APPENDIX A

OFF-RESERVATION ENVIRONMENTAL IMPACT ANALYSIS CHECKLIST

OFF-RESERVATION ENVIRONMENTAL IMPACT ANALYSIS CHECKLIST

I. AESTHETICS

Would the project:	*Potentially Significant Impact*	*Less Than Significant With Mitigation Incorporation*	*Less than Significant Impact*	*No Impact*
a) Have a substantial adverse effect on a scenic vista?	☐	☐	☒	☐
b) Substantially damage off-reservation scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☒	☐
c) Create a new source of substantial light or glare, which would adversely affect day or nighttime views of historic buildings or views in the area?	☐	☐	☒	☐

A.- C. Refer to **Section 3.2**, Aesthetics.

II. AGRICULTURAL AND FOREST RESOURCES

Would the project:	*Potentially Significant Impact*	*Less Than Significant With Mitigation Incorporation*	*Less than Significant Impact*	*No Impact*
a) Involve changes in the existing environment, which, due to their location or nature, could result in conversion of off-reservation farmland to non-agricultural use or conversion of off-reservation forest land to non-forest use?	☐	☐	☐	☒

A. The project site is not designated for agricultural use or as forest land (Yreka, 2003). No off-reservation farmland would be converted to non-agricultural use nor would off-reservation forest land be converted to non-forest use as a result of the Proposed Project. No impact would occur and Agricultural and Forest Resources are not addressed in the Tribal Environmental Impact Report (TEIR).

III. AIR QUALITY

Would the project:	*Potentially Significant Impact*	*Less Than Significant With Mitigation Incorporation*	*Less than Significant Impact*	*No Impact*
a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☒	☐

Would the project:	*Potentially Significant Impact*	*Less Than Significant With Mitigation Incorporation*	*Less than Significant Impact*	*No Impact*
b) Violate any air quality standard or contribute to an existing or projected air quality violation?	☐	☐	☒	☐
c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions, which exceed quantitative thresholds for ozone precursors)?	☐	☐	☒	☐
d) Expose off-reservation sensitive receptors to substantial pollutant concentrations?	☐	☒	☐	☐
e) Create objectionable odors affecting a substantial number of people off-reservation?	☐	☐	☒	☐

A.- E. Refer to **Section 3.4**, Air Quality.

IV. BIOLOGICAL RESOURCES

Would the project:	*Potentially Significant Impact*	*Less Than Significant With Mitigation Incorporation*	*Less than Significant Impact*	*No Impact*
a) Have a substantial adverse impact, either directly or through habitat modifications, on any species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☒	☐	☐
b) Have a substantial adverse effect on any off-reservation riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☐	☒	☐
c) Have a substantial adverse effect on federally protected off-reservation wetlands as defined by Section 404 of the Clean Water Act?	☐	☒	☐	☐
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☐	☐	☒	☐
e) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☒	☐

A.- E. Refer to **Section 3.5**, Biological Resources.

V. CULTURAL RESOURCES

Would the project:	*Potentially Significant Impact*	*Less Than Significant With Mitigation Incorporation*	*Less than Significant Impact*	*No Impact*
a) Cause a substantial adverse change in the significance of an off-reservation historical or archeological resource?	☐	☒	☐	☐
b) Directly or indirectly destroy a unique off-reservation paleontological resource or site or unique off-reservation geologic feature?	☐	☒	☐	☐
c) Disturb any off-reservation human remains, including those interred outside of formal cemeteries?	☐	☒	☐	☐

A.- C. Refer to **Section 3.12**, Cultural Resources.

VI. GEOLOGY AND SOILS

Would the project:	*Potentially Significant Impact*	*Less Than Significant With Mitigation Incorporation*	*Less than Significant Impact*	*No Impact*
a) Expose off-reservation people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	☐	☐	☒	☐
ii) Strong seismic ground shaking?	☐	☐	☒	☐
iii) Seismic-related ground failure, including liquefaction?	☐	☐	☒	☐
iv) Landslides?	☐	☐	☒	☐
b) Result in substantial off-reservation soil erosion or the loss of topsoil?	☐	☒	☐	☐

A.- B. Refer to **Section 3.6**, Geology and Soils.

VII. GREENHOUSE GAS EMISSIONS

Would the project:	*Potentially Significant Impact*	*Less Than Significant With Mitigation Incorporation*	*Less than Significant Impact*	*No Impact*
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the off-reservation environment?	☐	☐	☒	☐
b) Conflict with any off-reservation plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☒	☐

A.- B. Refer to **Section 3.4**, Air Quality, for the regulatory and environmental settings related to greenhouse gas (GHG) emissions. As discussed in **Section 3.4**, impacts of the Proposed Project related to GHG emissions are most appropriately addressed in terms of the incremental contribution to a global cumulative impact and are therefore assessed in **Section 3.13**, Population Growth-Inducing and Cumulative Off-Reservation Environmental Impacts.

VIII. HAZARDS AND HAZARDOUS MATERIALS

Would the project:	*Potentially Significant Impact*	*Less Than Significant With Mitigation Incorporation*	*Less than Significant Impact*	*No Impact*
a) Create a significant hazard to the off-reservation public or the off-reservation environment through the routine transport, use, or disposal of hazardous materials?	☐	☒	☐	☐
b) Create a significant hazard to the off-reservation public or the off-reservation environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☒	☐	☐
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed off-reservation school?	☐	☒	☐	☐
d) Expose off-reservation people or structures to a significant risk of loss, injury or death involving wildland fires.	☐	☒	☐	☐

A.- D. Refer to **Section 3.7**, Hazardous Materials.

IX. WATER RESOURCES

Would the project:	*Potentially Significant Impact*	*Less Than Significant With Mitigation Incorporation*	*Less than Significant Impact*	*No Impact*
a) Violate any water quality standards or waste discharge requirements?	☐	☒	☐	☐
b) Substantially deplete off-reservation groundwater supplies or interfere substantially with groundwater recharge such that there should be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?	☐	☐	☒	☐
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion of siltation off-site?	☐	☒	☐	☐
d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding off-site?	☐	☐	☒	☐
e) Create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff off-reservation?	☐	☒	☐	☐
f) Place within a 100-year flood hazard area structures, which would impede or redirect off-reservation flood flows?	☐	☐	☐	☒
g) Expose off-reservation people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?	☐	☐	☐	☒

A.- G. Refer to **Section 3.8**, Water Resources.

X. LAND USE

Would the project:	*Potentially Significant Impact*	*Less Than Significant With Mitigation Incorporation*	*Less than Significant Impact*	*No Impact*
a) Conflict with any off-reservation land use plan, policy, or regulation of an agency adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☒	☐

Would the project:	*Potentially Significant Impact*	*Less Than Significant With Mitigation Incorporation*	*Less than Significant Impact*	*No Impact*
b) Conflict with any applicable habitat conservation plan or natural communities conservation plan covering off-reservation lands?	☐	☐	☒	☐

A.- B. Refer to **Section 3.3**, Land Use, Population and Housing, and Recreation and Parks.

XI. MINERAL RESOURCES

Would the project:	*Potentially Significant Impact*	*Less Than Significant With Mitigation Incorporation*	*Less than Significant Impact*	*No Impact*
a) Result in the loss of availability of a known off-reservation mineral resource classified MRZ-2 by the State Geologist that would be of value to the region and the residents of the state?	☐	☐	☐	☒
b) Result in the loss of availability of an off-reservation locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?	☐	☐	☐	☒

A.- B. Implementation of the Proposed Project would not adversely impact any known off-Reservation mineral resources (Tribe, 1997; **Appendix E**). No impact will occur and Mineral Resource will not be assessed within the TEIR.

XII. NOISE

Would the project result in:	*Potentially Significant Impact*	*Less Than Significant With Mitigation Incorporation*	*Less than Significant Impact*	*No Impact*
a) Exposure of off-reservation persons to noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☒	☐	☐
b) Exposure of off-reservation persons to excessive groundborne vibration or groundborne noise levels?	☐	☐	☒	☐
c) A substantial permanent increase in ambient noise levels in the off-reservation vicinity of the project?	☐	☐	☒	☐
d) A substantial temporary or periodic increase in ambient noise levels in the off-reservation vicinity of the project?	☐	☒	☐	☐

A.- D. Refer to **Section 3.9**, Noise.

XIII. POPULATION AND HOUSING

Would the project:	*Potentially Significant Impact*	*Less Than Significant With Mitigation Incorporation*	*Less than Significant Impact*	*No Impact*
a) Induce substantial off-reservation population growth?	☐	☐	☒	☐
b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere off-reservation?	☐	☐	☒	☐

A.- B. Refer to **Section 3.3**, Land Use, Population and Housing, and Recreation and Parks.

XIV. PUBLIC SERVICES

Would the project:	*Potentially Significant Impact*	*Less Than Significant With Mitigation Incorporation*	*Less than Significant Impact*	*No Impact*
a) Result in substantial adverse physical impacts associated with the provision of new or physically altered off-reservation governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the off-reservation public services:				
Fire protection?	☐	☒	☐	☐
Police protection?	☐	☒	☐	☐
Schools?	☐	☐	☒	☐
Parks?	☐	☐	☒	☐
Other public facilities?	☐	☐	☒	☐

A. Refer to **Section 3.3**, Land Use, Population and Housing, and Recreation and Parks and **Section 3.10**, Public Services and Utilities.

XV. RECREATION

Would the project:	*Potentially Significant Impact*	*Less Than Significant With Mitigation Incorporation*	*Less than Significant Impact*	*No Impact*
a) Increase the use of existing off-reservation neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☒	☐

A. Refer to **Section 3.3** Land Use, Population and Housing, and Recreation and Parks.

XVI. TRANSPORTATION / TRAFFIC

Would the project:	*Potentially Significant Impact*	*Less Than Significant With Mitigation Incorporation*	*Less than Significant Impact*	*No Impact*
a) Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the off-reservation circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including, but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?	☐	☐	☒	☐
b) Conflict with an applicable congestion management program, including, but not limited to, level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated off-reservation roads or highways?	☐	☒	☐	☐
c) Substantially increase hazards to an off-reservation design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☒	☐
d) Result in inadequate emergency access for off-reservation responders?	☐	☐	☒	☐

A - D. Refer to **Section 3.11**, Transportation and Traffic and **Section 3.13**, Population Growth-Inducing and Cumulative Off-Reservation Environmental Impacts.

XVII. UTILITIES AND SERVICE SYSTEMS

Would the project:	*Potentially Significant Impact*	*Less Than Significant With Mitigation Incorporation*	*Less than Significant Impact*	*No Impact*
a) Exceed off-reservation wastewater treatment requirements of the applicable Regional Water Quality Control Board?	☐	☒	☐	☐
b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant off-reservation environmental effects?	☐	☒	☐	☐
c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant off-reservation environmental effects?	☐	☐	☒	☐

Would the project:	*Potentially Significant Impact*	*Less Than Significant With Mitigation Incorporation*	*Less than Significant Impact*	*No Impact*
d) Result in a determination by an off-reservation wastewater treatment provider (if applicable), which serves or may serve the project that it has inadequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☒	☐	☐

A.- D. Refer to **Section 3.10**, Public Services and Utilities.

XVIII. CUMULATIVE EFFECTS

Would the project:	*Potentially Significant Impact*	*Less Than Significant With Mitigation Incorporation*	*Less than Significant Impact*	*No Impact*
a) Have impacts that are individually limited, but cumulatively considerable off-reservation? "Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past, current, or probable future projects.	☐	☒	☐	☐

A. Refer to **Section 3.13**, Population Growth-Inducing and Cumulative Off-Reservation Environmental Impacts.

REFERENCES

City of Yreka (Yreka), 2003, City of Yreka General Plan Update 2002-2022. December 2003. Available online at http://ci.yreka.ca.us/sites/ci.yreka.ca.us/assets/files/General_Plan_Update_7-2012.pdf. Accessed July 29, 2013.

Karuk Tribe of California (Tribe), 1997. Environmental Assessment for the Acquisition of the Land into Trust Status for Housing, the Approval of Rights-of-Way, and Residential Lease Approval. January 1997.

APPENDIX B

NOTICE OF PREPARATION AND COMMENTS RECEIVED

NOTICE OF PREPARATION

NOTICE OF PREPARATION
TRIBAL ENVIRONMENTAL IMPACT REPORT

Date: July 22, 2013

To: State Clearinghouse
County of Siskiyou
City of Yreka
Interested Parties

The Karuk Tribe (Tribe) is the Lead Agency for the preparation of a Tribal Environmental Impact Report (TEIR) to assess the potential off-reservation environmental impacts of the Karuk Casino Project (Proposed Project). The TEIR is being developed in accordance with the requirements of the Draft Tribal-State Gaming Compact (Compact) between the Karuk Tribe (Tribe) and the State.

The Tribe is hereby requesting comments regarding the probable off-reservation environmental effects and reasonable mitigation measures that the Tribe will have to explore in the TEIR to comply with the provisions of the Compact.

The project description, location, vicinity map, site plans, and a brief description of the probable environmental effects are attached. Information about the Proposed Project will also become available online at www.karukteir.com.

Your comments should be sent at the earliest possible date, but postmarked no later than August 21, 2013.

Please send your comments to:

Karuk Tribe
Attn: Scott Quinn
P.O. Box 1016
Happy Camp, CA 96039

PROJECT TITLE

Karuk Tribe Casino Project

LEAD AGENCY

Karuk Tribe

CONTACT PERSON FOR ENVIRONMENTAL DOCUMENT

Trenton Wilson, Project Manager, Analytical Environmental Services
(916) 447-3479

ENVIRONMENTAL REQUIREMENTS OF THE DRAFT TRIBAL-STATE GAMING COMPACT

Section 11.0 of the Compact requires that a TEIR be prepared and provide detailed information about potential off-reservation environmental effects which may be caused by the Proposed Project and methods by which significant effects to the off-reservation environment could be minimized. Environmental effects are defined in the *Off-Reservation Environmental Impact Analysis Checklist* which is included as an exhibit to the Compact (Checklist) and is included as **Attachment A**. The Tribe has determined that the Proposed Project may have a significant effect on the off-reservation environment and therefore is moving forward with the preparation of a TEIR in anticipation of a fully-executed Compact prior to completion of this TEIR environmental review process.

PROJECT INFORMATION

Site Location

The Proposed Project is located in Yreka, California (**Figure 1**). It would be constructed on approximately 60 acres of tribal lands (Project Site) west of the Tribe's existing Yreka housing development (**Figure 2**). The gaming facility would be constructed on approximately 10 acres of tribal lands held in trust by the federal government. The remaining 50 acres of the Project Site are located adjacent and south of the gaming site and are owned by the Tribe in fee title. Regional access is provided by I-5 via the Moonlit Oak Avenue exit south of the Project Site. Through Yreka, I-5 is a four-lane highway with below grade intersections 0.8-mile south, 1.2-miles north, and 1.8 miles north of the Project Site.

Description of the Project

The Karuk Tribe (Tribe) proposes to develop a Class III Gaming Complex in two phases. Phase I would include a 36,000 square-foot facility to accommodate approximately 500 gaming machines and 8 table games, a 100-seat restaurant, and on-site parking (approximately 334 stalls). Additional parking (approximately 222 stalls) would be developed on the adjacent tribally-owned lands south of the gaming parcel with access to the Project Site provided from Sharps Road.

Phase II would include the addition of approximately 20,000 square feet to the gaming complex to add approximately 300 gaming machines, 8 table games, new restaurant space, and associated facilities. In addition, Phase II would include an 80-room, 48,000 square-foot hotel and an additional approximately 500 parking spaces.

Water supply and wastewater disposal services would be provided by the Yreka Public Utilities Department. The preliminary site plan for the two phases is provided as **Figure 3**.

Potential Off-Reservation Environmental Effects

The following section discusses potential adverse off-reservation environmental impacts associated with the Proposed Project. These potential impacts will be examined in the TEIR using the significance criteria presented in the Checklist. The TEIR will evaluate the extent to which the Proposed Project's mitigation measures, in combination with adopted governmental requirements, would mitigate potentially adverse off-reservation environmental impacts. The TEIR will identify any expected significant off-reservation adverse impacts that cannot be mitigated. The TEIR will provide analysis of the Proposed Project's off-reservation impacts including, but not limited to, the following resource areas in accordance with the Checklist:

Land Use

The Proposed Project site is located within an area developed with light industrial land uses. The Proposed Project is generally compatible with surrounding designated land uses. The TEIR will include an analysis of the Proposed Project's off-reservation impact on surrounding land uses.

Population and Housing

The Proposed Project would provide new employment opportunities; however, it is likely to have a less than significant impact on off-reservation housing and growth-inducement as the majority of the new employees would already reside within commuting distance of the Proposed Project.

Transportation and Circulation

The Proposed Project would generate additional vehicular use of local roadways, contributing to increased traffic volumes. Potential impacts to off-reservation roads during the construction and operational phases of the Proposed Project will be evaluated. The TEIR will include an analysis of the Proposed Project's cumulative off-reservation impact on the regional transportation system and will discuss potential mitigation measures.

Air Quality, Greenhouse Gas Emissions, and Noise

Construction of the Proposed Project would generate short-term emissions, including dust and greenhouse gases (GHGs), which could contribute to existing or projected off-reservation air quality exceedances. The Proposed Project would also generate air emissions including GHGs through the addition of vehicular

traffic to the area's roadway system. Construction activity would increase noise levels in the area during the construction phase, and increased traffic trips generated by the Proposed Project would also create noise. The Proposed Project's off-reservation impact on air quality, including GHGs, and noise will be evaluated in the TEIR.

Hydrology and Water Quality

In the absence of appropriate mitigation measures, the Proposed Project has the potential to result in impacts to off-reservation surface water quality from discharges to surface waters during and after construction. Post-construction impacts could result from the concentration of stormwater runoff by impervious surfaces. During periods of wet weather, stormwater would flow over on-reservation roadway surfaces, parking lots, and other impervious surfaces, which could carry pollutants and sediment to local off-reservation water bodies such as Yreka Creek. Assessment of the Proposed Project's impacts to off-reservation drainage patterns, groundwater, and water quality will be conducted as part of the TEIR. The TEIR will also discuss potential erosion control and other mitigation measures to minimize off-reservation impacts to water quality.

Biological and Cultural Resources

Direct impacts to off-reservation biological habitat and cultural resources could be significant if special-status species or historical properties are located on tribal fee lands. The TEIR will evaluate the potential off-reservation impacts to biological and cultural resources as a result of the Proposed Project.

Aesthetics

The Proposed Project site is located in an area of the City of Yreka designated for light industrial uses, and the proposed casino and hotel would be visible from I-5. Surrounding land uses include industrial facilities, open space, and residential. The TEIR will evaluate potential changes to the existing visual character and quality of the area, including light and glare effects. The TEIR will assess the off-reservation aesthetic impacts and identify mitigation measures, if necessary.

Hazards and Hazardous Materials

The TEIR will evaluate potential off-reservation impacts associated with hazards and hazardous materials resulting from the Proposed Project.

Public Services and Utilities

The Proposed Project would create additional demand for public services (fire protection, law enforcement) and utility services (water supply, wastewater treatment, electricity/natural gas, communication services). The TEIR will discuss potential impacts to service providers, as well as applicable mitigation measures.

Geology and Soils

The Proposed Project would be developed in an area with steep grades and would require grading and hill stabilization. The TEIR will discuss potential impacts to geology and soils, as well as applicable mitigation measures.

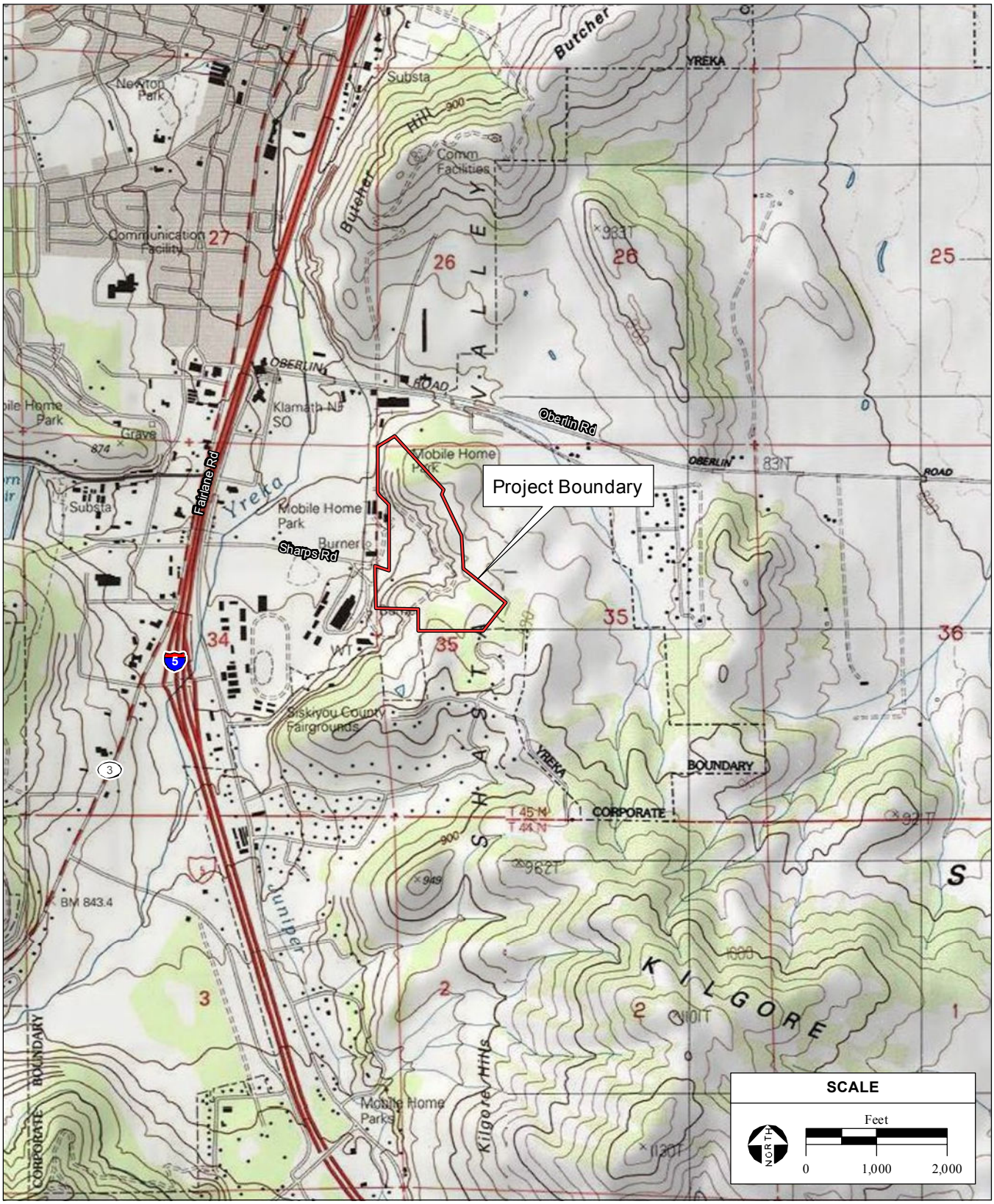
Project Approvals

The following project approvals may be required:

1) Karuk Tribe Tribal Council: The Draft and Final TEIR, along with associated findings, will be submitted to the Tribal Council for consideration and certification.
2) U.S. Environmental Protection Agency: National Pollutant Discharge Elimination System 2012 Construction General Permit and associated Stormwater Pollution Prevention Plan (SWPPP).
3) City of Yreka: Conditional Use and Grading Permit for the development of a parking lot on tribally-owned fee lands.
4) Pursuant to the Compact, the Tribe and the City of Yreka shall enter into an Intergovernmental Agreement (IGA) to mitigate Proposed Project off-reservation impacts.

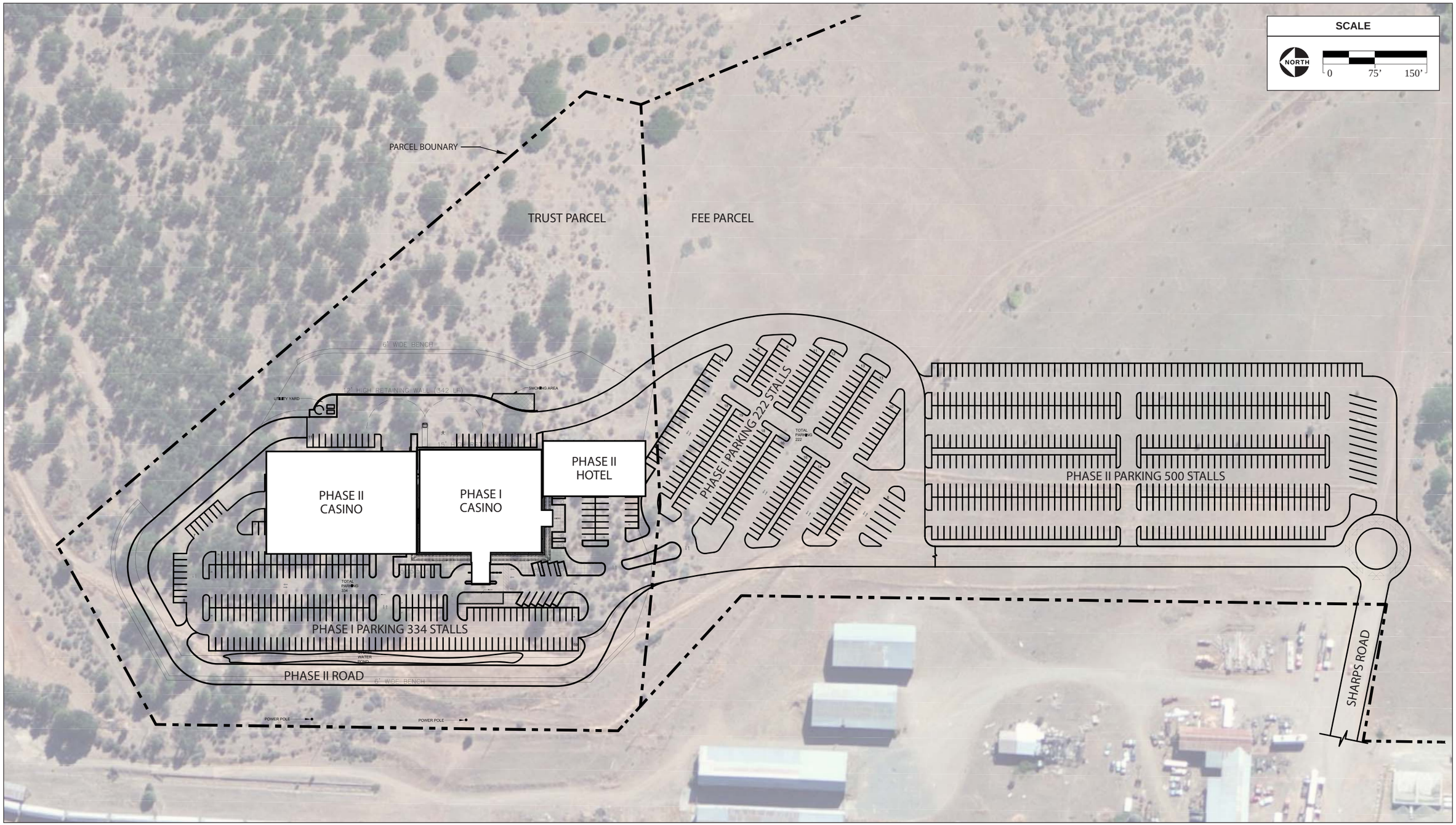
SOURCE: StreetMap North America, 2009; AES, 2013

Figure 1
Regional Location



SOURCE: "Yreka, CA" USGS 7.5 Minute Topographic Quadrangle, T45N, R7W, Section 35, Humboldt Baseline & Meridian; Karuk Tribe, 2013; AES, 2013

Figure 2
Site and Vicinity



SOURCE: Group West, 7/9/2013; UC-G aerial photograph 8/8/2010; AES, 2013

Figure 3
Site Plan - Phase I and II

ATTACHMENT A

Off-Reservation Environmental Impact Analysis Checklist

Attachment A

Off-Reservation Environmental Impact Analysis Checklist

I. Aesthetics

Would the project:	*Potentially Significant Impact*	*Less Than Significant With Mitigation Incorporation*	*Less than Significant Impact*	*No Impact*
a) Have a substantial adverse effect on a scenic vista?	☐	☐	☐	☐
b) Substantially damage off-reservation scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☐	☐
c) Create a new source of substantial light or glare, which would adversely affect day or nighttime views of historic buildings or views in the area?	☐	☐	☐	☐

II. Agricultural and Forest Resources

Would the project:	*Potentially Significant Impact*	*Less Than Significant With Mitigation Incorporation*	*Less than Significant Impact*	*No Impact*
a) Involve changes in the existing environment, which, due to their location or nature, could result in conversion of off-reservation farmland to non-agricultural use or conversion of off-reservation forest land to non-forest use?	☐	☐	☐	☐

III. Air Quality

Would the project:	*Potentially Significant Impact*	*Less Than Significant With Mitigation Incorporation*	*Less than Significant Impact*	*No Impact*
a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☐	☐
b) Violate any air quality standard or contribute to an existing or projected air quality violation?	☐	☐	☐	☐
c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions, which exceed quantitative thresholds for ozone precursors)?	☐	☐	☐	☐

Would the project:	*Potentially Significant Impact*	*Less Than Significant With Mitigation Incorporation*	*Less than Significant Impact*	*No Impact*
d) Expose off-reservation sensitive receptors to substantial pollutant concentrations?	☐	☐	☐	☐
e) Create objectionable odors affecting a substantial number of people off-reservation?	☐	☐	☐	☐

IV. Biological Resources

Would the project:	*Potentially Significant Impact*	*Less Than Significant With Mitigation Incorporation*	*Less than Significant Impact*	*No Impact*
a) Have a substantial adverse impact, either directly or through habitat modifications, on any species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☐	☐	☐
b) Have a substantial adverse effect on any off-reservation riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☐	☐	☐
c) Have a substantial adverse effect on federally protected off-reservation wetlands as defined by Section 404 of the Clean Water Act?	☐	☐	☐	☐
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☐	☐	☐	☐
e) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☐	☐

V. Cultural Resources

Would the project:	*Potentially Significant Impact*	*Less Than Significant With Mitigation Incorporation*	*Less than Significant Impact*	*No Impact*
a) Cause a substantial adverse change in the significance of an off-reservation historical or archeological resource?	☐	☐	☐	☐
b) Directly or indirectly destroy a unique off-reservation paleontological resource or site or unique off-reservation geologic feature?	☐	☐	☐	☐
c) Disturb any off-reservation human remains, including those interred outside of formal cemeteries?	☐	☐	☐	☐

VI. Geology and Soils

Would the project:	*Potentially Significant Impact*	*Less Than Significant With Mitigation Incorporation*	*Less than Significant Impact*	*No Impact*
a) Expose off-reservation people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	☐	☐	☐	☐
ii) Strong seismic ground shaking?	☐	☐	☐	☐
iii) Seismic-related ground failure, including liquefaction?	☐	☐	☐	☐
iv) Landslides?	☐	☐	☐	☐
b) Result in substantial off-reservation soil erosion or the loss of topsoil?	☐	☐	☐	☐

VII. Greenhouse Gas Emissions

Would the project:	*Potentially Significant Impact*	*Less Than Significant With Mitigation Incorporation*	*Less than Significant Impact*	*No Impact*
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the off-reservation environment?	☐	☐	☐	☐
b) Conflict with any off-reservation plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☐	☐

VIII. Hazards and Hazardous Materials

Would the project:	*Potentially Significant Impact*	*Less Than Significant With Mitigation Incorporation*	*Less than Significant Impact*	*No Impact*
a) Create a significant hazard to the off-reservation public or the off-reservation environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☐	☐
b) Create a significant hazard to the off-reservation public or the off-reservation environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☐	☐	☐
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed off-reservation school?	☐	☐	☐	☐
d) Expose off-reservation people or structures to a significant risk of loss, injury or death involving wildland fires.	☐	☐	☐	☐

IX. Water Resources

Would the project:	*Potentially Significant Impact*	*Less Than Significant With Mitigation Incorporation*	*Less than Significant Impact*	*No Impact*
a) Violate any water quality standards or waste discharge requirements?	☐	☐	☐	☐
b) Substantially deplete off-reservation groundwater supplies or interfere substantially with groundwater recharge such that there should be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?	☐	☐	☐	☐
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion of siltation off-site?	☐	☐	☐	☐
d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding off-site?	☐	☐	☐	☐
e) Create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff off-reservation?	☐	☐	☐	☐
f) Place within a 100-year flood hazard area structures, which would impede or redirect off-reservation flood flows?	☐	☐	☐	☐

Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
g) Expose off-reservation people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?	☐	☐	☐	☐

X. Land Use

Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a) Conflict with any off-reservation land use plan, policy, or regulation of an agency adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☐	☐
b) Conflict with any applicable habitat conservation plan or natural communities conservation plan covering off-reservation lands?	☐	☐	☐	☐

XI. Mineral Resources

Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a) Result in the loss of availability of a known off-reservation mineral resource classified MRZ-2 by the State Geologist that would be of value to the region and the residents of the state?	☐	☐	☐	☐
b) Result in the loss of availability of an off-reservation locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?	☐	☐	☐	☐

XII. Noise

Would the project result in:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a) Exposure of off-reservation persons to noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☐	☐	☐
b) Exposure of off-reservation persons to excessive groundborne vibration or groundborne noise levels?	☐	☐	☐	☐
c) A substantial permanent increase in ambient noise levels in	☐	☐	☐	☐

Would the project result in:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
the off-reservation vicinity of the project?				
d) A substantial temporary or periodic increase in ambient noise levels in the off-reservation vicinity of the project?	☐	☐	☐	☐

XIII. Population and Housing

Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a) Induce substantial off-reservation population growth?	☐	☐	☐	☐
b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere off-reservation?	☐	☐	☐	☐

XIV. Public Services

Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a) Result in substantial adverse physical impacts associated with the provision of new or physically altered off-reservation governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the off-reservation public services:				
Fire protection?	☐	☐	☐	☐
Police protection?	☐	☐	☐	☐
Schools?	☐	☐	☐	☐
Parks?	☐	☐	☐	☐
Other public facilities?	☐	☐	☐	☐

XV. Recreation

Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a) Increase the use of existing off-reservation neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☐	☐

XVI. Transportation / Traffic

Would the project:	*Potentially Significant Impact*	*Less Than Significant With Mitigation Incorporation*	*Less than Significant Impact*	*No Impact*
a) Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the off-reservation circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including, but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?	☐	☐	☐	☐
b) Conflict with an applicable congestion management program, including, but not limited to, level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated off-reservation roads or highways?	☐	☐	☐	☐
c) Substantially increase hazards to an off-reservation design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☐	☐
d) Result in inadequate emergency access for off-reservation responders?	☐	☐	☐	☐

XVII. Utilities and Service Systems

Would the project:	*Potentially Significant Impact*	*Less Than Significant With Mitigation Incorporation*	*Less than Significant Impact*	*No Impact*
a) Exceed off-reservation wastewater treatment requirements of the applicable Regional Water Quality Control Board?	☐	☐	☐	☐
b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant off-reservation environmental effects?	☐	☐	☐	☐
c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant off-reservation environmental effects?	☐	☐	☐	☐
d) Result in a determination by an off-reservation wastewater treatment provider (if applicable), which serves or may serve the project that it has inadequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☐	☐

XVIII. Cumulative Effects

Would the project:	*Potentially Significant Impact*	*Less Than Significant With Mitigation Incorporation*	*Less than Significant Impact*	*No Impact*
a) Have impacts that are individually limited, but cumulatively considerable off-reservation? "Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past, current, or probable future projects.	☐	☐	☐	☐

AFFIDAVIT OF POSTING

NOTICE OF PREPARATION

AFFIDAVIT OF POSTING

Pursuant to Section 15072 of the Public Resources Code, the following Notice of Preparation was posted on July 25, 2013

NOTICE OF PREPARATION
TRIBAL ENVRONMENTAL IMPACT REPORT
Karuk Tribe Casino Project

I certify under penalty of perjury that the foregoing is true and correct.

DATED: July 25, 2013

RETURNED TO: Karuk Tribe

DATED: Aug 26, 2013

COLLEEN SETZER, County Clerk

By: Stacey Willis
Deputy

PROJECT TITLE

Karuk Tribe Casino Project

FILED
Siskiyou County
JUL 25 2013
COLLEEN SETZER, CLERK
BY: ENDORSED - S. WILLISON
Deputy Clerk

LEAD AGENCY

Karuk Tribe

CONTACT PERSON FOR ENVIRONMENTAL DOCUMENT

Trenton Wilson, Project Manager, Analytical Environmental Services
(916) 447-3479

ENVIRONMENTAL REQUIREMENTS OF THE DRAFT TRIBAL-STATE GAMING COMPACT

Section 11.0 of the Compact requires that a TEIR be prepared and provide detailed information about potential off-reservation environmental effects which may be caused by the Proposed Project and methods by which significant effects to the off-reservation environment could be minimized. Environmental effects are defined in the *Off-Reservation Environmental Impact Analysis Checklist* which is included as an exhibit to the Compact (Checklist) and is included as **Attachment A**. The Tribe has determined that the Proposed Project may have a significant effect on the off-reservation environment and therefore is moving forward with the preparation of a TEIR in anticipation of a fully-executed Compact prior to completion of this TEIR environmental review process.

PROJECT INFORMATION

Site Location

The Proposed Project is located in Yreka, California (**Figure 1**). It would be constructed on approximately 60 acres of tribal lands (Project Site) west of the Tribe's existing Yreka housing development (**Figure 2**). The gaming facility would be constructed on approximately 10 acres of tribal lands held in trust by the federal government. The remaining 50 acres of the Project Site are located adjacent and south of the gaming site and are owned by the Tribe in fee title. Regional access is provided by I-5 via the Moonlit Oak Avenue exit south of the Project Site. Through Yreka, I-5 is a four-lane highway with below grade intersections 0.8-mile south, 1.2-miles north, and 1.8 miles north of the Project Site.

Description of the Project

The Karuk Tribe (Tribe) proposes to develop a Class III Gaming Complex in two phases. Phase I would include a 36,000 square-foot facility to accommodate approximately 500 gaming machines and 8 table games, a 100-seat restaurant, and on-site parking (approximately 334 stalls). Additional parking (approximately 222 stalls) would be developed on the adjacent tribally-owned lands south of the gaming parcel with access to the Project Site provided from Sharps Road.

COMMENTS RECEIVED ON NOTICE OF PREPARATION

DEPARTMENT OF TRANSPORTATION
OFFICE OF COMMUNITY PLANNING
1657 RIVERSIDE DRIVE
REDDING, CA 96001
PHONE (530) 225-3369
FAX (530) 225-3020

Flex your power!
Be energy efficient!

RECEIVED AUG 13 2013

August 12, 2013

IGR/CEQA Review
Sis-5-45.6
Karuk Tribe Casino Project
NOP Tribal DEIR
SCH# 2013072048

Mr. Scott Quinn
Karuk Tribe
P.O. Box 1016
Happy Camp, CA 96039

Dear Mr. Quinn:

Thank you for the opportunity to review the Notice of Preparation of a Tribal Environmental Impact Report (NOP TEIR) for the development of a Class III Gaming Complex in two phases. Phase I would develop a 36,000 square foot facility on land held in Trust to accommodate approximately 500 gaming machines and eight table games, a 100-seat restaurant, and 334 on-site parking spaces. An additional 222 parking spaces would be developed on the adjacent tribally–owned lands south of the gaming parcel with access to the facility provided from Sharps Road. Phase II would include the addition of approximately 20,000 square feet to the gaming complex to add approximately 300 gaming machines, eight table games, new restaurant space, and associated facilities. In addition Phase II would include an 80-room 48,000 square foot hotel and an additional 500 parking spaces. The project is located northeast of the South Yreka/Interstate 5 (I-5) interchange in the City of Yreka.

We appreciate the Tribe having previously provided early consultation information. We request consultation in the development of the traffic study for the traffic and circulation impact analysis. Agreement between Caltrans and the Tribe on the scope of work for the traffic study, which includes agreement on trip generation rates and trip distribution assumptions, will assist in reaching agreement on the results of the traffic study. We will be reviewing the following regarding development of the traffic study:

- Trip generation rates for casinos can vary, agreement on acceptable trip rates to be used in the study is critical. We will require documentation of the traffic study data sources, including any adjustment factors or other modifications. If from published data, cite the source and the publish date.
- Dates and times of traffic counts, and whether any adjustment factor is included. Identify and state the adjustment factor.
- The trip distribution will determine the highway road segments that need to be analyzed.
- The project is proposed to be phased. Please prepare an analysis reflecting both phases, project time frames, and timing of proposed mitigation improvements.
- Please use the Highway Capacity Manual (HCM) 2010 methodology. If any modeling or simulation is needed, the software program should be agreed on.

- Caltrans requests that electronic copies of the traffic analysis be provided, including all input and output files with enough time to complete an independent analysis of the traffic study. As part of the consultation process and to expedite the review of the technical data we would appreciate the opportunity to identify potential errors or omissions prior to incorporation of the analysis into the Draft TEIR. We suggest that the technical data be provided to Caltrans for review at the administrative draft stage or sooner. At a minimum, we request that we be able to review the raw traffic study data.
- Please consider the needs of pedestrian and bicycles facilities, along with a safety evaluation to allow for the safe use by pedestrian and bicycles in the project area.

In summary, Caltrans recognizes the unique sovereign status of the Tribe and is committed to strengthening the Government-to-Government relationship with the Tribe. To restate, prior to initiating the traffic study, as part of the scoping and consultation process, Caltrans requests that the Tribe obtain agreement by Caltrans on the assumptions and trip distribution.

We look forward to working with the Tribe in reviewing the potential traffic impacts and whether improvements will be necessary to improve access to the gaming complex and related facilities. If you have any questions, please call me at (530) 225-5532 or email at marcelino_gonzalez@dot.ca.gov.

Sincerely,

MARCELINO GONZALEZ
Local Development Review Coordinator
Office of Community Development
District 2

c: Siskiyou County Transportation Commission
City of Yreka

State of California – Natural Resources Agency
DEPARTMENT OF FISH AND WILDLIFE
Region 1 – Northern
601 Locust Street
Redding, CA 96001
www.wildlife.ca.gov

EDMUND G. BROWN JR., Governor
CHARLTON H. BONHAM, Director

August 16, 2013

RECEIVED AUG 20 2012

Mr. Scott Quinn
Karuk Tribe
P.O. Box 1016
Happy Camp, CA 96039

Subject: Notice of Preparation (NOP) Karuk Tribe Casino Project SCH# 2013072048, Siskiyou County, California

Dear Mr. Quinn:

The California Department of Fish and Wildlife, (Department) has reviewed the Notice of Preparation (NOP) for the draft Tribal Environmental Impact Report (TEIR) for the Karuk Tribe Casino Project (State Clearinghouse Number: 2013072048), hereinafter referred to as the "Project". The Project is located in Yreka, California, east of Interstate 5, and south of Oberlin Road. The Department appreciates this opportunity to comment on the above-referenced Project, relative to impacts to biological resources.

The Department is a Trustee Agency pursuant to the California Environmental Quality Act (CEQA). A Trustee Agency has jurisdiction over certain resources held in trust for the people of California. Trustee agencies are generally required to be notified of CEQA documents relevant to their jurisdiction, whether or not these agencies have actual permitting authority or approval power over aspects of the underlying project (CEQA Guidelines, Section 15386). As the Trustee Agency for fish and wildlife resources, the Department provides requisite biological expertise to review and comment upon CEQA documents, and makes recommendations regarding those resources held in trust for the people of California.

The Department may also assume the role of Responsible Agency. A Responsible Agency is an agency other than the Lead Agency that has a legal responsibility for carrying out or approving a project. A Responsible Agency actively participates in the Lead Agency's CEQA process, reviews the Lead Agency's CEQA document and uses that document when making a decision on a project. The Responsible Agency must rely on the Lead Agency's CEQA document to prepare and issue its own findings regarding a project (CEQA Guidelines, Sections 15096 and 15381). The Department most often becomes a Responsible Agency when a Lake or Streambed Alteration Agreement (Fish and Game Code Section 1600 *et. seq.*) or a California Endangered Species Act Incidental Take Permit (Fish and Game Code Section 2081(b)) is needed for a project. The Department relies on the CEQA document prepared by the Lead Agency to make a finding and decide whether or not to issue the permit or agreement. It is important that the Lead Agency's Environmental Impact Report (EIR) considers the Department's Responsible Agency requirements. For example, CEQA requires the Department to include additional feasible alternatives or feasible mitigation measures

within its powers, that would substantially lessen or avoid any significant effect a project would have on the environment (CEQA Guidelines, Section 15096 (g)(2). Under certain conditions, the Department may be required to assume the role of the Lead Agency (see CEQA Guidelines, Section 15052) during the course of issuing a permit or agreement.

