstem Russian River from deep cool pools and gravel riffle complexes into slower meandering, shallow warm water habitat with high sediment loading, has had a cumulative effect on the decline of these native fish populations.

The need for comprehensive water quality planning in the Russian River Basin and other coastal watersheds led to the development and adoption of the North Coast Region Water Quality Control Plan for the North Coast Region (NCRWQCB, 1993). The plan provides specific guidance on factors which must be considered in adoption of water quality objectives and implementation measures for the basin. The planning process considered past, existing, and future population and land uses based on recent population trends and projections contained in county general plans. With these projections, as well as current land-use practices, guidelines associated with surface water and groundwater use and discharge are adopted in order to benefit future water resources in the region.

As described previously, the alternatives avoid directly affecting suitable aquatic habitat for salmonids. In addition, the alternatives propose several project features that would minimize potential effects to downstream water quality and hydrology during operations. Based on these factors, and because regional development is guided by the requirements of the North Coast Region Water Quality Control Plan, it is unlikely that the development alternatives would have a significant, cumulative impact to salmonid habitat in the region.

Cultural and Paleontological Resources

No historic or prehistoric cultural resources were located during the survey of the project site. However, continued development throughout the geographic boundary runs the inherent risk of damaging or destroying previously unknown significant archaeological resources. This is particularly so in areas where fill and sedimentation may be shallow enough that construction activities could impact previously buried resources, such as along the shoreline of the Russian River.

Continued development may result in the cumulative loss of sites that could potentially yield information important in our history or prehistory. Mitigation measures as specified in **Section 5.6** would ensure that less than significant adverse effects to cultural and historic properties would occur as a result of the Proposed Action or alternatives. The application of similar measures to other proposed projects within the geographical boundaries of this analysis, include compliance

with the National Historic Preservation Act of 1966 and its requirements to consult with and/or notify the State Historic Preservation Officer (SHPO), compliance with CEQA, and applicable City and County historic preservation guidance. Accordingly, no significant cumulative impacts to cultural resources are expected.

Socioeconomic Conditions and Environmental Justice

The geographic boundary of the cumulative socioeconomic analysis is defined as Sonoma County. This boundary has been selected because the extent of socioeconomic effects, including fiscal impacts to local jurisdictions, would occur predominately within the City of Cloverdale and Sonoma County. The proposed cumulative projects, including the Graton Casino and Alexander Valley Resort, are all located within Sonoma County, and would also affect the socioeconomic trends within the County.

Cumulative socioeconomic effects could occur in the project area as the result of developments that impact the lifestyle and economic well being of residents. Examples of effects include:

- Urban blight
- A significant increase in crime
- Adverse changes in a community's ability to fund services
- Changes in the ability to access and use public or private property

The general trend in Sonoma County, and much of the Bay Area region, is a greater increase in the availability of housing units and the decline in available jobs. The continued rise of home foreclosures and unemployment have put a strain on the availability of cities to provide and pay for adequate public services, as the loss in property tax revenue and utility assessments declines. This has the potential to result in the inadequate delivery of public services and increase urban blight as homes and commercial property remain vacant. As described in **Section 4.7**, there are approximately 7,520 vacant housing units within Sonoma County. Sonoma County's total labor force was estimated to be approximately 270,500 with a county-wide unemployment rate of 6.5 percent, a rate much higher than its historical average of 4.2 percent. This suggests that there are at least 6,220 Sonoma County residents who are currently unemployed (i.e. 2.3 percent of the total labor force) and likely available for employment. The current economy's weakness also suggests that unemployment rates may increase further in the future which increase the job demand by Sonoma County's residents.

Of the related cumulative projects, some are employee generating, such as the Graton Casino Project and Alexander Valley Resort Project, and others have limited opportunity for permanent employment, such as the potential relocation of the Cloverdale Fairgrounds. Taken together, these projects would not be expected to substantially increase the demand for new housing construction and deviate from the existing trend of increased housing vacancy and declining job growth. The cumulative effect of these projects when considered with the development alternatives would be a potential reduction in unemployment and housing vacancy. This would be a beneficial effect for Sonoma County.

Transportation

The study area for cumulative analysis includes the sphere of project trip distribution on the local roadway and freeway network. It is within this area that the possible impact of approval and construction of other reasonably foreseeable projects in Sonoma County were considered. The trip distribution and extent of reach of the other cumulative project trips were added to the cumulative condition and assessed.

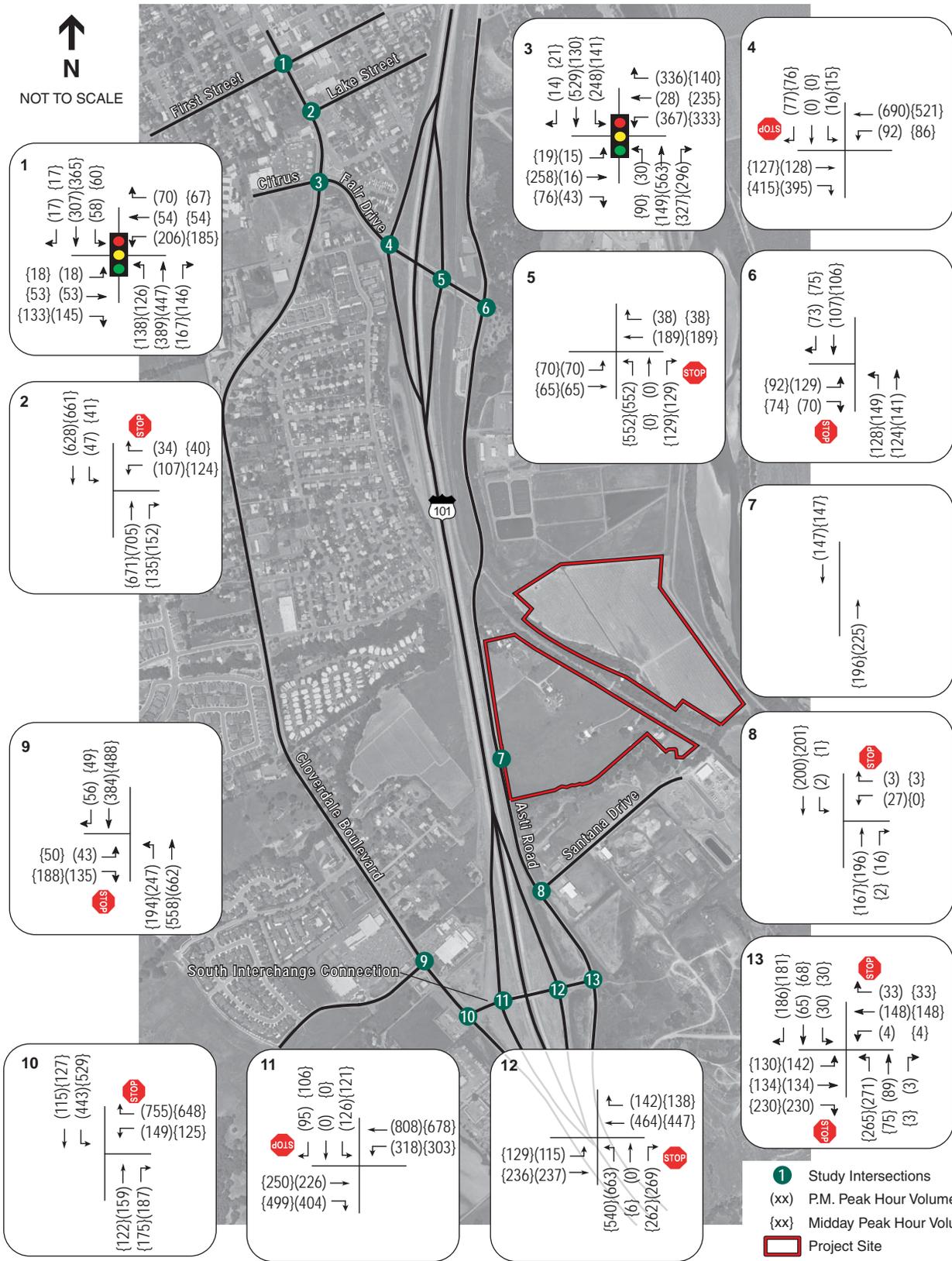
Future traffic projections, obtained from the General Plan Update traffic analysis, were used for this analysis. The General Plan assumes a mix of industrial development on the project site, and buildout volumes from the General Plan Update reflect that development assumption. To ensure an accurate analysis of potential project impacts under buildout conditions (i.e., that traffic generation for the project site is not double counted), assumed traffic volume increases due to General Plan-assumed future industrial development on the project site was removed from buildout traffic volumes. Thus, the Buildout baseline conditions evaluated in this study are lower than the General Plan Buildout traffic volumes. The buildout traffic volumes are shown in **Figure 4.16-1**.

Under Year 2030 Buildout conditions and without the project, the following study intersections would exceed City LOS standards during the weekend midday and/or weekday p.m. peak hours, with most operating at LOS F:

10. Cloverdale Boulevard / South Interchange
11. U.S. 101 Southbound Ramps / South Interchange
12. U.S. 101 Northbound Ramps / South Interchange
13. Asti Road / South Interchange

These study intersections all would satisfy the peak-hour traffic signal warrant criteria under 2030 baseline conditions. Intersection level of service conditions for 2030 baseline traffic conditions are summarized in **Table 4.16-2**, and the LOS calculation sheets are provided in **Appendix G**.

↑
N
NOT TO SCALE



SOURCE: w-trans, 2009; and ESA, 2011

Cloverdale Rancheria Resort Casino Project EIS . 207737

Figure 4.16-1
2030 Traffic Volumes

**TABLE 4.16-2
INTERSECTION AVERAGE DELAY AND LEVEL OF SERVICE
(CUMULATIVE 2030 BASELINE CONDITIONS)**

Intersection	Existing Conditions		2030 Baseline	
	PM Peak	Weekend Peak	PM Peak	Weekend Peak
1. Cloverdale Boulevard / First Street	11.6 / B	11.2 / B	12.9 / B	12.6 / B
2. Cloverdale Boulevard / Lake Street	2.3 / A	2.0 / A	3.9 / A	4.6 / A
<i>Westbound Approach</i>	19.3 / C	16.0 / C	43.3 / E	44.9 / E
3. Cloverdale Boulevard / Citrus Fair Drive	13.3 / B	19.0 / B	17.7 / B	25.7 / C
4. US 101 Southbound Ramps / Citrus Fair Drive	0.9 / A	1.0 / A	1.4 / A	1.4 / A
<i>Southbound Approach</i>	9.8 / A	9.0 / A	12.8 / B	11.4 / B
5. US 101 Northbound Ramps / Citrus Fair Drive	5.5 / A	6.6 / A	19.8 / B	11.7 / B
<i>Northbound Approach</i>	10.6 / B	9.8 / A	29.6 / D	18.9 / C
6. Asti Road / Citrus Fair Drive	5.0 / A	3.4 / A	5.7 / A	4.9 / A
<i>Eastbound Approach</i>	9.8 / A	9.0 / A	13.4 / B	11.6 / B
7. Asti Road / Project Access (<i>future intersection</i>)	NA	NA	NA	NA
8. Asti Road / Santana Drive	2.0 / A	0.4 / A	0.8 / A	0.1 / A
<i>Westbound Approach</i>	9.2 / A	8.5 / A	11.1 / B	9.1 / A
9. Cloverdale Boulevard / Treadway Drive	3.3 / A	3.5 / A	3.7 / A	3.7 / A
<i>Eastbound Approach</i>	12.1 / B	11.1 / B	18.3 / B	16.2 / C
10. Cloverdale Boulevard / South Interchange Connection	9.7 / A	8.0 / A	33.3 / D	27.2 / C
<i>Westbound Approach</i>	13.4 / B	10.6 / B	61.8 / F	53.9 / F
11. U.S. 101 Southbound Ramps / South Interchange	1.1 / A	0.9 / A	44.8 / F	35.1 / E
<i>Southbound Approach</i>	12.3 / B	10.6 / B	** / F	** / F
12. U.S. 101 Northbound Ramps / South Interchange	13.7 / B	9.3 / A	** / F	** / F
<i>Northbound Approach</i>	19.0 / C	13.2 / B	** / F	** / F
13. Asti Road / South Interchange Connection	4.3 / A	4.2 / A	** / F	** / F
<i>Eastbound Approach</i>	9.5 / A	9.3 / A	** / F	** / F

Results are shown as Delay/LOS

Delay is measured in average seconds per vehicle

LOS = Level of Service

Bold=Deficient LOS (relevant to impact determination)

**/F signifies that delay is projected to be greater than 120 seconds per vehicle, and delays of that magnitude are less precise.