Project Description

The Project, according to the NOP letter, states that the "Karuk Tribe (Tribe) proposes to develop a Class III Gaming Complex in two phases. Phase I would include a 36,000 square-foot facility to accommodate approximately 500 gaming machines and 8 table games, a 100-seat restaurant, and on-site parking (approximately 334 stalls). Additional parking (approximately 222 stalls) would be developed on the adjacent tribally-owned lands south of the gaming parcel with access to the Project Site provided from Sharps Road. Phase II would include the addition of approximately 20,000 square feet to the gaming complex to add approximately 300 gaming machines, 8 table games, new restaurant space, and associated facilities. In addition, Phase II would include an 80-room, 48,000 square-foot hotel and an additional approximately 500 parking spaces. Water supply and wastewater disposal services would be provided by the Yreka Public Utilities Department." The gaming facility would be constructed on approximately 60 acres of tribal lands; 10 acres is held in trust by the federal government, and the remaining 50 acres is owned by the Tribe in fee title. The Department is commenting on the 50 acres owned by the Tribe in fee title.

The Department is a Trustee Agency and a Responsible Agency for the Project. To enable Department staff to adequately review and comment on the proposed Project, we recommend the following information be included in the draft TEIR, as applicable:

1. A complete assessment of the flora and fauna within and adjacent to the Project area should be conducted, with particular emphasis upon identifying special status species including rare, threatened, and endangered species. This assessment should also address locally unique species, rare natural communities, and wetlands. The assessment area for the Project should be large enough to encompass areas potentially subject to both direct and indirect Project effects. Both the Project footprint and the assessment area (if different) should be clearly defined and mapped in the TEIR.

    a. The Department's California Natural Diversity Data Base (CNDDB) should be searched to obtain current information on previously reported sensitive species and habitat, including Significant Natural Areas identified under Chapter 12 of the Fish and Game Code. In order to provide an adequate assessment of special-status species potentially occurring within the Project vicinity, the search area for CNDDB occurrences should include all U. S. Geological Survey. 7.5-minute topographic quadrangles with Project activities, and all

adjoining 7.5-minute topographic quadrangles. The TEIR should discuss how and when the CNDDB search was conducted, including the names of each quadrangle queried, or why any areas may have been intentionally excluded from the NDDB query.

b. A complete assessment of rare, threatened, and endangered invertebrate, fish, wildlife, reptile, and amphibian species should be presented in the TEIR. Rare, threatened, and endangered species to be addressed shall include all those which meet the CEQA definition (see CEQA Guidelines, § 15380). Seasonal variations in use of the Project area should also be addressed. Focused species-specific surveys, conducted at the appropriate time of year and time of day when the species are active or otherwise identifiable, are required. Acceptable species-specific survey procedures should be developed in consultation with the Department and the U.S. Fish and Wildlife Service. Links to some survey procedures are provided on the Department's website.[1]

c. Species of Special Concern (SSC) status applies to animals generally not listed under the federal Endangered Species Act or the California Endangered Species Act, but which nonetheless are declining at a rate that could result in listing, or historically occurred in low numbers and known threats to their persistence currently exist. SSC's should be considered during the environmental review process.

d. Fully Protected (FP) animals may not be taken or possessed at any time and the Department is not authorized to issue permits or licenses for their incidental take[2]. FP animals should be considered during the environmental review process and all Project-related take must be avoided.

e. A thorough assessment of rare plants and rare natural communities should be conducted, following the Department's November 2009 *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities* (Attachment 1).

f. A detailed vegetation map should be prepared, preferably overlaid on an aerial photograph. The map should be of sufficient resolution to depict the locations of the Project site's major vegetation communities,

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[1] http://www.dfg.ca.gov/wildlife/nongame/survey_monitor.html

[2] Scientific research, take authorized under an approved NCCP, and certain recovery actions may be allowed under some circumstances; contact the Department for more information.

and show Project impacts relative to each community type. The vegetation classification system used to name the polygons should be described. Special Status natural communities should be specifically noted on the map.

g. The TEIR should include survey methods, dates, and results; and should list all plant and animal species detected within the Project study area. Special emphasis should be directed toward describing the status of rare, threatened, and endangered species in all areas potentially affected by the Project. All necessary biological surveys should be conducted in advance of TEIR circulation, and should not be deferred until after Project approval.

2. A thorough discussion of direct, indirect, and cumulative impacts expected to adversely affect biological resources, with specific measures to offset such impacts, should be included.

   a. The TEIR should present clear thresholds of significance to be used by the Lead Agency in its determination of environmental effects. A threshold of significance is an identifiable quantitative, qualitative or performance level of a particular environmental effect.

   b. CEQA Guidelines, § 15125, direct that knowledge of environmental conditions at both the local and regional levels is critical to an assessment of environmental impacts and that special emphasis shall be placed on resources that are rare or unique to the region.

   c. Impacts associated with initial Project implementation as well as long-term operation and maintenance of the Project shall be addressed in the TEIR pursuant to CEQA Guidelines 15126.2 (a).

   d. In evaluating the significance of the environmental effect of the Project, the Lead Agency should consider direct physical changes in the environment which may be caused by the Project, and reasonably foreseeable indirect physical changes in the environment which may be caused by the Project. Expected impacts should be quantified (e.g., acres, linear feet, number of individuals taken, volume or rate of water extracted, etc. to the extent feasible).

   e. Project impacts should be analyzed relative to their effects on off-site habitats and species. Specifically, this may include public lands, open space, downstream aquatic habitats, areas of groundwater depletion, or any other natural habitat or species that could be affected by the Project.

f. Impacts to and maintenance of wildlife corridor/movement areas and other key seasonal use areas should be fully evaluated and provided.

g. A discussion of impacts associated with increased lighting, noise, human activity, impacts of free-roaming domestic animals including dogs and cats, changes in drainage patterns, changes in water volume, velocity, quantity, and quality, soil erosion, and/or sedimentation in streams and water courses on or near the Project site.

h. A cumulative effects analysis shall be developed for species and habitats potentially affected by the Project. This analysis shall be conducted as described under CEQA Guidelines, § 15130. General and specific plans, as well as past, present, and anticipated future projects, should be analyzed relative to their impacts to species and habitats.

3. A range of Project alternatives shall be analyzed to ensure that the full spectrum of alternatives to the proposed Project are fully considered and evaluated. Alternatives which avoid or otherwise minimize impacts to sensitive biological resources shall be identified.

   a. If the Project will result in any impacts described under the Mandatory Findings of Significance (CEQA Guidelines, § 15065) the impacts must be analyzed in depth in the TEIR, and the Lead Agency is required to make detailed findings on the feasibility of alternatives or mitigation measures to substantially lessen or avoid the significant effects on the environment. When mitigation measures or Project changes are found to be feasible, such measures should be incorporated into the Project to lessen or avoid significant effects.

4. Mitigation measures for adverse Project-related impacts to sensitive plants, animals, and habitats should be developed and thoroughly discussed. Mitigation measures should first emphasize avoidance and reduction of Project impacts. For unavoidable impacts, the feasibility of on-site habitat restoration or enhancement should be discussed. If on-site mitigation is not feasible, off-site mitigation through habitat creation, enhancement, acquisition, and preservation in perpetuity should be addressed.

5. The Department has responsibility for wetland and riparian habitats. It is the policy of the Department to strongly discourage development in wetlands or conversion of wetlands to uplands. We oppose any development or conversion which would result in a reduction of wetland acreage or wetland

habitat values, unless, at a minimum, Project mitigation assures there will be "no net loss" of either wetland habitat values or acreage. The TEIR should demonstrate that the Project will not result in a net loss of wetland habitat values or acreage.

a. If the Project site has the potential to support aquatic, riparian, or wetland habitat, a delineation of lakes, streams, and associated riparian habitats potentially affected by the Project should be provided for agency and public review. This report should include a preliminary jurisdictional delineation including wetlands identification pursuant to the U. S. Fish and Wildlife Service wetland definition[3] as adopted by the Department[4]. Please note that some wetland and riparian habitats subject to the Department's authority may extend beyond the jurisdictional limits of the U.S. Army Corps of Engineers. The jurisdictional delineation should also include mapping of ephemeral, intermittent, and perennial stream courses potentially impacted by the Project. In addition to "federally protected wetlands" (see CEQA Appendix G), the Department considers impacts to any wetlands (as defined by the Department) as potentially significant.

The Department has identified the following specific environmental issues that need to be explored in the draft TEIR:

1. The Department recognizes the effects of artificial lighting on birds and other nocturnal species. The effects are numerous and include changes in singing and foraging behavior and even altered migration patterns. To minimize adverse effects of artificial lighting, the Department recommends lighting fixtures for the Project be fully shielded and designed and installed to minimize photo pollution.

2. If the trees and other vegetation located on the property are to be removed, the Department requests they do so outside the normal nesting season for both raptors and migratory bird species which occurs roughly from February 1 through August 31.

3. The following plant species are located near the project site: woolly meadowfoam (*Limnanthes floccosa* ssp. *floccosa*)- California Rare Plant Rank (CRPR) 4.2, Peck's lomatium (*Lomatium peckianum*) – CRPR 2.2,

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[3] Cowardin, Lewis M., et al. 1979. Classification of Wetlands and Deepwater Habitats of the United States. U.S. Department of the Interior, Fish and Wildlife Service.

[4] California Fish and Game Commission Policies: Wetlands Resources Policy; Wetland Definition, Mitigation Strategies, and Habitat Value Assessment Strategy; Amended 1994

woolly balsamroot (*Balsamorhiza lanata*)- CRPR 1B.2, pendulous bulrush (*Scirpus pendulus*) – CRPR 2.2, Oregon polemonium (*Polemonium carneum*) – CRPR 2.2, alkali hymenoxys (*Hymenoxys lemmonii*) – CRPR 2.2, and Yreka phlox (*Phlox hirsuta*) – state and federally listed as endangered. It is recommended that these species be included in protocol level plant surveys.

4. Stormwater and landscaping runoff should be discussed thoroughly in the TEIR. There appears to be a small drainage just south of the proposed parking lot; on-site stormwater treatment may be designed to be compatible with and support this habitat.

Thank you for this opportunity to comment. Questions regarding this letter and further coordination on these issues should be directed to Environmental Scientist Amy Henderson by phone at (530) 225-2779, or by email at amy.henderson@wildlife.ca.gov.

Sincerely,

Donna L. Cobb

for **Curt Babcock**
Habitat Conservation Program Manager

Attachment

ec: Mss. Donna Cobb and Kristin Hubbard
California Department of Fish and Wildlife
Donna.Cobb@wildlife.ca.gov, Kristin.Hubbard@wildlife.ca.gov

State Clearinghouse
state.clearinghouse@opr.ca.gov

Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities

State of California
CALIFORNIA NATURAL RESOURCES AGENCY
Department of Fish and Game
November 24, 2009[1]

INTRODUCTION AND PURPOSE

The conservation of special status native plants and their habitats, as well as natural communities, is integral to maintaining biological diversity. The purpose of these protocols is to facilitate a consistent and systematic approach to the survey and assessment of special status native plants and natural communities so that reliable information is produced and the potential of locating a special status plant species or natural community is maximized. They may also help those who prepare and review environmental documents determine when a botanical survey is needed, how field surveys may be conducted, what information to include in a survey report, and what qualifications to consider for surveyors. The protocols may help avoid delays caused when inadequate biological information is provided during the environmental review process; assist lead, trustee and responsible reviewing agencies to make an informed decision regarding the direct, indirect, and cumulative effects of a proposed development, activity, or action on special status native plants and natural communities; meet California Environmental Quality Act (CEQA)[2] requirements for adequate disclosure of potential impacts; and conserve public trust resources.

DEPARTMENT OF FISH AND GAME TRUSTEE AND RESPONSIBLE AGENCY MISSION

The mission of the Department of Fish and Game (DFG) is to manage California's diverse wildlife and native plant resources, and the habitats upon which they depend, for their ecological values and for their use and enjoyment by the public. DFG has jurisdiction over the conservation, protection, and management of wildlife, native plants, and habitat necessary to maintain biologically sustainable populations (Fish and Game Code §1802). DFG, as trustee agency under CEQA §15386, provides expertise in reviewing and commenting on environmental documents and makes protocols regarding potential negative impacts to those resources held in trust for the people of California.

Certain species are in danger of extinction because their habitats have been severely reduced in acreage, are threatened with destruction or adverse modification, or because of a combination of these and other factors. The California Endangered Species Act (CESA) provides additional protections for such species, including take prohibitions (Fish and Game Code §2050 *et seq.*). As a responsible agency, DFG has the authority to issue permits for the take of species listed under CESA if the take is incidental to an otherwise lawful activity; DFG has determined that the impacts of the take have been minimized and fully mitigated; and, the take would not jeopardize the continued existence of the species (Fish and Game Code §2081). Surveys are one of the preliminary steps to detect a listed or special status plant species or natural community that may be impacted significantly by a project.

DEFINITIONS

Botanical surveys provide information used to determine the potential environmental effects of proposed projects on all special status plants and natural communities as required by law (i.e., CEQA, CESA, and Federal Endangered Species Act (ESA)). Some key terms in this document appear in **bold font** for assistance in use of the document.

For the purposes of this document, **special status plants** include all plant species that meet one or more of the following criteria[3]:

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1 This document replaces the DFG document entitled "Guidelines for Assessing the Effects of Proposed Projects on Rare, Threatened and Endangered Plants and Natural Communities."

2 http://ceres.ca.gov/ceqa/

3 Adapted from the East Alameda County Conservation Strategy available at http://www.fws.gov/sacramento/EACCS/Documents/080228_Species_Evaluation_EACCS.pdf

- Listed or proposed for listing as threatened or endangered under ESA or candidates for possible future listing as threatened or endangered under the ESA (50 CFR §17.12).

- Listed[4] or candidates for listing by the State of California as threatened or endangered under CESA (Fish and Game Code §2050 *et seq.*). A species, subspecies, or variety of plant is **endangered** when the prospects of its survival and reproduction in the wild are in immediate jeopardy from one or more causes, including loss of habitat, change in habitat, over-exploitation, predation, competition, disease, or other factors (Fish and Game Code §2062). A plant is **threatened** when it is likely to become endangered in the foreseeable future in the absence of special protection and management measures (Fish and Game Code §2067).

- Listed as rare under the California Native Plant Protection Act (Fish and Game Code §1900 *et seq.*). A plant is **rare** when, although not presently threatened with extinction, the species, subspecies, or variety is found in such small numbers throughout its range that it may be endangered if its environment worsens (Fish and Game Code §1901).

- Meet the definition of rare or endangered under CEQA §15380(b) and (d). Species that may meet the definition of rare or endangered include the following:

  - Species considered by the California Native Plant Society (CNPS) to be "rare, threatened or endangered in California" (Lists 1A, 1B and 2);

  - Species that may warrant consideration on the basis of local significance or recent biological information[5];

  - Some species included on the California Natural Diversity Database's (CNDDB) *Special Plants, Bryophytes, and Lichens List* (California Department of Fish and Game 2008)[6].

- Considered a **locally significant species,** that is, a species that is not rare from a statewide perspective but is rare or uncommon in a local context such as within a county or region (CEQA §15125 (c)) or is so designated in local or regional plans, policies, or ordinances (CEQA Guidelines, Appendix G). Examples include a species at the outer limits of its known range or a species occurring on an uncommon soil type.

Special status natural communities are communities that are of limited distribution statewide or within a county or region and are often vulnerable to environmental effects of projects. These communities may or may not contain special status species or their habitat. The most current version of the Department's *List of California Terrestrial Natural Communities*[7] indicates which natural communities are of special status given the current state of the California classification.

Most types of wetlands and riparian communities are considered special status natural communities due to their limited distribution in California. These natural communities often contain special status plants such as those described above. These protocols may be used in conjunction with protocols formulated by other agencies, for example, those developed by the U.S. Army Corps of Engineers to delineate jurisdictional wetlands[8] or by the U.S. Fish and Wildlife Service to survey for the presence of special status plants[9].

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4 Refer to current online published lists available at: http://www.dfg.ca.gov/biogeodata.

5 In general, CNPS List 3 plants (plants about which more information is needed) and List 4 plants (plants of limited distribution) may not warrant consideration under CEQA §15380. These plants may be included on special status plant lists such as those developed by counties where they would be addressed under CEQA §15380. List 3 plants may be analyzed under CEQA §15380 if sufficient information is available to assess potential impacts to such plants. Factors such as regional rarity vs. statewide rarity should be considered in determining whether cumulative impacts to a List 4 plant are significant even if individual project impacts are not. List 3 and 4 plants are also included in the California Natural Diversity Database's (CNDDB) *Special Plants, Bryophytes, and Lichens List*. [Refer to the current online published list available at: http://www.dfg.ca.gov/biogeodata.] Data on Lists 3 and 4 plants should be submitted to CNDDB. Such data aids in determining or revising priority ranking.

6 Refer to current online published lists available at: http://www.dfg.ca.gov/biogeodata.

7 http://www.dfg.ca.gov/biogeodata/vegcamp/pdfs/natcomlist.pdf. The rare natural communities are asterisked on this list.

8 http://www.wetlands.com/regs/tlpge02e.htm

9 U.S. Fish and Wildlife Service Survey Guidelines available at http://www.fws.gov/sacramento/es/protocol.htm

BOTANICAL SURVEYS

Conduct botanical surveys prior to the commencement of any activities that may modify vegetation, such as clearing, mowing, or ground-breaking activities. It is appropriate to conduct a botanical field survey when:

- Natural (or naturalized) vegetation occurs on the site, and it is unknown if special status plant species or natural communities occur on the site, and the project has the potential for direct or indirect effects on vegetation; or
- Special status plants or natural communities have historically been identified on the project site; or
- Special status plants or natural communities occur on sites with similar physical and biological properties as the project site.

SURVEY OBJECTIVES

Conduct field surveys in a manner which maximizes the likelihood of locating special status plant species or special status natural communities that may be present. Surveys should be **floristic in nature**, meaning that every plant taxon that occurs on site is identified to the taxonomic level necessary to determine rarity and listing status. "Focused surveys" that are limited to habitats known to support special status species or are restricted to lists of likely potential species are not considered floristic in nature and are not adequate to identify all plant taxa on site to the level necessary to determine rarity and listing status. Include a list of plants and natural communities detected on the site for each botanical survey conducted. More than one field visit may be necessary to adequately capture the floristic diversity of a site. An indication of the prevalence (estimated total numbers, percent cover, density, etc.) of the species and communities on the site is also useful to assess the significance of a particular population.

SURVEY PREPARATION

Before field surveys are conducted, compile relevant botanicel information in the general project area to provide a regional context for the investigators. Consult the CNDDB[10] and BIOS[11] for known occurrences of special status plants and natural communities in the project area prior to field surveys. Generally, identify vegetation and habitat types potentially occurring in the project area based on biological and physical properties of the site and surrounding ecoregion[12], unless a larger assessment area is appropriate. Then, develop a list of special status plants with the potential to occur within these vegetation types. This list can serve as a tool for the investigators and facilitate the use of reference sites; however, special status plants on site might not be limited to those on the list. Field surveys and subsequent reporting should be comprehensive and floristic in nature and not restricted to or focused only on this list. Include in the survey report the list of potential special status species and natural communities, and the list of references used to compile the background botanical information for the site.

SURVEY EXTENT

Surveys should be comprehensive over the entire site, including areas that will be directly or indirectly impacted by the project. Adjoining properties should also be surveyed where direct or indirect project effects, such as those from fuel modification or herbicide application, could potentially extend offsite. Pre-project surveys restricted to known CNDDB rare plant locations may not identify all special status plants and communities present and do not provide a sufficient level of information to determine potential impacts.

FIELD SURVEY METHOD

Conduct surveys using **systematic field techniques** in all habitats of the site to ensure thorough coverage of potential impact areas. The level of effort required per given area and habitat is dependent upon the vegetation and its overall diversity and structural complexity, which determines the distance at which plants can be identified. Conduct surveys by walking over the entire site to ensure thorough coverage, noting all plant taxa

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[10] Available at http://www.dfg.ca.gov/biogeodata/cnddb

[11] http://www.bios.dfg.ca.gov/

[12] Ecological Subregions of California, available at http://www.fs.fed.us/r5/projects/ecoregions/toc.htm

observed. The level of effort should be sufficient to provide comprehensive reporting. For example, one person-hour per eight acres per survey date is needed for a comprehensive field survey in grassland with medium diversity and moderate terrain[13], with additional time allocated for species identification.

TIMING AND NUMBER OF VISITS

Conduct surveys in the field at the time of year when species are both evident and identifiable. Usually this is during flowering or fruiting. Space visits throughout the growing season to accurately determine what plants exist on site. Many times this may involve multiple visits to the same site (e.g. in early, mid, and late-season for flowering plants) to capture the floristic diversity at a level necessary to determine if special status plants are present[14]. The timing and number of visits are determined by geographic location, the natural communities present, and the weather patterns of the year(s) in which the surveys are conducted.

REFERENCE SITES

When special status plants are known to occur in the type(s) of habitat present in the project area, observe reference sites (nearby accessible occurrences of the plants) to determine whether those species are identifiable at the time of the survey and to obtain a visual image of the target species, associated habitat, and associated natural community.

USE OF EXISTING SURVEYS

For some sites, floristic inventories or special status plant surveys may already exist. Additional surveys may be necessary for the following reasons:

- Surveys are not current[15]; or
- Surveys were conducted in natural systems that commonly experience year to year fluctuations such as periods of drought or flooding (e.g. vernal pool habitats or riverine systems); or
- Surveys are not comprehensive in nature; or fire history, land use, physical conditions of the site, or climatic conditions have changed since the last survey was conducted[16]; or
- Surveys were conducted in natural systems where special status plants may not be observed if an annual above ground phase is not visible (e.g. flowers from a bulb); or
- Changes in vegetation or species distribution may have occurred since the last survey was conducted, due to habitat alteration, fluctuations in species abundance and/or seed bank dynamics.

NEGATIVE SURVEYS

Adverse conditions may prevent investigators from determining the presence of, or accurately identifying, some species in potential habitat of target species. Disease, drought, predation, or herbivory may preclude the presence or identification of target species in any given year. Discuss such conditions in the report.

The failure to locate a known special status plant occurrence during one field season does not constitute evidence that this plant occurrence no longer exists at this location, particularly if adverse conditions are present. For example, surveys over a number of years may be necessary if the species is an annual plant having a persistent, long-lived seed bank and is known not to germinate every year. Visits to the site in more

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13 Adapted from U.S. Fish and Wildlife Service kit fox survey guidelines available at www.fws.gov/sacramento/es/documents/kitfox_no_protocol.pdf

14 U.S. Fish and Wildlife Service Survey Guidelines available at http://www.fws.gov/sacramento/es/protocol.htm

15 Habitats, such as grasslands or desert plant communities that have annual and short-lived perennial plants as major floristic components may require yearly surveys to accurately document baseline conditions for purposes of impact assessment. In forested areas, however, surveys at intervals of five years may adequetely represent current conditions. For forested areas, refer to "Guidelines for Conservation of Sensitive Plant Resources Within the Timber Harvest Review Process and During Timber Harvesting Operations", available at https://r1.dfg.ca.gov/portal/Portals/12/THPBotanicalGuidelinesJuly2005.pdf

16 U.S. Fish and Wildlife Service Survey Guidelines available at http://www.fws.gov/ventura/speciesinfo/protocols_guidelines/docs/botanicalinventories.pdf

than one year increase the likelihood of detection of a special status plant especially if conditions change. To further substantiate negative findings for a known occurrence, a visit to a nearby reference site may ensure that the timing of the survey was appropriate.

REPORTING AND DATA COLLECTION

Adequate information about special status plants and natural communities present in a project area will enable reviewing agencies and the public to effectively assess potential impacts to special status plants or natural communities[17] and will guide the development of minimization and mitigation measures. The next section describes necessary information to assess impacts. For comprehensive, systematic surveys where no special status species or natural communities were found, reporting and data collection responsibilities for investigators remain as described below, excluding specific occurrence information.

SPECIAL STATUS PLANT OR NATURAL COMMUNITY OBSERVATIONS

Record the following information for locations of each special status plant or natural community detected during a field survey of a project site.

- A detailed map (1:24,000 or larger) showing locations and boundaries of each special status species occurrence or natural community found as related to the proposed project. Mark occurrences and boundaries as accurately as possible. Locations documented by use of global positioning system (GPS) coordinates must include the datum[18] in which they were collected;
- The site-specific characteristics of occurrences, such as associated species, habitat and microhabitat, structure of vegetation, topographic features, soil type, texture, and soil parent material. If the species is associated with a wetland, provide a description of the direction of flow and integrity of surface or subsurface hydrology and adjacent off-site hydrological influences as appropriate;
- The number of individuals in each special status plant population as counted (if population is small) or estimated (if population is large);
- If applicable, information about the percentage of individuals in each life stage such as seedlings vs. reproductive individuals;
- The number of individuals of the species per unit area, identifying areas of relatively high, medium and low density of the species over the project site; and
- Digital images of the target species and representative habitats to support information and descriptions.

FIELD SURVEY FORMS

When a special status plant or natural community is located, complete and submit to the CNDDB a California Native Species (or Community) Field Survey Form[19] or equivalent written report, accompanied by a copy of the relevant portion of a 7.5 minute topographic map with the occurrence mapped. Present locations documented by use of GPS coordinates in map and digital form. Data submitted in digital form must include the datum[20] in which it was collected. If a potentially undescribed special status natural community is found on the site, document it with a Rapid Assessment or Relevé form[21] and submit it with the CNDDB form.

VOUCHER COLLECTION

Voucher specimens provide verifiable documentation of species presence and identification as well as a public record of conditions. This information is vital to all conservation efforts. Collection of voucher specimens should

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17 Refer to current online published lists available at: http://www.dfg.ca.gov/biogeodata. For Timber Harvest Plans (THPs) please refer to the "Guidelines for Conservation of Sensitive Plant Resources Within the Timber Harvest Review Process and During Timber Harvesting Operations", available at https://r1.dfg.ca.gov/portal/Portals/12/THPBotanicalGuidelinesJuly2005.pdf

18 NAD83, NAD27 or WGS84

19 http://www.dfg.ca.gov/biogeodata

20 NAD83, NAD27 or WGS84

21 http://www.dfg.ca.gov/biogeodata/vegcamp/veg_publications_protocols.asp

be conducted in a manner that is consistent with conservation ethics, and is in accordance with applicable state and federal permit requirements (e.g. incidental take permit, scientific collection permit). Voucher collections of special status species (or suspected special status species) should be made only when such actions would not jeopardize the continued existence of the population or species.

Deposit voucher specimens with an indexed regional herbarium[22] no later than 60 days after the collections have been made. Digital imagery can be used to supplement plant identification and document habitat. Record all relevant permittee names and permit numbers on specimen labels. A collecting permit is required prior to the collection of State-listed plant species[23].

BOTANICAL SURVEY REPORTS

Include reports of botanical field surveys containing the following information with project environmental documents:

- **Project and site description**
  - A description of the proposed project;
  - A detailed map of the project location and study area that identifies topographic and landscape features and includes a north arrow and bar scale; and,
  - A written description of the biological setting, including vegetation[24] and structure of the vegetation; geological and hydrological characteristics; and land use or management history.
- **Detailed description of survey methodology and results**
  - Dates of field surveys (indicating which areas were surveyed on which dates), name of field investigator(s), and total person-hours spent on field surveys;
  - A discussion of how the timing of the surveys affects the comprehensiveness of the survey;
  - A list of potential special status species or natural communities;
  - A description of the area surveyed relative to the project area;
  - References cited, persons contacted, and herbaria visited;
  - Description of reference site(s), if visited, and phenological development of special status plant(s);
  - A list of all taxa occurring on the project site. Identify plants to the taxonomic level necessary to determine whether or not they are a special status species;
  - Any use of existing surveys and a discussion of applicability to this project;
  - A discussion of the potential for a false negative survey;
  - Provide detailed data and maps for all special plants detected. Information specified above under the headings "Special Status Plant or Natural Community Observations," and "Field Survey Forms," should be provided for locations of each special status plant detected;
  - Copies of all California Native Species Field Survey Forms or Natural Community Field Survey Forms should be sent to the CNDDB and included in the environmental document as an Appendix. It is not necessary to submit entire environmental documents to the CNDDB; and,
  - The location of voucher specimens, if collected.

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22 For a complete list of indexed herbaria, see: Holmgren, P., N. Holmgren and L. Barnett. 1990. Index Herbariorum, Part 1: Herbaria of the World. New York Botanic Garden, Bronx, New York. 693 pp. Or: http://www.nybg.org/bsci/ih/ih.html

23 Refer to current online published lists available at: http://www.dfg.ca.gov/biogeodata.

24 A vegetation map that uses the National Vegetation Classification System (http://biology.usgs.gov/npsveg/nvcs.html), for example *A Manual of California Vegetation*, and highlights any special status natural communities. If another vegetation classification system is used, the report should reference the system, provide the reason for its use, and provide e crosswalk to the National Vegetation Classification System.

- **Assessment of potential impacts**
  - A discussion of the significance of special status plant populations in the project area considering nearby populations and total species distribution;
  - A discussion of the significance of special status natural communities in the project area considering nearby occurrences and natural community distribution;
  - A discussion of direct, indirect, and cumulative impacts to the plants and natural communities;
  - A discussion of threats, including those from invasive species, to the plants and natural communities;
  - A discussion of the degree of impact, if any, of the proposed project on unoccupied, potential habitat of the species;
  - A discussion of the immediacy of potential impacts; and,
  - Recommended measures to avoid, minimize, or mitigate impacts.

QUALIFICATIONS

Botanical consultants should possess the following qualifications:

- Knowledge of plant taxonomy and natural community ecology;
- Familiarity with the plants of the area, including special status species;
- Familiarity with natural communities of the area, including special status natural communities;
- Experience conducting floristic field surveys or experience with floristic surveys conducted under the direction of an experienced surveyor;
- Familiarity with the appropriate state and federal statutes related to plants and plant collecting; and,
- Experience with analyzing impacts of development on native plant species and natural communities.

SUGGESTED REFERENCES

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August 19, 2013

Karuk Tribe
Scott Quinn
PO Box 1016
Happy Camp, CA 96039

Dear Mr. Quinn:

The City is in receipt of the Notice of Preparation (NOP) of the draft Tribal Environmental Impact Report (DTEIR) for the proposed Karuk Casino Project, and submits this letter to provide initial comments.

The project will have substantial impacts on the City and its residents.

Although the DTEIR NOP identifies the first and second phases of the project, the Tribe has also indicated that they hope to construct a travel center (truck stop), recreational vehicle park, and other complementary facilities to the Casino. The DTEIR should also take into account these cumulative future impacts.

1. **Police Services:** The extent to which the Police services will be affected depends upon the law enforcement model that the Tribe proposes. The City understands that the Tribe intends to utilize its own security within the Casino, but will rely on City police services for enforcement of laws on tribal lands. Further, the City understands that the Casino will be open 24 hours per day and will serve alcohol. This will increase the calls for service for the City Police Department, which is already facing increased calls for services, and at the same the Department has lost staffing. Staffing in the Police Department is based on the probable number of officers available for the types of incidents that may occur. In addition, mutual aid from other agencies for large incidents is limited, and not always easily available, particularly in the early morning hours. In order to handle the increased need for Police Department services from the Casino, the number of officers will need to be increased. The DTEIR should study the impact that the Casino will have on the Police Department and related emergency services.

2. **Emergency Dispatch:** The City operates its own dispatching center. Ongoing increases in call volume are already challenging the City's ability to effectively and efficiently handle dispatching. The City will need to continue to upgrade its hardware and software in order to meet increased demand for services from the Casino.

3. **Police Building:** The current Police Building, a 98 year old Carnegie Library, is inadequate to serve the current needs of the police department both in terms of functionality and space.

Repairs to the building are increasing in cost. Increased calls for service, from the Casino, and Yreka residents, will exacerbate the inefficiencies of this building. The building will need to be replaced in the near future, especially with the expected increase in Police Department staffing.

4. **Fire Protection:** The Yreka Volunteer Fire Department provides first responder services for fire protection, emergency medical service, rescue services and hazardous materials response. At present, the Yreka Volunteer Fire Department does not have paid staff (volunteers receive stipends, depending on duties and calls responded to). Construction of the proposed Casino and related facilities will increase the number of emergency responses to each of the services noted above. Depending on the final plans for the facility (e.g. structure height issues, access issues, and on-site hazardous materials), special training or equipment will be needed to respond to emergency events at the facility. The incidence of vehicle accidents is expected to increase as the volume of traffic increases, and as the number of Casino guests unfamiliar with the roadways increases. Vehicle fires may also increase, and the number of emergency responses for medical conditions will increase. The Department is currently facing challenges meeting the current need for Fire Department related services, and the Fire Department is increasingly having difficulty finding volunteers who are available and also willing to respond to medical calls. The Casino will further exacerbate these challenges, which will require the City to consider decreasing the response to medical calls, and/or hiring paid staff to perform such services. Fire sprinklers and first aid supplies/capabilities shall be considered for the project. The DTEIR should study the impact that the Casino will have on the Fire Department and related services.

5. **Fire Station Building:** The current Fire Station was originally constructed in 1931, and despite additions throughout the years, it is inadequate to serve the needs of the Yreka Volunteer Fire Department. Significant repairs to the building have been made recently, but the building still requires more and significant improvements, including structural improvements. An increase in medical and other calls for service, including from the Casino, and an increase in mutual aid support to surrounding areas, will continue to exacerbate the inefficiencies of this building. The building will need to be replaced at in the near future.

6. **Flood Control**: The project will increase the flow of stormwater to the City's storm drainage system, and decrease any surplus capacity of the system. Increased flows to Yreka Creek and its tributaries will increase damages to adjacent properties during floods. A study should identify the impacts. Mitigation measures should also be identified, and any required offsite improvements should be included in the DTEIR.

7. **Alcohol and Drug Abuse Prevention:** The Tribe has indicated a desire to serve alcohol. The addition of a large commercial operation serving alcohol will dramatically impact not only police services, but also programs to address alcohol problems. In addition, there is an increased potential for drug abuse. Increased drug use will significantly impact the community and requires appropriate mitigation (see County comments).

8. **Roads:** The City recommends that the Tribe complete a regional traffic impact study (TIS) that meets or exceeds Caltrans' traffic impact study guidelines. The TIS should address traffic concerns, pedestrian and bicyclist safety, the adequacy of the local roadways infrastructure/pavement conditions to accommodate project generated traffic, and increased

roadway maintenance requirements. Once complete, the City recommends that the Tribe utilize the TIS results to propose specific roadway improvement projects, describe how each project will be completed, and include preliminary project design. This analysis should include the fire standard Caltrans cost components, including design, environmental clearance/mitigation, right of way, construction and project support. The description should include the total estimated cost of the project, how each project will be funded, which agency will serve as lead agency, who will construct, what method of project administration and construction is proposed, who will conduct environmental review, who will acquire right of way, how much right of way is required, whether state or City encroachment of other permits will be required, how cost overruns will be addressed, and whether project completion be required prior to the Casino opening. Only with this level of information can the City, other agencies, and the public adequately determine the full scale of the project's traffic impacts.

Some specific impacts and questions that the City of Yreka requests the Project and DTEIR should address and include are:

- Sharps Road will likely need a signal and intersection improvement, and may need to be improved along its length. This may be complicated by the proximity to Yreka Creek.
- Caltrans will need to provide input on the Moonlit Oaks Drive/I-5 ramp and the intersection's proximity to Fairlane Road. It is possible that another signal will be needed at Fairlane Road.
- The Traffic study should evaluate left turns at the Oberlin Road/Fairlane Road intersection, and address the potential for long queues/stacking issues at this intersection.
- There appears to be insufficient stacking on the off ramps from I-5 and during large events at the Casino and Fairgrounds, it is likely that traffic will affect mainline I-5 travel.
- Will there be any non-motorized improvements from the project, such as pedestrian paths, bike facilities, etc.? Will there be a connection to the Yreka Creek trail system?
- Will there be any mass transit facilities (bus stops) associated with the project?

9. **Drainage:** The drainage impacts of the proposed Casino on non-tribal lands and waterways should be studied and mitigated, both during construction and afterwards. Note that the Casino is planned for high ground with some parking and connections to parking on significantly lower lands. Runoff from the parking areas will contain oil and debris that will need to stay out of the drainage system. The DTEIR should address the following drainage issues:
    a. Avoid any unnecessary paving, covering over or compaction of soil during all construction activities.
    b. Eliminate stormwater pollution and soil erosion through the following strategies:
        i. Construction activities involving grading and excavation should be conducted between April 15 and October 15 when major storms are not likely to occur, otherwise a winterization plan for the October 15 to Aril 15 period must be developed and included within the DTEIR for review. The required measures must be in place prior to October 15.
        ii. A drainage study as part of the DTEIR for the entire project, prepared by a Registered Civil Engineer. The study shall include calculations and a plan showing drainage areas, demonstrate adequate positive storm drainage

facilities both on and off the subject property and indicate any potential off-site impacts; particularly to Yreka creek and adjacent properties that may be impacted by on-site improvement. The drainage study of the entire project must be completed and included within the DTEIR. The study shall identify any increases in runoff due to project construction, and propose methods to either 1) detain such increases on site, and/or 2) make improvements to off-site facilities to ensure safe conveyance of such increases via existing drainage. Provisions for ongoing maintenance of such facilities shall be made, and such responsibility designated prior to approval of said study.

iii. Design the drainage plan in conformance with City guidelines and regulations, as well as regulations by the North Coast Regional Water Quality Control Board.

iv. Channel runoff from parking areas and roadway into retention ponds to meter flow into surface water systems, and to act as catch basins for impurities in accordance with best management practices (BMP's)

v. Include complete erosion control plans within the DTEIR.

10. **Solid Waste Management:** The Tribe should consider the capacity of the Oberlin Road Transfer & Recycling Station Transfer station to accommodate the proposed waste from the project. Aggressive recycling strategies should be described and implemented to voluntarily meet state recycling and diversion requirements. The Tribe should also describe how roadside litter resulting from increase project guest traffic will be addressed.

11. **Air Quality:** Construction of the facilities, including site development, is likely to result in a short term increase in particulate matter and greenhouse gas emissions. Operation of the facilities, including the increase in vehicular traffic associated with the Casino, is expected to result in additional greenhouse gas emissions over the long term. Idling traffic from I-5 through the Sharps Road intersection will increase air quality impacts as well as greenhouse gas emissions. Potential impacts to air quality will need to be identified, analyzed and addressed in the DTEIR.

12. **Water**: The project will result in an increased demand on the City's water supply, transmission, storage, and distribution systems.

    The DTEIR should include a detailed study to determine if the City's water system can provide the requested fire flow, flow duration, and storage. A study should be completed to determine the alternatives for connection to the City's water distribution system and a recommended alternative that will least impact the water system. A study should also determine if any improvements are needed immediately to serve the proposed development and if any improvements are needed to serve future proposed development. The study should determine if any improvements identified in the City Water Master Plan should be completed prior to any phase of development, and if the Tribe should contribute to any future improvements, and should include any required offsite improvements in the DTEIR.

13. **Hazardous Materials**: The proposed Casino will likely result in a modest potential for the increase in the transport, use, and disposal of hazardous material. The NOP scope does not discuss whether the existing propane line will be extended to the project site, or propane tanks will be added on site, or whether propane will not be used. Additional fuels for backup power supply, landscaping chemicals, etc. will increase the potential for impacts to the

surrounding community. Potential hazmat situations will result in impacts to City resources needed to respond to events.

14. **Character of the Area, Incompatible Land Uses:** Development of the proposed Casino project adjacent to the fairgrounds, the Juvenile detention facility, Yreka Creek flood basin and the Waiiaka trailer park create the potential for land use conflicts between the users. The Fair may also cause conflicts with events currently (the annual fair, auto racing, and agricultural events), and future unknown events, as the Fair transitions to hosting more events in order to cover the loss of state revenues for the fair. These events may conflict with noise, traffic, dust and related impacts. The mitigations of these impacts should include making sure that emergency vehicles can still respond when events at the fair and the Casino are at their peak.

15. **Aesthetic Impact**: The cut/fill in/on the hillside will be visible from the entire town. The light of the building and surrounding parking lots will affect the night sky and the visual aesthetic of the City. Signage for the Casino and any other ancillary structures may also have significant visual impacts to the City, and these should be included in the DTEIR.

16. **Wastewater Collection:** The proposed project will increase the flows of wastewater in the City's wastewater collection and treatment system. The DTEIR shall include a detailed study to determine the alternatives for connection to the City's wastewater collection system and a recommended alternative that will least impact the system. A study should also determine if any improvements are needed immediately to serve the proposed development and if any improvements are needed to serve future proposed development. A study should also determine if any improvements identified in the City Sewer Master Plan should be completed prior to any phase of development, and if the Tribe should contribute towards any future improvements, and should include any required offsite improvements in the DTEIR.

17. **Wastewater Treatment Plant:** The proposed project will increase the flow of wastewater to the City's Wastewater Treatment Plant (WWTP). A study should be completed to determine if the increased flow can be processed by the WWTP prior to completion of the planned Wastewater System Improvements Project, which will increase the capacity to 1 million gallons per day, and will be constructed in 2014, and any required improvements to the WWTP should be included in the DTEIR.

18. **Biological Resources**: A detailed assessment of the project's effects on biological resources needs to be included in the DTEIR, including a description of the local habitat and the wildlife species supported by that habitat. Widening Sharps Road for increased access will involve new and wider crossings of the creek and drainages, potentially impacting riparian habitat. Yreka Creek is a Coho salmon bearing stream. Mitigation measures re species impacts should be included DTEIR

19. **Noise**: The project will generate significant noise during construction and operations, especially associated with the proposed 24 hour operation for the facility. Due to the public use and residential character of the surrounding area, the noise generated by this facility would dramatically alter the local noise environment. The DTEIR should include a detailed analysis of the noise impacts association with the construction and operation of the facility, with a detailed analysis of increased traffic noise experienced by residents along roads

accessing the site. Feasible mitigation measures should be identified to minimized operational and traffic noise impact for local residents.

20. **Geology and Soils**: The project is proposed to be constructed on relatively steep slopes, which would require extensive areas of cut and fill to accommodate the building footprints and surrounding parking. There is a potential for geologic instability that could cause geotechnical hazards to the west of the project, and depending on the exact development plans, to the northwest and east of the proposed Casino. Due to the steep slope that would be constructed with project development, a detailed geotechnical analysis conducted by a qualified geotechnical engineer should be conducted to determine if any geotechnical hazards, such as land sliding, would be anticipated as a result of the project. The geotechnical analysis should include a detailed mitigation strategy for minimizing potential geologic hazards associated the site development. The DTEIR should also include a detailed discussion of the project's erosion and sedimentation impacts in offsite receiving waters. Mitigating measure should be identified that ensure that the quality of downstream receiving waters is not degraded.

21. **Financial Impacts**: The proposed project will reduce the amount of land that is eligible for property taxes paid to the City as land is purchased and incorporated into the Tribe's land trust. The project will also affect revenue from sales tax, and transient occupancy tax.

22. **Future Land Uses**: Although the NOP does not address this, the Tribe is actively acquiring other land in fee to the west of the project area. The cumulative impacts of these acquisitions and development of these sites should be included in the DTEIR with regard to the services noted above, including traffic, flood control, water, wastewater, land use incompatibility, storm drainage, and other impacts as noted above.

23. **Ancillary Uses and Structures**: Any other improvements or structures, such as employee housing, off-site transit improvements, truck stop, etc., that are not directly part of the Casino, but are considered part of the overall project, should be included in the DTEIR.

Thank you for consideration of our comments. As the project plan becomes more developed and the environmental impacts better understood, we would be willing to provide additional information.