SOURCE: W-Trans, 2009

**TABLE 4.16-3
CUMULATIVE INTERSECTION AVERAGE DELAY AND LEVELS OF SERVICE – ALTERNATIVE A**

Intersection	Existing Conditions		Cumulative (2030) Baseline		Cumulative (2030) plus Alternative A	
	PM Peak	Weekend Peak	PM Peak	Weekend Peak	PM Peak	Weekend Peak
1. Cloverdale Blvd / First Street	11.6/B	11.2/B	12.9/B	12.6/B	13.5/B	13.4/B
2. Cloverdale Blvd / Lake Street	2.3/A	2.0/A	3.9/A	4.6/A	4.3/A	5.4/A
<i>Westbound Approach</i>	19.3/C	16.0/C	43.3/E	44.9/E	49.8/E	55.7/F
3. Cloverdale Blvd / Citrus Fair Drive	13.3/B	19.0/C	17.7/B	25.7/C	18.1/B	26.6/C
4. U.S. 101 S. Ramps / Citrus Fair Dr.	0.9/A	1.0/A	1.4/A	1.4/A	2.7/A	3.4/A
<i>Southbound Approach</i>	9.8/A	9.0/A	12.8/B	11.4/B	21.1/C	22.1/C
5. U.S. 101 N. Ramps / Citrus Fair Dr	8.5/A	6.6/A	19.8/B	11.7/B	29.4/D	15.1/C
<i>Northbound Approach</i>	10.6/B	9.8/A	29.6/D	18.9/C	49.3/E	28.1/D
6. Asti Road / Citrus Fair Drive	5.0/A	3.4/A	5.7/A	4.9/A	8.8/A	8.5/A
<i>Eastbound Approach</i>	9.8/A	9.0/A	13.4/B	11.6/B	16.5/C	14.5/B
7. Asti Road / Project Access	NA	NA	NA	NA	50.7/F	**/F
<i>Westbound Approach</i>	NA	NA	NA	NA	**/F	**/F
<i>Mitigated (Signalized)</i>					20.3/C	24.1/C
8. Asti Road / Santana Drive	2.0/A	0.4/A	0.8/A	0.1/A	0.6/A	0.1/A
<i>Westbound Approach</i>	9.2/A	8.5/A	11.1/B	9.1/A	18.6/C	12.5/B
9. Cloverdale Boulevard / Treadway Drive	3.3/A	3.5/A	3.7/A	3.7/A	3.8/A	4.0/A
<i>Eastbound Approach</i>	12.1/B	11.1/B	18.3/B	16.2/B	18.6/C	16.7/C
10. Cloverdale Boulevard / South Interchange	9.7/A	8.0/A	33.3/D	27.2/C	36.6/D	30.5/D
<i>Westbound Approach</i>	13.4/B	10.6/B	61.8/F	53.9/F	68.4/F	61.1/F
<i>Mitigated (Signalized)</i>					59.4/E	51.4/D
<i>Mitigated (Roundabout)</i>					10.9/B	13.0/B
11. U.S. 101 SB Ramps / So. Interchange	1.1/A	0.9/A	44.8/F	35.1/E	**/F	**/F
<i>Southbound Approach</i>	12.3/B	10.6/B	**/F	**/F	**/F	**/F
<i>Mitigated (Signalized)</i>					25.3/C	39.1/D
<i>Mitigated (Roundabout)</i>					10.9/B	13.0/B
12. U.S. 101 NB Ramps / So. Interchange	13.7/B	9.3/A	**/F	**/F	**/F	**/F
<i>Northbound Approach</i>	19.0/C	13.2/B	**/F	**/F	**/F	**/F
<i>Mitigated (Signalized)</i>					71.6/E	75.1/E
<i>Mitigated (Roundabout)</i>					18.7/B	23.6/C
13. Asti Road / South Interchange	4.3/A	4.2/A	**/F	**/F	**/F	**/F
<i>Eastbound Approach</i>	9.5/A	9.3/A	**/F	**/F	**/F	**/F
<i>Mitigated (Signalized)</i>					49.7/D	75.5/E
<i>Mitigated (Roundabout)</i>					18.7/B	23.6/C

Results are shown as Delay/LOS

Delay is measured in average seconds per vehicle

LOS = Level of Service

Bold=Deficient LOS (relevant to impact determination)

****/F** signifies that delay is projected to be greater than 120 seconds per vehicle, and delays of that magnitude are less precise.

SOURCE: W-Trans, 2009

2030 Buildout Plus Alternative A Conditions

Peak Hour Intersection Effects

As shown in **Table 4.16-3**, with the addition of traffic volumes generated by Alternative A to the baseline Year 2030 Buildout traffic, operations at five unsignalized intersections would operate unacceptably. The U.S. 101 Southbound Ramps / South Interchange, U.S. 101 Northbound Ramps / South Interchange, and Asti Road / South Interchange intersections would worsen within unacceptable baseline service levels during both peak periods. The intersection of Cloverdale Boulevard / South Interchange would degrade to an unacceptable LOS during the weekend peak and would worsen within unacceptable LOS during the weekday peak. The newly created project access intersection would operate unacceptably during both peak periods. The LOS calculation sheets are provided in **Appendix G**. The following mitigation is recommended:

For the near-term **Mitigation Measures 5.8-1, 5.8-2 and 5.8-3** (signalization option) or **Mitigation Measure 5.8-1 and 5.8-4** (roundabout option) were recommended in **Section 4.8** to reduce impacts to a less than significant level. In the cumulative scenario implementation of the signalization option would result in adverse impacts at the U.S. 101 Northbound Ramps / South Interchange and Asti Road / South Interchange intersections. The roundabout option would reduce cumulative impacts to a less-than-significant level.

For the cumulative scenario only, **Mitigation Measures 5.8-7 and 5.8-8** (signalization option) would result in an adverse impact at Cloverdale Boulevard / South Interchange and a less than significant impact at U.S. 101 Southbound Ramps / South Interchange. Alternatively, **Mitigation Measure 5.8-9** (roundabout option) would result in acceptable LOS at these intersections avoiding the residual adverse impact from signalization.

Signal Warrants

Traffic signal warrants would be met for the following intersections under the 2030 plus Alternative A volumes.

- U.S. 101 Northbound Ramps / Citrus Fair Drive
- Asti Road / Project Access
- Cloverdale Boulevard / South Interchange
- U.S. 101 Southbound Ramps / South Interchange
- U.S. 101 Northbound Ramps / South Interchange
- Asti Road / South Interchange

However, the U.S. 101 Northbound Ramps / Citrus Fair Drive intersection would operate better than the mid-LOS D standard established by the City of Cloverdale.

Freeway Segment Performance

With the addition of traffic volumes generated by Alternative A to the baseline Year 2030 Buildout traffic, all of the study freeway segments would operate at an acceptable LOS C or better in both

the northbound and southbound directions during the weekday p.m. peak hour. Results of the freeway analysis are included in **Appendix G**.

2030 Buildout Plus Alternative B Conditions

Peak Hour Intersection Effects

As shown in **Table 4.16-4**, with the addition of traffic volumes generated by Alternative B to the baseline Year 2030 Buildout traffic, operations at five unsignalized intersections would operate unacceptably. The U.S. 101 Southbound Ramps / South Interchange, U.S. 101 Northbound Ramps / South Interchange, and Asti Road / South Interchange intersections would worsen within unacceptable baseline service levels during both peak periods. The intersection of Cloverdale Boulevard / South Interchange would worsen within unacceptable LOS during the weekday peak. The newly created project access intersection would operate unacceptably during the weekend peak. The LOS calculation sheets are provided in **Appendix G**. The following mitigation is recommended:

For the near-term **Mitigation Measures 5.8-1, 5.8-2 and 5.8-3** (signalization option) or **Mitigation Measure 5.8-1 and 5.8-4** (roundabout option) were recommended in **Section 4.8** to reduce impacts to a less than significant level. In the cumulative scenario implementation of the signalization option would result in adverse impacts at the U.S. 101 Northbound Ramps / South Interchange and Asti Road / South Interchange intersections. The roundabout option would reduce cumulative impacts to a less-than-significant level.

For the cumulative scenario only, **Mitigation Measures 5.8-7 and 5.8-8** (signalization option) would result in an adverse impact at Cloverdale Boulevard / South Interchange and a less than significant impact at U.S. 101 Southbound Ramps / South Interchange. Alternatively, **Mitigation Measure 5.8-9** (roundabout option) would result in acceptable LOS at these intersections avoiding the residual adverse impact from signalization.

Signal Warrants

Traffic signal warrants were met for the following intersections under the projected 2030 plus Alternative B volumes.

- U.S. 101 Northbound Ramps / Citrus Fair Drive,
- Asti Road / Project Access
- Cloverdale Boulevard / South Interchange,
- U.S. 101 Southbound Ramps / South Interchange,
- U.S. 101 Northbound Ramps / South Interchange,
- Asti Road / South Interchange

However, the U.S. 101 Northbound Ramps / Citrus Fair Drive intersection would operate better than the mid-LOS D standard established by the City of Cloverdale.

**TABLE 4.16-4
CUMULATIVE INTERSECTION AVERAGE DELAY AND LEVELS OF SERVICE – ALTERNATIVE B**

Intersection	Existing Conditions		Cumulative (2030) Baseline		Cumulative (2030) plus Alternative B	
	PM Peak	Weekend Peak	PM Peak	Weekend Peak	PM Peak	Weekend Peak
1. Cloverdale Blvd / First Street	11.6/B	11.2/B	12.9/B	12.6/B	13.4/B	13.2/B
2. Cloverdale Blvd / Lake Street	2.3/A	2.0/A	3.9/A	4.6/A	4.2/A	5.2/A
<i>Westbound Approach</i>	19.3/C	16.0/C	43.3/E	44.9/E	48.2/E	52.7/F
3. Cloverdale Blvd / Citrus Fair Drive	13.3/B	19.0/C	17.7/B	25.7/C	18.0/B	26.4/C
4. U.S. 101 S. Ramps / Citrus Fair Dr.	0.9/A	1.0/A	1.4/A	1.4/A	2.4/A	2.7/A
<i>Southbound Approach</i>	9.8/A	9.0/A	12.8/B	11.4/B	18.2/C	17.5/C
5. U.S. 101 N. Ramps / Citrus Fair Dr	8.5/A	6.6/A	19.8/B	11.7/B	26.5/D	13.7/C
<i>Northbound Approach</i>	10.6/B	9.8/A	29.6/D	18.9/C	43.3/E	24.8/C
6. Asti Road / Citrus Fair Drive	5.0/A	3.4/A	5.7/A	4.9/A	8.0/A	7.6/A
<i>Eastbound Approach</i>	9.8/A	9.0/A	13.4/B	11.6/B	15.5/C	13.4/B
7. Asti Road / Project Access	NA	NA	NA	NA	12.1/B	68.1/F
<i>Westbound Approach</i>	NA	NA	NA	NA	36.2/E	**/F
<i>Mitigated (Signalized)</i>					19.4/B	20.6/C
8. Asti Road / Santana Drive	2.0/A	0.4/A	0.8/A	0.1/A	0.6/A	0.1/A
<i>Westbound Approach</i>	9.2/A	8.5/A	11.1/B	9.1/A	16.1/C	11.4/B
9. Cloverdale Boulevard / Treadway Drive	3.3/A	3.5/A	3.7/A	3.7/A	3.8/A	3.9/A
<i>Eastbound Approach</i>	12.1/B	11.1/B	18.3/B	16.2/B	18.6/C	16.6/C
10. Cloverdale Boulevard / South Interchange	9.7/A	8.0/A	33.3/D	27.2/C	35.9/D	29.7/C
<i>Westbound Approach</i>	13.4/B	10.6/B	61.8/F	53.9/F	67.1/F	59.3/F
<i>Mitigated (Signalized)</i>					58.5/E	50.2/D
<i>Mitigated (Roundabout)</i>					10.1/B	10.9/B
11. U.S. 101 SB Ramps / So. Interchange	1.1/A	0.9/A	44.8/F	35.1/E	**/F	**/F
<i>Southbound Approach</i>	12.3/B	10.6/B	**/F	**/F	**/F	**/F
<i>Mitigated (Signalized)</i>					23.4/C	32.0/C
<i>Mitigated (Roundabout)</i>					10.1/B	10.9/B
12. U.S. 101 NB Ramps / So. Interchange	13.7/B	9.3/A	**/F	**/F	**/F	**/F
<i>Northbound Approach</i>	19.0/C	13.2/B	**/F	**/F	**/F	**/F
<i>Mitigated (Signalized)</i>					63.6/E	48.0/D
<i>Mitigated (Roundabout)</i>					15.8/B	17.4/B
13. Asti Road / South Interchange	4.3/A	4.2/A	**/F	**/F	**/F	**/F
<i>Eastbound Approach</i>	9.5/A	9.3/A	**/F	**/F	**/F	**/F
<i>Mitigated (Signalized)</i>					43.5/D	51.7/D
<i>Mitigated (Roundabout)</i>					15.8/B	17.4/B

Results are shown as Delay/LOS

Delay is measured in average seconds per vehicle

LOS = Level of Service

Bold=Deficient LOS (relevant to impact determination)

**/F signifies that delay is projected to be greater than 120 seconds per vehicle, and delays of that magnitude are less precise.