Sincerely,

Steve Baker by H Casson

Steven W. Baker
City Manager, City of Yreka

COUNTY OF SISKIYOU

Board of Supervisors

P.O. Box 750 • 201 Fourth Street
Yreka, California 96097
www.co.siskiyou.ca.us

(530) 842-8005
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Toll Free: 1-888-854-2000, ext. 8005

RECEIVED AUG 21 2012

August 13, 2013

Attn: Scott Quinn
Karuk Tribe
P.O. Box 1016
Happy Camp, CA 96039

Subject: Karuk Tribe Casino Project

Dear Mr. Quinn:

Thank you for this opportunity to review and comment on the Notice of Preparation (NOP) for the Tribal Environmental Impact Report (TEIR) for the Karuk Tribe Casino project. This project, which would be located on approximately 60 acres of tribal land in the City of Yreka and accessed via Sharps Road, would be developed in two phases. The initial phase would consist of a 36,000 square-foot casino with a 100-seat restaurant and parking for approximately 556 vehicles. The second phase would add approximately 20,000 square feet to the casino, an 80-room hotel, and approximately 500 more parking spaces. A portion of the project would be located on tribal trust land and a portion of the project would be located on land held in fee title by the Tribe.

Based upon the County's review of the NOP, the County offers the following comments:

Transportation

The project is anticipated to result in an increase in vehicular and pedestrian traffic in the vicinity of the project area. The TEIR should identify, analyze, and mitigate for potential impacts to affected transportation facilities, including those roadways or portions of roadways within the county-maintained road system (e.g., Fairlane Drive between Exit 773 and Yreka city limits). In addition, the County has facilities located along Sharps Road (the fair grounds, Hibbard Field, juvenile hall, and the corporation yard) which all could be impacted by the added traffic on Sharps Road and this potential impact needs to be fully reviewed. Finally, pedestrian safety, especially from the fair grounds, nearby RV park, and Hibbard Field, should be considered and addressed through appropriate mitigation as necessary.

Emergency Services

It is anticipated that the project would result in increased demand for law enforcement, fire protection, and emergency medical services. Any future environmental document should identify, analyze, and mitigate for potential impacts to emergency service providers, including those departments/agencies that provide mutual aid to the City (e.g., Siskiyou County Sheriff's Department, California Highway Patrol, Cal Fire, etc.).

Criminal Justice System

In addition to the increased demand on law enforcement that is expected, it is anticipated that the project would result in greater demand being placed upon the criminal justice system. The TEIR should identify, analyze, and mitigate for potential impacts to the Siskiyou County District Attorney's Office, Siskiyou County Superior Court, Siskiyou County Jail, and Siskiyou County Juvenile Hall as necessary.

Solid Waste

The project is expected to result in increased solid waste generation during site development and future operation of the facility. It is anticipated that this would result in a modest increase in utilization of the Yreka Transfer Station and a slight reduction in the capacity of the Anderson Landfill in Shasta County. It is recommended that the project reduce its solid waste through recycling and other waste diversion efforts and that the TEIR identify, analyze, and mitigate potential impacts to impacted facilities as appropriate.

Light and Noise

Given that the project area is currently unimproved land, it is anticipated that development of the casino would increase ambient nighttime lighting and noise in the vicinity of the project area considerably. It is recommended that the project's exterior lighting be designed to minimize spillover onto adjacent properties and that photo simulations be utilized in the TEIR to better assess potential lighting impacts. With regard to noise, the increase in traffic along Sharps Road has the potential to impact residents of the RV Park and Juvenile Detention Facility with noise associated with nighttime operations. Potential noise impacts will need to be addressed and adequately mitigated in the TEIR.

Hydrology and Water Quality

The NOP indicates that the City of Yreka will provide water service to the project. However, if groundwater will also be utilized, potential impacts to the underlying aquifer should be discussed in the TEIR. Further, grading activities and operation of the facility have the potential to degrade water quality in nearby Yreka Creek and

alter flood flows. Potential impacts to groundwater and surface waters will need to be addressed and adequately mitigated for in the TEIR.

Air Quality

Construction of the facilities, including site preparation, is likely to result in a short-term increase in particulate matter and greenhouse gas (GHG) emissions. Operation of the facilities, including the increase in vehicular traffic associated with the casino, is expected to result additional greenhouse gas emissions over the long term. Potential impacts to air quality will need to be identified, analyzed and addressed in the TEIR.

Social Services

The establishment and operation of a casino has the potential to adversely impact individuals predisposed to compulsive gambling and, as a result, also has the potential to adversely impact the families of problem gamblers. This may result in greater burden being placed on the limited resources of the County's social service providers. Any future environmental document should identify, analyze, and mitigate for potential impacts associated with problem gambling and the demand it places on social services.

Land Use Authority & NEPA Review

In order to better understand the applicable federal, state, and local jurisdictional issues, including local authority, any future environmental document should provide a detailed discussion of the applicable regulations governing the proposed project and detail the related land use approvals that may be necessary. This discussion should differentiate between those project components that would be constructed on tribal trust land and those components that would be constructed on land held in fee title by the Tribe. The document should also discuss any associated NEPA document that may be necessary to address that portion of the project located on tribal trust land as compared to the project components addressed by CEQA. The NOP also states that conditional use and grading permits will be required by the City of Yreka. The City's role in processing the environmental documents that it must rely on in approving any discretionary project should also be discussed.

Sincerely,

Ed Valenzuela
Chair, Siskiyou County Board of Supervisors

cc: Honorable Brian Dahle, Member, California State Assembly
Honorable Ted Gaines, Member, California State Senate
Honorable Jim Nielsen, Member, California State Senate

APPENDIX C

SITE GRADING AND DRAINAGE STUDY

Site Grading & Drainage Study

for the

Karuk Tribe Casino and Hotel Development

Sharps Road, Yreka, California

Prepared for:

The Karuk Tribe of California &

Group West Companies, PLLC
3601 Fremont Ave. N., Suite 314
Seattle, WA 98103

Prepared By:

Bray & Associates
Civil Engineering & Land Surveying
329 West Miner St. - - - Yreka, CA 96097
Ph (530) 842-6813 Fax (530) 842-6645

Job No. 13049-B July 3, 2013

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4.2 Storm Drainage

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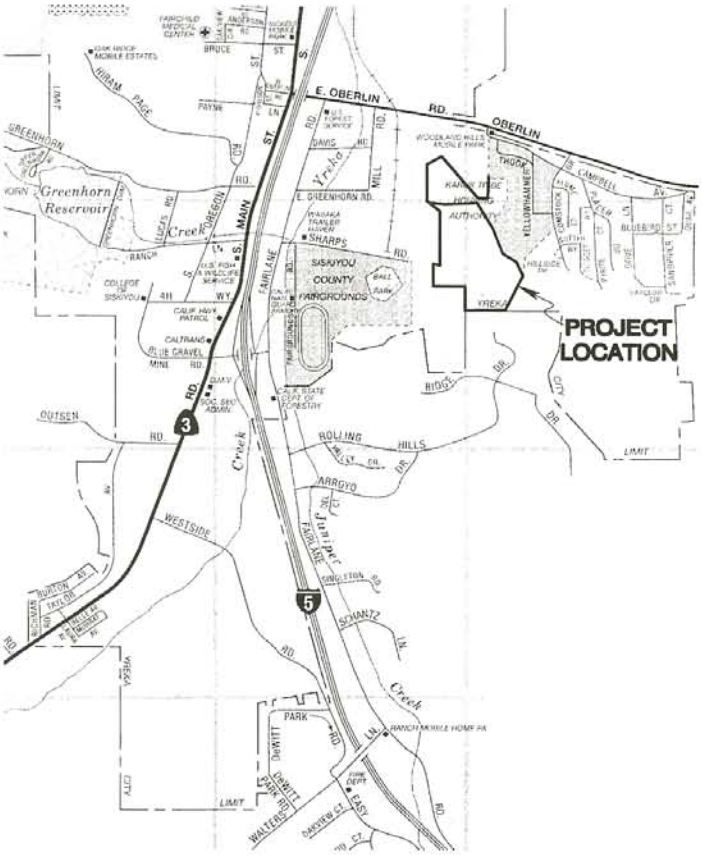
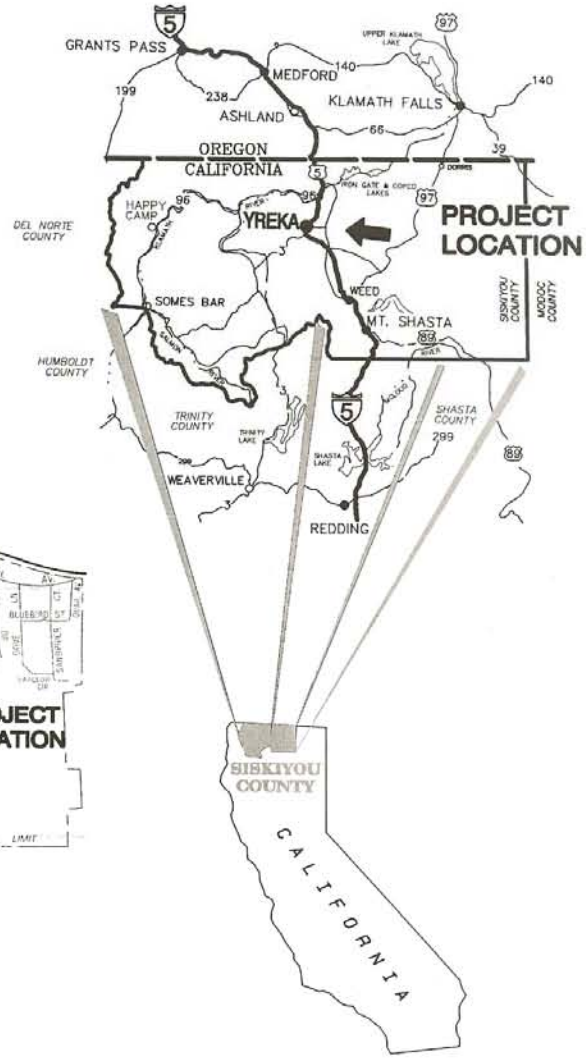
ATTACHMENT B:	Phase I - Preliminary Grading Plan & Earthwork Reports
ATTACHMENT C:	Phase II – Preliminary Grading Plan & Earthwork Reports
ATTACHMENT D:	Site Storm Drainage Analysis & Runoff Exhibit
ATTACHMENT E:	Recommended Best Management Practices





VICINITY MAP

PROJECT LOCATION

SECTION 1: INTRODUCTION

The purpose of this report is to review the proposed Karuk Tribe Casino/Hotel Development and make recommendations regarding site grading, site drainage, and erosion control in order to mitigate impacts due to the development of this project to less than significant.

1.1 Project Description

The Karuk Tribe of California proposes to develop a Class III Gaming Complex and Hotel in phases. Under Phase I, the Tribe would develop an approximately 36,000 square foot facility to accommodate 500 gaming machines and 8 table games. Phase I includes development of a 100 seat restaurant and on-site parking. Additional parking (223 stalls) would be developed on the tribally-owned parcel south of the gaming parcel with access to the project site provided from Sharps Road. Phase II would include the addition of approximately 20,000 square-feet to the gaming complex to add 300 gaming machines, 8 table games, 2,000 square feet of new restaurant space, and associated support facilities. In addition, the Tribe would develop a 48,000 square-foot hotel with 80 rooms to support the gaming establishment. The total square footage of the facility would increase by approximately 68,000 square feet under Phase II. The parking located on tribally-owned fee lands would be increased by 500 parking stalls to accommodate 723 vehicles.

1.2 Site Location

The site is located in Sections 26 & 35, Township 45 North, Range 7 West, MDM, Siskiyou County, California. The property is also located within City of Yreka, east of Interstate 5, just north of the south Yreka Interstate 5 interchange at the west end of Sharps Road. The property assessor's parcel numbers are as follows:

APN 062-061-040 (Trust Parcel – Owner: Karuk Tribe Trust USA)

APN 062-051-380 (Tebbe or Fee Parcel - Owner: Karuk Tribe of California)

The undeveloped northerly 12 acres of the Trust parcel, which was previously approved for gaming, shall be utilized for this project. A portion of the Tebbe or fee parcel shall be used for parking and storm water detention facilities.

1.3 Existing Conditions

The proposed project site is primarily undeveloped; however some grading has occurred in years past, including a dirt access road and drainage ditches. The Tebbe Parcel is currently used to store unoccupied mobile homes owned by the Karuk Tribe Housing Authority. Vegetation on site consists of weeds, sparse grasses, chaparral brush and oak trees. There are a number of rock out crops on the Trust portion of the property which are not vegetated. Slopes on site range from 20% to 30%. It is uncertain how difficult excavation of the under laying rock will be on the Trust parcel in particular. Attachment A - Existing Topography indicates existing slopes and drainage ways for the property.

An existing drainage ditch bisects the Tebbe parcel and runs northwesterly through the property. Storm runoff from a large portion of the property is collected by the existing drainage ditch, which exits the property and continues onto the flat below into a series of drainage swales, inlets and storm pipes. This drainage ditch is the primary discharge point for pre-existing drainage flows from the site. The Trust portion has a few small swales that accumulate small amounts of the storm water flows, but there is no large concentrated discharge point for existing storm water flows from the Trust parcel.

SECTION 2: SITE GRADING

In general, material used for engineered fills shall be excavated on-site and placed as engineered fill where applicable. Imported materials such as aggregate base rock and asphalt paving shall be obtained from permitted sources offsite.

2.1 Phase I

Phase I of the proposed development includes grading of the Trust parcel and the Tebbe parcel to include a total disturbed area of approximately 14.25 Acres +/-. The Phase I site includes a 27,000 square foot building footprint and approximately 8.41 acres of parking, walks and access roads. Primary access to the site comes from the south through the Tebbe parcel and Sharps Road. The Owner has an existing 60 foot wide easement for ingress, egress and public utilities, which allows the property access from Sharps Road to the Tebbe parcel.

The preliminary elevation recommended for the finish floor of the building is 2724.5 (NGVD 29 datum), with parking slopes ranging from 2% minimum to 5% maximum. All ADA accessible parking and routes of travel shall conform to the requirements of the 2010 California Building Code. It is recommended that a secondary emergency access be developed to the north to access Oberlin Road.

Grading of the site includes a 35' high engineered fill slope on the west side of the site and a 70' high cut slope on the east side of the site. The preliminary grading plan in Attachment B indicates the approximate limits of excavation and grading for the site. The preliminary grading plan was developed with recommended slopes based on the Geotechnical Report prepared for the property by Arrowhead Consultants of Modesto, California, dated January 20, 1998 and grading requirements in the 2010 California Building Code. Cut and fill slopes were developed using with 2:1 max slopes. Benches 6 feet in width are incorporated into slopes where the heights of the slopes exceed 30 feet vertically. All benches require surfaced drainage swales to collect storm water from the slopes and direct it to appropriate storm drainage facilities. Additionally, the top of the cut slope requires a surfaced swale to direct storm water from above the cut slope away from the face of the cut slope. Estimated earthwork volumes associated with construction of Phase I are as follows:

Net Earthwork Volumes Phase I Build Out

Excavation Volume	182,000 cubic yards
Fill Volume	132,000 cubic yards
Net Difference	50,000 cubic yards (waste)

Waste materials shall be incorporated and engineered fill placed into the Phase 2 parking area located on the Tebbe parcel to the south. The City of Yreka has a grading ordinance, and requires a grading permit for all proposed grading within the City limits.

2.2 Phase II

Phase II of the proposed development includes the addition of an 80 unit 48,000 square foot hotel and a 21,000 square foot casino/restaurant expansion. The proposed building expansions shall be located adjacent to the Phase I casino building footprint.

Mass grading of the site will have been done during Phase I of the project, due to the nature of the site. Excavated material from the Trust property will be placed on the Tebbe property during Phase I. It is anticipated that the site earthwork will be near balanced.

Trust property grading for the expansion and hotel addition shall be limited to the new building footprint and the areas adjacent to the building to adjust the site for building access and parking. The majority of the site grading for Phase II will be on the Tebbe parcel and will include construction of required project parking & storm drainage facilities. The preliminary grading plan in Attachment C indicates the approximate limits of excavation and grading for the site. The preliminary grading plan was developed with recommended slopes based on the Geotechnical Report prepared for the property by Arrowhead Consultants of Modesto, California, dated January 20, 1998 and grading requirements in the 2010 California Building Code. Cut and fill slopes were developed using with 2:1 max slopes. It is estimated that total project build out will include approximately 106,000 square feet of buildings and 12 acres of parking. Cut and fill slopes for the parking area on the Tebbe parcel range from 10 to 20 feet vertically. Estimated earthwork volumes associated with construction of Phase II are as follows:

Total Net Earthwork Volumes 100% Build Out

Excavation Volume	184,000 cubic yards
Fill Volume	184,000 cubic yards
==========	
Net Difference	0 cubic yards (balance)

SECTION 3: STORM WATER HYDROLOGY

3.1 Existing Site Drainage

In general, the site is sloping to the west. At present existing storm drainage runoff flows across the unimproved property and finds its way into existing drainage ditches and swales and eventually to Yreka Creek in the flat below. There is an existing drainage ditch that runs northwesterly bisecting the Tebbe parcel. Drainage from slopes above the ditch are collected by the ditch and transported northwesterly until they exit the property in the ditch. The ditch then continues on down to the flat below into a series of drainage ditches, inlets and pipes. The old railroad grade has several cross drains in place that carry storm water to the west of the tracks. Slopes below the ditch are collected via an earthen berm that runs north to south and collects storm runoff between the ditch and the berm. Storm drainage from the Trust portion of the property runs westerly toward the drainage ways on the flat below, however these flows are not concentrated into one exit point as are the flows from the Tebbe parcel.

A series of percolation tests were performed at the south end of the Phase I parking area. Testing indicated a soil percolation rate ranging from 50 min/in to 210 min/in. The average of all tests performed was approximately 130 min/in. Percolation of native materials onsite is relatively slow for disposal of storm water runoff.

3.2 Analysis Methodology

The Siskiyou County Drainage Manual was developed by RVA-Lounsbury engineering staff of Fair Oaks, California under authorization of the Siskiyou County Board of Supervisors. The manual was developed to provide procedures for estimation of design drainage at any given location in Siskiyou County. The drainage manual reports estimates of flood flows throughout Siskiyou County based on different hydrologic regions. The City of Yreka is located in hydrologic region II-A and the Rainfall I-D-F curves located on Plate 21 were used to develop estimated storm runoff flows for pre-developed and post-development conditions. The drainage manual is based on the Rational Method for estimating storm flows based on annual rainfall data for the area. Storm flows were estimated prior to site development based on existing slopes, vegetation, soil permeability, and surface type. The pre-development runoff coefficient for this site is estimated at C = 0.35. The post development runoff coefficient for this site is estimated at C = 0.85. Rainfall intensity was taken from the I-D-F curve for the Yreka area based on storm duration and probable recurrence intervals.

Attachment D tabulates estimated flows for 10, 25, & 100 year events for pre-developed and post-development for both phases of the project.

On-site storm drainage facilities for the project shall be designed in accordance with current EPA standards & the City of Yreka Storm Drainage Design & Evaluation Criteria and comply with the City of Yreka General Plan.

3.3 Phase I - Proposed Storm Drainage Mitigations

Peak Flows

Storm water runoff from the Phase I developed site shall be designed to detain storm flows on site and to not exceed flows from a 10 minute duration and a 10 year event (Q =18.45 cfs). Phase I storm detention on site shall be designed for 25 year storm event for a volume of 17,900 cubic feet. Storm drainage shall be directed to drainage facilities and routed to detention structures as necessary to meet the above outlined detention volumes. Detention basins shall be designed to meet these storage volumes with 1 foot of freeboard as outlined in the City of Yreka Storm Drainage Design & Evaluation Criteria.

All Trust parcel drainage shall be detained on the Trust parcel in detention basins located under the parking area. Discharge from the detention basin shall be directed to the existing drainage ditch that bisects the Tebbe parcel.

All drainage facilities including pipes, curbs, inlets and swales shall be sized for a 10 year, 24 hour storm event.

3.4 Phase II- Proposed Storm Drainage Mitigations

Peak Flows

Storm water runoff from 100% build out shall be designed to detain storm flows on site and to not exceed flows from a 10 minute duration and a 10 year event (Q = 23.59 cfs). Phase II storm detention on site shall be designed for 25 year storm event for a volume of 26,400 cubic feet. Storm drainage shall be directed to drainage facilities and routed to detention structures as necessary to meet the above outlined detention volumes. Detention basins shall be designed to meet these storage volumes with 1 foot of freeboard as outlined in the City of Yreka Storm Drainage Design & Evaluation Criteria.

All Trust parcel drainage shall be detained on the Trust parcel in detention basins located under the parking area. Discharge from the detention basin shall be directed to the existing drainage ditch that bisects the Tebbe parcel.

All drainage facilities including pipes, curbs, inlets and swales shall be sized for a 10 year, 24 hour storm event.

Erosion, Sediment, & Pollution Control

Permanent BMPs

The use of permanent Best Management Practices shall be incorporated into the design of the storm water collection system within the constraints of the site. The United States Environmental Protection Agency (USEPA) requires that site development include mitigation measures for storm water runoff through Permanent Best Management Practices. A “rain garden” type of storm water filter is proposed to be incorporated into the west side of the parking area. The rain garden filter will consist of a 3’ wide planter area that storm runoff will enter after flowing across the parking area. The rain garden will help contain sediment and the sand/fabric layer will filter pollutants from storm runoff. Storm runoff will then drain through a section of open graded drain rock into a perforated storm drain pipe. In the event the rain filter does not accept the entire flow there shall be a series of fail safe area drains set higher than filter grade to ensure that excess flow is directed to the storm detention piping. The storm drain pipe will then carry storm water to an under paving detention piping system with a controlled outlet. The outlet will only allow a pre-developed peak flow to exit the property. Other BMPs may be incorporated into the design, but peak flows shall be limited to pre-development conditions.

Construction Storm Water Pollution Prevention Plans

The use of construction best management practices shall be performed during construction of the project. The EPA and the State of California require the following:

Dischargers whose projects disturb one or more acres of soil or whose projects disturb less than one acre but are part of a larger common plan of development that in total disturbs one or more acres, are required to obtain coverage under the General Permit for Discharges of Storm Water Associated with Construction Activity Construction General Permit Order 2009-0009-DWQ. Construction activity subject to this permit includes clearing, grading and disturbances to the ground such as stockpiling, or excavation, but does not include regular maintenance activities performed to restore the original line, grade, or capacity of the facility.

A Storm Water Pollution Prevention Plan (SWPPP) must be developed and implemented by an individual certified in the State of California to provide this service. It is the Contractors responsibility to follow this SWPPP and conform to its requirements. Best Management Practices shall be implemented by this SWPPP process to mitigate the effects of erosion, sedimentation and pollution during construction activities.

SECTION 4: Recommendations & Conclusions

Site grading and storm drainage facilities for each of the phases of the project shall be designed and constructed to minimize environmental impacts. The following items have been outlined as specific mitigation measures to reduce environmental impacts.

4.1 Site Grading

Slopes:

The permanent cut and fill slopes being utilized for preliminary design of this grading project are consistent with other projects located within the City of Yreka. Additionally, slopes are designed to meet 2010 CBC grading requirements. Slope erosion control measures have been implemented through the use of concrete lined drainage ways that prevent large amounts of storm runoff from being directed down newly constructed slopes. All newly constructed slopes shall be replanted to establish vegetation within the constraints of the site.

A new project specific Geotechnical Report shall be performed prior to the final design of the project to address permanent slope stability, soil bearing capacities and pavement design.

Parking Lot Gradients:

Parking lots slopes shall be designed between 2% to 5% to help prevent ponding and icing during winter months.

4.2 Storm Drainage

Peak Flows:

The increased storm water peak runoff flows due to impervious surfaces being developed on-site shall be mitigated utilizing storm water detention facilities. Detention facilities shall be designed as outlined herein and approved by the City of Yreka Public Works Department.

Erosion, Sediment & Pollution Control:

The project site is located in the Yreka Creek drainage basin which is designated in the City of Yreka General Plan as Natural Water Resource. Special care shall be taken to ensure that pollutants and sediments from the project are not transported to Yreka Creek through the storm drainage system during construction or following completion of the project.

Permanent Best Management Practices:

The use of a rain garden type filter shall be included into the design of the storm drainage facility to ensure that storm water is filtered for pollutants and sediments deposited prior to entry

into Yreka Creek. The use of permanent Best Management Practices shall be incorporated into the design of the storm water collection system within the constraints of the site. The USEPA requires that site development include mitigation measures for storm water runoff through Permanent Best Management Practices. Erosion, sediment, and flood control Best Management Practices for design this project shall be included to ensure that sediments and pollutants are not transported to Yreka Creek to the best extent possible

Construction Best Management Practices:

A SWPPP shall be prepared & implemented for the project per the USEPA and State of California guidelines. The SWPPP shall include current BMPs applicable to the project site constraints.

I recommend inclusion of these mitigation measures and applicable BMPs into the design of this casino/hotel development project. If these mitigation measures and applicable BMPs are implemented the impacts from this project related to grading and drainage shall be considered to be less than significant.

_____
Morgan D. Eastlick, RCE 62963

Bray & Associates
Civil Engineering & Land Surveying

REFFERENCES:

2010 California Building Code

City of Yreka, General Plan 2002 - 2012
Adopted December 18, 2003

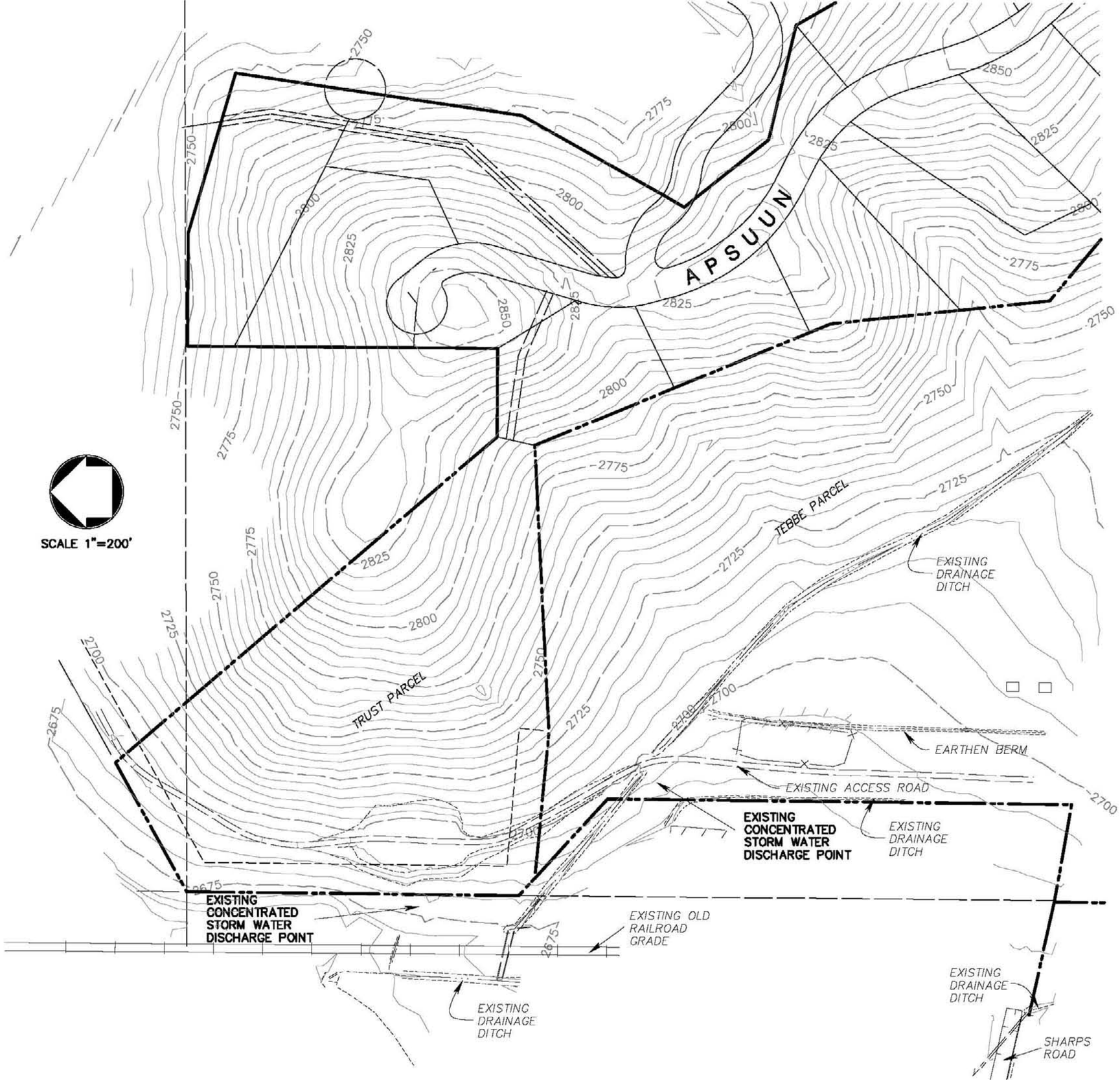
Wildan Engineering, City of Yreka, Storm Drain System Design & Evaluation Criteria
Dated July 14, 2006

Arrowhead Consultants, Preliminary Geotechnical Report Proposed Yreka Master Plan Development Karuk Housing Authority CA 98-70 Dated January 20, 1998

RVA-Lounsbury Engineering Siskiyou County Drainage Manual
Dated December, 1974

ATTACAHMENT A

EXISTING TOPOGRAPHY, DRAINAGE & PERCOLATION TESTING



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fax (530) 842-6845
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Engineers & Surveyors, Inc.

GROUP WEST COMPANIES, PLLC
3601 FREMONT AVE. N., SUITE 314
SEATLLE, WA 98103
PH (206) 826-4447
FAX (206) 826-4446

KARUK TRIBE CASINO DEVELOPMENT

PRE-DEVELOPMENT TOPOGRAPHY

SCALE: 1"=200'

DATE: JULY 3,2013

PAGE 1 OF 1

DBA:
Bray & Associates
Civil Engineering & Land Surveying
329 West Miner Street
Yreka, California 96097
ph. 530 842-6813 – fax 530 842-6645
Engineers & Surveyors, Inc.

CLIENT: Group West JOB # 13049-C
PROJECT: KAHK CASINO DATE: 6-25-2013
SCALE: BY: R.I.M.

PERCOLATION TEST DATA SHEET

PERCOLATION TEST NUMBER 1 (Dig after Pre-Soak) Bottom of Hole is 14½" below ground
LOCATION
SOIL TYPE
DEPTH TO WATER TABLE

FIELD MEASUREMENTS

	TIME	WATER LEVEL
1.	9:21	3 1/8"
2.	9:51	4 5/8"
3.	~~9:22~~ 10:22	5 2/8"
4.	10:52	5 6/8"
5.	11:22	6"
6.	11:52	6 2/8"
7.	12:22	6 7/16"
8.	12:52	6 9/16"
9.	1:22	6 6/8"
10.		
11.		
12.		
13.		

PERCOLATION RATE

ELAPSED TIME	WATER LEVEL DIFFERENCE	RATE (MIN./IN)
30	1 4/8"	25
31	5/8"	48
30	4/8"	60
30	2/8"	120
30	2/8"	120
30	34/16"	160
30	2/16"	240
30	3/16"	160

"STABILIZED" RATE 180 MIN./IN.

REMARKS:

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ph. 530 842-6813 - fax 530 842-6645
Engineers & Surveyors, Inc.

CLIENT: Group West JOB # 13049-C
PROJECT: KAROK CASINO DATE: 6-25-2013
SCALE: BY: R.E.M.

PERCOLATION TEST DATA SHEET

PERCOLATION TEST NUMBER 2 (1" of wtr in Bottom after Pre-soak)
LOCATION Bottom of hole is 12 1/2" below ground
SOIL TYPE
DEPTH TO WATER TABLE

FIELD MEASUREMENTS

	TIME	WATER LEVEL
1.	9:23	2"
2.	9:~~22~~ 52	2 5/8"
3.	10:23	3 2/8"
4.	10:53	3 6/8"
5.	11:23	4"
6.	11:53	4 3/16"
7.	12:23	4 7/16"
8.	12:53	4 5/8"
9.	1:23 ~~12:50~~	4 ~~6/8~~ 13/16"
10.		
11.		
12.		
13.		

PERCOLATION RATE

ELAPSED TIME	WATER LEVEL DIFFERENCE	RATE (MIN./IN)
29	5/8"	46
31	5/8"	50
30	1 1/8"	60
30	2/8"	120
30	3/16"	160
30	4/16"	120
30	3/16	160
30	3/16	160

"STABILIZED" RATE 160 MIN./IN.

REMARKS:

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Engineers & Surveyors, Inc.

CLIENT: Group West JOB # 13049-C
PROJECT: KARUK CASINO DATE: 6-25-2013
SCALE: BY: R.I.M.

PERCOLATION TEST DATA SHEET

PERCOLATION TEST NUMBER 3 (Dry after Pre-Soak)
LOCATION Btm of hole is 14 1/2" Below ground.
SOIL TYPE
DEPTH TO WATER TABLE

FIELD MEASUREMENTS

	TIME	WATER LEVEL
1.	9:26	4 3/8"
2.	9:53	10 1/2"
3.	10:25	11 2/8"
4.	10:26	3 2/8"
5.	10:54	9 7/8"
6.	11:23	10 4/8"
7.	11:24	3 3/8"
8.	11:54	9 5/8"
9.	12:24	10 3/8"
10.	12:24	6"
11.	12:54	9 5/8"
12.	~~12:5~~ 1:24	10 2/8"
13.		

PERCOLATION RATE

ELAPSED TIME	WATER LEVEL DIFFERENCE	RATE (MIN./IN)
27	6 1/8"	4
32	6/8"	43
Re-Fill		
28	6 5/8"	4
29	5/8"	46
Re-Fill		
30	6 2/8"	5
30	6/8"	40
Re-Fill		
30	3 5/8	8
30	5/8"	48

"STABILIZED" RATE 50 MIN./IN.

REMARKS:

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Engineers & Surveyors, Inc.

CLIENT: Group West JOB # 13049-C
PROJECT: RAKUK CASINO DATE: 6-25-2013
SCALE: BY: R.I.M.

PERCOLATION TEST DATA SHEET

PERCOLATION TEST NUMBER 4 (Dry after pre-soak)
LOCATION Bottom of hole is 12" Below ground
SOIL TYPE
DEPTH TO WATER TABLE

FIELD MEASUREMENTS

	TIME	WATER LEVEL
1.	9:30	4 1/2"
2.	9:53	8 1/8"
3.	10:27	8 4/8"
4.	10:29	3"
5.	10:56	8 1/8"
6.	~~10:55~~ 11:25	8 4/8"
7.	11:26	4"
8.	11:56	~~10 4/8~~ 8 2/8"
9.	12:26	8 4/8"
10.	12:26	4"
11.	12:56	8"
12.	1:26	8 3/8"
13.		

PERCOLATION RATE

ELAPSED TIME	WATER LEVEL DIFFERENCE	RATE (MIN./IN)
23	3 5/8"	6
34	3/8"	91
Re-Fill		
27	5 1/8"	5
29	3/8"	77
Re-Fill		
30	4 2/8	7
30	2/8"	120
Re-Fill		
30	4"	8
30	3/8"	80

"STABILIZED" RATE 100 MIN./IN.

REMARKS:

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CLIENT: Group West JOB # 13049-c
PROJECT: KAKUR CASINO DATE: 6-25-2013
SCALE: BY: R.I.M.

PERCOLATION TEST DATA SHEET

PERCOLATION TEST NUMBER #5 (1" of wtr after pre-soak)
LOCATION Bottom of Hole is 17 1/2" Below ground.
SOIL TYPE
DEPTH TO WATER TABLE

FIELD MEASUREMENTS

	TIME	WATER LEVEL
1.	9:33	5"
2.	9:54	7 1/8"
3.	10:30	8 3/8"
4.	10:58	8 6/8"
5.	11:00	3"
6.	11:27	6 1/8"
7.	11:57	7 5/8"
8.	12:27	8 2/8"
9.	12:57	8 6/8"
10.	1:27	9"
11.		
12.		
13.		

PERCOLATION RATE

ELAPSED TIME	WATER LEVEL DIFFERENCE	RATE (MIN./IN)
21	2 1/8"	10
36	1 2/8"	29
28	3/8"	75
Re-Fill		
27	3 1/8	9
30	1 4/8"	20
30	5/8"	48
30	4/8"	60
30	2/8"	120

"STABILIZED" RATE 90 MIN./IN.

REMARKS:

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CLIENT: Group West JOB # 13049-C
PROJECT: KAWUK CASINO DATE: 6-25-2013
SCALE: BY: R.I.M.

PERCOLATION TEST DATA SHEET

PERCOLATION TEST NUMBER 6 (4" of wtr in Btm after preseak.)
LOCATION Bottom of hole is 16" Below ground.
SOIL TYPE
DEPTH TO WATER TABLE

FIELD MEASUREMENTS

	TIME	WATER LEVEL
1.	9:34	4 7/8"
2.	9:55	5"
3.	10:31	5 3/16"
4.	11:01	5 2/8"
5.	11:29	5 3/8"
6.	11:59	5 4/8"
7.	12:29	5 5/8"
8.	12:59	5 6/8"
9.	1:29	5 15/16"
10.		
11.		
12.		
13.		

PERCOLATION RATE

ELAPSED TIME	WATER LEVEL DIFFERENCE	RATE (MIN./IN)
21	1/8"	168
36	3/16"	192
30	1/16"	480
28	1/8"	224
30	1/8"	240
30	1/8"	240
30	1/8"	240
30	3/16	160

"STABILIZED" RATE 210 MIN./IN.

REMARKS:

REGISTERED PROFESSIONAL ENGINEER
MORGAN D. EASTLICK
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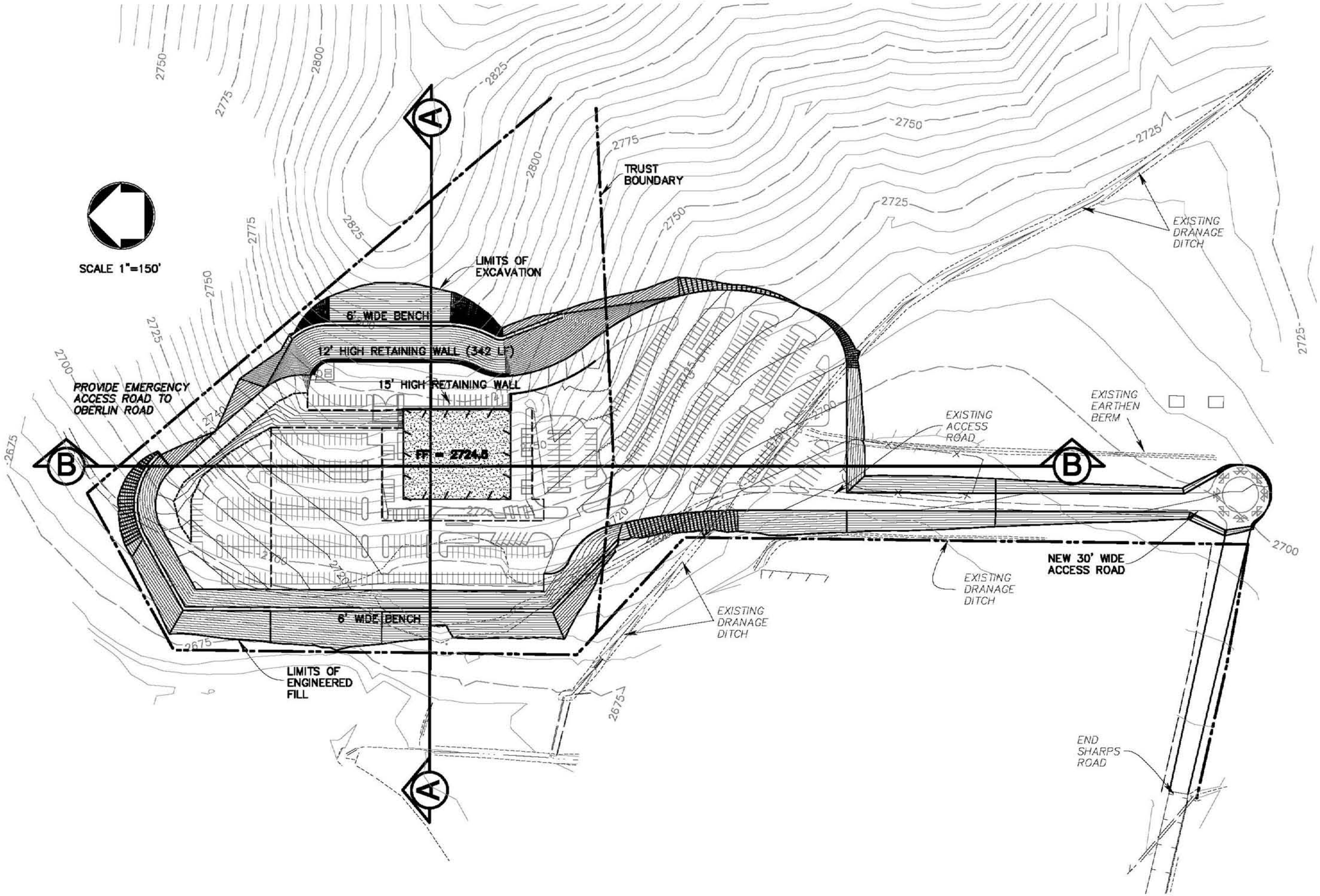
CIVIL
STATE OF CALIFORNIA

ATTACHMENT B

PHASE I PRELIMINARY GRADING PLAN & EARTHWORK REPORTS



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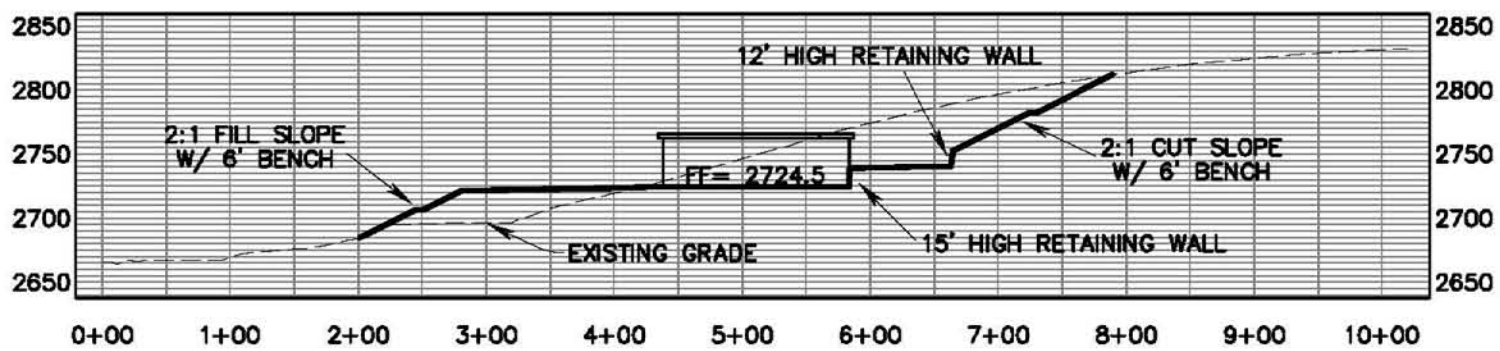
PH (206) 828-4447 FAX (206) 828-4446

KARUK TRIBE CASINO DEVELOPMENT

PHASE 1 PRELIMINARY GRADING PLAN

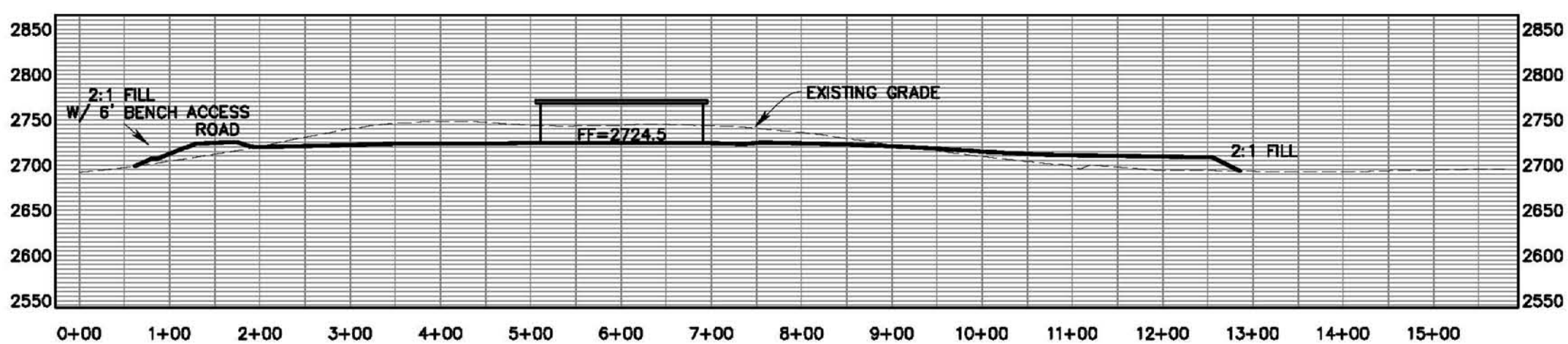
SCALE: 1"=150'

DATE: JUNE 27,2013



SECTION A-A

SCALE 1"=150'



SECTION B-B

SCALE 1"=150'

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KARUK TRIBE CASINO DEVELOPMENT

PHASE 1 PRELIMINARY GRADING PLAN

SCALE: 1"=150'

DATE: JUNE 27,2013

SURFACE TO SURFACE VOLUME REPORT

Bray & Associates Civil Engineering & Surveying
329 West Miner Street
Yreka, CA 96097
530-842-6813

Project: \\Nas\share\ACTIVE JOBS\1 Current Jobs\

Report Generated: Thursday, June 27, 2013 9:37:57 AM

Where the second surface is above the first the volume is reported as fill.
Where the second surface is below the first the volume is reported as excavation.