SOURCE: W-Trans, 2009

Freeway Segment Performance

With the addition of traffic volumes generated by Alternative B to the baseline Year 2030 Buildout traffic, all of the study freeway segments would operate at an acceptable LOS C or better in both the northbound and southbound directions during the weekday p.m. peak hour. Results of the freeway analysis are included in **Appendix G**.

2030 Buildout Plus Alternative C Conditions

Peak Hour Intersection Effects

As shown in **Table 4.16-5**, with the addition of traffic volumes generated by Alternative C to the baseline Year 2030 Buildout traffic, operations at five unsignalized intersections would operate unacceptably. The U.S. 101 Southbound Ramps / South Interchange, U.S. 101 Northbound Ramps / South Interchange, and Asti Road / South Interchange intersections would worsen within unacceptable baseline service levels during both peak periods. The intersection of Cloverdale Boulevard / South Interchange would worsen within unacceptable LOS during the weekday peak. The newly created project access intersection would operate unacceptably during the weekend peak. The LOS calculation sheets are provided in **Appendix G**. The following mitigation is recommended:

For the cumulative scenario only, **Mitigation Measure 5.8-1** would result in a less than significant impact at project access intersection.

For the near-term **Mitigation Measures 5.8-2 and 5.8-3** (signalization option) or **Mitigation Measure 5.8-4** (roundabout option) were recommended in **Section 4.8** to reduce impacts to a less than significant level. In the cumulative scenario implementation of the signalization option would result in adverse impacts at the U.S. 101 Northbound Ramps / South Interchange and Asti Road / South Interchange intersections. The roundabout option would reduce cumulative impacts to a less-than-significant level.

For the cumulative scenario only, **Mitigation Measures 5.8-7 and 5.8-8** (signalization option) would result in an adverse impact at Cloverdale Boulevard / South Interchange and a less than significant impact at U.S. 101 Southbound Ramps / South Interchange. Alternatively, **Mitigation Measure 5.8-9** (roundabout option) would result in acceptable LOS at these intersections avoiding the residual adverse impact from signalization.

Signal Warrants

Traffic signal warrants were met for the following intersections under the projected 2030 plus Alternative C volumes.

- U.S. 101 Northbound Ramps / Citrus Fair Drive,
- Asti Road / Project Access
- Cloverdale Boulevard / South Interchange,
- U.S. 101 Southbound Ramps / South Interchange,
- U.S. 101 Northbound Ramps / South Interchange,
- Asti Road / South Interchange

However, the U.S. 101 Northbound Ramps / Citrus Fair Drive intersection would operate better than the mid-LOS D standard established by the City of Cloverdale.

**TABLE 4.16-5
CUMULATIVE INTERSECTION AVERAGE DELAY AND LEVELS OF SERVICE – ALTERNATIVE C**

Intersection	Existing Conditions		Cumulative (2030) Baseline		Cumulative (2030) plus Alternative C	
	PM Peak	Weekend Peak	PM Peak	Weekend Peak	PM Peak	Weekend Peak
1. Cloverdale Blvd / First Street	11.6/B	11.2/B	12.9/B	12.6/B	13.3/B	13.1/B
2. Cloverdale Blvd / Lake Street	2.3/A	2.0/A	3.9/A	4.6/A	4.2/A	5.1/A
<i>Westbound Approach</i>	19.3/C	16.0/C	43.3/E	44.9/E	47.9/E	52.1/F
3. Cloverdale Blvd / Citrus Fair Drive	13.3/B	19.0/C	17.7/B	25.7/C	18.0/B	26.3/C
4. U.S. 101 S. Ramps / Citrus Fair Dr.	0.9/A	1.0/A	1.4/A	1.4/A	2.3/A	2.6/A
<i>Southbound Approach</i>	9.8/A	9.0/A	12.8/B	11.4/B	17.7/C	16.7/C
5. U.S. 101 N. Ramps / Citrus Fair Dr	8.5/A	6.6/A	19.8/B	11.7/B	25.9/D	13.4/B
<i>Northbound Approach</i>	10.6/B	9.8/A	29.6/D	18.9/C	42.3/E	24.1/C
6. Asti Road / Citrus Fair Drive	5.0/A	3.4/A	5.7/A	4.9/A	7.9/A	7.4/A
<i>Eastbound Approach</i>	9.8/A	9.0/A	13.4/B	11.6/B	15.3/C	13.1/B
7. Asti Road / Project Access	NA	NA	NA	NA	10.2/B	41.4/D
<i>Westbound Approach</i>	NA	NA	NA	NA	30.5/D	**/F
<i>Mitigated (Signalized)</i>					19.2/B	20.0/B
8. Asti Road / Santana Drive	2.0/A	0.4/A	0.8/A	0.1/A	0.6/A	0.1/A
<i>Westbound Approach</i>	9.2/A	8.5/A	11.1/B	9.1/A	15.7/C	11.2/B
9. Cloverdale Boulevard / Treadway Drive	3.3/A	3.5/A	3.7/A	3.7/A	3.8/A	3.9/A
<i>Eastbound Approach</i>	12.1/B	11.1/B	18.3/B	16.2/B	18.5/C	16.5/C
10. Cloverdale Boulevard / South Interchange	9.7/A	8.0/A	33.3/D	27.2/C	35.7/D	29.4/C
<i>Westbound Approach</i>	13.4/B	10.6/B	61.8/F	53.9/F	66.6/F	58.7/F
<i>Mitigated (Signalized)</i>					58.2/E	49.9/D
<i>Mitigated (Roundabout)</i>					9.9/A	10.5/B
11. U.S. 101 SB Ramps / So. Interchange	1.1/A	0.9/A	44.8/F	35.1/E	115.0/F	**/F
<i>Southbound Approach</i>	12.3/B	10.6/B	**/F	**/F	**/F	**/F
<i>Mitigated (Signalized)</i>					23.0/C	30.6/C
<i>Mitigated (Roundabout)</i>					9.9/A	10.5/B
12. U.S. 101 NB Ramps / So. Interchange	13.7/B	9.3/A	**/F	**/F	**/F	**/F
<i>Northbound Approach</i>	19.0/C	13.2/B	**/F	**/F	**/F	**/F
<i>Mitigated (Signalized)</i>					62.2/E	43.5/D
<i>Mitigated (Roundabout)</i>					15.1/B	15.4/B
13. Asti Road / South Interchange	4.3/A	4.2/A	**/F	**/F	**/F	**/F
<i>Eastbound Approach</i>	9.5/A	9.3/A	**/F	**/F	**/F	**/F
<i>Mitigated (Signalized)</i>					42.6/D	48.3/D
<i>Mitigated (Roundabout)</i>					15.1/B	15.4/B

Results are shown as Delay/LOS

Delay is measured in average seconds per vehicle

LOS = Level of Service

Bold=Deficient LOS (relevant to impact determination)

**/F signifies that delay is projected to be greater than 120 seconds per vehicle, and delays of that magnitude are less precise.

SOURCE: W-Trans, 2009

Freeway Segment Performance

With the addition of traffic volumes generated by Alternative C to the baseline Year 2030 Buildout traffic, all of the study freeway segments would operate at an acceptable LOS C or better in both the northbound and southbound directions during the weekday p.m. peak hour. Results of the freeway analysis are included in **Appendix G**.

2030 Buildout Plus Alternative D Conditions

Peak Hour Intersection Effects

As shown in **Table 4.16-6**, with the addition of traffic volumes generated by Alternative D to the baseline Year 2030 Buildout traffic, operations at four unsignalized intersections would operate unacceptably. The U.S. 101 Southbound Ramps / South Interchange, U.S. 101 Northbound Ramps / South Interchange, and Asti Road / South Interchange intersections would worsen within unacceptable baseline service levels during both peak periods. The intersection of Cloverdale Boulevard / South Interchange would worsen within unacceptable LOS during the weekday peak. The LOS calculation sheets are provided in **Appendix G**. In addition to mitigation recommended in **Section 4.8**, the following mitigation would be required:

For the near-term **Mitigation Measures 5.8-2** (signalization option) or **Mitigation Measure 5.8-4** (roundabout option) was recommended in **Section 4.8** to reduce impacts to a less than significant level. In the cumulative scenario implementation of the signalization option would result in adverse impacts at the U.S. 101 Northbound Ramps / South Interchange intersection. The roundabout option would reduce cumulative impacts to a less-than-significant level.

For the cumulative scenario only, **Mitigation Measure 5.8-3** (signalization) would result in an adverse impact at the Asti Road / South Interchange intersection. Alternatively, **Mitigation Measure 5.8-4** (roundabout option) would result in acceptable LOS at this intersections avoiding the residual adverse impact from signalization.

For the cumulative scenario only, **Mitigation Measures 5.8-7 and 5.8-8** (signalization option) would result in an adverse impact at Cloverdale Boulevard / South Interchange and a less than significant impact at U.S. 101 Southbound Ramps / South Interchange. Alternatively, **Mitigation Measure 5.8-9** (roundabout option) would result in acceptable LOS at these intersections avoiding the residual adverse impact from signalization.

Signal Warrants

Traffic signal warrants were met for the following intersections under the projected 2030 plus Alternative D volumes.

- U.S. 101 Northbound Ramps / Citrus Fair Drive,
- Asti Road / Project Access
- Cloverdale Boulevard / South Interchange,
- U.S. 101 Southbound Ramps / South Interchange,
- U.S. 101 Northbound Ramps / South Interchange,
- Asti Road / South Interchange

However, the U.S. 101 Northbound Ramps / Citrus Fair Drive and Asti Road / Project Access intersections would operate better than the mid-LOS D standard established by the City of Cloverdale.

**TABLE 4.16-6
CUMULATIVE INTERSECTION AVERAGE DELAY AND LEVELS OF SERVICE – ALTERNATIVE D**

Intersection	Existing Conditions		Cumulative (2030) Baseline		Cumulative (2030) plus Alternative D	
	PM Peak	Weekend Peak	PM Peak	Weekend Peak	PM Peak	Weekend Peak
1. Cloverdale Blvd / First Street	11.6/B	11.2/B	12.9/B	12.6/B	13.3/B	13.1/B
2. Cloverdale Blvd / Lake Street	2.3/A	2.0/A	3.9/A	4.6/A	4.2/A	5.1/A
<i>Westbound Approach</i>	19.3/C	16.0/C	43.3/E	44.9/E	47.2/E	51.1/F
3. Cloverdale Blvd / Citrus Fair Drive	13.3/B	19.0/C	17.7/B	25.7/C	17.9/B	26.2/C
4. U.S. 101 S. Ramps / Citrus Fair Dr.	0.9/A	1.0/A	1.4/A	1.4/A	2.1/A	2.4/A
<i>Southbound Approach</i>	9.8/A	9.0/A	12.8/B	11.4/B	16.7/C	15.9/C
5. U.S. 101 N. Ramps / Citrus Fair Dr	8.5/A	6.6/A	19.8/B	11.7/B	24.7/C	13.0/B
<i>Northbound Approach</i>	10.6/B	9.8/A	29.6/D	18.9/C	39.9/E	23.2/C
6. Asti Road / Citrus Fair Drive	5.0/A	3.4/A	5.7/A	4.9/A	7.5/A	7.1/A
<i>Eastbound Approach</i>	9.8/A	9.0/A	13.4/B	11.6/B	15.0/B	12.8/B
7. Asti Road / Project Access	NA	NA	NA	NA	7.2/A	20.0/B
<i>Westbound Approach</i>	NA	NA	NA	NA	21.9/C	60.4/F
8. Asti Road / Santana Drive	2.0/A	0.4/A	0.8/A	0.1/A	0.6/A	0.1/A
<i>Westbound Approach</i>	9.2/A	8.5/A	11.1/B	9.1/A	14.9/B	10.9/B
9. Cloverdale Boulevard / Treadway Drive	3.3/A	3.5/A	3.7/A	3.7/A	3.8/A	3.8/A
<i>Eastbound Approach</i>	12.1/B	11.1/B	18.3/B	16.2/B	18.5/C	16.5/C
10. Cloverdale Boulevard / South Interchange	9.7/A	8.0/A	33.3/D	27.2/C	35.3/D	29.2/C
<i>Westbound Approach</i>	13.4/B	10.6/B	61.8/F	53.9/F	65.9/F	58.3/F
<i>Mitigated (Signalized)</i>					57.8/E	49.6/D
<i>Mitigated (Roundabout)</i>					9.6/A	10.0/A
11. U.S. 101 SB Ramps / So. Interchange	1.1/A	0.9/A	44.8/F	35.1/E	101.1/F	115.3/F
<i>Southbound Approach</i>	12.3/B	10.6/B	**/F	**/F	**/F	**/F
<i>Mitigated (Signalized)</i>					22.3/C	28.9/C
<i>Mitigated (Roundabout)</i>					9.6/A	10.0/A
12. U.S. 101 NB Ramps / So. Interchange	13.7/B	9.3/A	**/F	**/F	**/F	**/F
<i>Northbound Approach</i>	19.0/C	13.2/B	**/F	**/F	**/F	**/F
<i>Mitigated (Signalized)</i>					59.2/E	39.2/D
<i>Mitigated (Roundabout)</i>					13.9/B	13.7/B
13. Asti Road / South Interchange	4.3/A	4.2/A	**/F	**/F	**/F	**/F
<i>Eastbound Approach</i>	9.5/A	9.3/A	**/F	**/F	**/F	**/F
<i>Mitigated (Signalized)</i>					40.9/D	45.0/D
<i>Mitigated (Roundabout)</i>					13.9/B	13.7/B

Results are shown as Delay/LOS

Delay is measured in average seconds per vehicle

LOS = Level of Service

Bold=Deficient LOS (relevant to impact determination)

**/F signifies that delay is projected to be greater than 120 seconds per vehicle, and delays of that magnitude are less precise.

SOURCE: W-Trans, 2009

Freeway Segment Performance

With the addition of traffic volumes generated by Alternative D to the baseline Year 2030 Buildout traffic, all of the study freeway segments would operate at an acceptable LOS C or better in both the northbound and southbound directions during the weekday p.m. peak hour. Results of the freeway analysis are included in **Appendix G**.

2030 Buildout Plus Alternative E Conditions

Peak Hour Intersection Effects

As shown in **Table 4.16-7**, with the addition of traffic volumes generated by Alternative E to the baseline Year 2030 Buildout traffic, operations at five unsignalized intersections would operate unacceptably. The U.S. 101 Southbound Ramps / South Interchange, U.S. 101 Northbound Ramps / South Interchange, and Asti Road / South Interchange intersections would worsen within unacceptable baseline service levels during both peak periods. The intersection of Cloverdale Boulevard / South Interchange would degrade to an unacceptable LOS during the weekend peak and would worsen within unacceptable LOS during the weekday peak. The intersection of U.S. 101 Northbound Ramps / Citrus Fair Drive would operate unacceptably during the weekday peak. The LOS calculation sheets are provided in **Appendix G**. In addition to mitigation recommended in **Section 4.8**, the following mitigation would be required:

For the near-term **Mitigation Measures 5.8-2** (signalization option) or **Mitigation Measure 5.8-4** (roundabout option) was recommended in **Section 4.8** to reduce impacts to a less than significant level. In the cumulative scenario implementation of the signalization option would result in adverse impacts at the U.S. 101 Northbound Ramps / South Interchange intersection. The roundabout option would reduce cumulative impacts to a less-than-significant level.

For the cumulative scenario only, **Mitigation Measure 5.8-3** (signalization) would result in an adverse impact at the Asti Road / South Interchange intersection. Alternatively, **Mitigation Measure 5.8-4** (roundabout option) would result in acceptable LOS at this intersections avoiding the residual adverse impact from signalization.

For the cumulative scenario only, **Mitigation Measures 5.8-7 and 5.8-8** (signalization option) would result in an adverse impact at Cloverdale Boulevard / South Interchange and a less than significant impact at U.S. 101 Southbound Ramps / South Interchange. Alternatively, **Mitigation Measure 5.8-9** (roundabout option) would result in acceptable LOS at these intersections avoiding the residual adverse impact from signalization.

For the cumulative scenario only, **Mitigation Measure 5.8-10** would result in acceptable LOS at the U.S. 101 Northbound Ramps / Citrus Fair Drive intersection.

**TABLE 4.16-7
CUMULATIVE INTERSECTION AVERAGE DELAY AND LEVELS OF SERVICE – ALTERNATIVE E**

Intersection	Existing Conditions		Cumulative (2030) Baseline		Cumulative (2030) plus Alternative E	
	PM Peak	Weekend Peak	PM Peak	Weekend Peak	PM Peak	Weekend Peak
1. Cloverdale Blvd / First Street	11.6/B	11.2/B	12.9/B	12.6/B	13.1/B	12.8/B
2. Cloverdale Blvd / Lake Street	2.3/A	2.0/A	3.9/A	4.6/A	5.1/A	6.0/A
<i>Westbound Approach</i>	19.3/C	16.0/C	43.3/E	44.9/E	63.0/F	64.1/F
3. Cloverdale Blvd / Citrus Fair Drive	13.3/B	19.0/C	17.7/B	25.7/C	18.7/B	27.5/C
4. U.S. 101 S. Ramps / Citrus Fair Dr.	0.9/A	1.0/A	1.4/A	1.4/A	2.5/A	2.6/A
<i>Southbound Approach</i>	9.8/A	9.0/A	12.8/B	11.4/B	22.3/C	18.7/C
5. U.S. 101 N. Ramps / Citrus Fair Dr	8.5/A	6.6/A	19.8/B	11.7/B	44.0/E	19.5/C
<i>Northbound Approach</i>	10.6/B	9.8/A	29.6/D	18.9/C	88.5/F	44.5/E
<i>Mitigated (Signalized)</i>					24.1/C	23.4/C
6. Asti Road / Citrus Fair Drive	5.0/A	3.4/A	5.7/A	4.9/A	10.1/B	7.4/A
<i>Eastbound Approach</i>	9.8/A	9.0/A	13.4/B	11.6/B	21.9/C	13.5/B
7. Asti Road / Project Access	NA	NA	NA	NA	29.4/D	15.6/C
<i>Westbound Approach</i>	NA	NA	NA	NA	67.8/F	42.7/E
8. Asti Road / Santana Drive	2.0/A	0.4/A	0.8/A	0.1/A	0.6/A	0.1/A
<i>Westbound Approach</i>	9.2/A	8.5/A	11.1/B	9.1/A	15.8/C	10.3/B
9. Cloverdale Boulevard / Treadway Drive	3.3/A	3.5/A	3.7/A	3.7/A	4.0/A	4.0/A
<i>Eastbound Approach</i>	12.1/B	11.1/B	18.3/B	16.2/B	20.3/C	17.5/C
10. Cloverdale Boulevard / South Interchange	9.7/A	8.0/A	33.3/D	27.2/C	46.3/F	37.0/E
<i>Westbound Approach</i>	13.4/B	10.6/B	61.8/F	53.9/F	86.3/F	74.9/F
<i>Mitigated (Signalized)</i>					71.9/E	60.4/E
<i>Mitigated (Roundabout)</i>					10.0/A	9.2/A
11. U.S. 101 SB Ramps / So. Interchange	1.1/A	0.9/A	44.8/F	35.1/E	**F	94.9/F
<i>Southbound Approach</i>	12.3/B	10.6/B	**F	**F	**F	**F
<i>Mitigated (Signalized)</i>					23.5/C	26.6/C
<i>Mitigated (Roundabout)</i>					10.0/A	9.2/A
12. U.S. 101 NB Ramps / So. Interchange	13.7/B	9.3/A	**F	**F	**F	**F
<i>Northbound Approach</i>	19.0/C	13.2/B	**F	**F	**F	**F
<i>Mitigated (Signalized)</i>					72.1/E	33.8/C
<i>Mitigated (Roundabout)</i>					21.9/C	12.5/B
13. Asti Road / South Interchange	4.3/A	4.2/A	**F	**F	**F	**F
<i>Eastbound Approach</i>	9.5/A	9.3/A	**F	**F	**F	**F
<i>Mitigated (Signalized)</i>					45.3/D	42.2/D
<i>Mitigated (Roundabout)</i>					21.9/C	12.5/B

Results are shown as Delay/LOS

Delay is measured in average seconds per vehicle

LOS = Level of Service

Bold=Deficient LOS (relevant to impact determination)

****F** signifies that delay is projected to be greater than 120 seconds per vehicle, and delays of that magnitude are less precise.

SOURCE: W-Trans, 2009

Signal Warrants

Traffic signal warrants were met for the following intersections under the projected 2030 plus Alternative E volumes.

- U.S. 101 Northbound Ramps / Citrus Fair Drive,
- Asti Road / Project Access
- Cloverdale Boulevard / South Interchange,
- U.S. 101 Southbound Ramps / South Interchange,
- U.S. 101 Northbound Ramps / South Interchange,
- Asti Road / South Interchange

However, the Asti Road / Project Access intersection would operate better than the mid-LOS D standard established by the City of Cloverdale.

Freeway Segment Performance

With the addition of traffic volumes generated by Alternative D to the baseline Year 2030 Buildout traffic, all of the study freeway segments would operate at an acceptable LOS B or better in both the northbound and southbound directions during the weekday p.m. peak hour. Results of the freeway analysis are included in **Appendix G**.

Land Use and Agriculture

The geographic boundary of the cumulative land use analysis is defined as Sonoma County. This analytical boundary is used because potential land use and agriculture effects would occur primarily within the County due to the location of the project site as well as the proposed cumulative projects within the County. While growth and development projects will occur in other areas of the region, the Proposed Action and alternatives would be expected to result in negligible land use effects outside of Sonoma County.

Cumulative land use effects that may occur in Sonoma County as the result of expected growth and development include the following:

- Conflicts with existing land uses
- Preclusion of planned land uses
- Disruption of access to existing or planned land uses
- Disruption of orderly development
- Creation of impediments to General Plans or specific plans

The growth projected to occur within Sonoma County and its incorporated cities will be subject to the policies of the County General Plan as well as local General Plans, such as the City of Cloverdale General Plan. These plans are the result of public processes to determine a pattern of land use that will facilitate community goals. Enforcement of these polices through the review and approval

of land use development plans, ensures orderly development of the County and its incorporated cities. Policies contained within these general plans are expected to minimize land use conflicts as growth occurs within the County.

Development of the project site may create incentive for surrounding industrial, business park, and agricultural designated lands to be developed with commercial uses. Due to the existing urban development in the area and the goals of the County and City General Plans, such incentive for redevelopment is not considered to be an adverse effect on existing or planned land uses. Development would still be subject to City and County land use and zoning policies which would limit development of commercial uses in the vicinity to lands designated as commercial.

Because the project site is located within an area planned for urban commercial and industrial uses, the Proposed Action and alternatives would not be expected to significantly affect existing land uses and the orderly development of planned land uses when combined with other development in Sonoma County and the City of Cloverdale. Potential cumulative land use effects are considered to be less than significant.

Public Services

The geographic boundary for cumulative public services analysis is defined as the boundaries encompassed by jurisdictions which are served by the individual public services such as water, wastewater, police protection, fire protection, etc.