Shrinkage/swell factors: Excavation 1.0000 Fill 1.0000

First Surface Layer Name	Number of Points	Second Surface Layer Name	Number of Points
FLD 6-6-2013	1,235	DESIGN 2	1,595

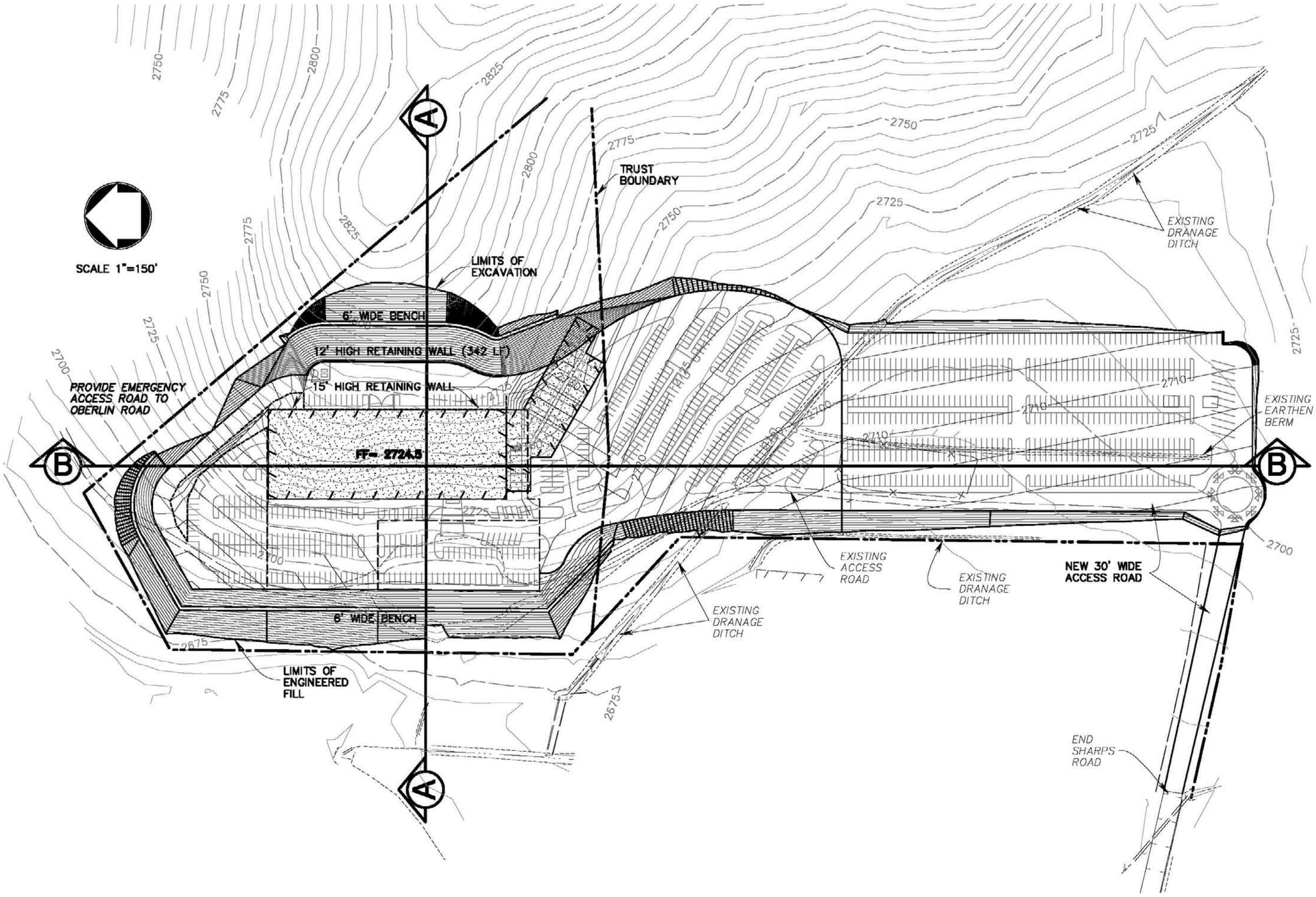
Volume limited to that within the constraining boundary - Object 11498
Constraining boundary name: DESIGN 2
Area within boundary: 620,699.49 SQ FT (14.25 ACRES)
Total triangulated area: 620,699.49 SQ FT (14.25 ACRES)

Excavation Volume (yd3)	Fill Volume (yd3)
181,782.2	131,979.8

Net Difference: 49,802.4 yd3 Waste

ATTATCHMENT C

PHASE II PRELIMINARY GRADING PLAN & EARTHWORK REPORTS



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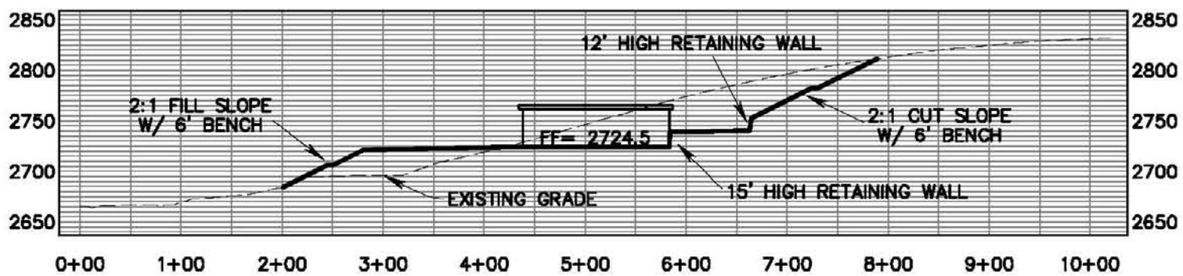
KARUK TRIBE CASINO DEVELOPMENT

PHASE 2 PRELIMINARY GRADING PLAN

SCALE: 1"=150'

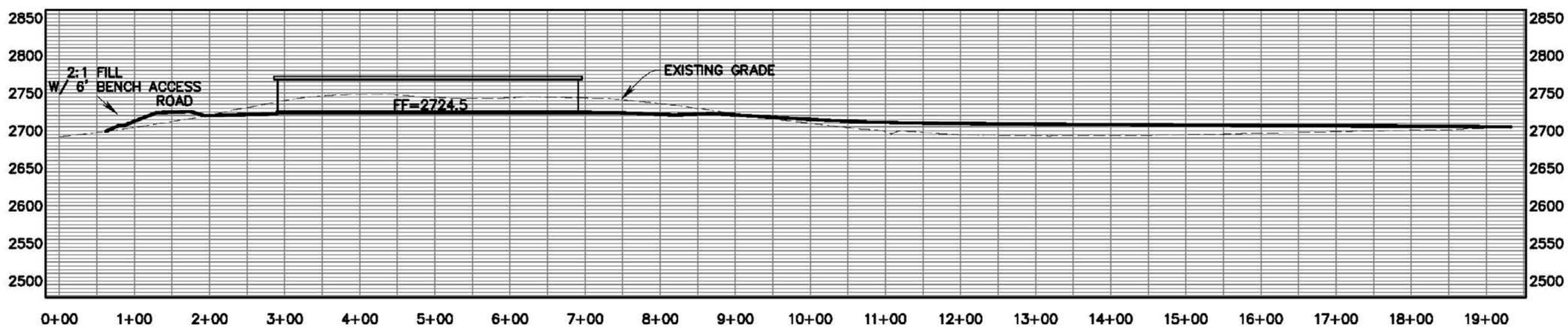
DATE: JUNE 27,2013

PAGE 1 OF 2



SECTION A-A

SCALE 1"=150'



SECTION B-B

SCALE 1"=150'

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KARUK TRIBE CASINO DEVELOPMENT

PHASE 2 PRELIMINARY GRADING PLAN

SCALE: 1"=150'

DATE: JUNE 27,2013

SURFACE TO SURFACE VOLUME REPORT

Bray & Associates Civil Engineering & Surveying
329 West Miner Street
Yreka, CA 96097
530-842-6813

Project: \\Nas\share\ACTIVE JOBS\1 Current Jobs\

Report Generated: Thursday, June 27, 2013 10:16:23 AM

Where the second surface is above the first the volume is reported as fill.
Where the second surface is below the first the volume is reported as excavation.

Shrinkage/swell factors: Excavation 1.0000 Fill 1.0000

First Surface Layer Name	Number of Points	Second Surface Layer Name	Number of Points
FLD 6-6-2013	1,235	DESIGN 2	1,585

Volume limited to that within the constraining boundary - Object 12880
Constraining boundary name: DESIGN 2
Area within boundary: 793,752.90 SQ FT (18.22 ACRES)
Total triangulated area: 793,752.90 SQ FT (18.22 ACRES)

Excavation Volume (yd3)	Fill Volume (yd3)
183,695.1	191,508.7

Net Difference: 7,813.6 yd3 Borrow

ATTATCHMENT D

STORM DRAINAGE ANALYSIS & EXHIBITS

Karuk Tribe Casino Development - Storm Drainage Calculations

Pre-Development Flows ***Phase 1 Project***

Refference: Siskiyou County Drainage Manual Yreka Area 11-B Rational Method

Unit Slope Coefficient	**0.14**	Unimproved Area Coefficient	**0.35**	
Unit Permeability Coefficient	**0.08**	Impervious Area Coefficient	**0.85**	
Unit Vegetation Coefficient	**0.06**	Unimproved Area	**14.25**	Ac.
Unit Surface Coefficient	**0.07**	Impervious Area	**0.00**	Ac.
Weighted Runoff Coefficient	**0.35**	Total Unit Drainage Area	**14.25**	Ac.

10 Year Event		**Estimated Flow cfs**	**KfxKst (Snow Melt Factor)**	
Storm Duration (min)	Rain Fall Intensity (in/hour)		**1.00**	
10	3.7	18.45	18.45	Maximum Discharge Rate
15	2.6	12.97	12.97	
20	1.9	9.48	9.48	
30	1.5	7.48	7.48	
60	0.85	4.24	4.24	
120	0.6	2.99	2.99	
180	0.45	2.24	2.24	

25 Year Event		**Estimated Flow cfs**	**KfxKst (Snow Melt Factor)**
Storm Duration (min)	Rain Fall Intensity (in/hour)		**1.27**
10	4	19.95	25.34
15	3	14.96	19.00
20	2.4	11.97	15.20
30	1.7	8.48	10.77
60	1	4.99	6.33
120	0.65	3.24	4.12
180	0.5	2.49	3.17

100 Year Event		**Estimated Flow cfs**	**KfxKst (Snow Melt Factor)**
Storm Duration (min)	Rain Fall Intensity (in/hour)		**1.80**
10	5.5	27.43	49.38
15	3.8	18.95	34.11
20	3.1	15.46	27.83
30	2.2	10.97	19.75
60	1.4	6.98	12.57
120	0.88	4.39	7.90
180	0.68	3.39	6.10

Karuk Tribe Casino Development - Storm Drainage Calculations

Post- Developmnet Flows ***Phase 1 Project***

Refference: Siskiyou County Drainage Manual Yreka Area 11-B Rational Method

Unit Slope Coefficient	**0.14**	Unimproved Area Coefficient	**0.35**	
Unit Permeability Coefficient	**0.08**	Impervious Area Coefficient	**0.85**	
Unit Vegetation Coefficient	**0.06**	Unimpervious Area	**5.23**	Ac.
Unit Surface Coefficient	**0.07**	Impervious Area	**9.02**	Ac.
Weighted Runoff Coefficient	**0.67**	Total Unit Drainage Area	**14.25**	Ac.

10 Year Event		**Estimated cfs**	**KfxKst**	**Deten. Vol. (CF)**
Storm Duration (min)	Rain Fall Intensity (in/hour)		**1.00**	
10	3.7	35.14	35.14	10012.20
15	2.6	24.69	24.69	5615.78
20	1.9	18.05	18.05	-490.20
30	1.5	14.25	14.25	-7573.50
60	0.85	8.07	8.07	-37371.15
120	0.6	5.70	5.70	-91837.80
180	0.45	4.27	4.27	-153142.65

25 Year Event		**Estimated cfs**	**KfxKst**	**Deten. Volume**
Storm Duration (min)	Rain Fall Intensity (in/hour)		**1.27**	
10	4	37.99	48.25	17876.13
15	3	28.49	36.19	15958.55
20	2.4	22.79	28.95	12593.56
30	1.7	16.15	20.51	3692.43
60	1	9.50	12.06	-23010.93
120	0.65	6.17	7.84	-76417.66
180	0.5	4.75	6.03	-134166.65

100 Year Event		**Estimated cfs**	**KfxKst**
Storm Duration (min)	Rain Fall Intensity (in/hour)		**1.80**
10	5.5	52.24	94.03
15	3.8	36.09	64.96
20	3.1	29.44	53.00
30	2.2	20.89	37.61
60	1.4	13.30	23.93
120	0.88	8.36	15.04
180	0.68	6.46	11.62

Karuk Tribe Casino Development - Storm Drainage Master Plan

Post- Developmnet Flows ***Phase 2 Project***

Refference: Siskiyou County Drainage Manual Yreka Area 11-B Rational Method

Unit Slope Coefficient	**0.14**	Unimproved Area Coefficient	**0.35**	
Unit Permeability Coefficient	**0.08**	Impervious Area Coefficient	**0.85**	
Unit Vegetation Coefficient	**0.06**	Unimproved Area	**4.37**	Ac.
Unit Surface Coefficient	**0.07**	Impervious Area	**13.85**	Ac.
Weighted Runoff Coefficient	**0.73**	Total Unit Drainage Area	**18.22**	Ac.

10 Year Event		**Estimated cfs**	**KfxKst**	**Deten. Vol. (CF)**
Storm Duration (min)	Rain Fall Intensity (in/hour)		**1.00**	
10	3.7	49.22	49.22	15373.50
15	2.6	34.59	34.59	9891.27
20	1.9	25.27	25.27	2014.68
30	1.5	19.95	19.95	-6555.42
60	0.85	11.31	11.31	-44237.52
120	0.6	7.98	7.98	-112418.64
180	0.45	5.99	5.99	-190177.20

25 Year Event		**Estimated cfs**	**KfxKst**	
Storm Duration (min)	Rain Fall Intensity (in/hour)		**1.27**	
10	4	53.21	67.57	26387.56
15	3	39.91	50.68	24377.15
20	2.4	31.92	40.54	20339.52
30	1.7	22.61	28.72	9223.41
60	1	13.30	16.89	-24124.90
120	0.65	8.65	10.98	-90821.51
180	0.5	6.65	8.45	-163599.80

100 Year Event		**Estimated cfs**	**KfxKst**
Storm Duration (min)	Rain Fall Intensity (in/hour)		**1.80**
10	5.5	73.16	131.69
15	3.8	50.55	90.99
20	3.1	41.24	74.23
30	2.2	29.26	52.68
60	1.4	18.62	33.52
120	0.88	11.71	21.07
180	0.68	9.05	16.28

Karuk Tribe Casino Development - Storm Drainage Master Plan

Pre-Development Flows ***Phase 2 Project***

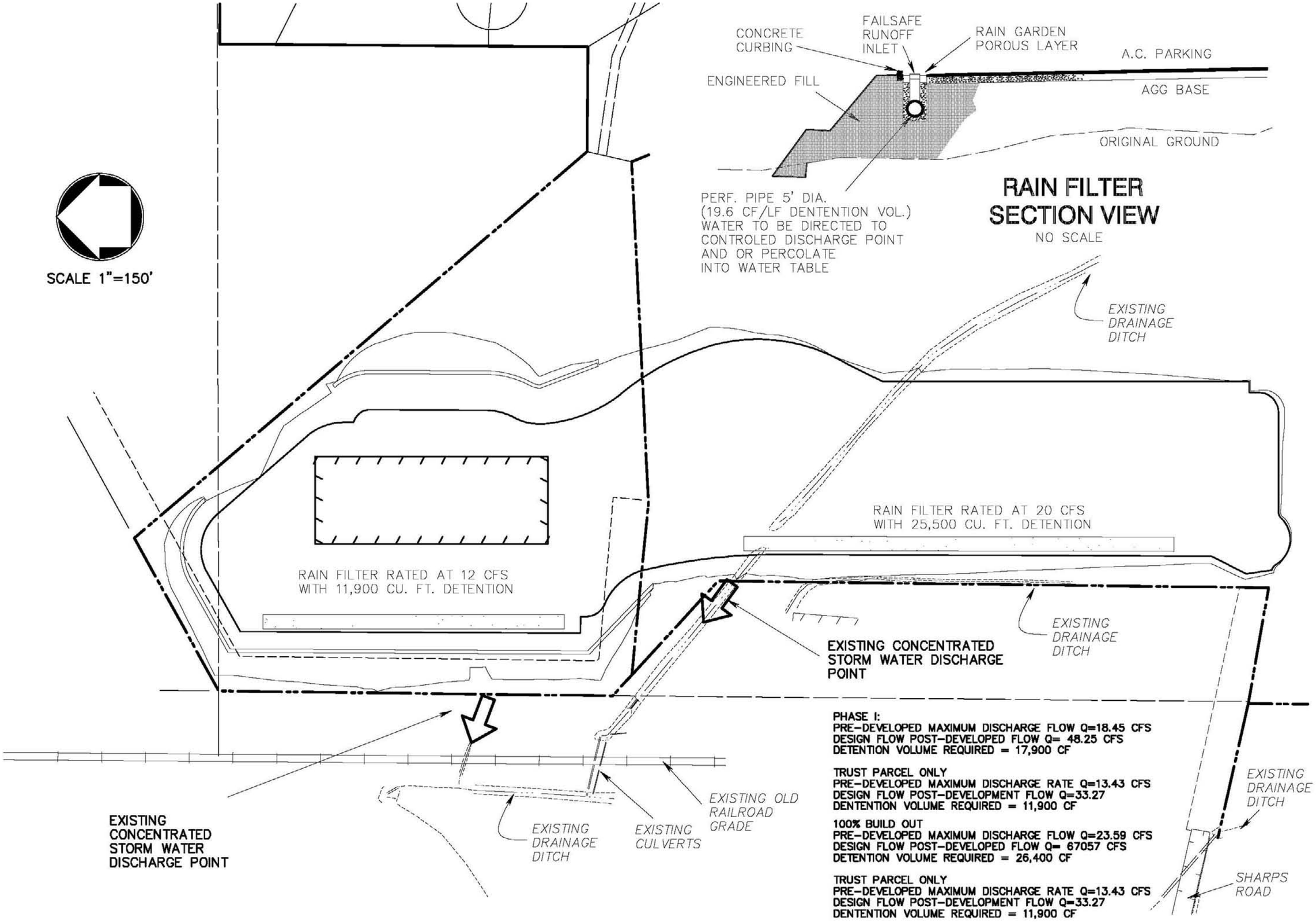
Refference: Siskiyou County Drainage Manual Yreka Area 11-B Rational Method

Unit Slope Coefficient	**0.14**	Unimproved Area Coefficient	**0.35**	
Unit Permeability Coefficient	**0.08**	Impervious Area Coefficient	**0.85**	
Unit Vegetation Coefficient	**0.06**	Unimproved Area	**18.22**	Ac.
Unit Surface Coefficient	**0.07**	Impervious Area	**0.00**	Ac.
Weighted Runoff Coefficient	**0.35**	Total Unit Drainage Area	**18.22**	Ac.

10 Year Event		**Estimated cfs**	**KfxKst (Snow Melt Factor)**	
Storm Duration (min)	Rain Fall Intensity (in/hour)		**1.00**	
10	3.7	23.59	23.59	Maximum Discharge Rate
15	2.6	16.58	16.58	
20	1.9	12.12	12.12	
30	1.5	9.57	9.57	
60	0.85	5.42	5.42	
120	0.6	3.83	3.83	
180	0.45	2.87	2.87	

25 Year Event		**Estimated cfs**	**KfxKst (Snow Melt Factor)**
Storm Duration (min)	Rain Fall Intensity (in/hour)		**1.27**
10	4	25.51	32.40
15	3	19.13	24.30
20	2.4	15.30	19.44
30	1.7	10.84	13.77
60	1	6.38	8.10
120	0.65	4.15	5.26
180	0.5	3.19	4.05

100 Year Event		**Estimated cfs**	**KfxKst (Snow Melt Factor)**
Storm Duration (min)	Rain Fall Intensity (in/hour)		**1.80**
10	5.5	35.07	63.13
15	3.8	24.23	43.62
20	3.1	19.77	35.58
30	2.2	14.03	25.25
60	1.4	8.93	16.07
120	0.88	5.61	10.10
180	0.68	4.34	7.81



PHASE I:
PRE-DEVELOPED MAXIMUM DISCHARGE FLOW Q=18.45 CFS
DESIGN FLOW POST-DEVELOPED FLOW Q= 48.25 CFS
DETENTION VOLUME REQUIRED = 17,900 CF

TRUST PARCEL ONLY
PRE-DEVELOPED MAXIMUM DISCHARGE RATE Q=13.43 CFS
DESIGN FLOW POST-DEVELOPMENT FLOW Q=33.27
DENTENTION VOLUME REQUIRED = 11,900 CF

100% BUILD OUT
PRE-DEVELOPED MAXIMUM DISCHARGE FLOW Q=23.59 CFS
DESIGN FLOW POST-DEVELOPED FLOW Q= 67057 CFS
DETENTION VOLUME REQUIRED = 26,400 CF

TRUST PARCEL ONLY
PRE-DEVELOPED MAXIMUM DISCHARGE RATE Q=13.43 CFS
DESIGN FLOW POST-DEVELOPMENT FLOW Q=33.27
DENTENTION VOLUME REQUIRED = 11,900 CF

DBA:
Bray & Associates
Civil Engineering & Land Surveying
329 West Miner Street
Yreka, California 96097
broyengineer.com
phone (530) 842-6813
fax (530) 842-6845
email – broyeng@sbcglobal.net
Engineers & Surveyors, Inc.

GROUP WEST COMPANIES, PLLC
3601 FREMONT AVE. N., SUITE 314
SEATLLE, WA 98103
PH (206) 826-4447
FAX (206) 826-4446

KARUK TRIBE CASINO DEVELOPMENT

RUNOFF EXHIBIT

SCALE: 1"=200'

DATE: JULY 3,2013

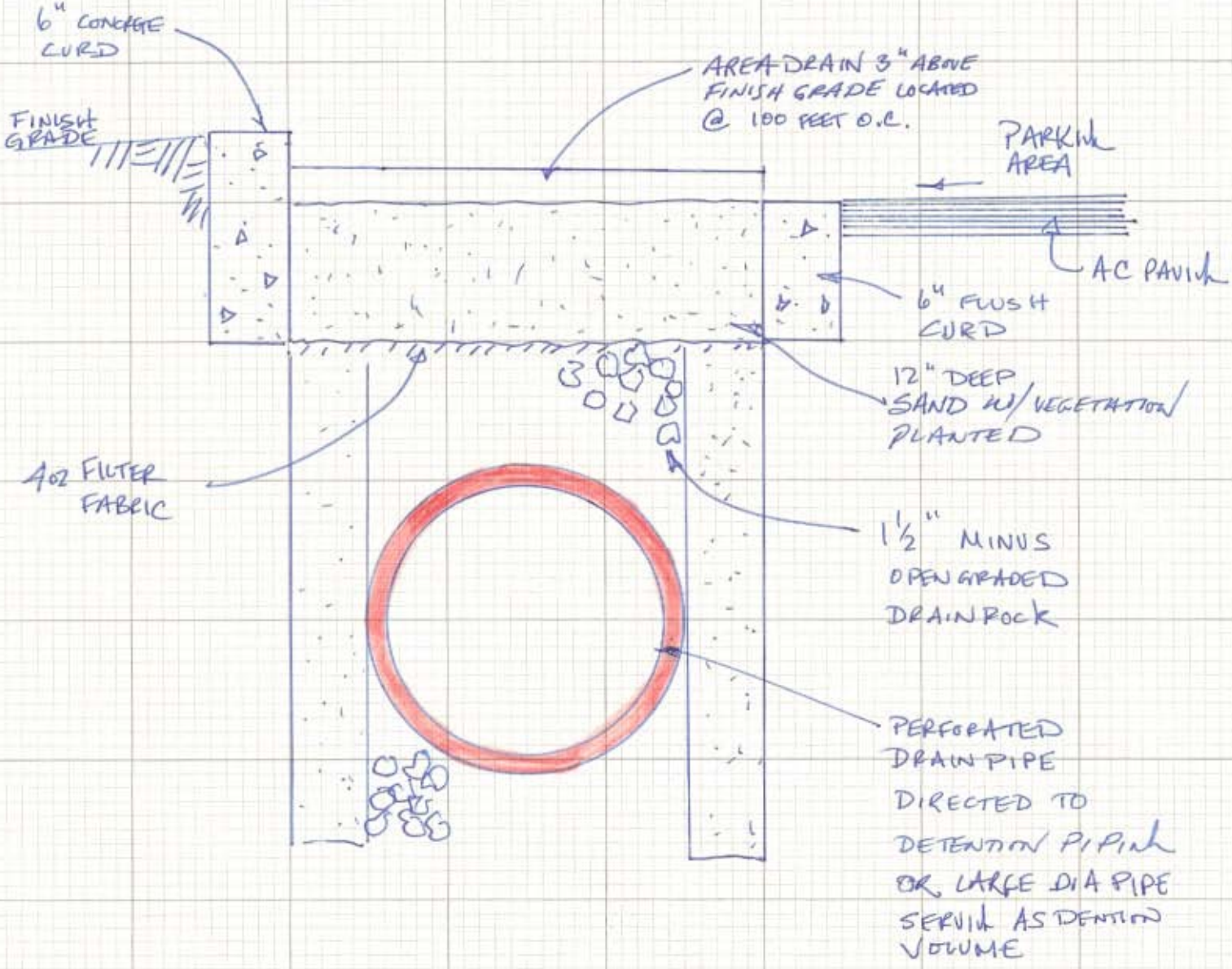
PAGE 1 OF 1

ATTATCHMENT E

RECOMMENDED BEST MANAGEMENT PRACTICES

DBA:
Bray & Associates
Civil Engineering & Land Surveying
329 West Miner Street
Yreka, California 96097
ph: 530-842-6813 • fax: 530-842-6645
www.brayengineering.com
Engineers & Surveyors, Inc.

CLIENT: GROUP WEST JOB # 13049
PROJECT: KARUK CASINO DATE: 6-27-13
SCALE: 1" = 1' BY: ME



PARKING LOT STORM DRAINAGE

RAIN GARDEN FILTER

GNP-101

TABLE 1-1

CONSTRUCTION SITE BMPs				
ID	**BMP NAME**	**APPROVED FOR STATEWIDE USE ON ALL PROJECTS [1]**	**APPROVED FOR USE ON A PROJECT-BY-PROJECT BASIS**	**MINIMUM REQUIREMENT**
TEMPORARY SOIL STABILIZATION				
SS-1	Scheduling	X		✓
SS-2	Preservation of Existing Vegetation	X		✓
SS-3	Hydraulic Mulch	X		✓[2]
SS-4	Hydroseeding	X		✓[2]
SS-5	Soil Binders	X		✓[2]
SS-6	Straw Mulch	X		✓[2]
SS-7	Geotextiles, Plastic Covers, & Erosion Control Blankets/Mats	X		✓[2]
SS-8	Wood Mulching	X		
SS-9	Earth Dikes/Drainage Swales & Lined Ditches		X	
SS-10	Outlet Protection/Velocity Dissipation Devices		X	
SS-11	Slope Drains		X	
SS-12	Streambank Stabilization	X		
TEMPORARY SEDIMENT CONTROL				
SC-1	Silt Fence	X		✓[3]
SC-2	Sediment/Desilting Basin		X	
SC-3	Sediment Trap		X	
SC-4	Check Dam		X	
SC-5	Fiber Rolls		X	✓[3]
SC-6	Gravel Bag Berm		X	
SC-7	Street Sweeping and Vacuuming	X		✓
SC-8	Sandbag Barrier		X	
SC-9	Straw Bale Barrier		X	
SC-10	Storm Drain Inlet Protection		X	✓
WIND EROSION CONTROL				
WE-1	Wind Erosion Control	X		✓
TRACKING CONTROL				
TC-1	Stabilized Construction Entrance/Exit		X	
TC-2	Stabilized Construction Roadway		X	
TC-3	Entrance/Outlet Tire Wash		X	

[1] Implementation depends on applicability to a project

[2] The Contractor shall select one of the five measures listed or a combination thereof to achieve and maintain the contract's rainy season disturbed soil area (DSA) requirements

[3] The Contractor shall select one of the two measures listed or a combination thereof to achieve and maintain the contract's rainy season disturbed soil area (DSA) requirements"

TABLE 1-1

CONSTRUCTION SITE BMPs				
ID	BMP NAME	APPROVED FOR STATEWIDE USE ON ALL PROJECTS [1]	APPROVED FOR USE ON A PROJECT-BY-PROJECT BASIS	MINIMUM REQUIREMENT
NON-STORM WATER MANAGEMENT				
NS-1	Water Conservation Practices	X		
NS-2	Dewatering Operations	X		
NS-3	Paving and Grinding Operations	X		
NS-4	Temporary Stream Crossing	X		
NS-5	Clear Water Diversion	X		
NS-6	Illicit Connection/Illegal Discharge Detection and Reporting	X		✓
NS-7	Potable Water/Irrigation	X		
NS-8	Vehicle and Equipment Cleaning	X		✓
NS-9	Vehicle and Equipment Fueling	X		✓
NS-10	Vehicle and Equipment Maintenance	X		✓
NS-11	Pile Driving Operations	X		
NS-12	Concrete Curing	X		
NS-13	Material and Equipment Use Over Water	X		
NS-14	Concrete Finishing	X		
NS-15	Structure Demolition/Removal Over or Adjacent to Water	X		
WASTE MANAGEMENT AND MATERIALS POLLUTION CONTROL				
WM-1	Material Delivery and Storage	X		✓
WM-2	Material Use	X		✓
WM-3	Stockpile Management	X		✓
WM-4	Spill Prevention and Control	X		✓
WM-5	Solid Waste Management	X		✓
WM-6	Hazardous Waste Management	X		
WM-7	Contaminated Soil Management	X		
WM-8	Concrete Waste Management	X		
WM-9	Sanitary/Septic Waste Management	X		✓
WM-10	Liquid Waste Management	X		

[1] Implementation depends on applicability to a project

[2] The Contractor shall select one of the five measures listed or a combination thereof to achieve and maintain the contract's rainy season disturbed soil area (DSA) requirements

[3] The Contractor shall select one of the two measures listed or a combination thereof to achieve and maintain the contract's rainy season disturbed soil area (DSA) requirements"

Attachment C

BMP Consideration Checklist

CONSTRUCTION SITE BMPs CONSIDERATION CHECKLIST						
The Contractor shall consider using all BMPs listed hereon. Those BMPs which are not included in the SWPPP shall be checked as "Not Used" with a brief statement describing why it is not being used. All selected BMPs shall be included in the Schedule of Values, except for those items shown on the plans and paid for as a separate item or work						
TEMPORARY SOIL STABILIZATION BMPs						
BMP No.	**BMP**	**MINIMUM REQUIREMENT (2)**	**CHECK IF CONTRACT REQUIREMENT**	**CHECK IF USED**	**CHECK IF NOT USED**	**IF NOT USED, STATE REASON**
SS-1	Scheduling	✔				
SS-2	Preservation of Existing Vegetation	✔				
SS-3	Hydraulic Mulch	✔(1)				
SS-4	Hydroseeding	✔(1)				
SS-5	Soil Binders	✔(1)				
SS-6	Straw Mulch	✔(1)				
SS-7	Geotextiles, Plastic Covers, & Erosion Control Blankets/Mats	✔(1)				
SS-8	Wood Mulching					
Temporary Concentrated Flow Conveyance Controls						
SS-9	Earth Dikes/Drainage Swales & Lined Ditches					
SS-10	Outlet Protection/ Velocity Dissipation Devices					
SS-11	Slope Drains					

(1) The Contractor shall select one of the five measures listed or a combination thereof to achieve and maintain the contract's rainy season disturbed soil area (DSA) requirements.
(2) Not all minimum requirements may be applicable to every project. Applicability to a specific project shall be verified by the Contractor or determined by Caltrans.

CONSTRUCTION SITE BMPs
CONSIDERATION CHECKLIST

The Contractor shall consider using all BMPs listed hereon. Those BMPs which are not included in the SWPPP shall be checked as "Not Used" with a brief statement describing why it is not being used.

All selected BMPs shall be included in the Schedule of Values, except for those items shown on the plans and paid for as a separate item or work

BMP No.	BMP	MINIMUM REQUIREMENT (2)	CHECK IF CONTRACT REQUIREMENT	CHECK IF USED	CHECK IF NOT USED	IF NOT USED, STATE REASON
TEMPORARY SEDIMENT CONTROL BMPs						
SC-1	Silt Fence	✔				
SC-2	Desilting Basin					
SC-3	Sediment Trap					
SC-4	Check Dam					
SC-5	Fiber Rolls					
SC-6	Gravel Bag Berm					
SC-7	Street Sweeping and Vacuuming	✔				
SC-8	Sand Bag Barrier					
SC-9	Straw Bale Barrier					
SC-10	Storm Drain Inlet Protection	✔				
WIND EROSION CONTROL BMPs						
WE-1	Wind Erosion Control	✔				
TRACKING CONTROL BMPs						
TC-1	Stabilized Construction Entrance/Exit					
TC-2	Stabilized Construction Roadway					
TC-3	Entrance/Outlet Tire Wash					

(2) Not all minimum requirements may be applicable to every project. Applicability to a specific project shall be verified by the contractor or determined by Caltrans.

CONSTRUCTION SITE BMPs
CONSIDERATION CHECKLIST

The Contractor shall consider using all BMPs listed hereon. Those BMPs which are not included in the SWPPP shall be checked as "not used" with a brief statement describing why it is not being included.

All selected BMPs shall be included in the Schedule of Values, except for those items shown on the plans and paid for as a separate item or work

NON-STORM WATER MANAGEMENT BMPs

BMP No.	BMP	MINIMUM REQUIREMENT (2)	CHECK IF CONTRACT REQUIREMENT	CHECK IF USED	CHECK IF NOT USED	IF NOT USED, STATE REASON
NS-1	Water Conservation Practices					
NS-2	Dewatering Operations					
NS-3	Paving and Grinding Operations					
NS-4	Temporary Stream Crossing					
NS-5	Clear Water Diversion					
NS-6	Illicit Connection/Illegal Discharge Detection and Reporting	✔				
NS-7	Potable Water/Irrigation					
Vehicle and Equipment Operations						
NS-8	Vehicle and Equipment Cleaning	✔				
NS-9	Vehicle and Equipment Fueling	✔				
NS-10	Vehicle and Equipment Maintenance	✔				

(2) Not all minimum requirements may be applicable to every project. Applicability to a specific project shall be verified by the contractor or determined by Caltrans.

CONSTRUCTION SITE BMPs
CONSIDERATION CHECKLIST

The Contractor shall consider using all BMPs listed hereon. Those BMPs which are not included in the SWPPP shall be checked as "not used" with a brief statement describing why it is not being used.

All selected BMPs shall be included in the Schedule of Values, except for those items shown on the plans and paid for as a separate item or work

WASTE MANAGEMENT AND MATERIALS POLLUTION CONTROL BMPs

BMP No.	BMP	MINIMUM REQUIREMENT (2)	CHECK IF CONTRACT REQUIREMENT	CHECK IF USED	CHECK IF NOT USED	IF NOT USED, STATE REASON
WM-1	Material Delivery and Storage	✔				
WM-2	Material Use	✔				
WM-3	Asphalt Concrete Stockpiles					
WM-4	Spill Prevention and Control	✔				
WM-5	Solid Waste Management	✔				
WM-6	Hazardous Waste Management					
WM-7	Contaminated Soil Management					
WM-8	Concrete Waste Management					
WM-9	Sanitary/Septic Waste Management	✔				
WM-10	Liquid Waste Management					

(2) Not all minimum requirements may be applicable to every project. Applicability to a specific project shall be verified by the contractor or determined by Caltrans.

APPENDIX D

AIR QUALITY MODEL (URBEMIS) OUTPUT FILES

8/23/2013 8:03:44 AM

Urbemis 2007 Version 9.2.4

Summary Report for Annual Emissions (Tons/Year)

File Name: C:\Users\equinn\AppData\Roaming\Urbemis\Version9a\Projects\Kurak\Kurak Phase I.urb924

Project Name: Kurak Casino Phase I

Project Location: California State-wide

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
2014 TOTALS (tons/year unmitigated)	1.62	10.98	5.31	0.00	0.10	0.49	0.59	0.02	0.45	0.48	1,758.25

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (tons/year, unmitigated)	0.02	0.02	0.15	0.00	0.00	0.00	20.40

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (tons/year, unmitigated)	0.74	1.13	9.04	0.01	1.80	0.35	998.62

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (tons/year, unmitigated)	0.76	1.15	9.19	0.01	1.80	0.35	1,019.02

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Urbemis 2007 Version 9.2.4

Combined Summer Emissions Reports (Pounds/Day)

File Name: C:\Users\equinn\AppData\Roaming\Urbemis\Version9a\Projects\Kurak\Kurak Phase I.urb924

Project Name: Kurak Casino Phase I

Project Location: California State-wide

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

CONSTRUCTION EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
2014 TOTALS (lbs/day unmitigated)	22.13	174.44	78.26	0.10	6.80	6.64	13.30	1.47	6.11	7.45	29,464.35

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	0.21	0.11	1.63	0.00	0.01	0.01	113.21

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	3.80	5.39	47.95	0.06	9.85	1.90	5,724.88

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	4.01	5.50	49.58	0.06	9.86	1.91	5,838.09

Construction Unmitigated Detail Report:

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CONSTRUCTION EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
Time Slice 1/1/2014-2/7/2014 Active Days: 28	8.59	79.93	36.72	0.06	3.44	3.11	6.55	0.75	2.86	3.61	13,575.31
Mass Grading 01/01/2014-02/15/2014	8.59	79.93	36.72	0.06	3.44	3.11	6.55	0.75	2.86	3.61	13,575.31
Mass Grading Dust	0.00	0.00	0.00	0.00	3.20	0.00	3.20	0.67	0.00	0.67	0.00
Mass Grading Off Road Diesel	6.39	50.90	24.04	0.00	0.00	2.04	2.04	0.00	1.87	1.87	6,856.86
Mass Grading On Road Diesel	2.14	28.91	10.36	0.06	0.22	1.07	1.29	0.07	0.98	1.06	6,405.01
Mass Grading Worker Trips	0.06	0.12	2.31	0.00	0.02	0.01	0.02	0.01	0.01	0.01	313.44
Time Slice 2/10/2014-2/14/2014 Active Days: 5	19.61	174.44	78.26	0.10	6.80	6.50	13.30	1.47	5.98	7.45	29,484.35
Fine Grading 02/10/2014-03/15/2014	11.02	94.51	41.55	0.04	3.36	3.39	6.75	0.72	3.12	3.84	15,909.04
Fine Grading Dust	0.00	0.00	0.00	0.00	3.20	0.00	3.20	0.67	0.00	0.67	0.00
Fine Grading Off Road Diesel	9.68	77.89	30.77	0.00	0.00	2.77	2.77	0.00	2.55	2.55	11,619.57
Fine Grading On Road Diesel	1.21	16.35	5.86	0.03	0.13	0.60	0.73	0.04	0.56	0.60	3,623.41
Fine Grading Worker Trips	0.13	0.26	4.92	0.01	0.03	0.02	0.05	0.01	0.01	0.03	666.06
Mass Grading 01/01/2014-02/15/2014	8.59	79.93	36.72	0.06	3.44	3.11	6.55	0.75	2.86	3.61	13,575.31
Mass Grading Dust	0.00	0.00	0.00	0.00	3.20	0.00	3.20	0.67	0.00	0.67	0.00
Mass Grading Off Road Diesel	6.39	50.90	24.04	0.00	0.00	2.04	2.04	0.00	1.87	1.87	6,856.86
Mass Grading On Road Diesel	2.14	28.91	10.36	0.06	0.22	1.07	1.29	0.07	0.98	1.06	6,405.01
Mass Grading Worker Trips	0.06	0.12	2.31	0.00	0.02	0.01	0.02	0.01	0.01	0.01	313.44

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Time Slice 2/17/2014-3/14/2014 Active Days: 20	11.02	94.51	41.55	0.04	3.36	3.39	6.75	0.72	3.12	3.84	15,909.04
Fine Grading 02/10/2014-03/15/2014	11.02	94.51	41.55	0.04	3.36	3.39	6.75	0.72	3.12	3.84	15,909.04
Fine Grading Dust	0.00	0.00	0.00	0.00	3.20	0.00	3.20	0.67	0.00	0.67	0.00
Fine Grading Off Road Diesel	9.68	77.89	30.77	0.00	0.00	2.77	2.77	0.00	2.55	2.55	11,619.57
Fine Grading On Road Diesel	1.21	16.35	5.86	0.03	0.13	0.60	0.73	0.04	0.56	0.60	3,623.41
Fine Grading Worker Trips	0.13	0.26	4.92	0.01	0.03	0.02	0.05	0.01	0.01	0.03	666.06
Time Slice 4/10/2014-5/30/2014 Active Days: 37	16.76	121.08	58.44	0.00	0.01	5.57	5.58	0.00	5.13	5.13	19,218.54
Building 04/10/2014-10/15/2014	16.76	121.08	58.44	0.00	0.01	5.57	5.58	0.00	5.13	5.13	19,218.54
Building Off Road Diesel	16.72	120.96	57.35	0.00	0.00	5.57	5.57	0.00	5.12	5.12	19,060.10
Building Vendor Trips	0.01	0.07	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	20.02
Building Worker Trips	0.03	0.05	1.02	0.00	0.01	0.00	0.01	0.00	0.00	0.01	138.41
Time Slice 6/2/2014-8/29/2014 Active Days: 65	19.42	121.09	58.47	0.00	0.01	5.57	5.58	0.00	5.13	5.13	19,223.41
Building 04/10/2014-10/15/2014	16.76	121.08	58.44	0.00	0.01	5.57	5.58	0.00	5.13	5.13	19,218.54
Building Off Road Diesel	16.72	120.96	57.35	0.00	0.00	5.57	5.57	0.00	5.12	5.12	19,060.10
Building Vendor Trips	0.01	0.07	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	20.02
Building Worker Trips	0.03	0.05	1.02	0.00	0.01	0.00	0.01	0.00	0.00	0.01	138.41
Coating 06/01/2014-10/31/2014	2.66	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.87
Architectural Coating	2.66	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.87