Cumulative public services effects that may occur as a result of the expected growth and development may include the following:

- A service provider's inability to supply sufficient capacity to meet the needs of its service area and customers
- Increased response time for public safety calls
- Decreased ratio of law enforcement and fire personnel to citizens, thereby decreasing the ability to adequately respond to the public safety needs of all citizens

As the growth in jobs and increased demand for housing occurs within Sonoma County, demands on community services such as police and fire protection will increase. The County and its incorporated cities address increased service demands from land use development by requiring that police protection standards be maintained through the creation of County Service Areas, assessment districts, and the assessment of special taxes. Likewise, counties and cities levy development impact fees on new development to pay for public services such as fire, police, water and wastewater facilities. The development of employment generating land uses and housing throughout the County would therefore be required to fund the additional services required. The related cumulative projects would accordingly be expected to pay taxes or development fees that would support additional community services commensurate with the type of land use proposed. Development on trust lands would not be subject to County or City development fees. However, as identified in **Section 5.10**, the Tribe would enter into service agreements with local contractors

for public services. This would mitigate the potential effects to the level of these services provided in the project area.

Noise

Any project that would individually have a potentially significant noise impact would also be considered to have a potentially significant cumulative noise impact. Noise associated with project facilities and equipment, including construction and operational noise, will not create cumulative noise impacts, because of construction **Mitigation Measures 4.11.1a** and **4.11.1b** as well as the fact that non-transportation noise will dissipate the distance to the nearest sensitive receptors as stated in the operational noise impacts in **Section 4.11**. Therefore, for the purpose of this analysis, cumulative noise effects will be limited to noise generated by traffic.

When considered alone, the Proposed Action and alternatives would generate noise mainly by adding more traffic to the area particularly the City of Cloverdale and the unincorporated portion of Sonoma County that serves the area. Many of the other anticipated projects in the region would contribute to noise in the area due to increased traffic volumes. As depicted in **Table 4.11-5** traffic associated with buildout (no project) would result in a cumulatively significant impact along local roadways when compared to the existing scenario. However, the project itself would not be cumulatively considerable. The project would not increase noise levels by 5 dBA or more on any of the roadway segments. Thus, it is considered to have a less-than-significant cumulative impact on noise without mitigation.

Hazardous Materials

Cumulative hazardous materials involvement that may occur in Sonoma County as the result of the implementation of the Proposed Action and alternatives include the following:

- Releases of hazardous materials into the environment
- Groundwater and soil contamination
- Exposure of residents to contaminants as a result of hazardous materials releases

Mitigation included in **Section 5.12** would ensure a less than significant cumulative effect during the construction of the Proposed Action or alternatives. Similar mitigation will be required for other construction projects in Sonoma County. As discussed in **Section 3.12**, available information and data reviewed does not suggest that ongoing or historical site uses have caused significant soil or groundwater contamination on the site (**Appendix K**).

Visual Resources

The geographic boundary of the cumulative visual analysis is defined as the project site and the surrounding viewshed. This boundary is used because changes in visual resources will be most noticeable in the vicinity of the project site. While visual resources effects may occur in other parts of Sonoma County, the surrounding topography and other physical geographic barriers typically prevent a visual resources effect from being viewed over a significant distance. Therefore the cumulative visual resources effects of the selected alternative would be limited to the project specific viewshed.

The potential cumulative degradation of project area visual resources would occur if the following were to occur as a result of development:

- Alter the existing natural view sheds, including the natural terrain or vegetation
- Change the existing visual quality of the region or eliminate significant visual resources

The project alternatives propose of an urban setting in a primarily rural environment; however the site is adjacent to existing industrial uses.

As noted in **Section 3.13**, the project site is located immediately adjacent to State Highway 101, which is a County-designated scenic corridor, as well as a designated scenic road within the Cloverdale General Plan. State Highway 101 within Sonoma County is not, however, considered a Scenic Highway by Caltrans. The Proposed Action and alternatives would introduce new manmade features which can be seen from surrounding public areas, including Highway 101, recreationists on the Russian River, and residences located to the west of Highway 101.

The development proposes an architectural design that is not out of character for the region. It has also designed landscaping to act as a screen for structures, effectively obscuring views of these structures from most vantage points. The massing and design of the structures have been designed to minimize the impact to public views of the ridgeline within the project area. No project components would be constructed above the existing ridgeline, thereby preserving the skyline.

In addition to the above design considerations, the alternatives include the provision of landscaping on the visible faces of the proposed structures. This includes gardens and native trees, all of which are within the aesthetic character of the region. With the maturation of the proposed landscaping, the views of passing motorists on Highway 101 and nearby residents of the project site from nearby points on the valley floor and from nearby highways would remain reasonably consistent with current structures and views on the site. With mitigation measures identified in **Section 5.13**, the cumulative effect to visual resources would be less than significant.

Environmental Justice

As discussed in **Section 3.14**, demographic analysis of the local population indicates that no minority or low-income communities of concern are located within the affected environment for the project site that warrant environmental justice analysis. Consequently, no cumulative environmental justice impacts are associated with the Proposed Action or alternatives.

4.16.3 Cumulative Analysis for the No Action Alternative

It can be assumed that anticipated future activities associated with the No Action Alternative would be consistent with existing land use plans and policies and meet the legal obligations related to environmental protection. The No Action Alternative would have no cumulative effects on land resources, land use patterns, water resources, air quality, biological resources, cultural resources, socioeconomics, resource use patterns, transportation networks, noise, visual resources, or hazardous wastes.

SECTION 5.0

Mitigation

5.1 Introduction

The Council on Environmental Quality (CEQ) Regulations for implementing the National Environmental Policy Act (NEPA) require that mitigation measures be developed for the Proposed Action and alternatives for all effects on the environment where it is feasible to do so (40 CFR 1502.14(f) and 1502.16(h)). The CEQ Regulations define mitigation as “avoiding the impact altogether by not taking a certain action or parts of an action, minimizing impacts by limiting the degree or magnitude of the action and its implementation, rectifying the impact by repairing, rehabilitating, or restoring the affected environment, reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action, compensating for the impact by replacing or providing substitute resources or environments” (40 CFR 1508.20). Where potential effects on the environment were identified in early stages of project design and EIS preparation, appropriate changes in the project description were made to minimize or eliminate them. For example, the projects were sited in areas which minimize impacts to jurisdictional water of the U.S. Other applications of mitigation, such as conforming to the California Building Code have been incorporated into the design of the alternatives and have been mentioned throughout the EIS. In addition to the mitigation that has already been incorporated into the design of the alternatives, the following section provides measures to mitigate specific effects identified in the preparation of the EIS.

5.2 Land Resources

The following mitigation measure is recommended for Alternatives A, B, C, D, and E:

Preparation of Design-Level Geotechnical Recommendations

Measure 5.2-1: A design-level geotechnical report shall be prepared along with construction drawings and the Tribe shall adhere to the recommendations of the report.

5.3 Water Resources

The following mitigation measures are recommended for Alternatives A, B, C, D, and E:

Comprehensive Drainage and Flood Management Planning and Implementation:

Measure 5.3-1: Prior to implementation of the selected alternative, the project proponent shall complete a comprehensive design-level Drainage Plan. This plan shall address drainage and flooding in the action area. The Drainage Plan will implement additional measures, including but not limited to additional pervious surfaces, stormwater retention ponds, additional underground stormwater retention capacity, and other measures to retain or infiltrate stormwater flows, such that no net increase in 100-year peak stormwater discharge occurs as a result of implementing the selected alternative.

Location of Facilities above the 100-Year Flood Height:

Measure 5.3-2a: The project proponent will ensure that the proposed groundwater well is installed above the FEMA-defined 100-year flood height, plus an additional 1-foot allowance to account for potential increases in flood height that would result from installation of levees surrounding the wastewater treatment plant, water treatment plant, and wastewater storage pond, as relevant. Specifically, the pump house including all electric and mechanical components, shall be installed at a level equivalent to at least 3 feet above the FEMA-delineated 100-year flood height, plus an additional 1 foot to offset flood height increases from installing flood control levees, as relevant.

Measure 5.3-2b: In accordance with FEMA floodplain hydraulic modeling requirements, the Tribe shall develop a hydraulic model to quantify the impact of wastewater facilities and other related systems proposed for construction within the 100-year floodplain, and 500-year floodplain if required by FEMA, of the Russian River. Depending on the results of the hydraulic model (e.g., modeling indicates that flood height increases would exceed 1 foot), the Tribe shall complete a Conditional Letter of Map Revision (CLOMR) prior to implementation of a project and must submit a Letter of Map Revision (LOMR) request to FEMA within 6 months of completion of a project.

Measure 5.3-2c: Under government to government consultation with FEMA, the Tribe shall seek participation National Flood Insurance Program (NFIP), which requires the Tribe to pass a resolution, adopt the effective Flood Insurance Rate Map that includes their lands, and adopt and enforce a flood damage prevention ordinance that meets or exceeds the minimum requirements of the program.

Measure 5.3-2d: The Tribe shall establish a Tribal Mitigation Plan in accordance with 44 CFR 201.7, which addresses flood hazards and mitigation of those hazards. The plan shall include mitigation goals and strategies and other NFIP or floodplain management activities as described in the latest version of FEMA's Tribal Multi-Hazard Mitigation Guidance.

Water Quality Mitigation for Proposed Sprayfields:

Measure 5.3-3: The applicant shall take the following measures to ensure no significant reduction in the quality of surface water or groundwater used for potable water supply under the selected alternative:

1. Sprayfield operation shall be managed such that no runoff or other surface discharge of treated effluent occurs from the sprayfield site. Sprayfields shall be monitored on a daily basis for signs of treated effluent pooling or potential runoff. In the event that

substantial pooling, runoff, or potential signs of runoff are found, sprayfield discharge rate or management shall be modified to ensure that no runoff occurs. All drainages shall be protected from receiving sprayfield runoff by berms, ditches, or other measures. In no instance shall sprayfields be operated during natural precipitation events, or when standing water is located on-site. This measure will thereby prevent the migration of treated effluent into surface waters, ensuring that comingling of treated effluent with surface waters does not occur.

2. If the private water supply option is selected, groundwater quality shall be monitored for nutrients and pathogens. The applicant shall install at least three groundwater quality monitoring wells in the vicinity of the proposed water supply well, and shall sample each well at least monthly. Monitoring wells shall be screened at or above the level of the water supply well. In the event that pollutants associated with the sprayfield are detected in the groundwater in the vicinity of the water supply well, measures shall be taken to alter the pattern or intensity of wastewater/sprayfield disposal, to ensure that the water supply well does not become contaminated. In the event that the water supply well becomes contaminated with nutrients or pathogens associated with the proposed sprayfield, additional water treatment shall be installed, or a new well shall be installed, in order to ensure that drinking water quality meets federal requirements.

5.4 Air Quality

The following mitigation measures are recommended for Alternatives A, B, C, D, and E:

Dust Abatement Program

Measure 5.4-1: The applicant shall require construction contractors to implement a appropriate dust abatement program at least as stringent as the recommendations of the most recent version of the Northern Sonoma County Air Pollution Control District Rule 430, Fugitive Dust Emissions. These would include, but not be limited to, the following measures:

1. Covering open bodied trucks when used for transporting materials likely to give rise to airborne dust.
2. Installation and use of hoods, fans, and fabric filters to enclose and vent the handling of dusty materials. Containment methods can be employed during sandblasting and other similar operations.
3. Conduct agricultural practices in such a manner as to minimize the creation of airborne dust.
4. The use of water or chemicals for control of dust in the demolition of existing buildings or structures, construction operations, the grading of roads or the clearing of land.
5. The application of asphalt, oil, water or suitable chemicals on dirt roads, materials stockpiles, and other surfaces which can give rise to airborne dusts.
6. The paving of roadways and their maintenance in a clean condition.

7. The prompt removal of earth or other material from paved streets onto which earth or other material has been transported by trucking or earth moving equipment, erosion by water, or other means.

Measure 5.4-2: All construction equipment shall be properly tuned and maintained in accordance with manufacturer's specifications.

Measure 5.4-3: General contractors shall maintain and operate construction equipment so as to minimize exhaust emissions. During construction, trucks and vehicles in loading and unloading queues shall turn their engines off when not in use to reduce vehicle emissions.

Measure 5.4-4: Electricity from power poles rather than temporary diesel- or gasoline-powered generators shall be used to the extent feasible.