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Time Slice 9/1/2014-10/15/2014 Active Days: 33	22.13	134.49	69.13	0.01	0.03	6.64	6.68	0.01	6.11	6.12	20,906.92
Asphalt 09/01/2014-10/31/2014	2.71	13.41	10.66	0.01	0.02	1.07	1.09	0.01	0.98	0.99	1,683.52
Paving Off-Gas	0.58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	1.99	12.21	7.96	0.00	0.00	1.02	1.02	0.00	0.94	0.94	1,131.92
Paving On Road Diesel	0.08	1.07	0.39	0.00	0.01	0.04	0.05	0.00	0.04	0.04	238.16
Paving Worker Trips	0.06	0.12	2.31	0.00	0.02	0.01	0.02	0.01	0.01	0.01	313.44
Building 04/10/2014-10/15/2014	16.76	121.08	58.44	0.00	0.01	5.57	5.58	0.00	5.13	5.13	19,218.54
Building Off Road Diesel	16.72	120.96	57.35	0.00	0.00	5.57	5.57	0.00	5.12	5.12	19,060.10
Building Vendor Trips	0.01	0.07	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	20.02
Building Worker Trips	0.03	0.05	1.02	0.00	0.01	0.00	0.01	0.00	0.00	0.01	138.41
Coating 06/01/2014-10/31/2014	2.66	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.87
Architectural Coating	2.66	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.87
Time Slice 10/16/2014-10/31/2014 Active Days: 12	5.38	13.41	10.70	0.01	0.02	1.07	1.09	0.01	0.98	0.99	1,688.39
Asphalt 09/01/2014-10/31/2014	2.71	13.41	10.66	0.01	0.02	1.07	1.09	0.01	0.98	0.99	1,683.52
Paving Off-Gas	0.58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	1.99	12.21	7.96	0.00	0.00	1.02	1.02	0.00	0.94	0.94	1,131.92
Paving On Road Diesel	0.08	1.07	0.39	0.00	0.01	0.04	0.05	0.00	0.04	0.04	238.16
Paving Worker Trips	0.06	0.12	2.31	0.00	0.02	0.01	0.02	0.01	0.01	0.01	313.44
Coating 06/01/2014-10/31/2014	2.66	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.87
Architectural Coating	2.66	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.87

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Phase Assumptions

Phase: Fine Grading 2/10/2014 - 3/15/2014 - Type Your Description Here

Total Acres Disturbed: 10

Maximum Daily Acreage Disturbed: 0.16

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 900

Off-Road Equipment:

1 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day

2 Off Highway Trucks (479 hp) operating at a 0.57 load factor for 8 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

13 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Mass Grading 1/1/2014 - 2/15/2014 - Type Your Description Here

Total Acres Disturbed: 10

Maximum Daily Acreage Disturbed: 0.16

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 1590.91

Off-Road Equipment:

2 Off Highway Trucks (479 hp) operating at a 0.57 load factor for 8 hours per day

2 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

2 Rubber Tired Loaders (164 hp) operating at a 0.54 load factor for 6 hours per day

1 Scrapers (313 hp) operating at a 0.72 load factor for 3 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Paving 9/1/2014 - 10/31/2014 - Default Paving Description

Acres to be Paved: 10

Off-Road Equipment:

4 Cement and Mortar Mixers (10 hp) operating at a 0.56 load factor for 6 hours per day

1 Pavers (100 hp) operating at a 0.62 load factor for 7 hours per day

2 Paving Equipment (104 hp) operating at a 0.53 load factor for 6 hours per day

1 Rollers (95 hp) operating at a 0.56 load factor for 7 hours per day

Phase: Building Construction 4/10/2014 - 10/15/2014 - Default Building Construction Description

Off-Road Equipment:

1 Cranes (399 hp) operating at a 0.43 load factor for 4 hours per day

4 Forklifts (145 hp) operating at a 0.3 load factor for 6 hours per day

1 Generator Sets (49 hp) operating at a 0.74 load factor for 8 hours per day

10 Off Highway Trucks (479 hp) operating at a 0.57 load factor for 8 hours per day

2 Rough Terrain Forklifts (93 hp) operating at a 0.6 load factor for 8 hours per day

1 Sweepers/Scrubbers (91 hp) operating at a 0.68 load factor for 8 hours per day

3 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day

1 Trenchers (63 hp) operating at a 0.75 load factor for 8 hours per day

Phase: Architectural Coating 6/1/2014 - 10/31/2014 - Default Architectural Coating Description

Rule: Residential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Rule: Residential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Rule: Nonresidential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Rule: Nonresidential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

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Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

Source	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
Natural Gas	0.01	0.09	0.08	0.00	0.00	0.00	110.40
Hearth - No Summer Emissions							
Landscape	0.12	0.02	1.55	0.00	0.01	0.01	2.81
Consumer Products	0.00						
Architectural Coatings	0.08						
TOTALS (lbs/day, unmitigated)	0.21	0.11	1.63	0.00	0.01	0.01	113.21

Area Source Changes to Defaults

Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

Source	ROG	NOX	CO	SO2	PM10	PM25	CO2
Casino	3.80	5.39	47.95	0.06	9.85	1.90	5,724.88
TOTALS (lbs/day, unmitigated)	3.80	5.39	47.95	0.06	9.85	1.90	5,724.88

Operational Settings:

Does not include correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2014 Temperature (F): 85 Season: Summer

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

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Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
Casino		61.20	1000 sq ft	13.80	844.56	5,710.91
					844.56	5,710.91

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	48.4	0.4	99.4	0.2
Light Truck < 3750 lbs	10.9	0.9	95.4	3.7
Light Truck 3751-5750 lbs	21.9	0.5	99.5	0.0
Med Truck 5751-8500 lbs	9.7	0.0	100.0	0.0
Lite-Heavy Truck 8501-10,000 lbs	1.7	0.0	76.5	23.5
Lite-Heavy Truck 10,001-14,000 lbs	0.7	0.0	42.9	57.1
Med-Heavy Truck 14,001-33,000 lbs	1.0	0.0	20.0	80.0
Heavy-Heavy Truck 33,001-80,000 lbs	0.9	0.0	0.0	100.0
Other Bus	0.1	0.0	0.0	100.0
Urban Bus	0.1	0.0	0.0	100.0
Motorcycle	3.5	51.4	48.6	0.0
School Bus	0.1	0.0	0.0	100.0
Motor Home	1.0	0.0	90.0	10.0

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	10.8	7.3	7.5	9.5	7.4	7.4

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Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Rural Trip Length (miles)	16.8	7.1	7.9	14.7	6.6	6.6
Trip speeds (mph)	35.0	35.0	35.0	35.0	35.0	35.0
% of Trips - Residential	32.9	18.0	49.1			
% of Trips - Commercial (by land use)						
Casino				2.0	1.0	97.0

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Urbemis 2007 Version 9.2.4

Summary Report for Annual Emissions (Tons/Year)

File Name: C:\Users\equinn\AppData\Roaming\Urbemis\Version9a\Projects\Kurak\Kurak Phase II.urb924

Project Name: Kurak Casino Phase I

Project Location: California State-wide

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
2014 TOTALS (tons/year unmitigated)	1.96	10.36	5.27	0.00	0.33	0.47	0.80	0.07	0.44	0.51	1,638.60

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (tons/year, unmitigated)	0.08	0.13	0.39	0.00	0.00	0.00	154.10

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (tons/year, unmitigated)	0.73	0.99	8.02	0.01	1.73	0.33	957.33

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (tons/year, unmitigated)	0.81	1.12	8.41	0.01	1.73	0.33	1,111.43

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Urbemis 2007 Version 9.2.4

Combined Summer Emissions Reports (Pounds/Day)

File Name: C:\Users\equinn\AppData\Roaming\Urbemis\Version9a\Projects\Kurak\Kurak Phase II.urb924

Project Name: Kurak Casino Phase I

Project Location: California State-wide

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

CONSTRUCTION EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
2014 TOTALS (lbs/day unmitigated)	29.64	137.02	72.39	0.01	22.45	6.85	27.28	4.70	6.30	9.14	21,467.88

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	0.59	0.74	3.68	0.00	0.01	0.01	847.22

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	4.01	4.70	42.58	0.06	9.44	1.83	5,488.94

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	4.60	5.44	46.26	0.06	9.45	1.84	6,336.16

Construction Unmitigated Detail Report:

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CONSTRUCTION EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
Time Slice 1/1/2014-2/7/2014 Active Days: 28	6.45	51.02	26.36	0.00	11.22	2.04	13.26	2.34	1.88	4.22	7,170.30
Mass Grading 01/01/2014-02/15/2014	6.45	51.02	26.36	0.00	11.22	2.04	13.26	2.34	1.88	4.22	7,170.30
Mass Grading Dust	0.00	0.00	0.00	0.00	11.20	0.00	11.20	2.34	0.00	2.34	0.00
Mass Grading Off Road Diesel	6.39	50.90	24.04	0.00	0.00	2.04	2.04	0.00	1.87	1.87	6,856.86
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.06	0.12	2.31	0.00	0.02	0.01	0.02	0.01	0.01	0.01	313.44
Time Slice 2/10/2014-2/14/2014 Active Days: 5	16.25	129.18	62.05	0.01	22.45	4.83	27.28	4.70	4.44	9.14	19,455.93
Fine Grading 02/10/2014-03/15/2014	9.81	78.16	35.69	0.01	11.23	2.79	14.02	2.35	2.56	4.91	12,285.63
Fine Grading Dust	0.00	0.00	0.00	0.00	11.20	0.00	11.20	2.34	0.00	2.34	0.00
Fine Grading Off Road Diesel	9.68	77.89	30.77	0.00	0.00	2.77	2.77	0.00	2.55	2.55	11,619.57
Fine Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fine Grading Worker Trips	0.13	0.26	4.92	0.01	0.03	0.02	0.05	0.01	0.01	0.03	666.06
Mass Grading 01/01/2014-02/15/2014	6.45	51.02	26.36	0.00	11.22	2.04	13.26	2.34	1.88	4.22	7,170.30
Mass Grading Dust	0.00	0.00	0.00	0.00	11.20	0.00	11.20	2.34	0.00	2.34	0.00
Mass Grading Off Road Diesel	6.39	50.90	24.04	0.00	0.00	2.04	2.04	0.00	1.87	1.87	6,856.86
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.06	0.12	2.31	0.00	0.02	0.01	0.02	0.01	0.01	0.01	313.44

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Time Slice 2/17/2014-3/14/2014 Active Days: 20	9.81	78.16	35.69	0.01	11.23	2.79	14.02	2.35	2.56	4.91	12,285.63
Fine Grading 02/10/2014-03/15/2014	9.81	78.16	35.69	0.01	11.23	2.79	14.02	2.35	2.56	4.91	12,285.63
Fine Grading Dust	0.00	0.00	0.00	0.00	11.20	0.00	11.20	2.34	0.00	2.34	0.00
Fine Grading Off Road Diesel	9.68	77.89	30.77	0.00	0.00	2.77	2.77	0.00	2.55	2.55	11,619.57
Fine Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fine Grading Worker Trips	0.13	0.26	4.92	0.01	0.03	0.02	0.05	0.01	0.01	0.03	666.06
Time Slice 4/10/2014-5/30/2014 Active Days: 37	16.84	121.39	61.22	0.01	0.03	5.59	5.62	0.01	5.14	5.15	19,624.96
Building 04/10/2014-10/15/2014	16.84	121.39	61.22	0.01	0.03	5.59	5.62	0.01	5.14	5.15	19,624.96
Building Off Road Diesel	16.72	120.96	57.35	0.00	0.00	5.57	5.57	0.00	5.12	5.12	19,060.10
Building Vendor Trips	0.02	0.23	0.23	0.00	0.00	0.01	0.01	0.00	0.01	0.01	71.38
Building Worker Trips	0.10	0.19	3.64	0.00	0.02	0.01	0.04	0.01	0.01	0.02	493.48
Time Slice 6/2/2014-8/29/2014 Active Days: 65	26.34	121.40	61.35	0.01	0.03	5.59	5.62	0.01	5.14	5.15	19,642.33
Building 04/10/2014-10/15/2014	16.84	121.39	61.22	0.01	0.03	5.59	5.62	0.01	5.14	5.15	19,624.96
Building Off Road Diesel	16.72	120.96	57.35	0.00	0.00	5.57	5.57	0.00	5.12	5.12	19,060.10
Building Vendor Trips	0.02	0.23	0.23	0.00	0.00	0.01	0.01	0.00	0.01	0.01	71.38
Building Worker Trips	0.10	0.19	3.64	0.00	0.02	0.01	0.04	0.01	0.01	0.02	493.48
Coating 06/01/2014-10/31/2014	9.50	0.01	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	17.37
Architectural Coating	9.49	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.00	0.01	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	17.37

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Time Slice 9/1/2014-10/15/2014 Active Days: 33	29.64	137.02	72.39	0.01	0.05	6.85	6.90	0.02	6.30	6.32	21,467.88
Asphalt 09/01/2014-10/31/2014	3.30	15.63	11.04	0.01	0.02	1.26	1.29	0.01	1.16	1.17	1,825.55
Paving Off-Gas	0.87	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	2.27	13.94	9.01	0.00	0.00	1.20	1.20	0.00	1.10	1.10	1,272.41
Paving On Road Diesel	0.12	1.61	0.58	0.00	0.01	0.06	0.07	0.00	0.05	0.06	357.24
Paving Worker Trips	0.04	0.08	1.45	0.00	0.01	0.01	0.01	0.00	0.00	0.01	195.90
Building 04/10/2014-10/15/2014	16.84	121.39	61.22	0.01	0.03	5.59	5.62	0.01	5.14	5.15	19,624.96
Building Off Road Diesel	16.72	120.96	57.35	0.00	0.00	5.57	5.57	0.00	5.12	5.12	19,060.10
Building Vendor Trips	0.02	0.23	0.23	0.00	0.00	0.01	0.01	0.00	0.01	0.01	71.38
Building Worker Trips	0.10	0.19	3.64	0.00	0.02	0.01	0.04	0.01	0.01	0.02	493.48
Coating 06/01/2014-10/31/2014	9.50	0.01	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	17.37
Architectural Coating	9.49	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.00	0.01	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	17.37
Time Slice 10/16/2014-10/31/2014 Active Days: 12	12.80	15.63	11.16	0.01	0.02	1.26	1.29	0.01	1.16	1.17	1,842.91
Asphalt 09/01/2014-10/31/2014	3.30	15.63	11.04	0.01	0.02	1.26	1.29	0.01	1.16	1.17	1,825.55
Paving Off-Gas	0.87	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	2.27	13.94	9.01	0.00	0.00	1.20	1.20	0.00	1.10	1.10	1,272.41
Paving On Road Diesel	0.12	1.61	0.58	0.00	0.01	0.06	0.07	0.00	0.05	0.06	357.24
Paving Worker Trips	0.04	0.08	1.45	0.00	0.01	0.01	0.01	0.00	0.00	0.01	195.90
Coating 06/01/2014-10/31/2014	9.50	0.01	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	17.37
Architectural Coating	9.49	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.00	0.01	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	17.37

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Phase Assumptions

Phase: Fine Grading 2/10/2014 - 3/15/2014 - Type Your Description Here

Total Acres Disturbed: 10

Maximum Daily Acreage Disturbed: 0.56

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off-Road Equipment:

1 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day

2 Off Highway Trucks (479 hp) operating at a 0.57 load factor for 8 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

13 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Mass Grading 1/1/2014 - 2/15/2014 - Type Your Description Here

Total Acres Disturbed: 10

Maximum Daily Acreage Disturbed: 0.56

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off-Road Equipment:

2 Off Highway Trucks (479 hp) operating at a 0.57 load factor for 8 hours per day

2 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

2 Rubber Tired Loaders (164 hp) operating at a 0.54 load factor for 6 hours per day

1 Scrapers (313 hp) operating at a 0.72 load factor for 3 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Paving 9/1/2014 - 10/31/2014 - Default Paving Description

Acres to be Paved: 15

Off-Road Equipment:

1 Pavers (100 hp) operating at a 0.62 load factor for 8 hours per day

2 Paving Equipment (104 hp) operating at a 0.53 load factor for 6 hours per day

2 Rollers (95 hp) operating at a 0.56 load factor for 6 hours per day

Phase: Building Construction 4/10/2014 - 10/15/2014 - Default Building Construction Description

Off-Road Equipment:

1 Cranes (399 hp) operating at a 0.43 load factor for 4 hours per day

4 Forklifts (145 hp) operating at a 0.3 load factor for 6 hours per day

1 Generator Sets (49 hp) operating at a 0.74 load factor for 8 hours per day

10 Off Highway Trucks (479 hp) operating at a 0.57 load factor for 8 hours per day

2 Rough Terrain Forklifts (93 hp) operating at a 0.6 load factor for 8 hours per day

1 Sweepers/Scrubbers (91 hp) operating at a 0.68 load factor for 8 hours per day

3 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day

1 Trenchers (63 hp) operating at a 0.75 load factor for 8 hours per day

Phase: Architectural Coating 6/1/2014 - 10/31/2014 - Default Architectural Coating Description

Rule: Residential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Rule: Residential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Rule: Nonresidential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Rule: Nonresidential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

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Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

Source	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
Natural Gas	0.05	0.70	0.59	0.00	0.00	0.00	841.60
Hearth - No Summer Emissions							
Landscape	0.25	0.04	3.09	0.00	0.01	0.01	5.62
Consumer Products	0.00						
Architectural Coatings	0.29						
TOTALS (lbs/day, unmitigated)	0.59	0.74	3.68	0.00	0.01	0.01	847.22

Area Source Changes to Defaults

Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

Source	ROG	NOX	CO	SO2	PM10	PM25	CO2
Hotel	1.64	1.43	12.98	0.02	2.88	0.56	1,673.67
Casino	2.37	3.27	29.60	0.04	6.56	1.27	3,815.27
TOTALS (lbs/day, unmitigated)	4.01	4.70	42.58	0.06	9.44	1.83	5,488.94

Operational Settings:

Does not include correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2015 Temperature (F): 85 Season: Summer

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Emfac: Version : Emfac2007 V2.3 Nov 1 2006

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
Hotel		2.98	rooms	80.00	238.40	1,669.99
Casino		61.20	1000 sq ft	9.20	563.04	3,807.28
					801.44	5,477.27

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	48.5	0.2	99.6	0.2
Light Truck < 3750 lbs	10.8	0.9	95.4	3.7
Light Truck 3751-5750 lbs	21.9	0.5	99.5	0.0
Med Truck 5751-8500 lbs	9.7	0.0	100.0	0.0
Lite-Heavy Truck 8501-10,000 lbs	1.7	0.0	76.5	23.5
Lite-Heavy Truck 10,001-14,000 lbs	0.7	0.0	57.1	42.9
Med-Heavy Truck 14,001-33,000 lbs	1.0	0.0	20.0	80.0
Heavy-Heavy Truck 33,001-60,000 lbs	0.9	0.0	0.0	100.0
Other Bus	0.1	0.0	0.0	100.0
Urban Bus	0.1	0.0	0.0	100.0
Motorcycle	3.5	48.6	51.4	0.0
School Bus	0.1	0.0	0.0	100.0
Motor Home	1.0	0.0	90.0	10.0

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Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	10.8	7.3	7.5	9.5	7.4	7.4
Rural Trip Length (miles)	16.8	7.1	7.9	14.7	6.6	6.6
Trip speeds (mph)	35.0	35.0	35.0	35.0	35.0	35.0
% of Trips - Residential	32.9	18.0	49.1			
% of Trips - Commercial (by land use)						
Hotel				5.0	2.5	92.5
Casino				2.0	1.0	97.0

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Urbemis 2007 Version 9.2.4

Summary Report for Annual Emissions (Tons/Year)

File Name: C:\Users\equinn\AppData\Roaming\Urbemis\Version9a\Projects\Kurak\Kurak Phase Cumulative.urb924

Project Name: Kurak Casino Phase I

Project Location: California State-wide

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (tons/year, unmitigated)	0.09	0.13	0.39	0.00	0.00	0.00	160.82

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (tons/year, unmitigated)	0.53	0.53	5.32	0.01	2.31	0.44	1,297.08

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (tons/year, unmitigated)	0.62	0.66	5.71	0.01	2.31	0.44	1,457.90

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Urbemis 2007 Version 9.2.4

Combined Summer Emissions Reports (Pounds/Day)

File Name: C:\Users\equinn\AppData\Roaming\Urbemis\Version9a\Projects\Kurak\Kurak Phase Cumulative.urb924

Project Name: Kurak Casino Phase I

Project Location: California State-wide

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	0.61	0.77	3.70	0.00	0.01	0.01	884.02

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	2.93	2.53	28.50	0.08	12.69	2.42	7,442.37

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	3.54	3.30	32.20	0.08	12.70	2.43	8,326.39

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Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

Source	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
Natural Gas	0.05	0.73	0.61	0.00	0.00	0.00	878.40
Hearth - No Summer Emissions							
Landscape	0.25	0.04	3.09	0.00	0.01	0.01	5.62
Consumer Products	0.00						
Architectural Coatings	0.31						
TOTALS (lbs/day, unmitigated)	0.61	0.77	3.70	0.00	0.01	0.01	884.02

Area Source Changes to Defaults

Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

Source	ROG	NOX	CO	SO2	PM10	PM25	CO2
Hotel	0.93	0.57	6.45	0.02	2.87	0.55	1,684.04
Casino	2.00	1.96	22.05	0.06	9.82	1.87	5,758.33
TOTALS (lbs/day, unmitigated)	2.93	2.53	28.50	0.08	12.69	2.42	7,442.37

Operational Settings:

Does not include correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2030 Temperature (F): 85 Season: Summer

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Emfac: Version : Emfac2007 V2.3 Nov 1 2006

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
Hotel		2.98	rooms	80.00	238.40	1,669.99
Casino		61.20	1000 sq ft	13.80	844.56	5,710.91
					1,082.96	7,380.90

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	47.5	0.0	100.0	0.0
Light Truck < 3750 lbs	11.0	0.0	99.1	0.9
Light Truck 3751-5750 lbs	22.2	0.0	100.0	0.0
Med Truck 5751-8500 lbs	9.9	0.0	100.0	0.0
Lite-Heavy Truck 8501-10,000 lbs	1.8	0.0	77.8	22.2
Lite-Heavy Truck 10,001-14,000 lbs	0.7	0.0	57.1	42.9
Med-Heavy Truck 14,001-33,000 lbs	1.1	0.0	18.2	81.8
Heavy-Heavy Truck 33,001-60,000 lbs	0.9	0.0	0.0	100.0
Other Bus	0.1	0.0	0.0	100.0
Urban Bus	0.1	0.0	0.0	100.0
Motorcycle	3.5	34.3	65.7	0.0
School Bus	0.1	0.0	0.0	100.0
Motor Home	1.1	0.0	90.9	9.1

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Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	10.8	7.3	7.5	9.5	7.4	7.4
Rural Trip Length (miles)	16.8	7.1	7.9	14.7	6.6	6.6
Trip speeds (mph)	35.0	35.0	35.0	35.0	35.0	35.0
% of Trips - Residential	32.9	18.0	49.1			
% of Trips - Commercial (by land use)						
Hotel				5.0	2.5	92.5
Casino				2.0	1.0	97.0

APPENDIX E

GEOTECHNICAL REPORT

PRELIMINARY GEOTECHNICAL REPORT

KARUK CASINO & HOTEL PROJECT
YREKA, CALIFORNIA

Prepared For:

Karuk Tribe

CGI Technical Services Inc.

KARUK

CGI TECHNICAL SERVICES INC.

July 12, 2013
CGI: 13-2094.01

Mr. Scott Quinn
Director of Tribal Land's Management
KARUK TRIBE
64236 Second Avenue
Happy Camp, California 96039

Subject: **Preliminary Geotechnical Study**
Karuk Tribe Casino & Hotel Project
Yreka, California

Dear Mr. Quinn,

CGI Technical Services, Inc. (CGI), is pleased to submit this preliminary geotechnical report to the Karuk Tribe for the proposed Casino and Hotel Project located on tribal lands in Yreka, California. This report is being submitted in accordance with our proposal dated June 14, 2013.

This report summarizes the evaluation of geologic hazards that could impact the site, provides an estimate of rippability of earth materials likely to be encountered during grading, and presents an opinion regarding slope stability of proposed project cut and fill slopes. Some or all of these items will be further evaluated during pending design-level geotechnical studies for the project.

We appreciate the opportunity to perform this study. If you have any questions pertaining to this report, or if we may be of further service, please contact us at (530) 244-6277 at your earliest convenience.

Regards,

CGI TECHNICAL SERVICES, INC.

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Copies: Three (3) hard copies delivered via Fedex and one (1) electronic (PDF) copy delivered by e-mail.

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CITY OF YREKA, CALIFORNIA

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1 GENERAL

This report presents the results of CGI Technical Services, Inc. (CGI), preliminary geotechnical study for the proposed Karuk Tribe Casino & Hotel facility located on Tribal trust and fee lands within the City of Yreka, California. CGI has prepared this report at the request of the Karuk tribe. The project location is shown on Plate 1 – Site Location Map. The following sections present our understanding of the project, the purpose of our study, and the findings, conclusions, and recommendations of this study. Our services were performed in general conformance with our proposal dated June 14, 2013.

1.1 PROJECT LOCATION

The project development area is located east of Sharps Road, south of Oberlin Road, and west of Apsuun Road in Yreka, California, as shown on Plate 1. Latitude and longitude for the approximate center of the proposed casino structure are as follows:

- Latitude: 41° 42' 41.1" (41.711426°)
- Longitude: -122° 37' 54.2" (-122.631728°)

1.2 PROJECT UNDERSTANDING

We understand that the Karuk Tribe is proposing development of a new Class III gaming facility and hotel on tribal-owned parcels located in Yreka. We understand that the proposed development will occur in two phases. The first phase will include construction of an approximately 36,000 square foot (ft^2) facility that will accommodate a gaming area along with a 100-seat restaurant. That phase will also include development of parking around the structure and on a tribally-owned parcel located south of the casino. The facility will be accessed from Sharps Road.

The proposed second phase will include expansion of the gaming facility by 20,000 ft^2, construction of an 80-room hotel, addition of 2,000 ft^2 of new restaurant space, and development of ancillary improvements to support the expansion. In addition, parking space on the southern fee-parcel would be increased by 500 stalls to accommodate 723 vehicles. Both phases of project development are shown on Plate 2 – Project Elements.

To develop the proposed project, significant grading will be required to create a pad for the proposed casino and parking areas on the gently to moderately sloping terrain, as shown on draft site development plans forwarded to us that depict the various phases of the project. Those plans show cut slopes with vertical heights of up to about 80 feet having vertical cuts into the natural slope of up to about 45 feet. Cut slopes on those plans are inclined at 2:1 (horizontal to vertical) in the upper reaches of the cut and flatten to about 3:1 at the lower approximately half of the cut slope.

Grading will also be performed to create fills along the western half of the casino parcel, in proposed parking areas, and on the fee lands located south of the casino parcel. Those fills are shown as being up to about 30 feet thick and are shown with fill slopes inclined at gradients up to 1:1.

It is anticipated that retaining walls will be utilized are various locations around the proposed development. Those walls are anticipated to consist of concrete cantilever and/or segmental block. Wall heights are unknown at this time.

1.3 STUDY PURPOSE

The purpose of this preliminary geotechnical study was to perform a detailed search of selected, available geologic and geotechnical information for the project site and region to estimate which geologic hazards, if any, might pose a risk to the development and performance of the proposed project. Data sources collected and reviewed during this study are referenced in Section 7 of this report.

The data compilation and review were supplemented with geologic mapping of the project site to confirm mapped geologic conditions and performance of geophysical refraction survey lines to help estimate the rippability of underlying earth materials that will be encountered during site grading. The geologic map and locations of geophysical refraction surveys are shown on Plate 3 – Preliminary Geotechnical Map. Results of the geophysical refraction surveys are presented in Appendix A – Geophysical Refraction Surveys.

1.4 PREVIOUS WORK PERFORMED & REFERENCES REVIEWED

A number of previous geologic, geotechnical, and geoenvironmental studies have been performed in the project region, proximal to the proposed casino and hotel development. Plate 4 – Proximal Studies, shows the location of those previous studies. As noted on Plate 4, only one of the studies extends into the proposed development area. The following paragraphs provide more detail on proximal studies to the proposed development. In addition, regional geologic and geotechnical studies and maps were referred to during this study. Section 7 provides references for studies, reports, maps, and other information sources used during this study.

One geotechnical report (Arrowhead, 1998) was provided by the Tribe that included information on Tribal trust land for the proposed casino and hotel location along with residential development areas located east of the Tribal fee lands where the proposed parking improvements are located. That report advanced a number of explorations in their study area; however, a map showing where those explorations are located was not available at the time this report was prepared.

A geotechnical study was performed by Kleinfelder (1989) east of the Arrowhead (1998) study for tribal housing development. That study did not extend into the proposed development area but provides background geotechnical information for the project region.

Geoenvironmental studies have been performed for sites containing buried tanks, contaminants, or other geoenvironmental hazards. Those studies include Lawrence & Associates ([L&A], 2005; 2011) and Blue Rock Environmental ([BRE], 2009, 2010). These studies did not extend onto the proposed development area but provided groundwater and stratigraphic information for nearby properties.

1.5 SCOPE OF SERVICES

Services performed for this study are in general conformance with the proposed scope of services presented in our June 14, 2013 proposal. Our scope of services included:

- Reconnaissance of the site surface conditions, topography, and existing drainage features;
- Acquisition of selected, existing, available geologic and geotechnical data for the project site and region;
- Performance of reconnaissance geologic mapping of the project site. The geologic map prepared for the site is presented on Plate 3;
- Performance of geophysical refraction surveys at the project site. The results of those surveys are presented in Appendix A;
- Preparation of this report, which includes:
    - A description of the proposed project;
    - A description of site surface and subsurface conditions encountered during our preliminary field investigation;
    - A description of geologic conditions observed at the project site;
    - A discussion of geologic hazards that could affect the project site. The geologic hazards assessment was performed according to the California Geologic Survey (CGS) Technical Note 48, which is attached as Appendix B – Geologic Hazards Checklist;
    - A description of ground shaking conditions expected at the site, including deterministic and probabilistic estimates of strong ground motion and California Building Code (CBC) seismic design criteria; and
    - A discussion and opinion of rippability of rock underlying portions of the project site.

2 FINDINGS

2.1 SITE HISTORY

We have reviewed historical topographic maps and aerial photographs for the project site to help evaluate past land uses that might have an impact on the proposed project design and construction. Topographic maps from 1922 to present and historical aerial photographs from 1993 to present were reviewed. The topographic maps and aerial photographs show no historical developments on the project site with the exception of a drainage ditch dirt, access roads that cross selected portions of the property, and two concrete slabs located near the eastern end of Sharps Road (see Plate 3).

The drainage ditch is visible in the 1974 aerial photographs but not shown on topographic maps that pre- or post-date the 1974 photograph.

The dirt access roads are not shown on the historical nor most recent topographic maps but are visible on aerial photographs. In general, their position has stayed relatively static over time with some minor variations in alignment and use.

The two concrete pads are also visible on aerial photographs reviewed but not shown on topographic maps. It appears they were slabs for structures; however, no information is available to confirm this supposition.

No signs of prior mining were observed at the site and no records of mine shafts, adits, tunnel, or collapses were noted at the project site by Silva (undated), as have been observed in other portions of the City of Yreka.

2.2 SURFACE CONDITIONS

The proposed casino and hotel complex is located on hilly terrain east of Highway 5 on the west side of the Shasta Valley, within an area called the Kilgore Hills. The location of the proposed casino and hotel is moderately inclined upward to the east at an inclination ranging from about 5 to 20 degrees. The proposed parking areas south of the casino site are more gently inclined with slope inclinations ranging from about 2 to 7 degrees.

The project area is fallow with moderate to thick seasonal grasses and shrubs and scattered oak trees. Local outcrops of rock are present in the slope at and east of (above) the proposed casino and hotel, as noted on Plate 3.

Drainage at the site occurs as sheetflow to the west where it is eventually captured and diverted by Yreka Creek. According to a draft site plan developed for the project (Group West, 2013), elevations at the site range from about 2,675 to 2,825 feet above mean sea level (MSL).

2.3 SOILS & GEOLOGIC CONDITIONS

2.3.1 Regional Geology

The project site is located at the margin between the Klamath Mountains and Cascade Range geologic/geomorphic provinces of California. The Klamath Mountains province extends from the northern end of the California Coast Ranges north into Oregon. It is bounded to the east by the Cascade Range province, to the south by the Coast Ranges and Great Valley provinces, to the west by the Pacific Ocean, and to the north by Coast Ranges of Oregon. It is estimated that the province encompasses about 11,800 square miles in area (Irwin, 1966). The Klamath Mountains province is predominately composed of pre-Paleozoic and Paleozoic sedimentary, volcanic, intrusive, and metamorphic rocks that have been locally intruded by Mesozoic-age rocks (Hinds, 1952). Rock materials within this province have been accreted during tectonic processes into four differing terrains or differing ages (Irwin, 1966). Those terrains range in age from Jurassic to Ordovician.

The Cascade Range province extends from the northern end of the Sierra Nevada north to the Canadian border. In the project vicinity the Cascade Range province is bounded to the west by the Klamath Mountain province, to the east by the Modoc Plateau province, to the south by the Sierra Nevada province, and to the north by the Cascade Range extending through Oregon and Washington.

The Cascade Range province consists of a north-northwest-trending, relatively linear belt of active and dormant strata and shield volcanoes. The regional geologic conditions are dominated by andesitic, rhyolitic and basaltic volcanic rocks mantled with surficial deposits consisting of pyroclastic rocks, lahar deposits, alluvium, and local lacustrine sediments (Hinds, 1952).

2.3.2 Local Geologic Setting

Based on mapping by Irwin (2009), the project site is located in the Eastern Klamath Terrane of the Klamath Mountains. The Eastern Klamath Terrane consists of Ordovician- to Silurian-age sedimentary, metasedimentary, metamorphic, and intrusive rocks (Irwin, 2009).

The site is underlain by colluvium, older alluvium, and the Schulmeyer Gulch Formation (Hotz, 1977; Nilsen, 1993). As noted on Plate 5 – Regional Geologic Map, most of the proposed development area has been mapped as being underlain by the member of the Schulmeyer Gulch Formation having predominately phyllitic siltstone, which is a metamorphosed siltstone. Within that member are discontinuous lenses of chert and quartzite (Hotz, 1977). Within the proposed Phase 2 development parking area, a limestone member of the Schulmeyer Gulch Formation has been mapped.

Overlying the Schulmeyer Gulch Formation are colluvial soils, which include topsoil amd sediments that have largely been accumulated on and at the base of the slope. In addition,

alluvial soils have been mapped along the western margin of the development area, in areas predominately flat and within former and/or active flood plain of Yreka Creek.

CGI mapped the geologic conditions exposed at the ground surface at the project site to verify regional mapping performed by Hotz (1977), Nilsen (1993), and others. As noted on Plate 3, our geologic mapping of the site is in general agreement with the regional geologic map presented on Plate 5. Resistant quartzite outcrops were observed along the southern portion of the proposed cut slope. The primary difference is the location that we have mapped alluvial soils and the locations of relatively thick colluvium and artificial fill materials, which were not noted by Hotz (1977). In addition, limestone noted by Hotz (1977) and shown on Plate 3 was not observed during our mapping at the site.

2.3.3 Soils

The Natural Resources Conservation Service (NRCS, 2013) maps the following soil units within the proposed development area:

- Duzel-Jilson-Facey Complex, 15 to 50% slopes;
- Stoner Gravelly Sandy Loam, 2 to 5% slopes; and
- Dumps

Locations of those mapped soils units are shown on Plate 6 – Soil Service Map. Characteristics of those soils, as reported by NRCS are as follows:

NRCS SOILS INFORMATION

Soil Unit	USCS Symbol	Grain Size (%)			Liquid Limit	Plasticity Index	Hydraulic Conductivity (cm/sec)
		Sand	Silt	Clay			
Dumps	NA	NA	NA	NA	NA	NA	NA
Duzel-Jilson-Facey Complex, 15-50% Slopes	GC-GM	40.2	37.5	22.2	29.9	12.4	4.4×10^{-4}
Stoner Gravelly Sandy Loam 2-5% Slopes	GM	58.1	28.0	13.9	23.5	3.5	1.3×10^{-3}

NA – Not Available/Not Reported by NRCS

2.3.4 Groundwater

The depth to groundwater beneath the project site is unknown. Groundwater was not encountered in explorations advanced by Arrowhead (1998) or Kleinfelder (1989). Arrowhead (1998) projected that groundwater will be at a depth of at least 100 feet beneath ground surface elevations but did not reference information to support that conjecture.

A search of the California Department of Water Resources water Library was performed and found no near-by wells that are being monitored by the State for groundwater levels. A

search of the State Water Quality Control Board's Geotracker data base (Geotracker, 2013) found two studies located within about ½-mile of the site. In the first study, groundwater was encountered by L&A (2005 & 2011) at a site about 2,000 feet west of the project site and proximal to Yreka Creek. At that location, groundwater was encountered at depths of less than 10 feet. In the second study, BRE (2010) encountered groundwater at depths of less than 11 feet at a site located about 1,000 feet north of the proposed casino location. For both the L&A (2005 & 2011) and BRE (2010) sites, the groundwater was measured in a geologically different environment compared to the project location. Both of those studies were situated on alluvial soils in close proximity to Yreka Creek or an unnamed drainage along Oberlin Road. The proposed project is situated predominately on Ordovician-age rock materials that are locally covered with colluvium. Thus, groundwater is anticipated to be significantly deeper than 10 feet beneath the site; however, that depth cannot be determined until the subsurface exploration at the site is performed. For purposes of this preliminary geotechnical study, we are assuming that water is located at least 50 feet below the proposed structures.

3 GEOLOGICAL HAZARDS

The following sections address geologic hazards that could influence the project and provide a discussion and opinion regarding the potential impact of each of those hazards to the project. The geologic hazards assessment performed for this study conforms to requirments by the State of California for critical facilities such as hospitals, schools, and essential services buildings. A checklist of those geologic hazards is presented as CGS Note 48 included in Appendix B – Geologic Hazards Checklist.

It should be noted that the project site does not lie within any established Geologic Hazards Zones, either within the City of Yreka or the County of Siskiyou.

3.1 FAULTING & SEISMICITY

3.1.1 Seismic Setting

The State of California designates faults as active, potentially active, and inactive depending on the recency of movement that can be substantiated for a fault. Fault activity is rated as follows:

FAULT ACTIVITY RATINGS		
Fault Activity Rating	**Geologic Period of Last Rupture**	**Time Interval (Years)**
Active	Holocene	Within last 11,000 Years
Potentially Active	Quaternary	>11,000 to 1.6 Million Years
Inactive	Pre-Quaternary	Greater than 1.6 Million Years

The California Geologic Survey (CGS) evaluates the activity rating of a fault in fault evaluation reports (FER). FERs compile available geologic and seismologic data and evaluate if a fault should be zoned as active, potentially active, or inactive. If an FER evaluates a fault as active, then it is typically incorporated into a Special Studies Zone in accordance with the Alquist-Priolo Earthquake Hazards Act (AP). AP Special Studies Zones require site-specific evaluation of fault location and require a structure setback if the fault is found traversing a project site.

The site is not located within an Alquist-Priolo Earthquake Fault Zone and no active faults are known to pass through the project site (Jennings, 1994; Hart & Bryant, 1997). However, a number of potentially active and active faults are located in the project region, as shown on Plate 7 – Regional Fault Map. The following table presents regional fault locations relative to the project site.

REGIONAL FAULT INFORMATION				
Fault Name	Fault Activity Rating[1]	Distance from Site		Upper Bound Earthquake (M_W)
		Mile	Kilometers	
Yellow Butte	PA	20.1	32.4	5.5 (est)
Cedar Mountain-Mahogany Mountain	A	36.5	58.7	6.9
Hat Creek-McArthur-Mayfield	A	53.3	85.8	7.0
Gillem-Big Crack	A	53.9	86.7	6.6
Big Lagoon-Bald Mountain	A	72.1	116.0	7.3
Trinidad	A	76.9	123.8	7.3
Cascadia Subduction Zone	A	78.5	126.4	9.0
McKinleyville	A	81.0	130.3	7.0
Mad River	A	81.3	130.9	7.1
Fickle Hill	A	82.7	133.1	6.9
Little Salmon	A	92.3	148.5	7.0
Battle Creek	PA	93.2	150.0	6.5

[1] - A= active, PA = potentially active, per Peterson et al. (1996). Information obtained from Blake (2000a).

As noted on Plate 7, a number of inactive faults are located within about one mile of the project site. The closest mapped potentially active fault is the Yellow Butte fault, located about 20 miles southeast of the site. The closest active fault is the Cedar Mountain/Mahogany Mountain fault system located about 36 miles east of the site.

3.1.2 Deterministic Estimates of Strong Ground Motion

Peak horizontal ground accelerations were estimated for the project site using attenuation relations from Boore et al. (1997) and the computer program EQFAULT (Blake, 2000a). The results of those estimates are shown in the following table:

DETERMINISTIC GROUND MOTION DATA						
Fault Name	Maximum Credible Magnitude (Mw)	Distance from Site (miles)	Fault Data		Deterministically Estimated Peak Ground Acceleration (g)	
			Length (km)	Slip Rate (mm/yr)[1]	M[2]	M+δ[2]
Cedar Mountain-Mahogany Mountain	6.9	36.5	78	1±0.5	0.086	0.145
Hat Creek-McArthur-Mayfield	7.0	53.3	96	1.5±1	0.068	0.114
Gillem-Big Crack	6.6	53.9	32	1±0.5	0.055	0.092
Big Lagoon-Bald Mountain	7.3	72.1	88	0.5±0.5	0.063	0.106
Trinidad	7.3	76.9	88	2.5±1.5	0.060	0.101
Cascadia Subduction Zone	9.0	78.5	257	35±5	0.144	0.243
McKinleyville	7.0	81.0	48	0.6±0.2	0.049	0.083
Mad River	7.1	81.3	52	0.7±0.6	0.052	0.087
Fickle Hill	6.9	82.7	34	0.6±0.4	0.046	0.077
Little Salmon	7.0	92.3	46	5±3	0.044	0.075
Battle Creek	6.5	93.2	29	0.5±0.4	0.034	0.057

[1] – From Peterson et al. (1996).
[2] – M = indicates estimated mean peak horizontal ground acceleration. M+δ = peak horizontal ground acceleration utilizing mean plus at least one standard deviation (84th percentile) for seismicity data.

Soil conditions modeled in the deterministic studies consisted of shallow soils having shear wave velocities averaging 560 meters per second. Based on these evaluations, the site could be subjected to horizontal ground accelerations of at least 0.24g. The causative fault that is responsible for that peak horizontal ground acceleration is a Cascadia Subduction Zone event, located about 78 miles west of the project site. It should be noted that probability and exposure periods are not considered during deterministic evaluations and that, typically, deterministic estimates of strong ground motion for a site generate relatively conservative horizontal ground acceleration values.

3.1.3 Probabilistic Estimates of Strong Ground Motion

Probabilistic evaluations of horizontal strong ground motion that could affect the site were performed using attenuation evaluation methods provided by the U.S. Geological Survey (USGS, 2013). Because the proposed structures will likely be situated on metasedimentary rock, the evaluations were performed using an estimated shear wave velocity in the upper 100 feet of the soil column of 760 meters per second. Evaluations were performed for upper-bound (UBE) and design-basis (DBE) probabilistic exposures. The UBE corresponds to horizontal ground accelerations having a 10 percent probability of exceedance in a 100-year exposure period, with a statistical return period of 949 years. The DBE corresponds to horizontal ground accelerations having a 10 percent probability of exceedance in a 50-year, with a statistical return period of 475 years.

The results of these evaluations are presented in the following table:

PROBABILISTIC GROUND MOTION DATA				
Earthquake Level	**Probabilistic Estimate Exposure Period (years)**	**Probability of Exceedance (%)**	**Return Period (years)**	**Estimated Peak Horizontal Ground Acceleration (g)**
Upper-Bound Ground-Motion	100	10	949	0.19
Design-Basis Ground-Motion	50	10	475	0.13

It should be noted that although the seismic hazard models used for this study predict the probability of exceedance for various levels of acceleration in a given exposure period, the models are not able to account for the effect that the passage of time since past earthquakes has on future earthquake probability. Thus, while time may affect the incipient risk of earthquakes occurring, the UBE and DBE values are based on any 100-year and 50-year exposure period, respectively, regardless of how recently earthquakes have occurred.

3.1.4 CBC Design Recommendations

At a minimum, structures should be designed in accordance with the 2010 CBC seismic design criteria as follows:

CBC SEISMIC DESIGN PARAMETERS		
California Building Code	**Parameter**	**CBC Designation**
Site Coordinates	Latitude	41.711426°
	Longitude	-122.631728°
Section 1613.5.3 Table 1613.5.3(1)	Site Coefficient, F_a	1.121
Section 1613.5.3 Table 1613.5.3(2)	Site Coefficient, F_v	1.466
Section 1613.5.1 Figure 1613.5	Site Class Designation	C
	Seismic Factor, Site Class B at 0.2 Seconds, S_s	0.697g
	Seismic Factor, Site Class B at 1.0 Seconds, S_1	0.334g
Section 1613.5.3	Site Specific Response Parameter for Site Class D at 0.2 Seconds, S_{MS}	0.781g
	Site Specific Response Parameter for Site Class D at 1.0 Seconds, S_{M1}	0.489g
Section 1613.5.4	$S_{DS}=2/3S_{MS}$	0.521g
	$S_{D1}=2/3S_{M1}$	0.326g

3.1.5 Historical Seismicity

A search of historical earthquakes occurring between 1800 and 1999, listed in the CGS catalog, was performed for a 100-mile radius around the project site (Blake, 2000b). That search found that 103 earthquakes have occurred within that area. Of those earthquakes, only 22 with moment magnitudes (M_W) of 5 or greater, and 3 with M_W 6 and 2 with M_W 6.5 or greater have occurred in the search area. The largest earthquake to affect the area occurred on September 22, 1865 and was estimated to be 3.3 miles from the site. That M_W 4.3 earthquake resulted in an estimated ground acceleration of about 0.11 g at the site.