Transportation and Motor Vehicle Measures

Measure 5.4-5: Implement the Transportation and Motor Vehicle Measures below:

- Incorporate public transit into project design
- Limit idling time for commercial vehicles, including delivery and construction vehicles.
- Use low or zero-emission vehicles where feasible, including construction vehicles and Tribal-fleet vehicles.
- Promote ride sharing programs e.g., by designating a certain percentage of parking spaces for ride sharing vehicles, designating adequate passenger loading and unloading and waiting areas for ride sharing vehicles, and providing a web site or message board for coordinating rides.
- Create car sharing programs. Accommodations for such programs include providing parking spaces for the car share vehicles at convenient locations accessible by public transportation.
- If feasible, increase the cost of driving and parking private vehicles by, e.g., imposing tolls and parking fees.
- Provide shuttle service to public transit.
- Provide public transit incentives, such as free or low-cost monthly transit passes.
- Implement parking cash-out program for employees, e.g., non driving employees receive transportation allowance equivalent to value of subsidized parking.

Measure 5.4-6: The applicant shall require busses and diesel loading trucks to comply with the California Air Resource Board's Airborne Toxic Control Measure to Limit Diesel-Fueled Commercial Motor Vehicle Idling (California Code of Regulations, Title 13, Division 3, Article 1, Chapter 10, Section 2458) which requires that the driver shall not idle for more than 5 minutes at any location, except in the case of passenger boarding where a ten minute limit is imposed, or when passengers are onboard.

Odor Management Plan

Measure 5.4-7: The operator of the WWTP shall formulate a progressive Odor Management Plan. This plan will allow the operator to respond to odor complaints and revise operations as necessary. The operator shall coordinate with the NSCAPCD to ensure that the operator is notified of all odor complaints received regarding the facility. The Plan shall discuss this complaint response protocol and include progressive measures to be made in the event of repeated, verified complaints. When the operator or NSCAPCD staff verify strong odors at off-site receptors, the operator shall make changes in site operations to reduce the potential for odors. Odors may be reduced by installing additional odor control equipment, making process/treatment modifications, or other activities. Once complete, the Plan shall be submitted to the ICAPCD for a 30-day period for review and comment.

Energy Efficient Measures

Measure 5.4-8: Implement the Energy Efficient Measures below:

- Install efficient lighting and lighting control systems. Site and design building to take advantage of daylight.
- Install energy efficient heating and cooling systems, appliances and equipment, and control systems.
- Use solar heating, automatic covers, and efficient pumps and motors for pools and spas.
- Bus Shelter for Existing/Planned Transit Service
- Parking Area Tree Cover (50% cover in 10 years)
- Enhanced Recycling
- Drought tolerant landscaping and shade trees
- If financially feasible the Tribe could commit to construction of a facility that operates at a minimum level which is similar to the California Title 24 standards.

Indoor Air Quality

Measure 5.4-9: The following measures are recommended for all alternatives.

- The Tribe shall ensure that ventilation of outdoor air is consistent with ASHRAE Standard 62-19991 under all operating conditions.
- To limit public exposure to environmental tobacco smoke, the Tribe shall provide non-smoking areas, or “smoke-free zones” in the casino gaming area.
- The Tribe shall provide non-smoking rooms in the hotel.
- The Tribe shall post signage in prominent locations alerting patrons and employees of areas that permit smoking, noting that environmental tobacco smoke has been found to be deleterious to health. Signage for employees shall include the employee break room.

Greenhouse Gas Emissions

Measure 5.4-10: The Tribe shall compensate for indirect greenhouse gas (GHG) emissions which exceed 25,000 metric tons CO₂e annually through the purchase of GHG credits offered at an approved GHG credit broker. The alternatives exceed 25,000 metric tons CO₂e by the following amounts:

- Alternative A – 27,211 CO₂e
- Alternative B – 11,748 CO₂e
- Alternative C – 8,928 CO₂e
- Alternative D – 1,430 CO₂e
- Alternative E – 18,758 CO₂e

Credits shall be purchased once operations begin, and purchases may be phased over the first 10 years of operation.

5.5 Biological Resources

The following mitigation measures are recommended for Alternatives A, B, C, D, and E.

Upland Habitats:

Measure 5.5-1: The project applicant shall compensate for the loss of coast live oak woodland and north coast riparian scrub habitat at a ratio no less than 1:1. Compensation will include on-site creation, restoration, or enhancement along the southern portion of the project area north of and parallel with Coyote Creek (channel I-2). On-site creation/restoration plans must be prepared by a qualified biologist prior to construction and be implemented within one year following construction. On-site creation/restoration sites shall be monitored for at least five (5) years to ensure their success.

Measure 5.5-7: Landscaped areas associated with project layout design shall be planted with native trees, shrubs, and ground covers. Landscaped areas shall avoid direct impacts to jurisdictional waters of the U.S.

Measure 5.5-9: No construction activities shall occur within the drip line of native trees that have been designated as avoided/protected from the project. If proposed construction activities are proposed within 50 feet of a protected tree, the project applicant shall clearly delineate the tree with appropriate fencing at the drip line.

Wetlands and Other Waters of the U.S.:

Measure 5.5-2: The project applicant shall ensure that any loss of waters of the U.S. shall be compensated for by the preservation or creation of similar habitat at a ratio no less than 1:1, prior to construction. Permits secured for the project (Section 404 and Section 401) may require higher ratios. Compensation may include on-site creation, restoration, or enhancement, off-site creation, or payment into a Corps-approved mitigation bank for in-kind habitat credits. Mitigation bank credits must be obtained prior to construction. On-site or off-site creation/restoration plans must be prepared by a qualified biologist prior

to construction and approved by the Corps. On- or off-site creation/restoration sites shall be monitored for at least five (5) years to ensure their success.

Measure 5.5-6: The project applicant shall incorporate into the project site drainage plan the flow and treatment BMPs and the accompanying recommended design parameters (i.e. locations, sizing factors, soil specifications and plant selection) proposed in the preliminary Stormwater Quality Management Plan (Appendix Q).

Federally Listed Species:

Measure 5.5-3: Impacts to aquatic habitat for federally listed salmonids during construction shall be minimized by implementing Best Management Practices (BMP) to protect water quality. This may include installing temporary siltation barriers (such as silt fencing), straw wattles, covering exposed soils, protecting inlet structures with sand bags, and reseeded exposed soils immediately following construction. These BMPs shall be fully described within the project's Storm Water Pollution Protection Plan (SWPPP), which shall be prepared prior to construction and implemented by the project applicant during construction. The project applicant shall also adhere to the measures provided under the EPA's NPDES General Construction Permit. Equipment and soil stock areas shall be placed at least 50 feet away from aquatic water sources.

Migratory Birds:

Measure 5.5-4: The applicant shall make every effort to conduct any tree and shrub removal activities that are required for project construction outside of the migratory bird and raptor breeding season (March 1 through August 31). For construction activities that will occur between March 1 and August 31 of any given year, the applicant shall conduct preconstruction surveys in suitable nesting habitat within 500 feet of the project site for nesting raptors. Surveys shall be conducted by a qualified biologist. If nesting raptors are detected, the applicant will consult with a qualified biologist to develop suitable measures to avoid impacting breeding effort. Measures may include, but are not limited to:

1. Maintaining a 500 foot buffer around each active raptor nest; no construction activities shall be permitted within this buffer except as described in Mitigation Measure 5.5-4II.
2. Depending on conditions specific to each nest, and the relative location and rate of construction activities, it may be feasible for construction to occur as planned within the buffer without impacting the breeding effort. In this case (to be determined on an individual basis), the nest(s) shall be monitored by a qualified biologist during construction within the buffer. If, in the professional opinion of the monitor, the project would impact the nest, the biologist shall immediately inform the construction manager. The construction manager shall stop construction activities within the buffer until the nest is no longer active.

State and Local Special-Status Species:

Measure 5.5-5: The applicant shall conduct a survey for bat roosts within suitable habitat on the project site. The survey shall be conducted by a qualified biologist. This survey shall include, at a minimum, a visual inspection of potential bat roosting sites, and may include an evening or night survey to observe emergence and/or to detect presence using sonic detectors

(to detect bat vocalizations). If occupied bat roosts are detected, the applicant shall consult with a qualified biologist to develop measures that avoid impacting roosts. Measures may include, but are not limited to:

1. Maintaining a 100-foot buffer around each roost; no construction activities shall be permitted within this buffer except as described in Mitigation Measure 5.5-5II.
2. Exclusion of bats from roosts (ensuring that no bats are trapped in the roost). For maternity roosts, this measure may only be implemented once young have been reared and are able to freely leave the roost (typically before March and after August).

Measure 5.5-8: Prior to construction or grading activities, a survey for the western pond turtle shall be performed by a qualified biologist within 48 hours of construction. Surveys shall focus on potential upland basking sites. Any pond turtles found during surveys shall be relocated by a qualified biologist to suitable aquatic habitat not proposed to be impacted within the study area. Upon clearance of the site of pond turtles, appropriate exclusionary fencing (associated with project site BMPs) shall be erected to prohibit potential turtle upland migration through, or basking within, the active construction site.

5.6 Cultural and Paleontological Resources

The following mitigation measures are recommended for Alternatives A, B, C, D, and E.

Archaeological and Historical Resources:

Measure 5.6-1: Due to the sensitivity of the general vicinity, appropriate recommendations consist of monitoring by a qualified archaeologist and Native American representative during ground-disturbing activities that occur within 150 feet of perennial water courses including Porterfield Creek at the north and central portions of the project area and the unnamed creek at the south of the project area. An archaeological monitoring program should be established that includes consultation between the consulting archaeologist, lead agency, and the project proponent. The program should clearly define the authority to temporarily halt/redirect construction should resources be encountered.

Measure 5.6-2: If previously unidentified cultural materials are unearthed during construction, work should be halted in that area until a qualified archaeologist can assess the significance of the find. Prehistoric materials might include obsidian and chert flaked-stone tools (e.g., projectile points, knives, scrapers) or toolmaking debris; culturally darkened soil (“midden”) containing heat-affected rocks, artifacts, or shellfish remains; and stone milling equipment (e.g., mortars, pestles, handstones, or milling slabs); and battered stone tools, such as hammerstones and pitted stones. Historic-era materials might include stone, concrete, or adobe footings and walls; filled wells or privies; and deposits of metal, glass, and/or ceramic refuse. If any find is determined to be significant, the project proponent and a qualified archaeologist will meet to determine the appropriate avoidance measures or other appropriate mitigation.

Human Remains

In the unlikely event that human remains were discovered during subsurface activities, including those interred outside of formal cemeteries, the human remains could be inadvertently damaged,

which could be a significant impact. However, this impact would be minimized by implementation of Mitigation Measure 3, in conjunction with Mitigation Measures 1 and 2.

Measure 5.6-3: The possibility of encountering human remains cannot be entirely discounted. Section 7050.5 of the California Health and Safety Code states that it is a misdemeanor to knowingly disturb a human grave. If human graves are encountered, work should halt in the vicinity and the County Coroner should be notified. At the same time, an archaeologist should be contacted to evaluate the situation. If the remains are determined to be of Native American descent, the Native American Heritage Commission (NAHC) shall be contacted within a reasonable timeframe. The NAHC will then identify the person(s) thought to be the Most Likely Descendent (MLD) of the deceased Native American. The MLD shall then make recommendations, and engage in consultations concerning the treatment of the remains as provided in PRC§ 5097.98.

5.7 Socioeconomic Conditions

The following mitigation measures are recommended for Alternatives A, B, C and D:

Problem Gambling

Measure 5.7-1:

- The Tribe will adopt a policy statement on problem gambling.
- The Tribe will contract with a gambling treatment professional to train management and staff to develop strategies for recognizing and addressing customers whose gambling behavior may strongly suggest they may be experiencing serious to severe difficulties.
- The Tribe shall refuse service to any customer whose gambling behavior convincingly exhibits indications of problem or pathological gambling.
- The Tribe shall respectively and confidentially provide the customer (as described above) with written information that includes a list of professional gambling treatment programs and self-help groups.
- The Tribe shall prominently display materials describing the risks and signs of problem and pathological gambling behaviors. Materials shall also be prominently displayed that provide information on available programs for those seeking treatment for problem and pathological gambling disorders.
- The Tribe shall implement procedures to allow for voluntary self-exclusion, enabling gamblers to ban themselves from a gambling establishment for a specific period of time.
- The Tribe will enter into an agreement with Sonoma County for an annual contribution from the Tribe to local organizations that address problem gamblers in Sonoma County. Based on the previous calculation of the expected increase in problem gamblers in Sonoma County and trends in treatment of problem gamblers, the Tribe would compensate the county social services for a minimum of equivalent to 1.4 licensed counselor positions. If the County does not have a mechanism to provide these services then the Tribe shall contribute an equivalent amount to problem gambling treatment and prevention programs which serve Sonoma County.