3.2 LANDSLIDES

The site is moderately inclined to gently sloping. Geologic mapping of the area has not noted any landslides on the property (Hotz, 1977; Nilsen, 1993). Observations made at the site and review of aerial photographs did not identify geomorphic features that would be indicative of past or incipient slope failures. It is our opinion that natural landslides pose a low risk to the proposed project.

3.3 LIQUEFACTION AND LATERAL SPREADING

Liquefaction is described as the sudden loss of soil shear strength due to a rapid increase of soil pore water pressures caused by cyclic loading from a seismic event. In simple terms, it means that a liquefied soil acts more like a fluid than a solid when shaken during an earthquake. In order for liquefaction to occur, the following are needed:

- Granular soils (sand, silty sand, sandy silt, and some gravels);
- A high groundwater table; and
- A low density in the granular soils underlying the site.

If those criteria are present, then there is a potential that the soils could liquefy during a seismic event.

The adverse effects of liquefaction include local and regional ground settlement, ground cracking and expulsion of water and sand, the partial or complete loss of bearing and confining forces used to support loads, amplification of seismic shaking, and lateral spreading. In general, the effects of liquefaction on the proposed project could include:

- Lateral spreading;
- Vertical settlement; and/or
- The soils surrounding lifelines can lose their strength and those lifelines can become damaged or severed.

Lateral spreading is defined as lateral earth movement of liquefied soils, or soil riding on a liquefied soil layer, down slope toward an unsupported slope face, such as a creek bank, or an inclined slope face. In general, lateral spreading has been observed on low to moderate gradient slopes, but has been noted on slopes inclined as flat as one degree.

The proposed structures will be situated on rock materials of the Schulmeyer Gulch Formation, as noted on Plate 3. Those rock materials are not prone to liquefaction or lateral spreading. Portions of the proposed development outside of the building areas are situated on relatively thin, fine-grained colluvial soils that, in turn, rest on the Schulmeyer Gulch Formation. Those soils have sufficient fines content and a general absence of shallow groundwater such that the likelihood of liquefaction occurring within the sediments is low. It is our opinion that liquefaction poses a low risk to the proposed project.

3.4 EXPANSION POTENTIAL

There is a direct relationship between plasticity of a soil and the potential for expansive behavior, with expansive soil generally having a high plasticity. Thus, granular soils typically have a low potential to be expansive, whereas, clay-rich soils can have a low to high potential to be expansive. According to the NRCS (2013; see Section 2.3.3), Plasticity Indices (PI) values ranging from about 3 to 13 are present within the soils on site. Soils with PIs in that

range correlate to soils having very low to low expansion potential (Day, 1999). It should be noted that expansion cracks were observed at various locations on site in the soil surface indicating soils influenced by expansion and contraction. However, the cracking of the soil surface was relatively moderate and likely implies soils having up to about a moderate expansion potential. Soils with even a moderate expansion potential should not adversely impact the design, construction, and performance of the proposed project. This should be confirmed during the design-level geotechnical study.

3.5 FLOOD HAZARDS

The proposed development area is elevated above the alluvial plain located adjacent to Yreka Creek. According to the Federal Emergency Management Agency Flood Insurance rate Maps (FIRM) for the project area, the property is in Zone X outside of the two-percent annual flood chance. Therefore, it is our opinion that flooding poses a low risk for the project.

3.6 VOLCANIC HAZARDS

The project site is located proximal to the Cascade Range, which contains numerous active but dormant volcanoes. Volcanic hazards can occur from a variety of causes but are typically associated with the following:

- Ground deformation
- Lava flows;
- Pyroclastic flows;
- Volcanoclastic debris flows;
- Tephra; and/or
- Volcanic Gasses

The closest significant eruptive center to the project site is Mount Shasta, located about 30 miles (50 kilometers) southeast of the project site. Other volcanic sources in the region include Medicine Lake (54 miles east), Goosenest Mountain (20 miles east), Mount McLaughlin (54 miles northeast). It is likely that Mount Shasta poses the greatest risk to the project site due to its proximity, activity, and size. Mount Shasta has an eruption recurrence interval of about 600 years on average and last erupted about 200 years ago (Miller, 1980). Thus, while an eruption could occur any time, it is unlikely to occur soon based on its past history.

Ground deformation consists of the tilting, doming, or collapse of the ground surface in the vicinity of a volcanic center. Significant ground deformation can be experienced due to the rise of magma leading up to and following a volcanic eruption or due to migration of subsurface magma that does not lead to eruption. Typically, this deformation occurs on or immediately adjacent to the volcanic source. Because the proposed project is located over

20 miles from the closest volcanic cone, ground deformation is unlikely to adversely affect the project site.

Typically, lava flows pose a risk to life and property when people or improvements are located within about 5 miles of the source (Miller, 1980). The project site is well outside of that range and thus, is unlikely to experience risk from lava flows.

Pyroclastic flows are masses of volcanic rocks mixed with hot gasses that can travel very rapidly down volcanic slopes and extend onto adjacent ground for some distance. They generally follow valleys and other depressions but can build up sufficient momentum to carry them over ridges and low hills. It is anticipated that pyroclastic flows originating high on Mount Shasta could extend as far as about 10 or 11 miles from origin (Miller, 1980). Thus, because of the distance from the site to Mount Shasta, the risk of pyroclastic flows adversely impacting the site is low.

Volcaniclastic deposits associated with a gigantic debris avalanche that occurred about 300,000 to 380,000 years ago (Crandell, 1988) are present east of the project area. That avalanche extended north-northwest of Mt Shasta through Grenada and north of Montague, as shown on Plate 8 – Volcanic Debris Avalanche & Tephra Fall Limits. It was derived from an ancestral and much larger Mt Shasta whose remnants are no longer apparent (Crandell, 1988).

The result of the ancestral debris avalanche was to mobilize large blocks of andesite derived from Mt Shasta across the Shasta Valley. The large blocks are, in turn, surrounded and locally covered with a matrix of unsorted and unstratified debris consisting of volcanic ash, pebbles, cobbles and boulders in a silty sand (Crandell, 1988). This has created the morphology in the Shasta Valley where there are isolated hills surrounded by relatively flat or slightly undulating valleys. Such occurrences of large volcaniclastic debris flows or immense landslides capable of traveling tens of miles from their source are rare and occur on a limited basis in geologic time. The potential of such a failure impacting the propose project during the anticipated life span of the project is improbable and in our opinion poses little risk.

Tephra includes ash, rock, and pumice which are erupted into the atmosphere above a volcano. Large tephra particles typically fall to earth in areas relatively close to the source; however, ash can be carried long distances from the source and poses health and structure damage, specifically when thick accumulation of wet ash occur on a structure. As noted on Plate 8, the project site is located within about 50 kilometer of Mount Shasta, which places it within an area that feasibly could receive significant thicknesses of tephra deposits. However, tephra is typically deposited in lobate shaped areas that follow prevalent winds in the region. According to Miller (1980), the prevalent winds in the region occur to the northeast and southeast about 82 percent of the time. Thus, while the risk for ashfall is present at the site, it is likely to not result in thick accumulations of ash that could impact the

project.

Volcanoes can discharge hot and toxic gasses that pose a threat to life and property. These fumarolic gasses are influenced by the wind and dissipate relatively quickly, thus, are typically a risk confined to areas on or immediately near the source. The project site is sufficiently removed to make discharge of volcanic gasses a risk for the project.

3.7 TSUNAMI AND SEICHE INUNDATION

Tsunamis occur due to subaqueous seismic activity and submarine landslides generating long period waves in the ocean that run-up onshore and potentially cause tremendous damage and loss of life. Because of the project's separation from the Pacific Ocean, tsunamis pose no risk to the project.

Seiches are waves that develop within landlocked bodies of water due to distant or near-source earthquakes and from wind shear. Those waves can cause overtopping of impoundments and inundation to adjacent and downstream lands. The project site is not located below or adjacent to land locked bodies of water. The closest body of water is Greenhorn Reservoir located a mile away and at a slightly lower elevation than the proposed project. Thus, seiche inundation is not anticipated to pose a risk to the project.

3.8 RADON

Radon is a naturally occurring odorless gas that emanates from the decay of radioactive elements within soil and rock. Radon gas can increase the potential for developing lung cancer and is, thus, a concern regarding indoor accumulations of the gas. Concentrations of radon gas outdoors are typically not of concern due to the reduced potential of concentration of the gas to levels of concern due to wind and lack of a confined space. The average concentration of radon in American homes is about 1.3 picocuries per liter and the average concentration in outdoor air is about 0.4 picocuries per liter. The U.S. EPA recommends that individuals avoid long-term exposures to radon concentrations above 4 picocuries per liter.

Generally, it is thought that radon is generated by the decay of uranium and thorium isotopes. The potential of finding those elements in soil or rock are typically greater in shales, fat clays, and some igneous rocks. The project area is underlain by quartzite and metamorphic rocks. It has been mapped within Radon Zone 3, which corresponds to areas anticipated to have less than 2 pCi/L of indoor radon gas. Nine tests were performed by CGS in Yreka and none of the tests detected indoor radon levels in excess of 2 pCi/L (CGS, 2013). It is our opinion that radon gas poses a low risk to the proposed project.

3.9 NATURALLY OCCURRING ASBESTOS

Ultramafic rock, such as serpentinite, amphibolite, peridotite, dunite, pyroxenite, hornblendite, etc., can contain asbestiform minerals, which are fibrous, silica-rich crystals

that can cause lung cancer, mesothelioma, asbestosis, and other health-related issues, if present. Typically, six minerals within ultramafic rocks are responsible for the primary, naturally occurring asbestiform (NOA) concerns for health-related issues:

- Chrysotile;
- Tremolite;
- Actinolite;
- Anthophyllite;
- Arocidolite; and
- Amosite.

These minerals may or may not be present in ultramafic rocks; thus, the presence of ultramafic rock on a site does not automatically indicate that there is a health hazard on a site. The presence of asbestiform minerals can sometimes be discerned in the field based on visual examination of rock exposures but, most often, must be confirmed using laboratory testing.

Asbestos can be a hazardous material when it becomes airborne and is inhaled, and is typically not considered a hazard when it is not in aerosol form. Inhalation is the primary exposure route of concern, because breathing asbestos fibers may cause them to become trapped in the lungs. Ingestion is another, albeit less common, pathway of concern, because swallowing asbestos fibers may also cause the fibers to be trapped in body tissues. Asbestos is not absorbed through the skin, so merely touching it does not pose a significant risk to human health. Asbestos fibers are not water soluble and do not move through groundwater to any appreciable extent. Based on studies of other insoluble particles of similar size, the expected migration rate of an asbestos fiber through soils by the forces of groundwater is approximately 1 to 10 centimeters (0.4 to 4 inches) per 3,000 to 40,000 years (New Hampshire DES, 2010). Thus, asbestos is not considered a groundwater contaminant.

Ultramafic rocks are present within Siskiyou County but were not observed at the project site, as shown on Plate 9 - Ultramafic Rock Locations Relative to Site. It is our opinion that NOA does not pose a hazard for the project site. This opinion is supported by Churchill & Hill (2000).

3.10 HYDROCOLLAPSE

Hydrocollapse occurs when water is introduced to poorly cemented soils, resulting in the dissolution of the soil cementation and the volumetric collapse of the soil. In most cases, the soils are cemented with weak clay (argillic) sediments or soluble precipitates. This phenomena generally occurs in granular sediments situated within arid environments.

We know of no reported instance of hydrocollapse occurring within Siskiyou County. Furthermore, most of the project site will be situated on metamorphic rocks, which are not

subject to hydrocollapse. In our opinion, hydrocollapse poses a low risk to the proposed project.

3.11 REGIONAL SUBSIDENCE

Regional ground subsidence occurs due to the extraction of subsurface fluids, such as water or oil. In parts of California, ground subsidence has exceeded 20 vertical feet due to oil or water extraction. In Las Vegas, they are currently experiencing localized areas of ground subsidence that exceed 16 feet due to groundwater extraction. With withdrawal of fluids, the pore spaces within the soils decreases leading to a volumetric reduction. If that reduction is significant enough over an appropriately thick sequence of sediments then regional ground subsidence can occur. This typically only occurs within poorly lithified sediments and not within competent rock.

In Yreka, the only fluid that might be extracted would be groundwater. Oil and gas have not been identified as extractable resources in the area (Jenkins, 1943). The alluvial sediments within the Yreka area are of limited thickness and do not encroach into the proposed development area. In our opinion, regional ground subsidence due to fluid extraction is low.

Regional subsidence due to collapse of underground mine workings can also occur. Typically, this occurs over pillar and stoop mines or large chamber mines, such as coal mines. Mining has played an important history in the Yreka area but no identified mines have been mapped beneath the project site (Silva, undated). In addition, those mines in the region typically consisted of relatively shallow shafts and adits of limited volume. Thus, regional subsidence due to mine activities is, in our opinion, a low risk.

3.12 HAZARDOUS MATERIALS

The evaluation of the potential presence of hazardous materials on site is typically performed using a Phase I environmental site assessment and/or Phase II environmental site characterization. Neither of those studies was within the scope of this preliminary geotechnical report. Based on existing foundations and slabs located within the development area (see Plate 3), there is a potential that some form of hazardous material releases or buried tanks could be present on site; however, we have no evidence of such releases occurring or tanks being present. If there is a concern regarding hazardous materials at the site, we recommend that an experienced, properly licensed professional be retained to perform, at a minimum, a Phase I ESA. We can refer the Tribe to companies that can perform those services, if desired.

3.13 PRELIMINARY SLOPE STABILITY

We understand that the proposed cut slope will have inclinations ranging from about 3:1 (horizontal to vertical) to as steep as 2:1. For rock materials anticipated to be exposed by the cut slope, it is our opinion that those inclinations should be grossly stable and should meet minimum factors of safety commonly accepted by the engineering community. Obviously,

the cut slope should and will be evaluated during design-level geotechnical studies to confirm slope stability.

Proposed fill slopes are shown on preliminary drawings as being inclined as steep as 1:1; however, in discussions with Morgan Eastlick of James Bray Engineering, we understand that the proposed fill slope inclinations will be flattened to no steeper than 2:1. If fill slopes are inclined at 2:1 or flatter then the gross stability of those slopes should meet or exceed commonly accepted factors of safety against failure. If steeper inclinations are proposed then additional stability analyses should be performed during design-level geotechnical studies to evaluate the slope stability and to propose methods of increasing slope stability, where necessary.

3.14 RIPPABILITY OF UNDERLYING ROCK MATERIALS

As noted on Plates 2 and 3, a cut slope and pad are proposed within the Schulmeyer Gulch Formation beneath and east of the proposed casino and hotel facility. That cut slope will penetrate up to about 45 feet into those rock materials. That formation at the project site consists of quartzite, which is apparent in outcrops on the slope, and phyllitic schist, which is visible in local cut slopes. The ability to rip and excavate those materials during grading of the site is of concern due to the hardness of the rock materials. For this preliminary geotechnical evaluation, we performed geophysical refraction surveys on the slopes to help assess the rippability of those rock materials. The results of the surveys are included in Appendix A.

Two, 230-foot-long, 24-channel refraction surveys were performed at the site on July 8, 2013. Refraction surveys provide seismic velocities of rock materials within the profile evaluated. The seismic velocities can be used to assess the rippability of the rocks through charts developed by Caterpillar Corporation (Caterpillar, 2012). Those charts compare the seismic velocities for varying rock materials to various sizes of heavy grading equipment.

Geophysical refraction surveys performed across the site (see Appendix A) indicate seismic velocities within the schist to proposed depths of construction to range from about 1,200 to over 10,000 feet per second (ft/sec). In general schist having seismic velocities of about 8,000 ft/sec are present within the upper 30 feet of the slope. Below a depth of about 30 feet, seismic velocities increase above 10,000 ft/sec. This is a generalization of depths and fluctuations in seismic velocities were imaged, as noted in the figures presented in Appendix A. For instance, as noted on seismic line SL-1, the depth to relatively faster seismic velocities increases between a distance of about 40 to 150 feet. In addition, as noted on seismic line SL-2, the depth to relatively faster seismic velocities increases to the north past about distance 110. Regardless, the proposed cut slope depths will penetrate schist that has seismic velocities exceeding 10,000 ft/sec in the lower reaches of portions and possibly all of the proposed cut slope

Rippability charts for D8R/D8T, D9R/D9T, D10R, and D11R bulldozers, or equivalent, are presented on Plate 10 - Rippability Charts. According to those rippability charts published by the Caterpillar (2012), a D10R Caterpillar bulldozer, or equivalent, equipped with single or multiple shanks should be capable of ripping metamorphic schist with velocities of about 8,000 ft/sec or slower and has marginal rippability up to seismic velocities exceeding 9,500 ft/sec for the materials encountered on site. A Caterpillar D11R bulldozer can rip schist having seismic velocities of up to about 8,200 ft/sec and has marginal ripping capabilities within similar rock having seismic velocities up to about 10,200 ft/sec.

4 CONCLUSIONS AND RECOMMENDATIONS

Based on the results of our preliminary geotechnical study, it is our opinion that the project has little or no risks from the following geologic hazards:

- Fauling
- Naturally occurring landslides;
- Liquefaction and lateral spreading;
- Expansive soils;
- Flooding;
- Tsumani and seiches;
- Radon
- Naturally occurring asbestos;
- Hydrocollapse; and
- Regional subsidence.

Volcanic hazards in the form of ash fall pose a risk to the proposed project. However, as stated in Section 3.6, it is likely that accumulation of ash will not be significant from a Mount Shasta eruption because of the distance to the site from the volcano and because prevalent wind directions are away from Yreka.

Slope stability of the proposed cut slope should be stable as proposed on the preliminary plans. Slope stability of fill slopes inclined at 2:1 or flatter should be stable for the proposed project.

Based on the results of our geophysical refraction survey lines and the published rippability charts, the upper portions of the proposed cut slope should be rippable using conventional heavy grading equipment sized based on the rock types and seismic velocities encountered. However, rippability of the lower portions of the cut slope may not be feasible and alternative means of excavation, such as blasting, hydraulic hammering (hoe-ram), rock sawing, or other means may be needed to excavate those portions of the slope to proposed grade. Furthermore, installation of foundations, elevator wells, basements, and utilities in the proposed cut pad at the base of the cut slope could prove difficult in these rock materials and may require rock sawing or other means to excavate.

It needs to be noted that the ability of a piece of equipment to rip a rock materials does not imply that that same piece of equipment will or can reduce the ripped fragment sizes down to an acceptable level for use as engineered fill materials or other select construction materials. Additional crushing may be required to perform those tasks to meet project specifications.

5 ADDITIONAL SERVICES

This report and its associated recommendations were intended to provide a preliminary assessment of potential geologic hazards that could impact the project and rippability of rocks at the project site. A design-level geotechnical study should be performed to provide geotechnical recommendations for design and construction of the proposed project.

6 LIMITATIONS

This report has been prepared in substantial accordance with the generally accepted geotechnical engineering practice, as it existed in the site area at the time our services were rendered. No other warranty, either express or implied, is made.

Conclusions and recommendations contained in this report were based on the conditions encountered during our evaluation of geologic hazards at the site and our preliminary field investigation and are applicable only to those project features described herein (see Section 1.2 – Project Understanding). Soil and rock deposits can vary in type, strength, and other geotechnical properties between points of observation and exploration. Additionally, groundwater and soil moisture conditions can also vary seasonally and for other reasons. Therefore, we do not and cannot have a complete knowledge of the subsurface conditions underlying the project site. The conclusions and recommendations presented in this report are based upon the findings at the points of exploration, and interpolation and extrapolation of information between and beyond the points of observation, and are subject to confirmation based on the conditions revealed by construction.

The scope of services provided by CGI for this project did not include the investigation and/or evaluation of toxic substances, or soil or groundwater contamination of any type. If such conditions are encountered during site development, additional studies may be required. Further, services provided by CGI for this project did not include the evaluation of the presence of critical environmental habitats or culturally sensitive areas.

This report may be used only by our client and their agents and only for the purposes stated herein, within a reasonable time from its issuance. Land use, site conditions, and other factors may change over time that may require additional studies. In the event significant time elapses between the issuance date of this report and construction, CGI shall be notified of such occurrence in order to review current conditions. Depending on that review, CGI may require that additional studies be conducted and that an updated or revised report is issued.

Any party other than our client who wishes to use all or any portion of this report shall notify CGI of such intended use. Based on the intended use as well as other site-related

factors, CGI may require that additional studies be conducted and that an updated or revised report be issued. Failure to comply with any of the requirements outlined above by the client or any other party shall release CGI from any liability arising from the unauthorized use of this report.

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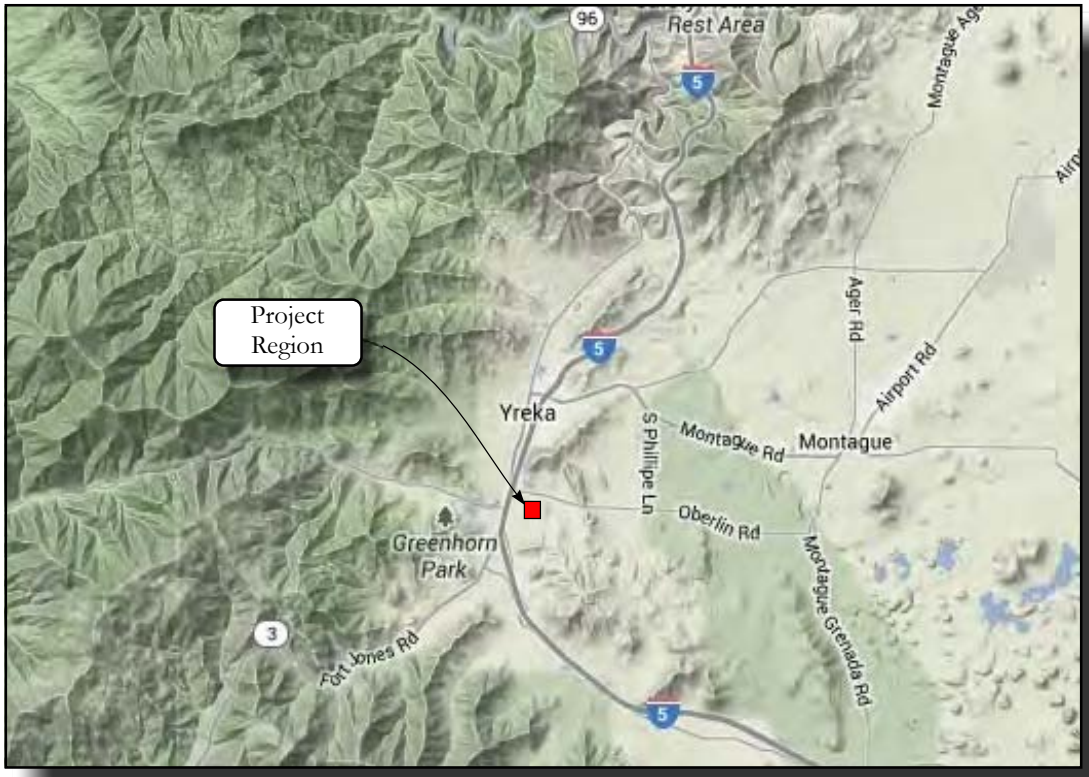
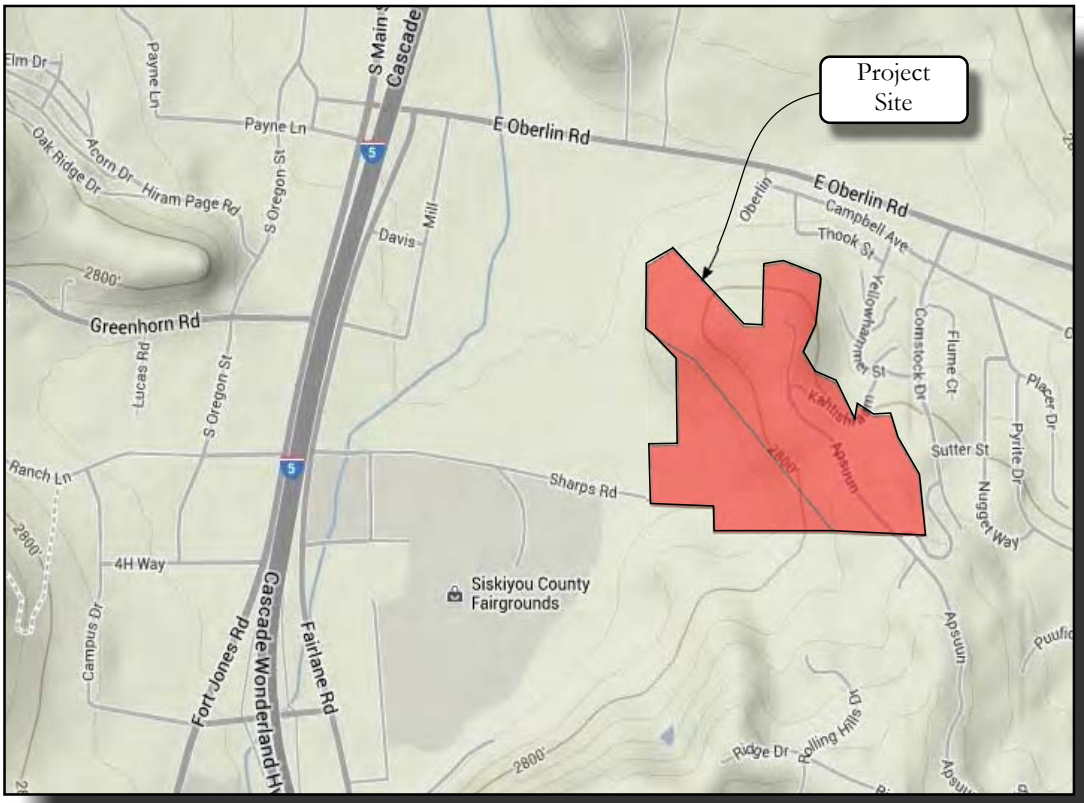




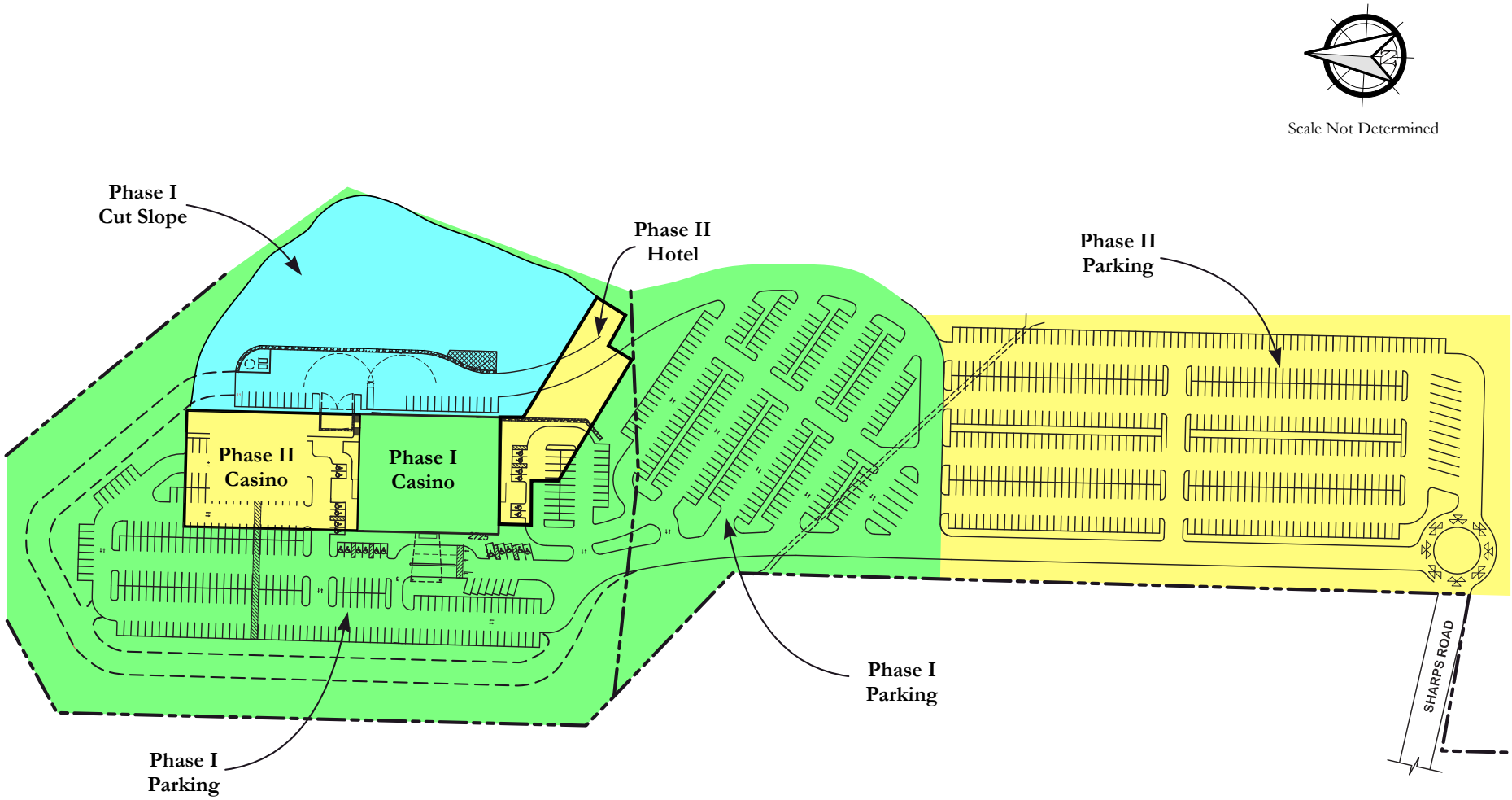
CGI Technical Services Inc.

Project No.: 13-2094.01

SITE LOCATION MAP
KARUK CASINO & HOTEL PROJECT
KARUK TRIBE
YREKA, CALIFORNIA

Plate

1



Phased development plan provided by Group West PLLC (2013)

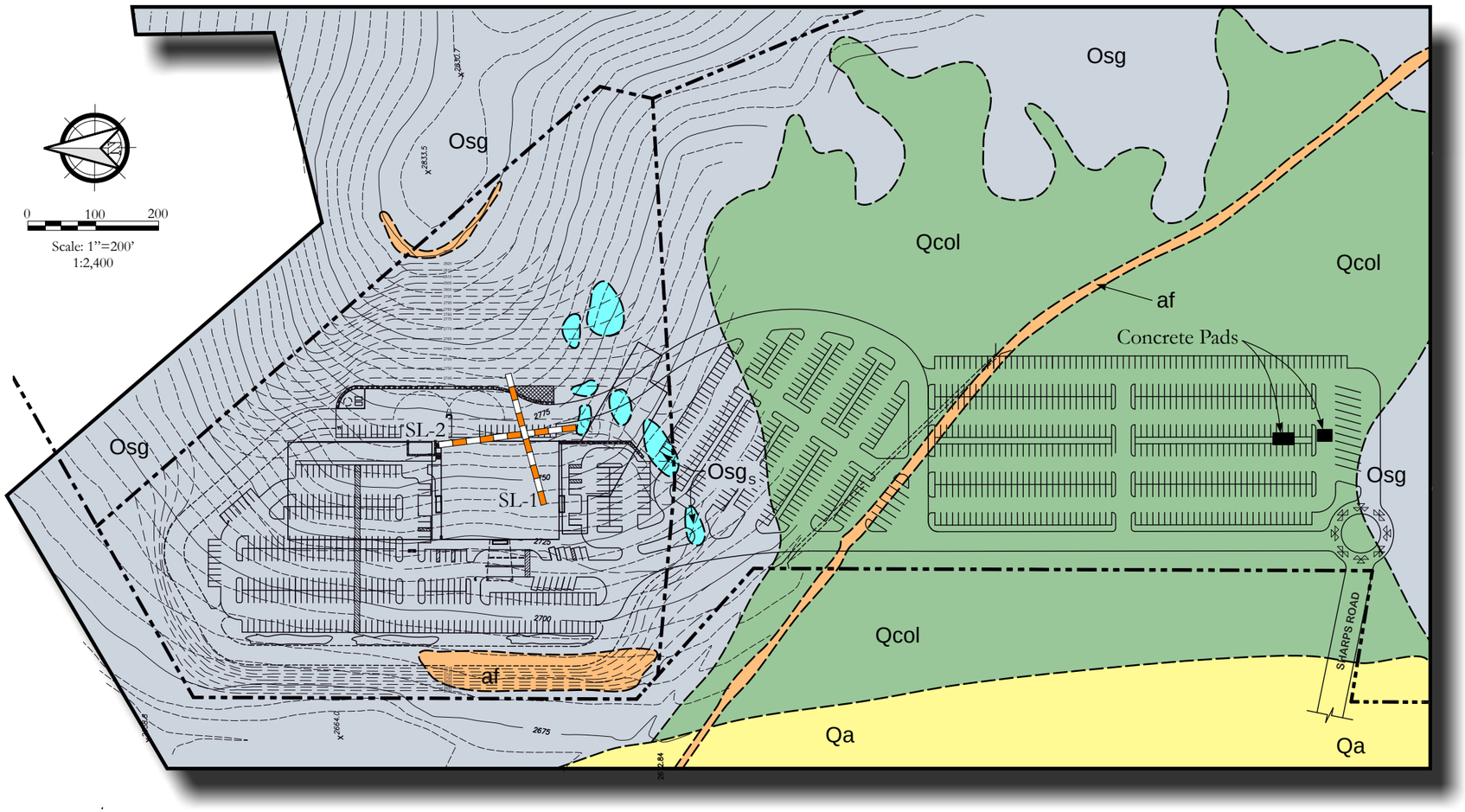
CGI Technical Services Inc.

Project No.: 13-2094.01

PROJECT ELEMENTS
KARUK CASINO & HOTEL PROJECT
KARUK TRIBE
YREKA, CALIFORNIA

Plate

2



af — Artificial Fill

Qa — Alluvium

Qcol — Colluvium

Osg$_s$ — Schulmeyer Gulch Formation Quartzite

Osg — Schulmeyer Gulch Formation Phyllitic Siltstone, Chert

SL-2 — Geophysical Survey Line

Geologic Contact: dashed where approximate, dotted where covered, queried where uncertain

Fault: showing dip of fault and and trend of striae on fault surface (arrow); bar and ball on downthrown side; dashed where approximate, dotted where concealed; queried where uncertain

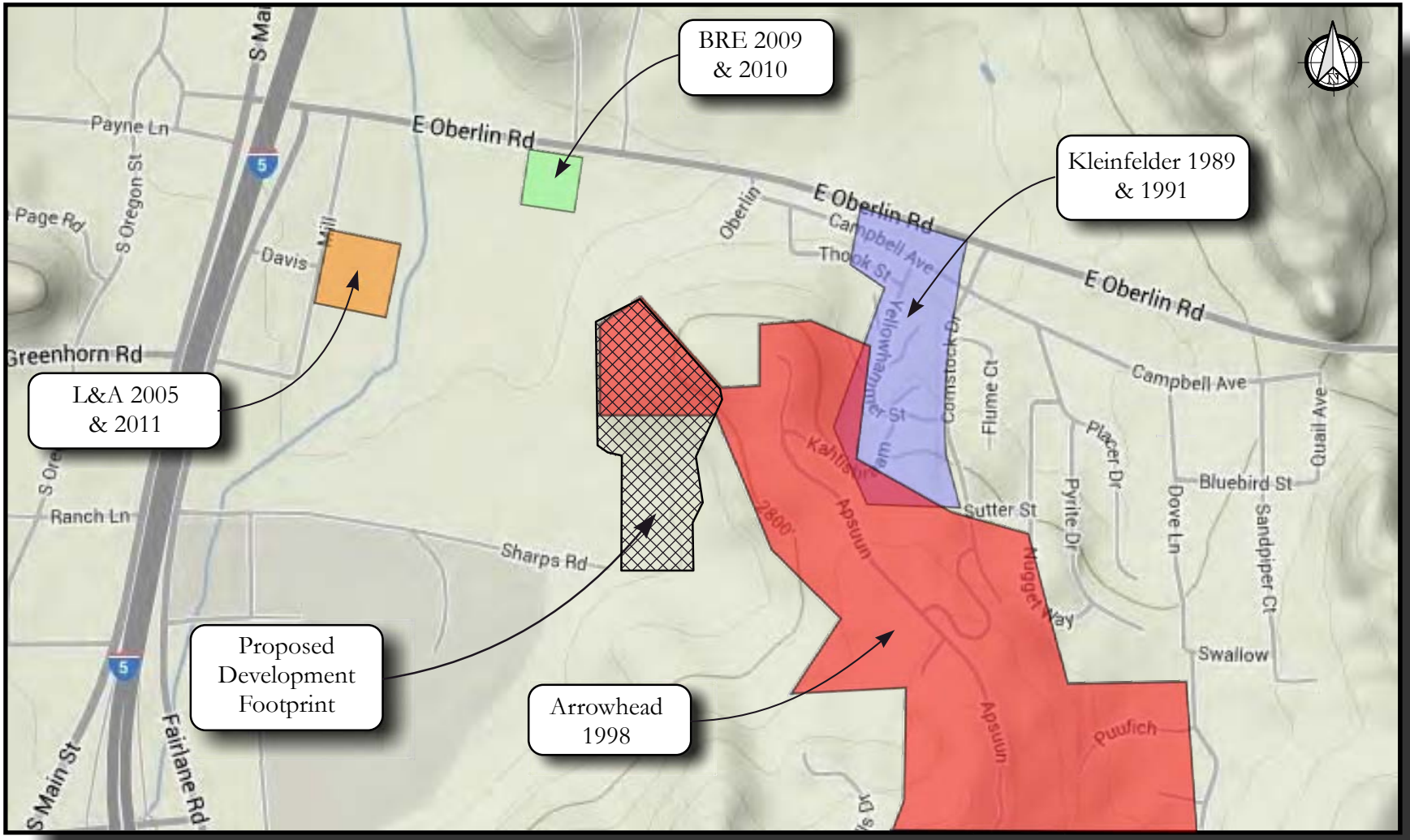
Base map from Group West (2013)

CGI Technical Services Inc.

Project No.: 13-2094.01

GEOTECHNICAL MAP
KARUK CASINO & HOTEL PROJECT
KARUK TRIBE
YREKA, CALIFORNIA

Plate 3



Arrowhead - Arrowhead Consultants
BRE - Blue Rock Environmental, Inc
Kleinfleder - Kleinfelder, Inc.
L&A - Lawrence & Associates, Inc.

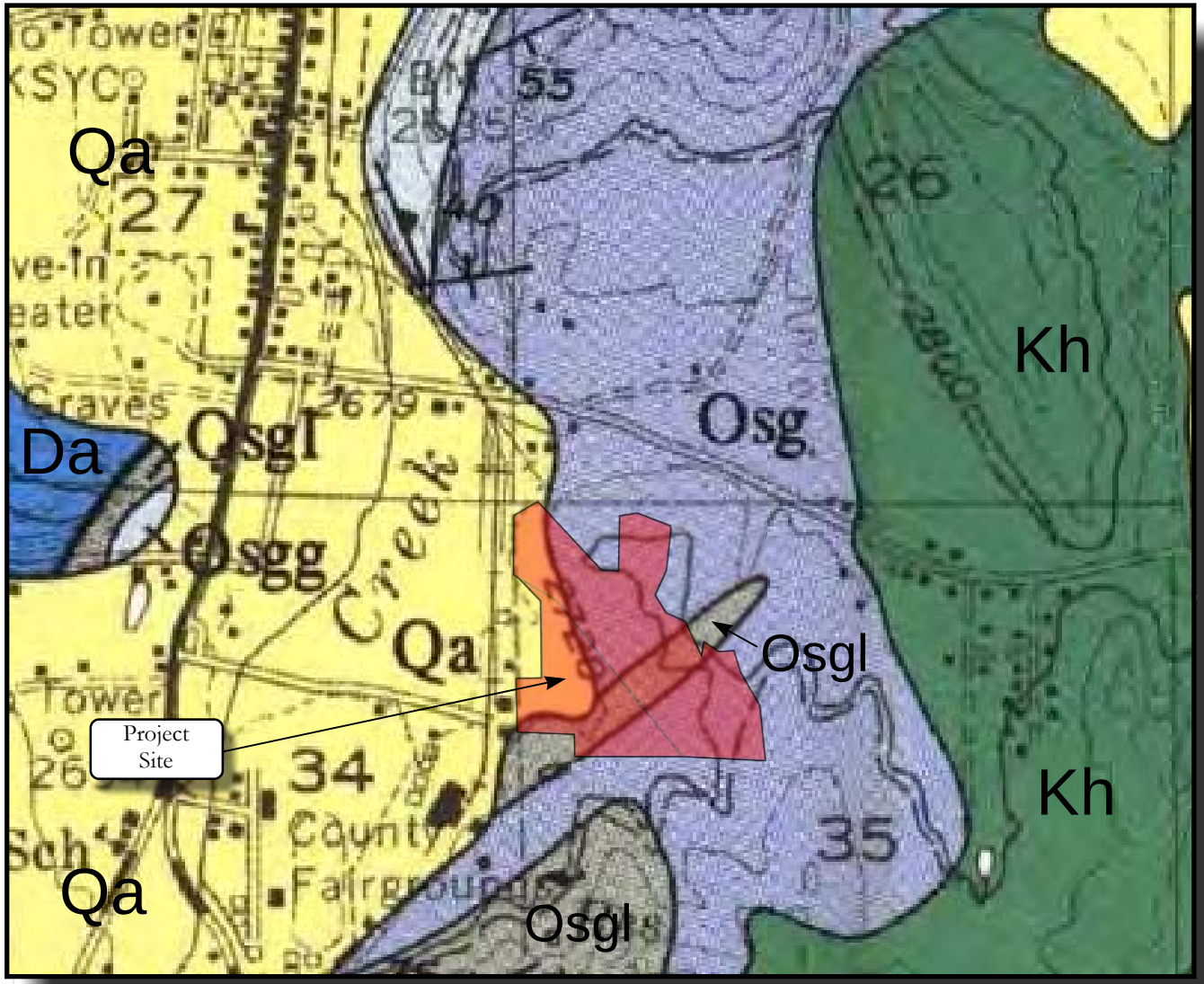
CGI Technical Services Inc.

Project No.: 13-2094.01

PROXIMAL STUDIES
KARUK CASINO & HOTEL PROJECT
KARUK TRIBE
YREKA, CALIFORNIA

Plate

4



Scale Not Determined

Qa	Alluvium
Kh	Hornbrook Formation
Da	Amphibolite
Osgg	Schulmeyer Gulch Formation Greenstone/Greenschist
Osg	Schulmeyer Gulch Formation Phyllitic Siltstone, Chert
Osgl	Schulmeyer Gulch Formation Limestone

Geologic Contact: dashed where approximate, dotted where covered, queried where uncertain

Fault: showing dip of fault and and trend of striae on fault surface (arrow); bar and ball on downthrown side; dashed where approximate, dotted where concealed; queried where uncertain

Geologic base map from Hotz (1977)

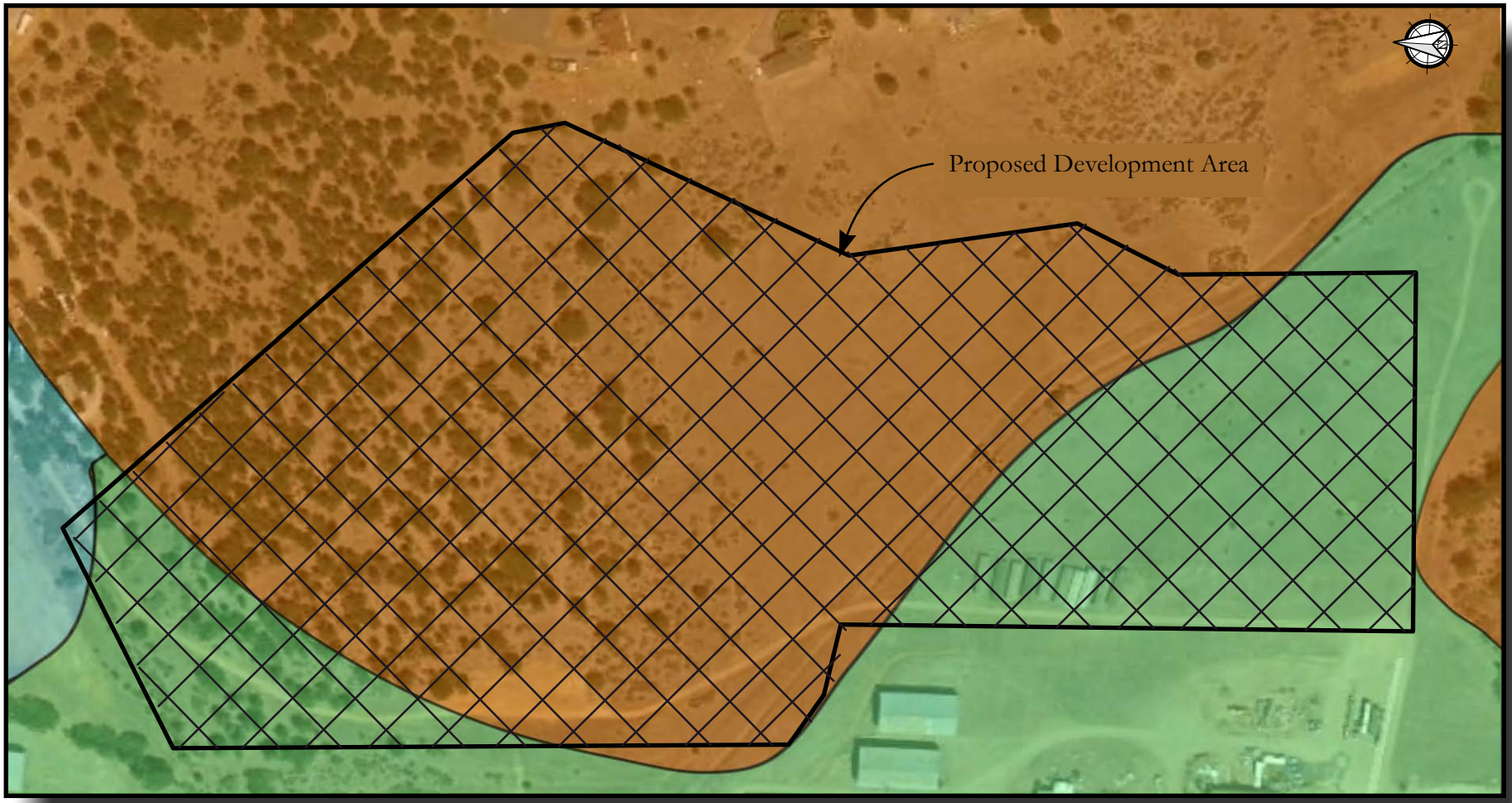
CGI Technical Services Inc.

Project No.: 13-2094.01

REGIONAL GEOLOGIC MAP
KARUK CASINO & HOTEL PROJECT
KARUK TRIBE
YREKA, CALIFORNIA

Plate

5



Duzel-Jilson-Facey Complex
15-50% Slopes

Stoner Gravelly Sandy Loam
2-5% Slopes

Dumps

Map from NRCS (2013) Web Soil Survey

Scale Not Determined

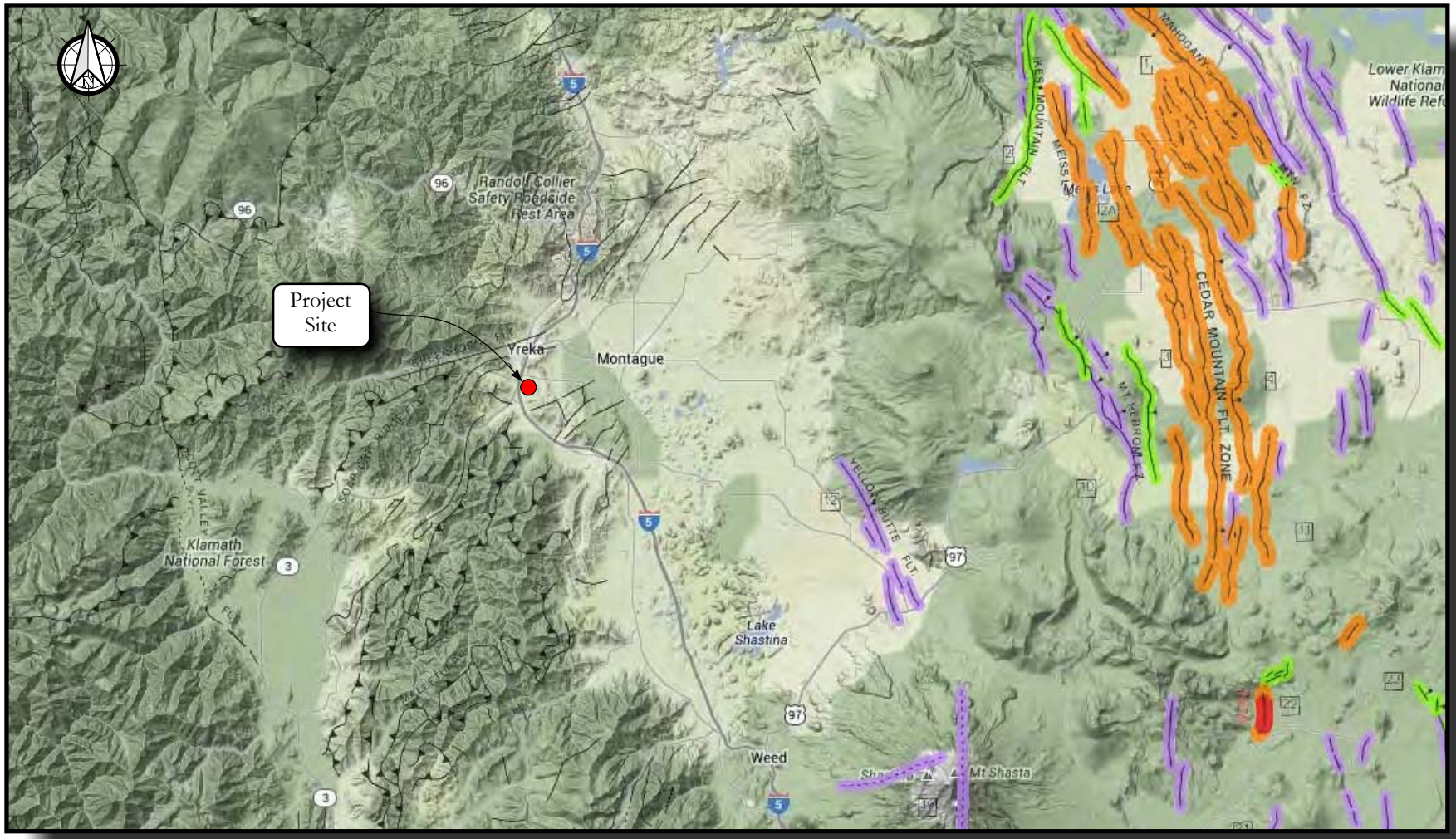
CGI Technical Services Inc.

Project No.: 13-2094.01

SOIL SERVICE MAP
KARUK CASINO & HOTEL PROJECT
KARUK TRIBE
YREKA, CALIFORNIA

Plate

6



Historic Displacement (last 200 years)

Holocene Displacement (last 11,700 years)

Late Quaternary Displacement (last 700,000 years)

Quaternary Fault (last 1.6 million years)

Map from California Geological Survey 2010 Fault Activity Map of California

Scale Not Determined

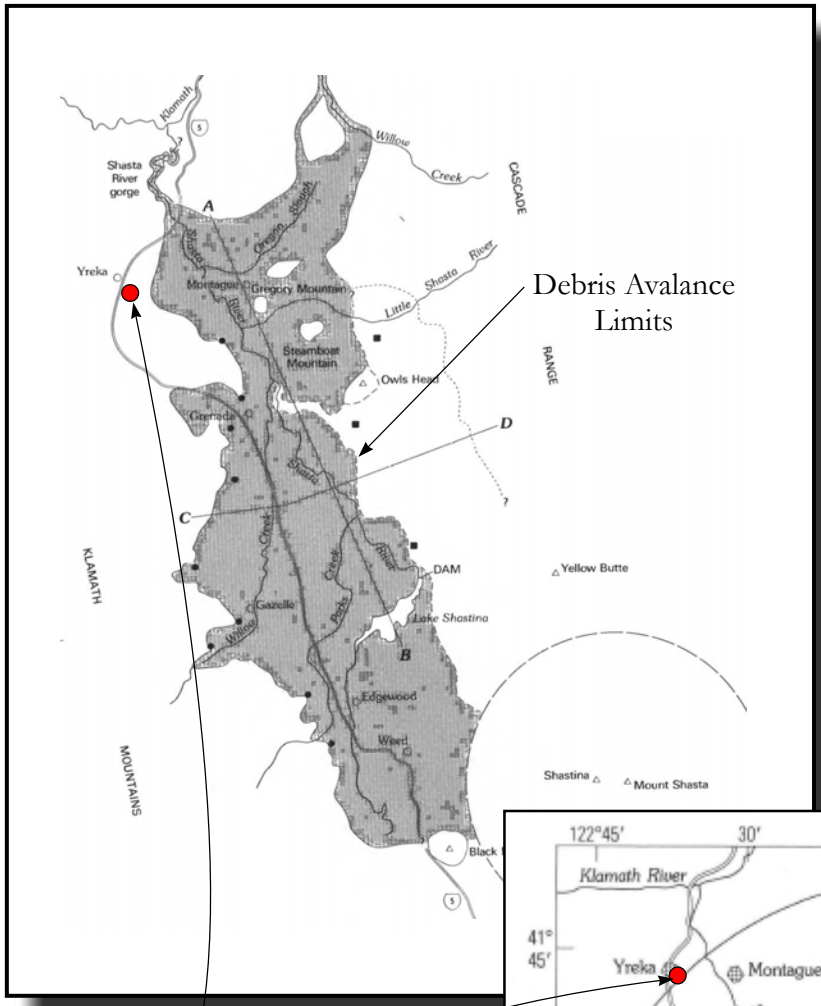
CGI Technical Services Inc.

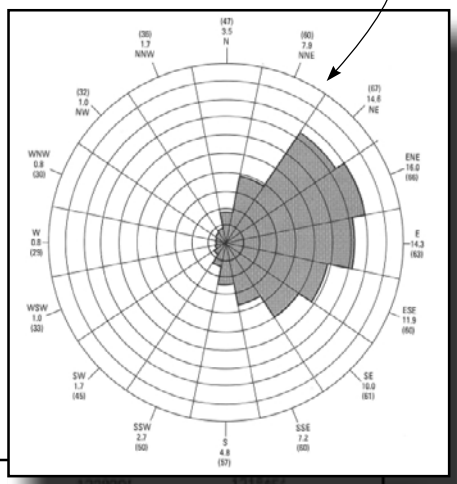
Project No.: 13-2094.01

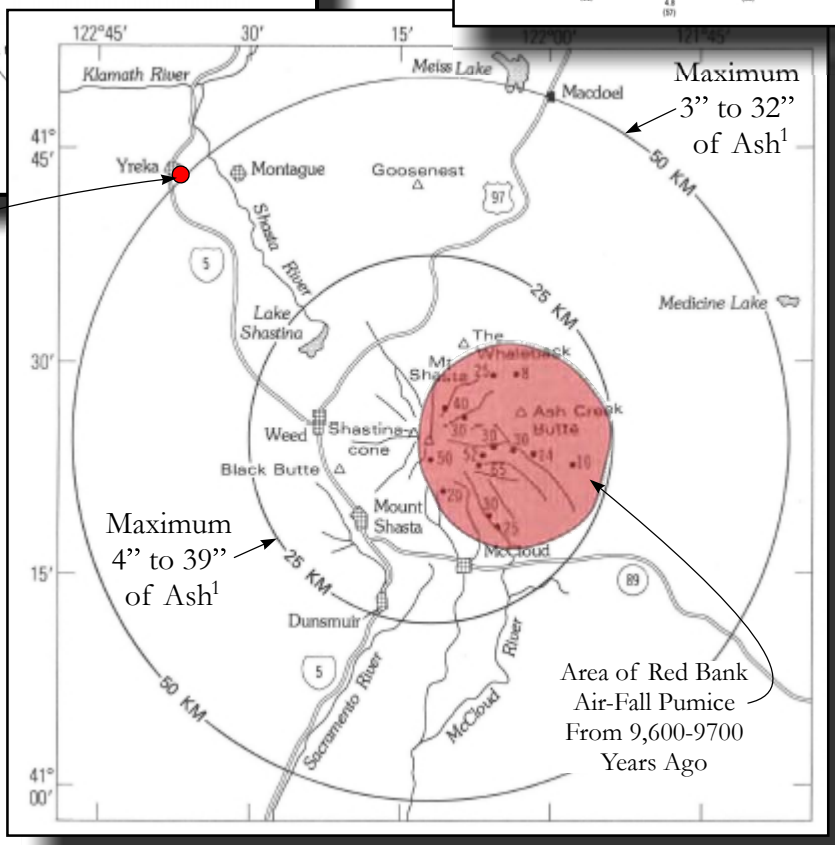
REGIONAL FAULT MAP
KARUK CASINO & HOTEL PROJECT
KARUK TRIBE
YREKA, CALIFORNIA

Plate

7







Project Site

[1] Based on ash fall records from Mt St Helens (Miller1980)

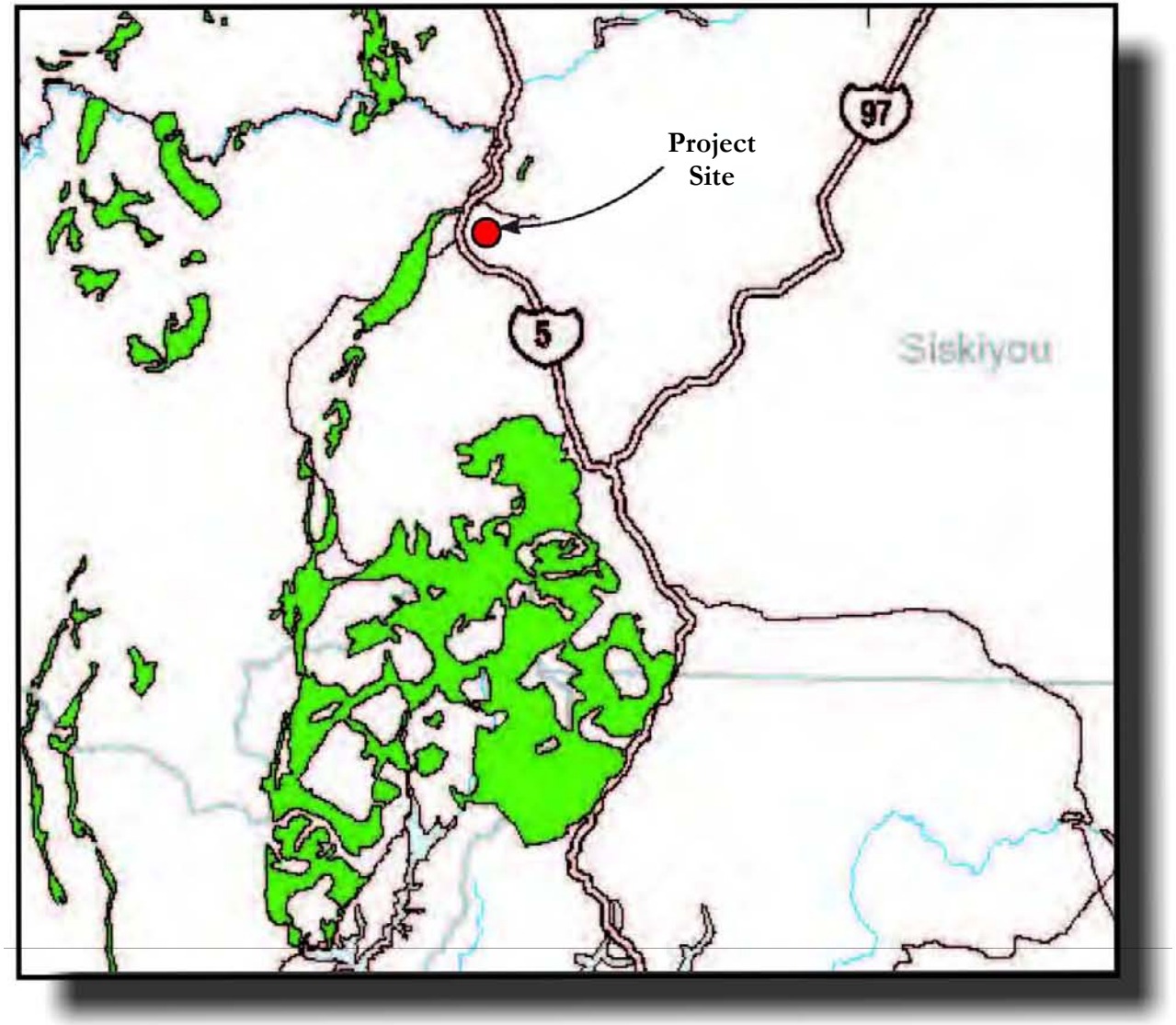
Illustrations modified from Miller (1980)

CGI Technical Services Inc.

Project No.: 13-2094.01

VOLCANIC DEBRIS AVALANCHE & TEPHRA FALL LIMITS
KARUK CASINO & HOTEL PROJECT
KARUK TRIBE
YREKA, CALIFORNIA

Plate 8



Mapped Locations of
Ultramafic Rocks

Base map from Churchill & Hill (2000)

Scale not determined

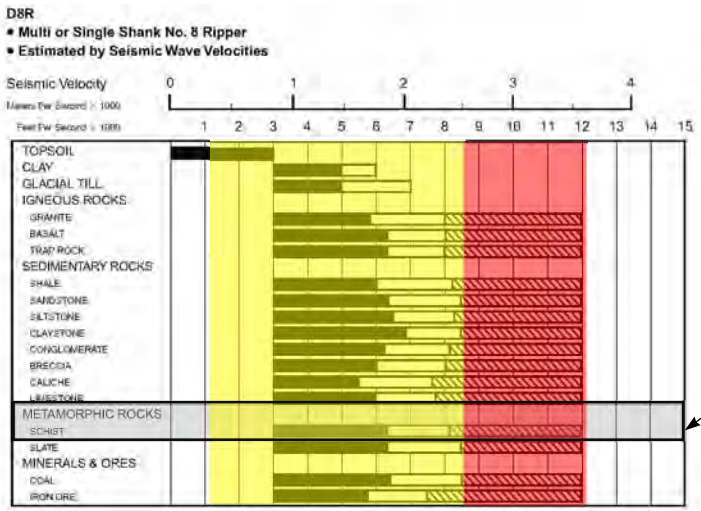
CGI Technical Services Inc.

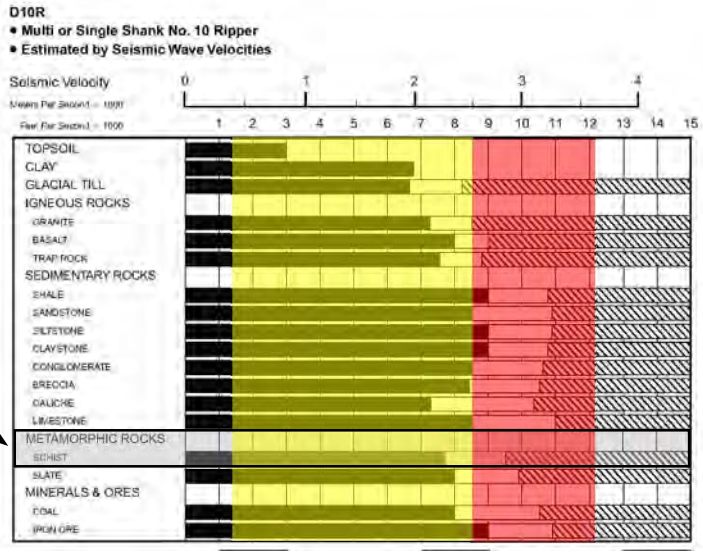
Project No.: 13-2094.01

ULTRAMAFIC ROCK LOCATIONS RELATIVE TO SITE
KARUK CASINO & HOTEL PROJECT
KARUK TRIBE
YREKA, CALIFORNIA

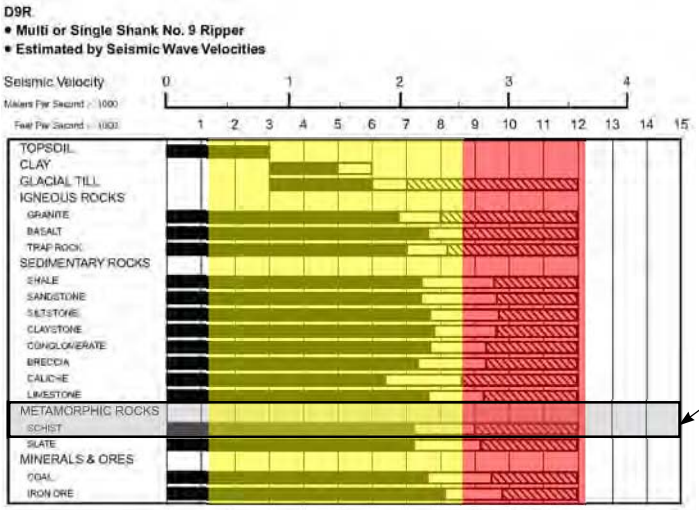
Plate

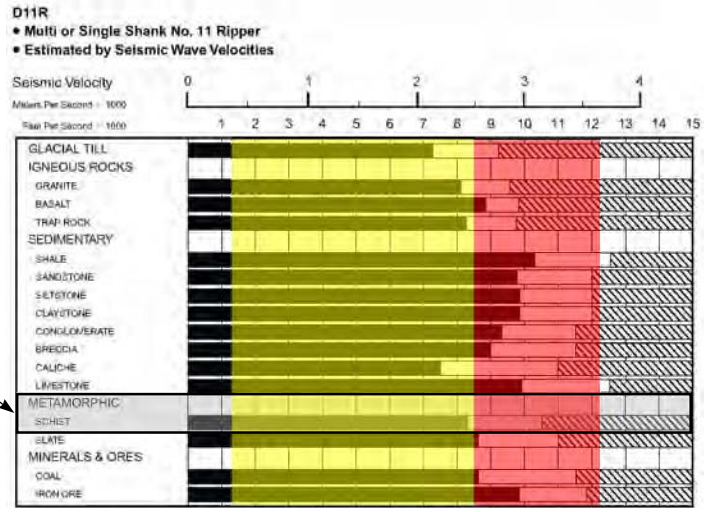
9





Anticipated Rock Type Within Proposed Cut Slope





Anticipated Rock Type Within Proposed Cut Slope

RIPPABLE MARGINAL NON-RIPPABLE

Seismic Velocities in Upper Approximately 30' of Slope

Seismic Velocities Below Upper Approximately 30' of Slope

Rippability charts obtained from Caterpillar (2012)

CGI TECHNICAL SERVICES INC.

Project No.: 13-2094.01

RIPPABILITY CHARTS
KARUK CASINO & HOTEL PROJECT
KARUK TRIBE
YREKA, CALIFORNIA

Plate

10

APPENDIX A
GEOPHYSICAL REFRACTION SURVEYS

Geophysical refraction surveys were performed along two survey lines at the project site. The surveys were performed on July 8, 2013 by Redpath Geophysics of Murphys, California. A CGI geologist and technician assisted Redpath Geophysics during the surveys. The results of geophysical surveys and a discussion on methodology are included within this appendix.

REDPATH GEOPHYSICS
P.O. BOX 540 MURPHYS CALIFORNIA 95247
209-728-3705

Mr. James A. Bianchin
CGI Technical Services
1612 Wedding
Redding, CA 96003
via email: jbianchin@currygroup.com

12 July 2013

Dear Mr. Bianchin,

This letter presents the results of seismic refraction surveys that were conducted at the site of the proposed Karuk Casino in Yreka, California. Two lines were surveyed on 8 July, 2013, with your assistance. The general intent of the seismic surveys was to provide information that would assist in assessing the subsurface materials in terms of their competence and rippability.

The attached figure based on Google Earth imagery shows the locations of the two lines surveyed in this project. The coordinates of the ends of each line are given in the following table:

Line Number	Station	Coordinates (WGS84)	
		North	West
SL-1	0+00	41º 42.716’	122º 37.883’
	2+30	41º 42.726’	122º 37.837’
SL-2	0+00	41º 42.706’	122º 37.856’
	2+30	41º 42.746’	122º 37.863’

Ground elevations along each line were obtained using a total station and pole-mounted prism. The ground elevation at 0+00 on Seismic Line No. 1 was arbitrarily assigned a value of zero and was used a reference elevation for the surveys

Each line consisted of 24 geophones spaced at 10-ft intervals. A 16-lb sledgehammer striking a one-inch-thick slab of high-density polyethylene on the ground was used as the energy source. Signals from 7 hammer-points were recorded for each line; i.e., at points every 3 or 4 geophones along the line. All data were recorded on a Geometrics model R24 Strataview™ digital seismograph configured to record 24 channels, each of which consisted of 1024 samples at intervals of 125 microseconds, for a total recording time of 128 milliseconds. The geophones’ natural frequency is 4.5 Hz. The seismograph has the capability of adding or ‘stacking’ the signals from repeated hammer blows in order to improve the signal-to-noise ratio, and as many as 6 hammer blows were stacked at a given hammer point.

The seismic records were viewed on the R24's LCD screen as they were acquired and paper copies were printed on its internal printer for examination in the field. The data are stored on the internal hard drive on the R24 and ultimately copied to 3-1/2-inch diskettes in SEG-2 binary format; the data are then transferred from the diskettes to the analysis programs.

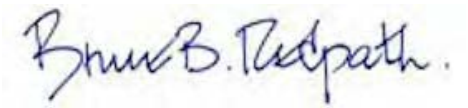
First arrivals and travel times are picked using the Pickwin component of Geometrics' SeisImager™ software which compiles a time-vs.-distance file for subsequent analysis. The time-vs.-distance plots are analyzed with the Plotrefa portion of SeisImager in which a two- or three-layer solution is developed first and then used as a starting model for a tomographic inversion of the travel-time data.

The time vs. distance plots of the data indicated that a three-layer model is a good approximation of the subsurface velocity structure, and this was used as the starting point for the tomographic inversion of the refraction data. The results of the surveys are presented on the attached profiles in the form of velocity cross-sections based on tomographic inversions of the time-distance data. The two profiles share the same velocity/color scale and both have contours drawn at 400-ft/sec intervals. The SeisImager software has the capability of calculating and displaying the ray paths from the sources (hammer points) to receivers (geophones), and these ray paths are shown on the profiles. I used this feature to trim the depth of the color cross-sections to be just slightly below the computed maximum depth of penetration of the seismic signals.

I have also attached the time vs. distance plots for each line showing the observed travel times and those calculated on the basis of the tomographic model. As can be seen, the agreement between the times is generally good, with a root-mean-square difference of approximately one millisecond.

Please do not hesitate to contact me if you have questions about any aspect of these surveys or the results.

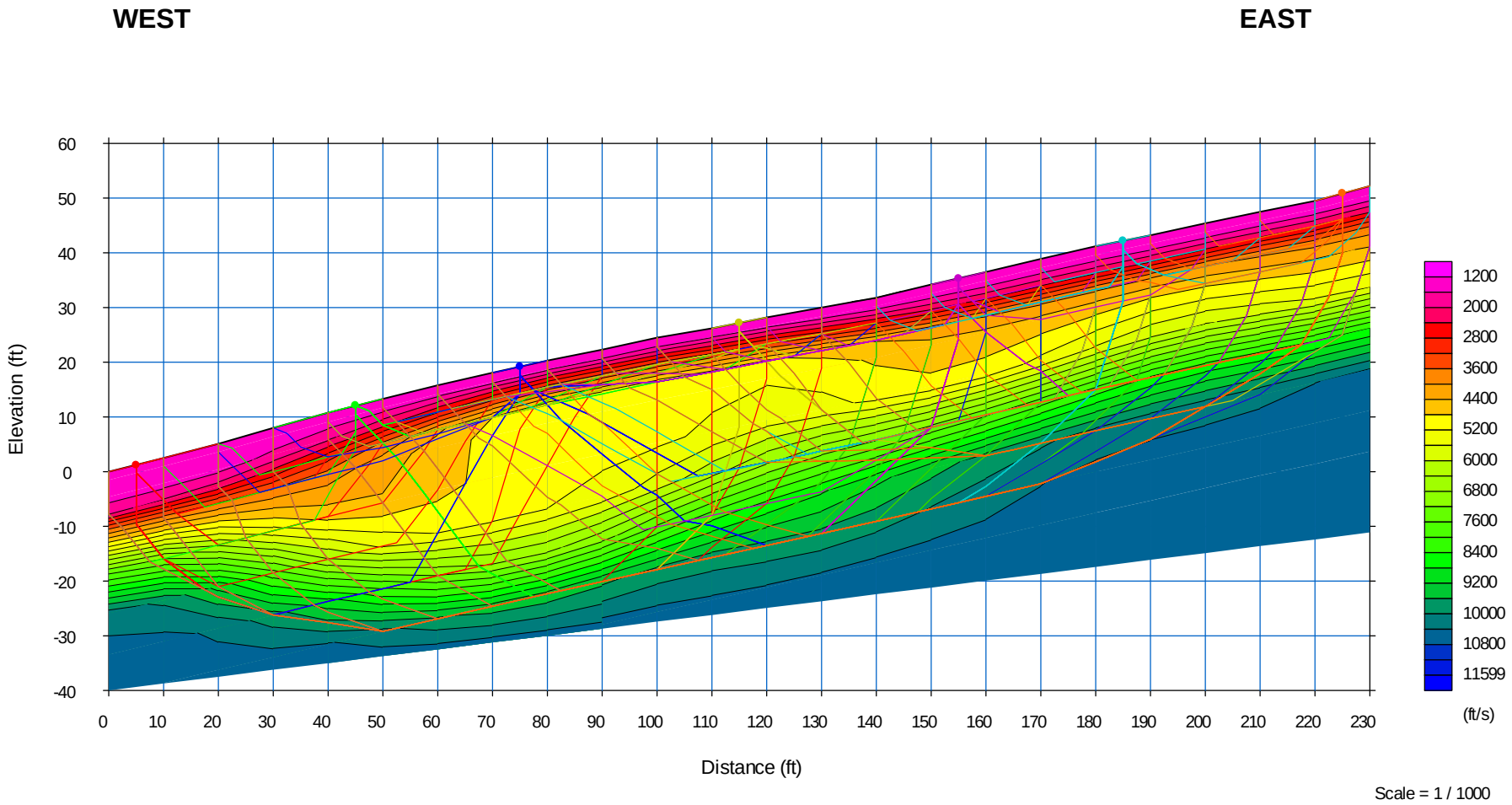
Sincerely,



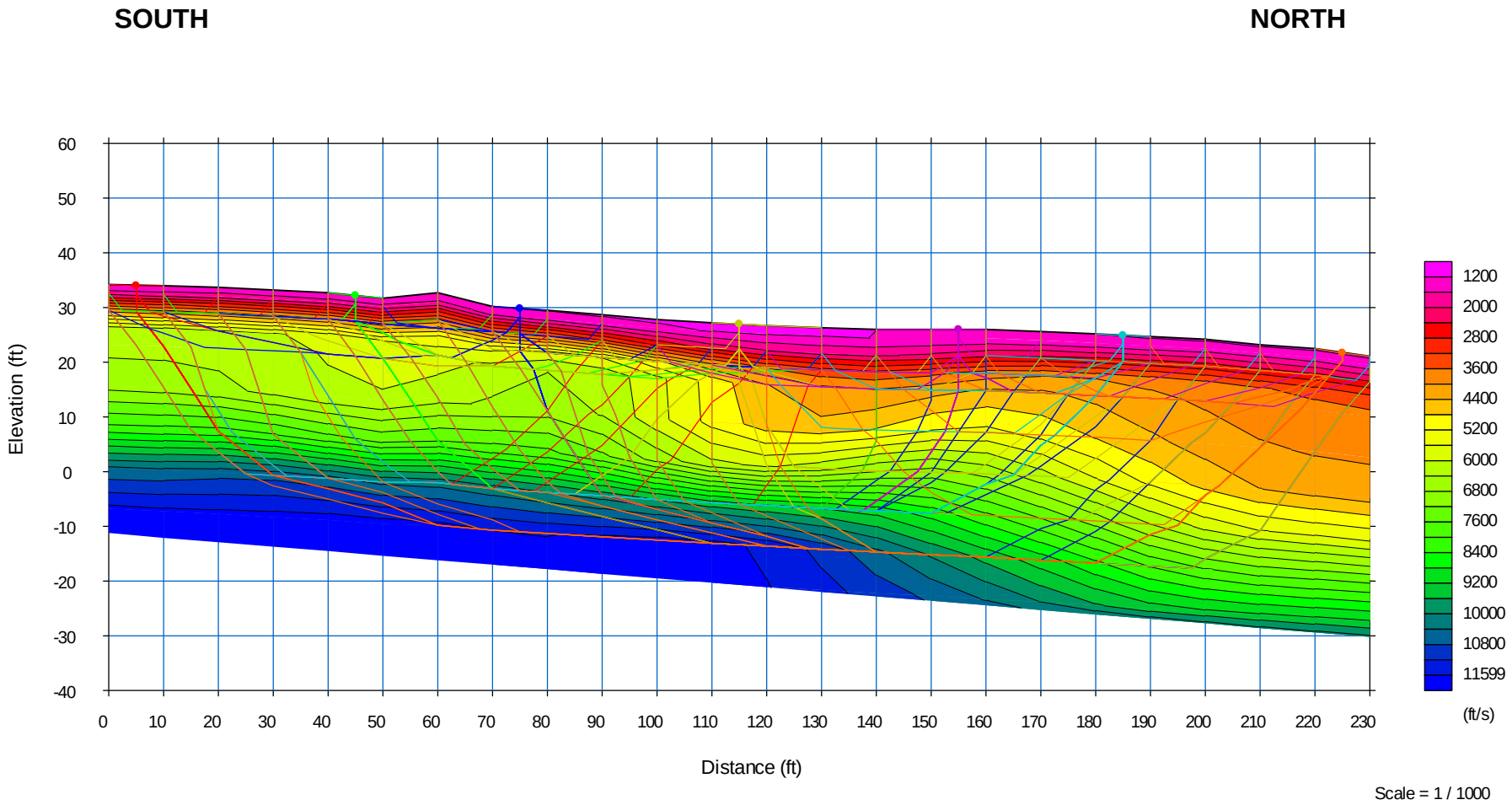
Bruce B. Redpath

California Registered Geophysicist GP-347

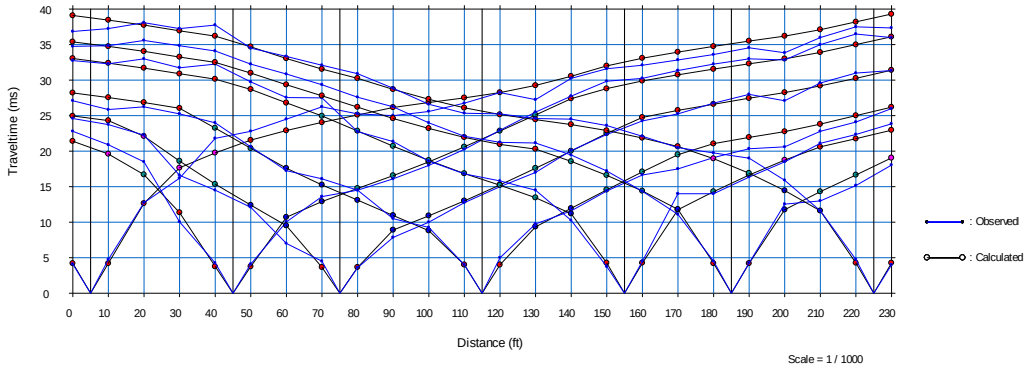
Location of Seismic Refraction Lines
Karuk Casino Project
Yreka, California - July 2013
2+30
SL-2
2+30
SL-1
0+00
0+00
200 ft
© 2012 Google
Google earth
Imagery Date: 7/7/2012 41° 42.720' N 122° 37.875' W elev 2771 ft eye alt 3532 ft



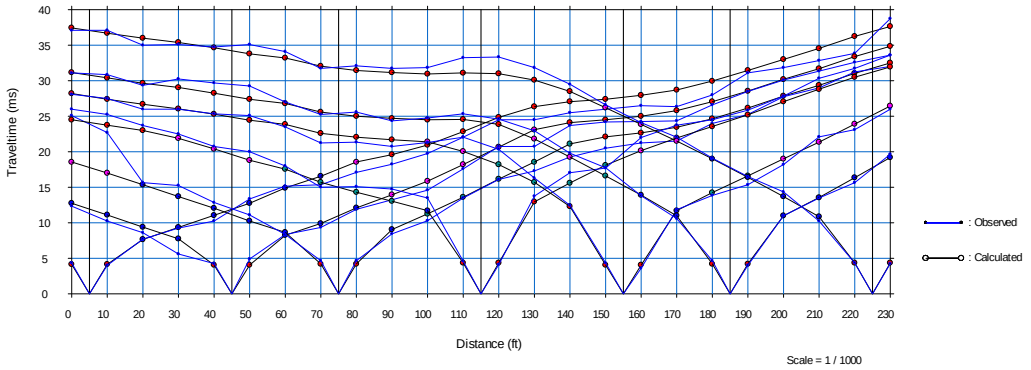
Seismic Refraction Line No. 1
Tomographic Inversion of Time vs. Distance Data
Karuk Casino Project
Yreka, California – July 2013



Seismic Refraction Line No. 2
Tomographic Inversion of Time vs. Distance Data
Karuk Casino Project
Yreka, California – July 2013



Seismic Refraction Line No. 1
Comparison of Observed and Calculated Travel Times



Seismic Refraction Line No. 2
Comparison of Observed and Calculated Travel Times

Karuk Casino Project
Yreka, California – July 2013

APPENDIX B
GEOLOGIC HAZARDS CHECKLIST

CGI utilized the attached California Geological Survey Technical Note 48 as a checklist of geologic hazards to address in the preliminary geotechnical study. Technical Note 48 was established for the evaluation of geologic hazards for schools, hospitals, and essential services buildings within California. It is a relatively comprehensive checklist and provides a standardized method of addressing geologic hazards on a given site. Because this is a preliminary geotechnical study that did not include invasive forms of exploration, not every item on the checklist could be addressed; however, those items pertinent to this study were evaluated and discussed in the report.

California Geological Survey - Note 48

Checklist for the Review of Engineering Geology and Seismology Reports for California Public Schools, Hospitals, and Essential Services Buildings

January 1, 2011

Note 48 is used by the California Geological Survey (CGS) to review the geology, seismology, and geologic hazards evaluated in reports that are prepared under California Code of Regulations (CCR), Title 24, California Building Code. CCR Title 24 applies to California Public Schools, Hospitals, Skilled Nursing Facilities, and Essential Services Buildings. The Building Official for public schools is the Division of the State Architect (DSA). Hospitals and Skilled Nursing Facilities in California are under the jurisdiction of the Office of Statewide Health Planning & Development (OSHPD). The California Geological Survey serves under contract with these two state agencies.

Project Name: _____ Location: _____

OSHPD or DSA File #: _____ Reviewed By: _____

Date Reviewed: _____ California Certified Engineering Geologist #: _____

Checklist Item or Topic Within Consulting Report NA = not applicable NR = not addressed by consultant and therefore not reviewed at this time	Adequately Described; Satisfactory	Additional Data Needed; Not Satisfactory
Project Location		
1. Site Location Map, Street Address, County Name: Correctly plot site on a 7½-minute USGS quadrangle base-map.		
2. Plot Plan with Exploration Data and Building Footprint: One boring or exploration shaft per 5000 ft^2, with minimum of two for any one building. Exploratory trench locations.		
3. Site Coordinates (Latitude & Longitude):		
Engineering Geology/Site Characterization		
4. Regional Geology and Regional Fault Maps: Concise page-sized illustrations with site plotted.		
5. Geologic Map of Site: Detailed (large-scale) geologic map with proper symbols and geologic legend.		
6. Subsurface Geology: Engineering geologic description summarized from boreholes or trench logs. Summarize ground water conditions.		
7. Geologic Cross Sections: Two or more detailed geologic sections with pertinent foundations and site grading.		
8. Active Faulting & Coseismic Deformation Across Site: Show proposed structures in relation to Alquist-Priolo Earthquake Fault Zones and/or any potential fault rupture hazard identified from the Safety Element of the local agency (city or county); show location of fault investigation trenches; 50-foot setbacks perpendicular from fault plane and proposed building footprints.		
9. Geologic Hazard Zones (Liquefaction & Landslides): (*If applicable*) Show proposed structures in relation to CGS official map showing zones of required investigation for liquefaction and landslide, and/or any pertinent geologic hazard map from the Safety Element of the local agency (city or county).		
10. Geotechnical Testing of Representative Samples: Broad suite of appropriate geotechnical tests.		
11. Consideration of Geology in Geotechnical Engineering Recommendations: Discuss engineering geologic aspects of excavation/grading/fill activities, foundation and support of structures. Include geologic and geotechnical inspections and problems anticipated during grading. Special design and construction provisions for bearing capacity failure and/or footings or foundations founded on weak or expansive soils. Consideration of seismic compression of fills; cut/fill differential settlement.		
Seismology & Calculation of Earthquake Ground Motion		
12. Evaluation of Historical Seismicity: Prepare a short description of how historical earthquakes have affected the site.		
13. Classify the Geologic Subgrade (Site Class): 2010 CBC Table 1613A.5.2 and §1613A.5.5.		
14. General Procedure Ground Motion Analysis: Follows 2010 CBC §1613A.5. Report parameters S_S, S_1, S_{DS} and S_{D1}. Recommended method for establishing map values found at: http://earthquake.usgs.gov/research/hazmaps/design/.		
15. Seismic Design Category: Report if $S_1 > 0.75$		

Checklist Item or Topic Within Consulting Report NA = not applicable NR = not addressed by consultant and therefore not reviewed at this time	Adequately Described; Satisfactory	Additional Data Needed; Not Satisfactory
16. Site-Specific Ground Motion Analysis: (*If applicable*) Required for sites where conditions described in 2010 CBC §1615A.1.2 apply. Provide probabilistic MCE, deterministic MCE and deterministic lower limit. See requirements in CBC §1803A.6.2. Provide design response spectrum that meets ASCE 7 §21.3. Also provide S_{DS} and S_{D1} values that meet ASCE 7 §21.4.		
17. Deaggregated Seismic Source Parameters: (*If applicable*) Provide controlling magnitude (M_w) and distance to fault, if needed for liquefaction, slope stability analysis or for earthquake record selection.		
18. Time Histories of Earthquake Ground Motion: (*If applicable*) Compute target spectra, justify selected earthquake records, scale to target to meet ASCE 7 §16.1.3 or §17.3 and show initial and scaled time histories and response spectra.		

Liquefaction/Seismic Settlement Analysis

19. Geologic Setting for Occurrence of Liquefaction: Perform screening analysis to identify where the following conditions apply: ♦ depth of highest historical ground water surface <50 ft. ♦ low-density, non-plastic alluvium, typically *SPT* $(N_1)_{60}$<30.		
20. Seismic Settlement Calculations: (*If applicable*) Evaluate both saturated and unsaturated layers of the entire soil column; based on several detailed geologic cross sections. Provide calculations (no estimates) including all input parameters. Evaluate liquefaction using highest historical ground water elevation. Evaluate using peak ground acceleration based on site-specific study or peak ground acceleration equal to $S_{DS}/2.5$.		
21. Other Liquefaction Effects (*If applicable*) Bearing capacity failure and/or lateral spread		
22. Mitigation Options for Liquefaction: (*If applicable*) Discuss effectiveness of options to mitigate liquefaction effects. Acceptance criteria for ground-improvement schemes.		