Employee Commuters

Measure 5.7-2: The Tribe shall create an employee Commuter Program that will provide a shuttle service for employee commuters from the Santa Rosa/Rohnert Park area. In addition, incentives (such as partial or full reimbursement) would be provided for commuting employees.

5.8 Transportation

It is recommended that the Tribe pay a full share or fair share for implementation of the following improvements. In cases where improvements would require an environmental study and design, the full share or fair share contribution shall also apply to the environmental study. A summary table of mitigation measures is provided as **Table 5-1**. The table summarizes the mitigation measures required for each alternative and the residual significance after mitigation which are discussed in detail below.

The following measures are recommended to mitigate project impacts under 2015 short-term conditions and/or cumulative conditions, as described in **Sections 4.8 and 4.16**, respectively:

Measure 5.8-1: (Alternatives A and B for near term and cumulative, Alternative C for cumulative scenario only). The project sponsor would pay 100% of the costs to install traffic signals at one central main entrance to the project site on Asti Road, and to construct a northbound right-turn lane and southbound left-turn lane on Asti Road at the site entrance. Supplementary driveways to the north and south of this signalized access would be configured to limit access to right-turn in/right-turn out only. The Tribe shall enter into an agreement with the County regarding maintenance of the traffic signal.

Implementation of Mitigation Measure 5.8-1 would result in acceptable levels of service at the intersection of Asti Road / Project Access.

Measure 5.8-2: (All Project Alternatives for near term and cumulative). The project sponsor would pay their fair share contribution towards the installation of traffic signals at the intersection of U.S. 101 Northbound Ramps / South Interchange.

Implementation of Mitigation Measure 5.8-2 would result in acceptable levels of service at the intersection of U.S. 101 Northbound Ramps / South Interchange in the near-term, but associated queuing between the U.S. 101 northbound ramps and Asti Road, and between the northbound and southbound ramps, would exceed storage capacity. Road widening to incorporate additional turn lanes would be infeasible because it would require widening of the overpass structure over U.S. 101. In the cumulative scenario, Mitigation Measure 5.8-2 would not result in acceptable levels of service at this intersection. For acceptable traffic LOS and/or no excessive queuing, construction of a dual-lane roundabout with a 160-foot diameter is recommended instead of installation of traffic signals (see Mitigation Measure 5.8-4). The proximity of the intersection of U.S. 101 Northbound Ramps / South Interchange to the Asti Road / South Interchange intersection dictates consolidation of the two intersections into a single roundabout.

**TABLE 5-1
SUMMARY OF TRAFFIC MITIGATION MEASURES**

Mitigation Measure	Near-Term (and Cumulative)	Cumulative Only	Significance after Mitigation	
Measure 5.8-1: The project sponsor would pay 100% of the costs to install traffic signals at one central main entrance to the project site on Asti Road, and to construct a northbound right-turn lane and southbound left-turn lane on Asti Road at the site entrance. Supplementary driveways to the north and south of this signalized access would be configured to limit access to right-turn in/right-turn out only.	A, B	C	LTS	
Measure 5.8-2: The project sponsor would pay their fair share contribution towards the installation of traffic signals at the intersection of U.S. 101 Northbound Ramps / South Interchange.	A, B, C, D, E		LTS (near-term) / SU (cumulative)	If Mitigation Measure 5.8-2 and 5.8-3 are selected, then Mitigation Measure 5.8-4 would not be required and vice versa. Either signalization of both intersections or a roundabout would be implemented.
Measure 5.8-3: The project sponsor would pay their fair share contribution towards the installation of traffic signals at the intersection of Asti Road / South Interchange.	A, B, C	D,E	LTS (near-term) / SU (cumulative)	
Measure 5.8-4: The project sponsor would pay their fair share contribution towards the construction of a roundabout that encompasses the intersections of U.S. 101 Northbound Ramps / South Interchange and Asti Road / South Interchange. A Conceptual Approval Report would need to be completed as the first step of Caltrans' Project Initiation Document process.	A, B, C, D, E		LTS	
Measure 5.8-5: The project would install either an off-street path or sidewalk along Asti Road between the SMART track/multi-use trail crossing of Asti Road and the project site entrance.	A, B, C, D, E		LTS	
Measure 5.8-6: Prior to construction, the project applicant shall redesign the parking plan to provide an additional 135 parking spaces. These additional spaces shall be added so as not to substantially change the proposed site layout.	D		LTS	
Measure 5.8-7: The project sponsor would pay their fair share contribution towards the installation of traffic signals at the intersection of Cloverdale Boulevard / South Interchange.		A, B, C, D, E	SU	If Mitigation Measure 5.8-7 and 5.8-8 are selected, then Mitigation Measure 5.8-9 would not be required and vice versa. Either signalization of both intersections or a roundabout would be implemented.
Measure 5.8-8: The project sponsor would pay their fair share contribution towards the installation of traffic signals at the intersection of U.S. 101 Southbound Ramps / South Interchange.		A, B, C, D, E	LTS	
Measure 5.8-9: The project sponsor would pay their fair share contribution towards the construction of a roundabout that encompasses the intersections of Cloverdale Boulevard / South Interchange and the U.S. 101 Southbound Ramps / South Interchange.		A, B, C, D, E	LTS	
Measure 5.8-10: The project sponsor would pay their fair share contribution towards the installation of traffic signals at the intersection of U.S. 101 Northbound Ramps / Citrus Fair Drive.		E	LTS	

Measure 5.8-3: (Alternatives A, B and C in near term and cumulative, Alternatives D and E in cumulative scenario only). The project sponsor would pay their fair share contribution towards the installation of traffic signals at the intersection of Asti Road / South Interchange.

Implementation of Mitigation Measure 5.8-3 would result in acceptable levels of service at the intersection of Asti Road / South Interchange in the near term, but associated queuing between the U.S. 101 northbound ramps and Asti Road, and between the northbound and southbound ramps, would exceed storage capacity. Road widening to incorporate additional turn lanes would be infeasible because it would require widening of the overpass structure over U.S. 101. In the cumulative scenario, Mitigation Measure 5.8-3 would not result in acceptable levels of service at this intersection. For acceptable traffic LOS and/or no excessive queuing, construction of a dual-lane roundabout with a 160-foot diameter is recommended instead of installation of traffic signals (see Mitigation Measure 5.8-4). The proximity of the intersection of U.S. 101 Northbound Ramps / South Interchange to the Asti Road / South Interchange intersection dictates consolidation of the two intersections into a single roundabout.

Measure 5.8-4: (All Project Alternatives for near term and cumulative). The project sponsor would pay their fair share contribution towards the construction of a roundabout that encompasses the intersections of U.S. 101 Northbound Ramps / South Interchange and Asti Road / South Interchange. A Conceptual Approval Report would need to be completed as the first step of Caltrans' Project Initiation Document process.

Implementation of Mitigation Measure 5.8-4 (roundabout) instead of Mitigation Measures 5.8-2 and 5.8-3 (traffic signals) would eliminate excessive queuing between adjacent intersections, and also would result in acceptable levels of service.

Measure 5.8-5: (All Project Alternatives in near term and cumulative). The project would install either an off-street path or sidewalk along Asti Road between the SMART track/multi-use trail crossing of Asti Road and the project site entrance.

Measure 5.8-6: (Alternative D in near term and cumulative). Prior to construction, the project applicant shall redesign the parking plan to provide an additional 135 parking spaces. These additional spaces shall be added so as not to substantially change the proposed site layout.

Measure 5.8-7: (All Project Alternatives in the cumulative scenario only). The project sponsor would pay their fair share contribution towards the installation of traffic signals at the intersection of Cloverdale Boulevard / South Interchange.

Implementation of Mitigation Measure 5.8-7, by itself, would not result in acceptable levels of service at the intersection of Cloverdale Boulevard / South Interchange, and in addition, queuing between this intersection and the U.S. 101 Southbound Ramps would exceed storage capacity. For acceptable traffic LOS and no excessive queuing, a partial multi-lane roundabout with a 160-foot diameter is recommended (see Mitigation Measure 5.8-9). The proximity of the intersection of Cloverdale Boulevard / South Interchange to the U.S. 101 Southbound Ramps / South Interchange intersection dictates consolidation of the two intersections into a single roundabout.

Measure 5.8-8: (All Project Alternatives in the cumulative scenario only). The project sponsor would pay their fair share contribution towards the installation of traffic signals at the intersection of U.S. 101 Southbound Ramps / South Interchange.

Implementation of Mitigation Measure 5.8-8 would result in acceptable levels of service at the intersection of U.S. 101 Southbound Ramps / South Interchange, but associated queuing between the U.S. 101 southbound ramps and Cloverdale Boulevard would exceed storage capacity. For acceptable operation (i.e., no excessive queuing), a partial multi-lane roundabout with a 160-foot diameter is recommended (see Mitigation Measure 5.8-9). The proximity of the intersection of Cloverdale Boulevard / South Interchange to the U.S. 101 Southbound Ramps / South Interchange intersection dictates consolidation of the two intersections into a single roundabout.

Measure 5.8-9: (All Project Alternatives in the cumulative scenario only). The project sponsor would pay their fair share contribution towards the construction of a roundabout that encompasses the intersections of Cloverdale Boulevard / South Interchange and the U.S. 101 Southbound Ramps / South Interchange.

Implementation of Mitigation Measure 5.8-9 (roundabout) instead of Mitigation Measures 5.8-7 and 5.8-8 (traffic signals) would eliminate excessive queuing between adjacent intersections, and also would result in an acceptable levels of service.

Measure 5.8-10: (Alternative E in the cumulative scenario only). The project sponsor would pay their fair share contribution towards the installation of traffic signals at the intersection of U.S. 101 Northbound Ramps / Citrus Fair Drive.

Implementation of Mitigation Measure 5.8-10 would result in acceptable levels of service at the intersection of U.S. 101 Northbound Ramps / Citrus Fair Drive.

5.9 Land Use and Agriculture

The following mitigation measures are recommended for Alternatives A, B, C, D, and E:

Measure 5.9-1: In accordance with FAR Part 77.17 the project Applicant has submitted FAA form SF 7460-1, "Notice of Proposed Construction or Alteration" for FAA review. Pertinent information about the alteration and appropriate attachments showing the type and location of the alteration has been submitted. The Applicant will continue to consult with FAA and will adhere to the recommendations of the FAA, concerning lighting and construction activities, received in response to the Applicant's form SF7460-1 submission.

Measure 5.9-2: To ensure that the proposed wastewater ponds do not become an attractant to hazardous wildlife (such as ducks, geese, and other birds), the pond shall be monitored for one year following construction by a qualified biologist on a monthly basis to determine if hazardous wildlife are being attracted to it. Should it be determined that the pond is an attractant, it shall be covered to eliminate wildlife access. Acceptable materials that could be used to cover the pond include solid covers, grids, mesh, or netting. In addition, all lighting, storm water drainage, and landscaping plans at the WWTP site shall be designed to reduce or negate wildlife attractants. A wildlife hazard biologist shall review all plans.

5.10 Public Services

The following mitigation measures are recommended for Alternatives A, B, C, D, and E:

Municipal Water Agreement (If municipal option is chosen)

Measure 5.10-1: The Tribe would enter into a service contract with the City of Cloverdale for water service. The service contract would address the proportionate share of costs for the construction of water distribution lines along Asti Road which would serve the project and other developments. If municipal water cannot be provided the Tribe would choose the private water supply option.

Municipal Wastewater Agreement (If municipal option is chosen)

Measure 5.10-2: The Tribe would enter into a service contract with the City of Cloverdale for wastewater service. If municipal water cannot be provided the Tribe would choose the private wastewater option.

Law Enforcement Service Agreement

Measure 5.10-3: The Tribe would enter into a service contract with the City of Cloverdale Police Department or Sonoma County Sheriff's Office for the provision of primary law enforcement services to the project site.

Alternatives A-D:

It is anticipated that approximately 2.0 to 2.5 new sworn officer positions would be needed to adequately provide services to the project site and surrounding community. The actual number of sworn officer positions and other costs would be negotiated with the City or County. It is also recommended that the Tribe fund a fair share of the cost of a new police facility for the City of Cloverdale should the City propose this improvement.

Alternative E:

It is anticipated that approximately a 0.5 new sworn officer position would be needed to adequately provide services to the project site and surrounding community. The actual number of sworn officer positions and other costs would be negotiated with the City or County. It is also recommended that the Tribe fund a fair share of the cost of a new police facility for the City of Cloverdale should the City propose this improvement.

Fire Protection Service Agreement

Measure 5.10-4: The Tribe would enter into a service contract with the Cloverdale Fire Protection District for the provision of primary fire protection services to the project site.

Alternatives A-C:

It is anticipated that the Tribe would pay a fair share of the costs for (1) an aerial apparatus recommended for the Alexander Valley Resort, (2) regional training to fight multi-story structure fires, (3) other apparatus within the District's apparatus replacement program and (4) staffing needs.

Alternative D and E:

It is anticipated that the Tribe would pay a fair share of the costs for apparatus within the District's apparatus replacement program and staffing needs.

Ambulance Service Agreement

Measure 5.10-5: The Tribe would enter into a service contract with the Cloverdale Healthcare District for provision of ambulance services to the project site.

Emergency Response Plan

Measure 5.10-6: The Tribe would develop an emergency response plan (emergency medical, pandemic, natural disaster, failure of private water/wastewater facilities if applicable) in coordination with the local fire protection and emergency medical service providers. The plan would address staff training and the necessity of an on-site defibrillator.

5.11 Noise

The following mitigation measures are recommended for Alternatives A, B, C, D, and E:

Measure 5.11.1a: Construction activities shall be limited to the daytime hours of 7:00 a.m. to 6:00 p.m Monday through Friday, and shall be prohibited weekends and holidays.

Measure 5.11.1b: To reduce daytime noise impacts due to construction, the applicant shall require construction contractors to implement the following measures:

- Equipment and trucks used for construction shall use the industry standard noise control techniques (e.g., standard mufflers, equipment redesign, use of intake silencers, ducts, engine enclosures, and acoustically-attenuating shields or shrouds).
- Stationary noise sources shall be located as far from adjacent receptors, whenever feasible, and they shall be muffled and enclosed within temporary sheds and incorporate insulation barriers or other measures.

Measure 5.11.2: Rooftop air conditioners and other continuously operated 24-hour equipment (i.e., rooftop chillers, refrigeration systems, and exhaust fans) shall be located at the furthest away point from the nearest residential receptor and/or include additional noise attenuation (i.e., rooftop barriers or parapets between the equipment and the nearest sensitive receptor to absorb or deflect the noise) as necessary to reduce noise levels from the equipment to below 50 dBA at the nearest off-site sensitive receptors.

5.12 Hazardous Materials

The following mitigation measures are recommended for Alternatives A, B, C, D, and E:

Construction Reporting

Measure 5.12-1: In the event that contaminated soil and/or groundwater or other unknown hazardous materials are encountered during construction-related earthmoving activities, or during operation of the facility, all work shall be halted until a qualified individual can assess the extent of contamination. If contamination is determined to be significant, representatives of the Tribe shall consult with the USEPA to determine the appropriate course of action, including the development of a sampling plan and remediation plan if necessary. If concentrations of hazardous substances (i.e. VOCs from the adjacent MGM site) are identified in the groundwater during preliminary testing and development of an onsite potable groundwater source, the Tribe shall implement regular groundwater monitoring and install an appropriate water treatment system to reduce and/or eliminate concentrations from the groundwater supply.

5.13 Visual Resources

The following mitigation measures are recommended for Alternatives A, B, C, D, and E:

Visual Resources

Measure 5.13-1: The external appearance of the proposed project facilities, including the choice of color and materials, shall seek to reduce the visual impact of the proposed facilities. Bright reflective materials and colors shall be avoided in favor of colors that blend into the natural environment, mimic an agricultural scale structure or nearby residential structures.

Light and Glare

Measure 5.13-2: All outdoor light sources shall be properly shielded and installed to prevent light trespass on adjacent properties. Any flood or spot lamps must be aimed no higher than 45 degrees above straight down (half-way between straight down and straight to the side) when the source is visible from any offsite residential property or public roadway. Project signage will refrain from using excessively bright or neon signage, and will be designed to reduce visual impacts. Dark sky lighting techniques, including light shielding to prevent spill and fixtures for parking and walkways that direct all light to the ground, will be incorporated into the project

Measure 5.13-3: All new outdoor roadway lights within the project site should consist of high-pressure sodium or low-wattage metal halide or comparable sources. As well, the intensity of the lights should be kept to a minimum necessary for safety and commerce as determined by the Tribe.

Measure 5.13-4: The proposed project facilities shall be painted with flat colors to reduce or eliminate glare.

5.14 Environmental Justice

No mitigation is required.

SECTION 6.0

Consultation, Coordination and List of Preparers

6.1 Lead Agency

Bureau of Indian Affairs

Pacific Region

Amy Dutschke	Regional Director
Dale Risling	Deputy Regional Director
John Rydzik	Chief, Division of Environmental and Cultural Resources, Management and Safety
Chad Broussard	Environmental Protection Specialist
Patrick O'Mallan	Environmental Protection Specialist
Dan Hall	Regional Archaeologist
Larry Blevins	Safety Officer
Valerie Thomas	Environmental Protection Specialist

6.2 Cooperating Agencies

Cloverdale Rancheria of Pomo Indians

Patricia Hermosillo	Tribal Chairperson
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National Indian Gaming Commission

Brad Mehaffy	NEPA Compliance Officer
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U.S Environmental Protection Agency, Region IX

Kathleen Goforth	Manager
Karen Vitulano	Environmental Review

California Department of Transportation

Bijan Sartipi	District Director
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Sonoma County Board of Supervisors

Paul Kelly	Chair Pro Tem
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City of Cloverdale

Nina D. Regor	City Manager
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6.3 Consultants

Environmental Science Associates (ESA)

Erich L. Fischer	Project Director
Jamie Galos	Project Manager
Jennifer Wade	Deputy Project Manager
Chariss Tweedy	Biological Resources
Paul Miller	Senior Air Quality/Noise
Donnie Ambroziak	Air Quality/Noise
Robert Eckard	Water Resources
Nik Carlson	Socioeconomics
Kathy Anderson	Cultural Resources
Heidi Koenig	Archeology
Jack Hutchison, PE	Traffic
Peter Hudson, PG	Hazardous Materials, Water Resources, and Geology
David Beecroft	Geographic Information Systems

Whitlock & Weinberger Transportation, Inc. (W-Trans)

Steve Weinberger	Senior Transportation Engineer
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Adobe Associates Inc.

Kevin Mass, P.E.	Engineering and Project Design
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JCJ Architecture

David Beck, Jr.	Project Design
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FORMA

Chris Lee	Project Design and Visual Simulations
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SECTION 7.0

Acronyms and Abbreviations

AB	Assembly Bill
ABAG	Association of Bay Area Governments
ACHP	Advisory Council on Historic Preservation
ADA	Federal Americans with Disabilities Act
af/yr	acre-feet per year
ALUC	airport land use commission
ALUP	airport land use plan
APE	area of potential effect
A-PEZA	Alquist-Priolo Earthquake Fault Zoning Act
APN	Assessor's Parcel Number
ARPA	Archaeological Resources Protection Act
AST	aboveground storage tanks
BAAQMD	Bay Area Air Quality Management District
bgs	below ground surface
BIA	Bureau of Indian Affairs
BMP	best management practice
BOD	biochemical oxygen demand
Caltrans	California Department of Transportation
CARB	California Air Resources Board
CBC	California Building Code

CCAT	California Climate Action Team
CDFG	California Department of Fish and Game
CCR	California Code of Regulations
CEQ	Council on Environmental Quality
CFPD	Cloverdale Fire Protection District
CFR	Code of Federal Regulations
CH ₄	methane
CIWMA	California Integrated Waste Management Act
CIWMB	California Integrated Waste Management Board
CNEL	community noise equivalent level
CNPS	California Native Plant Society
CO	carbon monoxide
CO ₂	carbon dioxide
CoIWMP	County Integrated Waste Management Plan
CRHR	California Register of Historical Resources
CUPA	Coyote Valley Steelhead Facility
CWA	Clean Water Act
dB	decibels
dBA	A-weighted decibels
DHS	Department of Health Services
DO	Dissolved Oxygen
DOF	California Department of Finance
DOT	Department of Transportation
DPM	diesel particulate matter
DTSC	California Department of Toxic Substances Control

DWR	Department of Water Resources
EIS	Environmental Impact Statement
EFH	Essential Fish Habitat
EPA	U.S. Environmental Protection Agency
ESA	Environmental Science Associates
ESU	Evolutionary Significant Unit
FAA	Federal Aviation Administration
FAR	Federal Aviation Regulations
FEMA	Federal Emergency Management Agency
FESA	Federal Endangered Species Act
FIRM	Flood Insurance Rate Maps
FMMP	Farmland Mapping and Monitoring Program
FMP	Fishery Management Plan
FPPA	Farmland Protection Policy Act
FYLF	foothill yellow-legged frog
GHG	greenhouse gas
gpm	gallons per minute
HCM	Highway Capacity Manual
HFCs	hydrofluorocarbons
HVAC	heating ventilation and air conditioning
Hz	hertz
IGRA	Indian Gaming Regulatory Act
IPCC	Intergovernmental Panel on Climate Change
IRWMP	Integrated Regional Water Management Plan
ITE	Institute of Transportation Engineers

KHA	Kimley-Horn Associates
LOS	level of service
MBTA	Migratory Bird Treaty Act
MCAQMD	Mendocino County Air Pollution Control District
MCL	maximum contaminant levels
mgd	million gallons per day
mph	miles per hour
MRZ	mineral resource zone
msl	mean sea level
MW	Moment Magnitude 10
NAGPRA	Native American Graves Protection and Repatriation Act
NAHC	Native American Heritage Commission
NCRWQCB	North Coast Regional Water Quality Control Board
NEC	National Electric Code
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NIGC	National Indian Gaming Commission
NOA	Notice of Availability
NOAA	National Oceanic and Atmospheric Administration
NOI	Notice of Intent
NO _x	nitrogen oxides
NPCRR	North Pacific Coast Railroad
NPDES	National Pollutant Discharge Elimination System
NPL	National Priorities List
NRCS	Natural Resource Conservation Service

NRHP	National Register of Historic Places
NSCAPCD	Northern Sonoma County Air Pollution Control District
NWIC	Northwest Information Center
NWPRR	Northwestern Pacific Railroad
OPR	Governor's Office of Planning and Research
PAH	polycyclic aromatic hydrocarbons
PG&E	Pacific Gas and Electric Company
PM10	particulate matter of less than 10 microns in size
PM2.5	particulate matter of less than 2.5 microns
ppd	pounds per day
ppm	parts per million
psi	pounds per square inch
PSA	project study area
ROG	reactive organic gases
RWQCB	Regional Water Quality Control Board
SAFZ	San Andreas Fault Zone
SCWA	Sonoma County Water Agency
SHPO	State Historic Preservation Officer
SIP	state implementation plan
sq. ft.	square feet
SWITRS	Statewide Integrated Traffic Records System
SWPPP	stormwater pollution prevention plan
SWRCB	State Water Resources Control Board
TAC	toxic air contaminants
TDS	total dissolved solids

TMDL	total maximum daily load
TPH	total petroleum hydrocarbons
TPHd	total petroleum hydrocarbons as diesel
TPHg	total petroleum hydrocarbons as gasoline
TPHmo	total petroleum hydrocarbons as motor oil
TPZ	traffic pattern zone
TSS	total suspended solids
TRB	Transportation Research Board
Tribe	Cloverdale Rancheria of Pomo Indians
TTLIC	total threshold limit concentration
TWSC	two-way stop-controlled
ULI	Urban Land Institute
USACE	United States Army Corps of Engineers
UCMP	California Museum of Paleontology Collections
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
WSH	Warm Springs Salmon and Steelhead Hatchery
WWTP	wastewater treatment plant