Slope Stability Analysis

23. Geologic Setting for Occurrence of Landslides: Characterize the potential for landsliding both on and off-site affecting proposed project.		
24. Determination of Static And Dynamic Strength Parameters: (*If applicable*) Conduct appropriate laboratory tests to determine material strength for both static and dynamic conditions.		
25. Determination of Pseudo-Static Coefficient (K_{eq}): (*If applicable*) Recommended procedure available from http://www.conservation.ca.gov/cgs/shzp/webdocs/Documents/sp117.pdf		
26. Identify Critical Slip Surfaces for Static and Dynamic Analyses: (*If applicable*) Failure surfaces should be modeled to include existing slip surfaces, discontinuities, geologic structure and stratigraphy; include appropriate ground water conditions.		
27. Dynamic Site Conditions: (*If applicable*) Site response analysis and topographic effects should be considered, if appropriate.		
28. Mitigation Options for Landsliding/Other Slope Failure: (*If applicable*) Discuss effectiveness of options to mitigate landsliding/slope failure effects. Acceptance criteria for ground-improvement schemes.		

Other Geologic Hazards or Adverse Site Conditions

These exceptional geologic hazards do not occur statewide; however, they may be pertinent to a particular site. Where these conditions exist relevant information should be communicated to the design team.

29. Expansive Soils		
30. Corrosive/Reactive Geochemistry of Geologic Subgrade: soluble sulfates and corrosive soils.		
31. Conditional Geologic Assessment: Including but not limited to - **A. Hazardous materials** methane gas, hydrogen-sulfide gas, tar seeps; **B. Volcanic eruption**; **C. Flooding** Riverine (FEMA FIRM's for 100-year flood)/Alluvial fan/Dam inundation, is the site elevated or protected from the hazard; **D. Tsunami and seiche inundation**; **E. Radon-222 gas**; **F. Naturally occurring asbestos** in geologic formations associated with serpentine; refer to CGS SP 124; **G. Hydrocollapse** of alluvial fan soils due to anthropic use of water; **H. Regional subsidence**; **I. Clays and cyclic softening**.		

Report Documentation

32. Geology, Seismology, and Geotechnical References		
33. Certified Engineering Geologist: (2010 CBC §1803A.1)		
34. Registered Geotechnical Engineer: (2010 CBC §1803A.1)		

APPENDIX F

TRANSPORTATION IMPACT ANALYSIS

Transportation Impact Analysis

Karuk Casino

Yreka, California

Draft

September 2013

Transportation Impact Analysis

Karuk Casino

Yreka, California

Prepared For:
Trenton Wilson
Analytical Environmental Services
1801 7th Street, Suite 100, Sacramento, CA 95811
(916) 447-3479

Prepared By:
Kittelson & Associates, Inc.
428 J Street, Suite 500
Sacramento, CA 95814
(916) 226-2190

Project Manager: Franklin Cai, T.E.
Project Principal: Scott Beaird, P.E., P.T.O.E.

Project No. 13592

September 2013

ENGINEER'S CERTIFICATION

This traffic analysis was prepared by

Franklin Cai

Registered Traffic Engineer in the State of California

An Engineer with the firm of

Kittelson & Associates, Inc.

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Section 1
Executive Summary

EXECUTIVE SUMMARY

Proposed Development Plan

The Karuk Casino project is a 800 gaming position casino and 80 room hotel development on the north side of Sharps Road, east of Fairlane Road in the City of Yreka. Phase 1 of the project consists of a 500 gaming position (14,200 square feet) casino. Phase 2 (total project) would add an additional 300 gaming positions (9,500 square feet) to the casino, for a total of 800 gaming positions or 23,700 square feet, as well as an 80 room hotel.

Trip Generation

Based on the Institute of Transportation Engineers (ITE) Trip Generation, 9th Edition (commonly referred to as the ITE Trip Generation Manual), combined with trip generation studies of previous, similar casino projects, the project descriptions for the Karuk Casino generate a maximum of 159 PM peak hour trips and 1,689 daily trips.

The project's traffic impacts were estimated by considering the amount of traffic to be generated by the project and the direction distribution of that traffic. Only the PM peak hour was analyzed for this project because a casino generates most of its weekday trips during the PM peak hour.

FINDINGS

Existing No Project Conditions

All study intersections were found to be operating at a satisfactory level of service based on the applicable standards.

Existing Plus Project Phase 1 Conditions

With the addition of project traffic from Phase 1,

- All study intersections are expected to perform satisfactorily per the applicable standards.

Based on the *City of Yreka General Plan*[1] and *Caltrans Traffic Impact Study Guidelines*[2], no impacts are considered significant.

[1] *City of Yreka General Plan 2002-2022*. City of Yreka (December 2003).
[2] *Guide for the Preparation of Traffic Impace Studies*. Caltrans (December 2002).

Existing Plus Project Phase 2 Conditions

With the addition of project traffic from Phase 2 (total build out including Phase 1),

- All study intersections are expected to perform satisfactorily per the applicable standards.

No impacts were found to be significant.

Cumulative (2030) No Project Conditions

Using the historic annual growth rate from the previous decade from Caltrans Traffic Count database, existing PM peak hour turning movement volumes at the study intersections were increased to turning movement volumes in the cumulative (2030) year.

In summary, in the Cumulative (2030) No Project scenario,

- The I-5 Northbound Ramps and Moonlit Oaks Avenue intersection is expected to perform below the applicable level of service standards.
- All other intersections are expected to perform satisfactorily.

Cumulative (2030) Plus Ultimate Build-out of Project Conditions

With the addition of project traffic,

- The I-5 Northbound Ramps and Moonlit Oaks Avenue intersection is expected to perform below the applicable level of service standards.
- All other intersections are expected to perform satisfactorily.
- The project's impact was found to be **significant** at the I-5 Northbound Ramps and Moonlit Oaks intersection. Mitigation measure to reduce the project's impact to less than significant is summarized in Table 1.

Table 1: Mitigation Summary

#	Intersection	Type	Existing Conditions		Cumulative (2035) Conditions	
			Mitigation	Mitigation Share	Mitigation	Mitigation Share
	INTERSECTIONS					
5	I-5 Northbound Ramps & Moonlit Oaks Avenue	TWSC	None Expected	None Expected	• Convert to single-lane roundabout; or • Convert to signalized intersection	75.0%

No queueing issues were identified at any of the study intersections using 95th percentile queue analysis for all scenarios.

Aside from the proposed mitigation, it's recommended that improvements be made to Sharps Road, at a minimum in the vicinity of the project site, providing curbs, gutters, and sidewalks with pedestrian access into the proposed casino. Similar improvements can be found along the short stretch of Sharps Road on the opposite side of the project.

Section 2
Introduction

INTRODUCTION

PROJECT DESCRIPTION

The Karuk Casino project is a 800 gaming position casino and 80 room hotel development on the north side of Sharps Road, east of Fairlane Road in the City of Yreka. Phase 1 of the project consists of a 500 gaming position (14,200 square feet) casino. Phase 2 (total build out) would add 300 gaming positions (9,500 square feet) to the casino, for a total of 800 gaming positions or 23,700 square feet, as well as an 80 room hotel.

STUDY AREA

Existing and future overall peak hour traffic conditions were evaluated at seven intersections that would most likely be impacted by the project. The following locations were studied:

1. South Main Street/Fort Jones Road and Oberlin Road
2. Fairlane Road and Oberlin Road
3. Campbell Avenue and Oberlin Road
4. I-5 Southbound Ramps and Moonlit Oaks Avenue
5. I-5 Northbound Ramps and Moonlit Oaks Avenue
6. Fairlane Road and Moonlit Oaks Avenue
7. Fairlane Road and Sharps Road

In summary, the study includes an analysis of seven intersections in the vicinity of the project site. The study intersections were evaluated against the standards set forth by the City of Yreka and Caltrans.

Traffic conditions at the intersections were analyzed for the weekday PM peak hours of traffic. The PM peak hour is typically between 4:00 and 6:00 PM.

Traffic conditions were evaluated for the following scenarios:

Scenario 1: Existing Conditions. Existing traffic volumes were obtained from recent traffic counts.

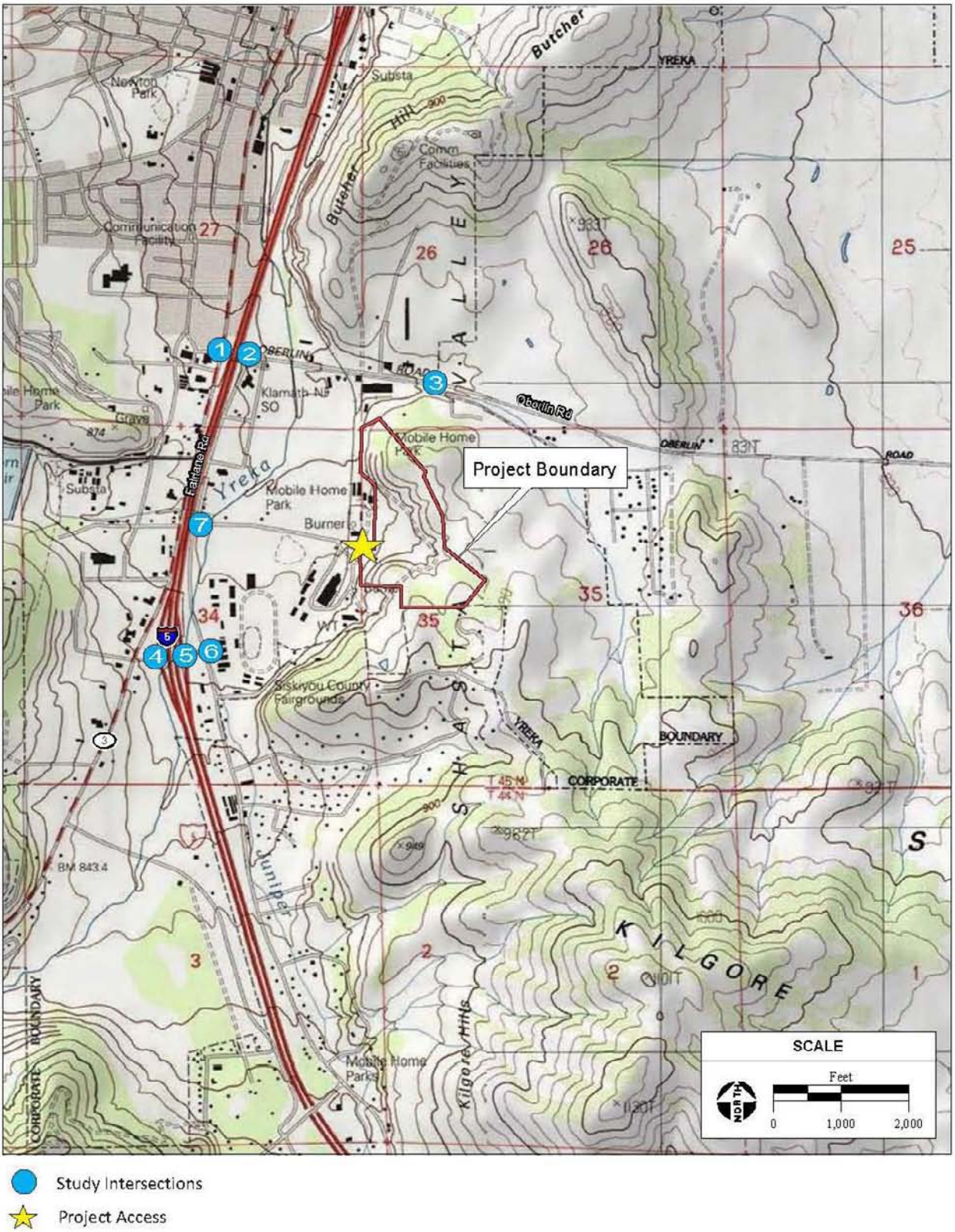
Scenario 2: Existing Plus Project Conditions. Project generated traffic volumes were added to the Existing traffic volumes. Existing plus project conditions were evaluated relative to existing conditions in order to determine potential project impacts.

Scenario 3: Cumulative Conditions. Cumulative Conditions traffic volumes were developed using the historical growth rate from the previous decade based on Caltrans traffic data.

Scenario 4: Cumulative Plus Project Conditions. Project generated traffic volumes were added to the cumulative traffic volumes. Cumulative plus project conditions were evaluated relative to cumulative conditions in order to determine potential cumulative project impacts.

Figure 1 is a location map of the study area with key intersections analyzed in this report.

Figure 1: Project Vicinity Map



Study Intersections

Project Access

Source: Analytical Environmental Services, 2013.

Section 3
Existing Conditions

EXISTING CONDITIONS

The existing conditions analysis identifies the site conditions and current operational and geometric characteristics of the key intersections within the study area. These conditions will be compared with future conditions later in this report.

TRANSPORTATION FACILITIES

Roadway Facilities

The existing traffic lane configurations and traffic controls at the key intersections are shown in Figure 2. The following is a description of the roadway network in the vicinity of the project:

Interstate 5 (I-5) is an interstate freeway that traverses in the north-south direction, providing intercity connection to the north and south of the City of Yreka. Interstate 5 has two 12-foot travel lanes in each direction with 10-foot shoulders at the interchange in the vicinity of the project site. The facility would provide intercity access to the proposed traffic from the north and south. The speed limit along Interstate-5 is posted at 65 miles per hour (mph).

Fairlane Road is a collector that begins at Oberlin Road and continues south into the County of Siskiyou where it terminates at Running Bear Road. Fairlane Road has two 12-foot travel lanes with 10-foot paved shoulders in the vicinity of the project site. The speed limit along Fairlane Road is posted at 45 mph. The facility lacks curbs, gutters, and sidewalks along portions of the facility in the vicinity of the project site.

Oberlin Road is an arterial that traverses in the east-west direction, providing connection between Kegler Lane and Montague Grenada Road. Oberlin Road has two 12-foot travel lanes with 8-foot paved shoulders in the vicinity of the project site. The speed limit along Oberlin Road is posted at 35 mph in the vicinity of the project site.

Sharps Road is a local roadway, running in the east-west direction from Fairlane Road to the project site. Sharps Road has two 12-foot travel lanes with no paved shoulders in the vicinity of the project site. The facility would provide access to the proposed project via a full access project driveway. The speed limit along Sharps Road is unposted and the facility lacks curbs, gutters, and sidewalks along most of its length with the exception of a short segment across from the project site. Surrounding land uses include mostly empty lots, a large portion of which south of Sharps Road is used for the Siskiyou County Fairgrounds. There is also an R.V. Park to the north of Sharps Road and some scattered industrial uses.

Moonlit Oaks Avenue is an arterial/local roadway, running east-west from Campus Drive to Fairlane Road. Moonlit Oaks Avenue has two 15-foot travel lanes with 5-foot paved shoulders in the vicinity of the project area. The facility is at the location of the interchange with Interstate 5 that would provide intercity access to the project site. The speed limit along Moonlit Oaks Avenue is unposted and the

facility lacks curbs, gutters, and sidewalks except on both approaches to the Moonlit Oaks Avenue and Main Street signalized intersection.

Pedestrian and Bicycle Facilities

Fairlane Road is the only currently-designated bicycle route in the City of Yreka. However, Class II bicycle lanes are not present in the vicinity of the project area. The area also generally lacks curbs, gutters, and sidewalks with the exceptions noted above. Additionally, Oberlin Road and Moonlit Oaks Avenue are designated as bicycle routes in the City of Yreka's General Plan.

Transit Facilities

Local transit service is provided within the City of Yreka by the Siskiyou Transit and General Express (STAGE) transit agency. However, there is not local transit service provided in the vicinity of the project site.

EXISTING TRAFFIC VOLUMES AND PEAK HOUR OPERATIONS

The existing traffic volume levels in the vicinity of the project were determined by collecting afternoon peak hour turning movement counts at six of the seven study intersections. The lone exception is the Sharps Road and Fairlane Road intersection which was not identified as a study intersection at the time of the traffic counts. Traffic volumes at Sharps Road and Fairlane Road were inferred from nearby counts at the Fairlane Road and Oberlin Road intersection to the north and the Fairlane Road and Moonlit Oaks Road intersections to the south. The difference in approaching and departing volumes were all attributed to the Sharps Road and Fairlane Road intersection's inbound and outbound movements. The traffic counts were collected during the afternoon (4:00PM – 6:00PM) peak hours on June 20, 2013 when all of the local area schools were in session. Figure 3 shows the turning movement counts as well as the existing geometries and controls at the study intersections.

Figure 2: Existing Intersection Lane Configuration and Control

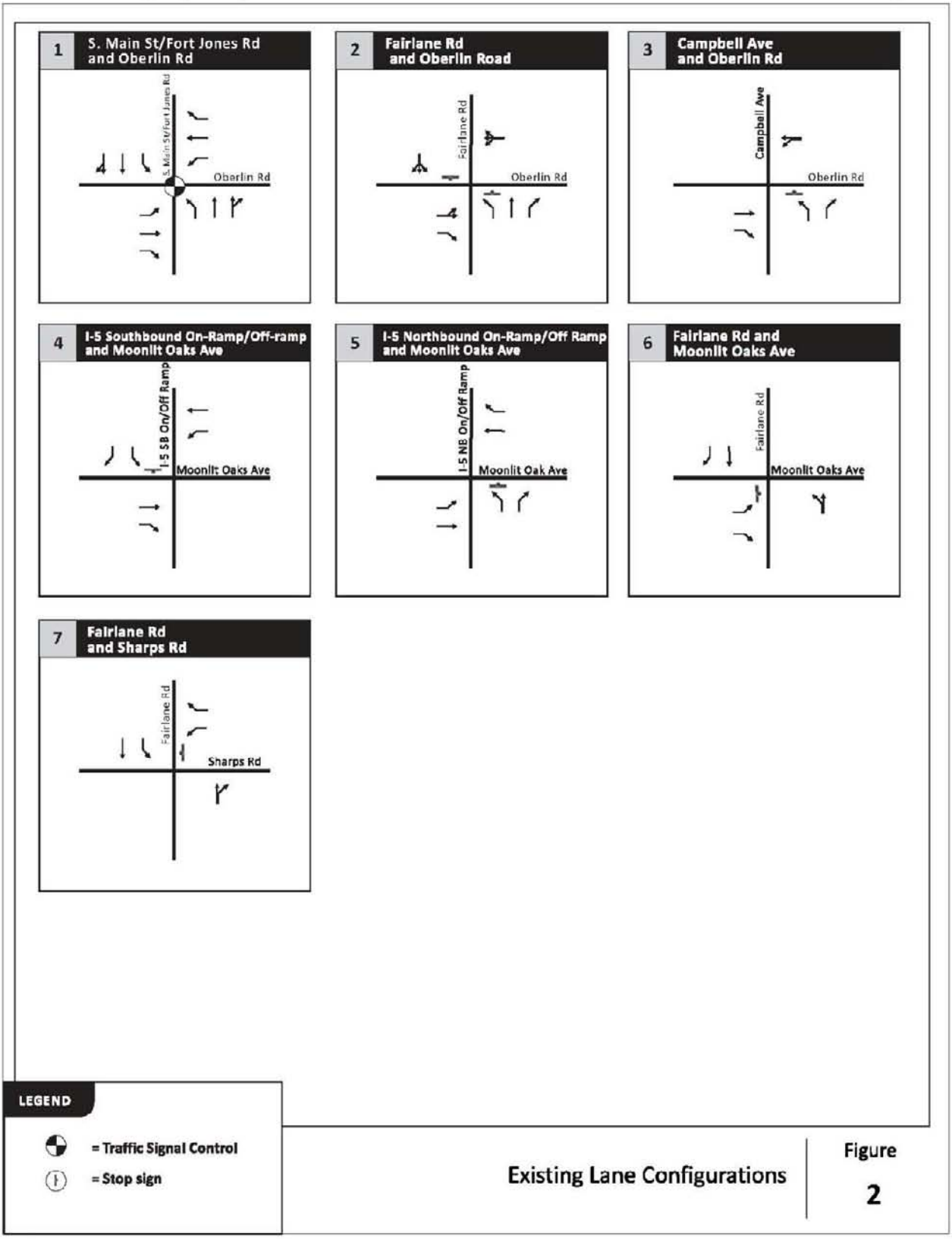
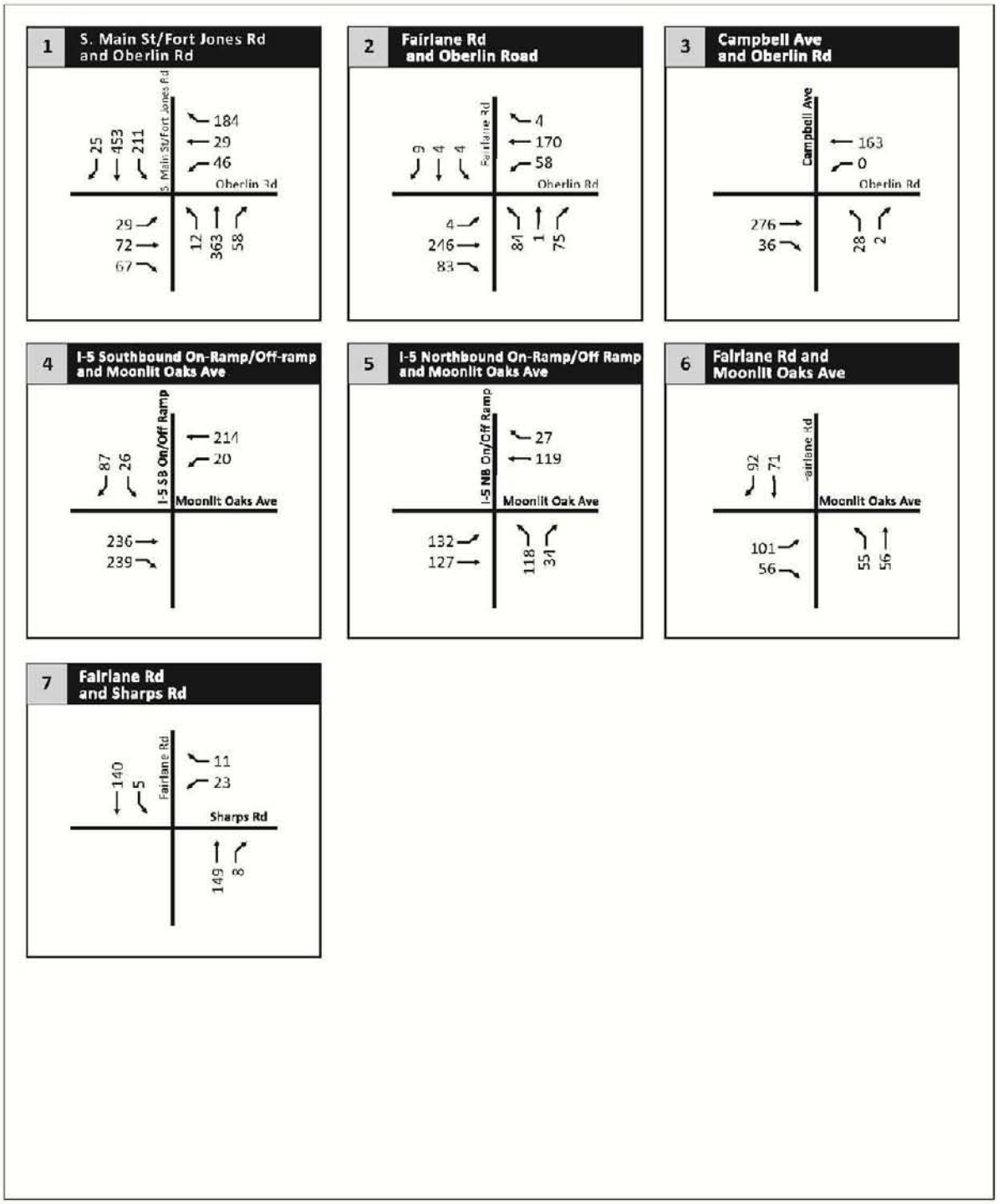


Figure 3: Existing Peak Hour Volumes



LEVEL OF SERVICE METHODOLOGY

Level of Service (LOS) is a qualitative indication of the level of delay and congestion experienced by motorists using an intersection. Levels of service are designated by the letters A through F, with A being the best conditions and F being the worst (high delay and congestion). The City of Yreka considers LOS A through C to be acceptable operating conditions for intersections within the City's jurisdiction. Caltrans considers LOS A through C to be acceptable operating conditions for state highway facilities.

The following intersections lie within the City of Yreka's jurisdiction, and therefore, LOS C is acceptable for these intersections:

- South Main Street/Fort Jones Road and Oberlin Road
- Fairlane Road and Oberlin Road
- Campbell Avenue and Oberlin Road
- Fairlane Road and Moonlit Oaks Avenue
- Fairlane Road and Sharps Road

The following intersections and roadway segments lie within the jurisdiction of Caltrans, and therefore, LOS C is acceptable for these intersections:

- I-5 Southbound Ramps and Moonlit Oaks Avenue
- I-5 Northbound Ramps and Moonlit Oaks Avenue

The methods used for analysis are described below.

Signalized Intersection Analysis

All signalized intersections (those controlled by traffic signals) were analyzed using the Highway Capacity Manual (HCM) 2010 methodology. This procedure calculates an average stopped delay per vehicle at a signalized intersection, and assigns a level of service designation based upon the delay. Table 2 presents the HCM 2010 delay and level of service definitions. Optimized timings were assumed for all scenarios.

Table 2: Signalized Intersection Delay and LOS Definitions

Control Delay (s/veh)	V/C ≤1.0	V/C >1.0
≤10	A	F
>10–20	B	F
>20–35	C	F
>35–55	D	F
>55–80	E	F
>80	F	F

Source: Highway Capacity Manual 2010, Chapter 18 (Transportation Research Board, 2010)

Unsignalized Intersection Analysis

At an unsignalized intersection, most of the major street traffic is not delayed, and by definition have acceptable conditions. The major street left-turn movements and the minor street movements are all susceptible to delay of varying degrees. Generally, the higher the major street traffic volumes, the higher the delay for the minor movements.

Two-Way Stop Controlled (TWSC) Intersection Analysis: Non-signalized TWSC intersection analyses were conducted using the operational methodology outlined in the *Highway Capacity Manual* (Transportation Research Board, Washington D.C., 2000). This procedure calculates an average stopped delay per vehicle for each movement and assigns a level of service designation based upon the minor leg's worst movement average delay.

HCM 2010 definitions for delay and level of service at unsignalized intersections are presented in Table 3.

Table 3: Unsignalized Intersection Delay and LOS Definitions

Control Delay (s/veh)	V/C ≤1.0	V/C >1.0
≤10	A	F
>10–15	B	F
>15–25	C	F
>25–35	D	F
>35–50	E	F
>50	F	F

Source: Highway Capacity Manual 2010, Chapter 18 (Transportation Research Board, 2010)

SIGNAL WARRANTS

Unsignalized intersections were evaluated using the Peak Hour Volume Warrant (Warrant 3) in the Caltrans Traffic Manual. Non-signalized intersections shown to trigger the peak hour signal warrant are identified in this analysis for discussion purposes. However, the decision to install a traffic signal should not be based solely upon a single warrant. The additional eight other warrants should be examined as well.

Warrant 3 addresses peak hour traffic volume levels above which it is presumed that the need for a traffic signal is warranted. Traffic signals tend to reduce the potential for right-angle type collisions but also tend to increase the potential for less severe read-end collisions. Signal warrant peak hour volumes represent the threshold point at which the potential for more rear-end collisions is offset by the potential for fewer more severe right-angle collisions.

All unsignalized intersections were evaluated using total approach volumes. Where signal warrants were met with total approach volume, right turn volumes were reduced if a dedicated right turn only

lane was present in accordance with the California MUTCD. A common approach to determining the amount of the reduction involves subtracting 85% of the right turn lane's capacity from the number of right turns on the approach. If the result is less than or equal to zero, no right turns are included in the warrant for that approach.

IMPACT SIGNIFICANCE CRITERIA

City of Yreka

According to the City of Yreka's General Plan, the following are thresholds of significance, which are used to determine if an impact is significant and requires mitigation.

For unsignalized and signalized intersections, a project is considered to have a significant effect if it would:

- Result in a roadway or a signalized intersection operating at an acceptable LOS (A, B, or C) to deteriorate to an unacceptable LOS (D, E, or F)

Caltrans

Per Caltrans guidelines[3], Caltrans endeavors to maintain a target LOS at the transition between LOS "C" and LOS "D" on State highway facilities. However, Caltrans acknowledges that this may not always be feasible and recommends that the lead agency consult with Caltrans to determine the appropriate target LOS.

[3] *Guide for the Preparation of Traffic Impact Studies*. Caltrans (December 2002)

LEVEL OF SERVICE ANALYSIS

Table 4 presents the results of the level of service analysis for the Existing (No Project) conditions. All study intersections were found to be operating at a satisfactory level of service.

Intersection

Table 4: Existing No Project Intersection LOS Summary

#	Intersection	Control	Time	Existing No Project		
				Worst Movement	Delay	LOS
1	South Main Street/Fort Jones Road & Oberlin Road	Signal	PM	-	9.9	A
2	Fairlane Road & Oberlin Road	TWSC	PM	NBL	17.0	C
3	Campbell Avenue & Oberlin Road	TWSC	PM	NBL	11.7	B
4	I-5 Southbound Ramps & Moonlit Oaks Avenue	TWSC	PM	SBL	15.4	C
5	I-5 Northbound Ramps & Moonlit Oaks Avenue	TWSC	PM	NBL	17.8	C
6	Fairlane Road & Moonlit Oaks Avenue	TWSC	PM	EBL	12.1	B
7	Fairlane Road & Sharps Road	TWSC	PM	WBL	10.6	B

For signalized intersection, the HCM 2010 intersection delay and LOS are reported. For two-way stop controlled (TWSC) intersections, the worst movement's delay and LOS are reported.

SIGNAL WARRANTS ANALYSIS

Table 5 presents the results of the signal warrant analysis for the Existing No Project conditions. No intersections were found to meet the peak hour signal warrant in the PM peak hour under the Existing No Project condition. Signal warrant analysis worksheets for all scenarios are provided in Appendix 7.

Table 5: Existing No Project Signal Warrant Summary

#	Intersection	Control	Meets PM Peak Hour?
2	Fairlane Road & Oberlin Road	TWSC	No
3	Campbell Avenue & Oberlin Road	TWSC	No
4	I-5 Southbound Ramps & Moonlit Oaks Avenue	TWSC	No
5	I-5 Northbound Ramps & Moonlit Oaks Avenue	TWSC	No
6	Fairlane Road & Moonlit Oaks Avenue	TWSC	No
7	Fairlane Road & Sharps Road	TWSC	No

The California MUTCD Peak Hour Signal Warrant (#3) was used for the signal warrant analysis.

Section 4
Existing Plus Project Conditions

EXISTING PLUS PROJECT CONDITIONS

To develop the Existing Plus Project traffic conditions, the traffic generated by the proposed project is added to the Existing traffic volumes. Existing Plus Project conditions are compared relative to the Existing conditions to determine the potential impacts due to the proposed project.

Project Traffic

The project's traffic impacts were estimated in this section by considering the amount of traffic to be generated by the project and the directional distribution of that traffic. The project site is proposed to have one access point toward the end of Sharps Road.

TRIP GENERATION

Generally, the ITE Trip Generation Manuals is the standard reference from which to determine trip generation rates. However, the rates for a casino included in the latest edition of the ITE Trip Generation Manual are based on surveys of six casino/video lottery establishments taken in South Dakota in the 1990's. The square footage of the surveyed facilities ranged from 600 to 2,400 square feet. Based on preliminary calculations and a comparison of this rate with other studies, described below, it was found that use of the ITE rate was inappropriate and produced results that did not compare with the expected traffic of the Proposed Project. Instead, as described below, more recent trip generation data available from surveys of existing tribal casinos were used to estimate the traffic that would be produced by the casino portion of the Proposed Project for Phase 1 and 2.

The rates used in the weekday analysis are presented in Table 6. To determine the weekday trip generation for the project, an analysis of the trip generation was conducted to relate the actual casino square footage to the trips being generated. Data for this comparison was previously obtained from 24-hour machine traffic counts conducted during the peak season at the Cache Creek Casino located in Capay, California.[4] Using this data it was determined that including the non-gaming areas in the calculations results in a gross overstatement of the future casino trip generation. Therefore, the additional trips from the casino portion of the Proposed Project were calculated based on the area of the gaming floor and other space that would be accessible to patrons (excluding back of house, administration, and employee areas).

The trip generation rates used in the Shingle Springs Rancheria Interchange Project Transportation/Circulation Technical Study[5] were based on survey data collected at five (5) northern

[4] *Report on Traffic Data Collection at the Cache Creek Casino/Hotel*, conducted between July 26 and July 29, 2007 by Kimley Horn & Associates, San Ramon, CA, 2007.

[5] *Shingle Springs Rancheria Interchange Project Transportation/Circulation Technical Study*, CCS Planning and Engineering, San Jose, August, 2002.

California Indian gaming casinos ranging in size from 17,300 square feet to 78,000 square feet. Inbound and outbound traffic data was collected at each casino surveyed for a weekday AM peak hour, a weekday PM peak hour, and the Saturday peak hour. The resulting traffic data was then converted to trip generation data for use in the Shingle Springs document using a weighted average rate methodology.

The use of the weighted average to establish trip rates is justified based on the following precedents:

1. A similar methodology using a "weighted average" was used by Fehr and Peers within their traffic study for the Auburn Rancheria. A PM peak hour rate was established within that report by using a "weighted average" of PM peak hour rates at four northern California casinos.
2. Page 7 of the Institute of Transportation Engineer's "Trip Generation Handbook – Second Edition" published in June of 2004 specifies that ITE rates are based on weighted averages and states: "The average rates presented in Trip Generation are weighted averages (weighted by the units of the independent variable)." The use of the weighted average rates is typically specified by ITE when there are less than 20 survey data points. When there are more than 20 data points (and the data has the desired level of coordination) then a regression equation may be used, if provided.

The hotel component base trip generation information was developed from the number of rooms provided by the applicant using the Institute of Transportation Engineers (ITE) Trip Generation, Ninth Edition, 2012. The rates for a standard hotel were used (ITE Land Use Code 310).

The San Diego County Department of Public Works prepared a study of casino trip generation entitled "Report on the Potential Impacts of Tribal Gaming on Northern and Eastern San Diego County".[6] Based on surveys of numerous southern California Indian gaming casinos, the San Diego Report established that when a hotel is part of a casino-hotel establishment the daily trip rate for the hotel is typically around 3.0 trips per room rather than the typical 8.17 trips per room rate found in the ITE Trip Generation manual. This is a 63.5% reduction in number of daily trips likely to be generated by a hotel when the hotel is combined with a casino. This 63.5% reduction in trips was applied to the AM, PM, and Saturday peak hour rates for a hotel. This is conservative compared to the 75% reduction that has been used in other recent casino studies in Caltrans District 3 such as the Thunder Valley Casino Expansion Project.[7]

Using these rates, during the normal weekday p.m. commute peak hour the Proposed Project is estimated to generate a total of approximately 159 p.m. peak hour trips (76 inbound and 83 outbound). The revised project descriptions for the two phases of the Karuk Casino generate a maximum of 1,689

[6] *Cowlitz Indian Tribe Trust Acquisition and Casino Project Final Environmental Impact Statement*, Bureau of Indian Affairs, Portland, OR, May, 2008.

[7] *Thunder Valley Casino Expansion Draft TEIR*, United Auburn Indian Community, Auburn, CA, February, 2008.

daily trips. Table 7 and Table 8 present the trip generation by peak hour and daily for each phase of the project.

Table 6: Weekday Trip Generation Rates

Land Use	Daily Trip Rates	PM Peak-Hour Trip Rates		
		In	Out	Total
Casino (per 1000 sq. ft.)	61.20	2.74	3.21	5.95
Standard Hotel (per room) (ITE 310)	8.17	0.35	0.26	0.61
Casino Hotel (per room) (after applying 63.5% reduction)	2.98	0.13	0.09	0.22

Table 7: Proposed Project Phase 1 Weekday Trip Generation Estimates

Land Use	Size	Daily Trips	PM Peak-Hour Trip Rates		
			In	Out	Total
Casino (per 1000 sq. ft.)	14,200 sq. ft.	869	39	46	85
Total		869	39	46	85

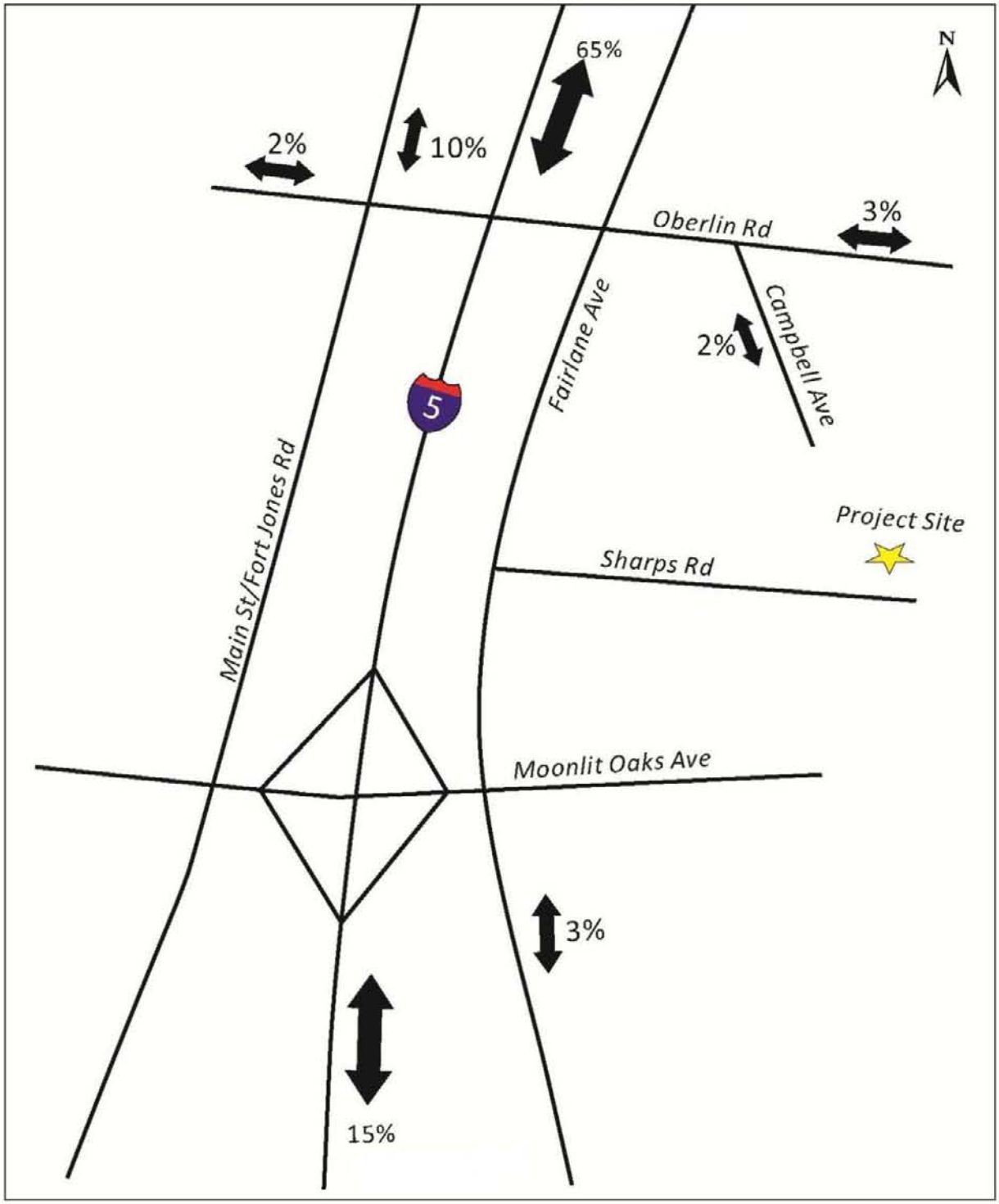
Table 8: Proposed Project Phase 2 (Total Build Out) Weekday Trip Generation Estimates

Land Use	Size	Daily Trips	PM Peak-Hour Trip Rates		
			In	Out	Total
Casino (per 1000 sq. ft.)	23,700 sq. ft.	1450	65	76	141
Casino Hotel (per room)	80 rooms	239	11	7	18
Total		1689	76	83	159

Trip Distribution

To evaluate the traffic related effects of the project, trips that would be generated by the project were distributed onto the roadway network. Trip distribution simulates the circulation pattern of travel, by matching trips generated by one type of land use (e.g., residential) with trips generated by other types of land uses (e.g., employment, shopping, and education). Trip distribution patterns to and from the proposed project were estimated by evaluating the existing roadway network, existing travel patterns from counts, nearby population centers of likely patrons for this proposed casino project, and current land use patterns. Trip distribution patterns are shown in Figure 4. Figure 5 and Figure 6 present the project's turning movement volumes at the study intersections for the Phase 1 and Phase 2 scenarios, respectively.

Figure 4: Project Trip Distribution



Trip Distribution | Figure 4

Figure 5: Project Only Phase 1 Peak Hour Volumes

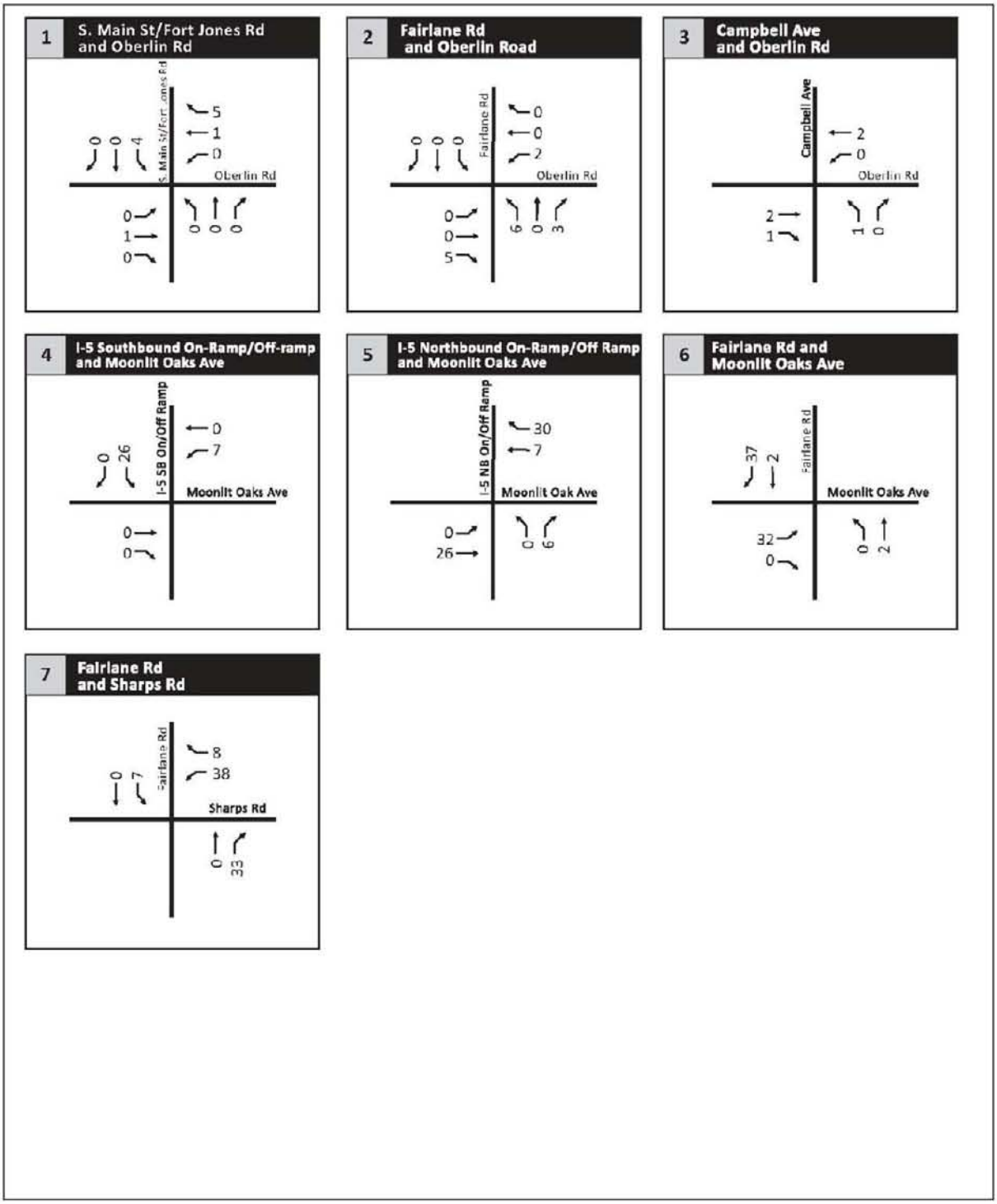


Figure 6: Project Only Phase 2 (Total Build Out) Peak Hour Volumes

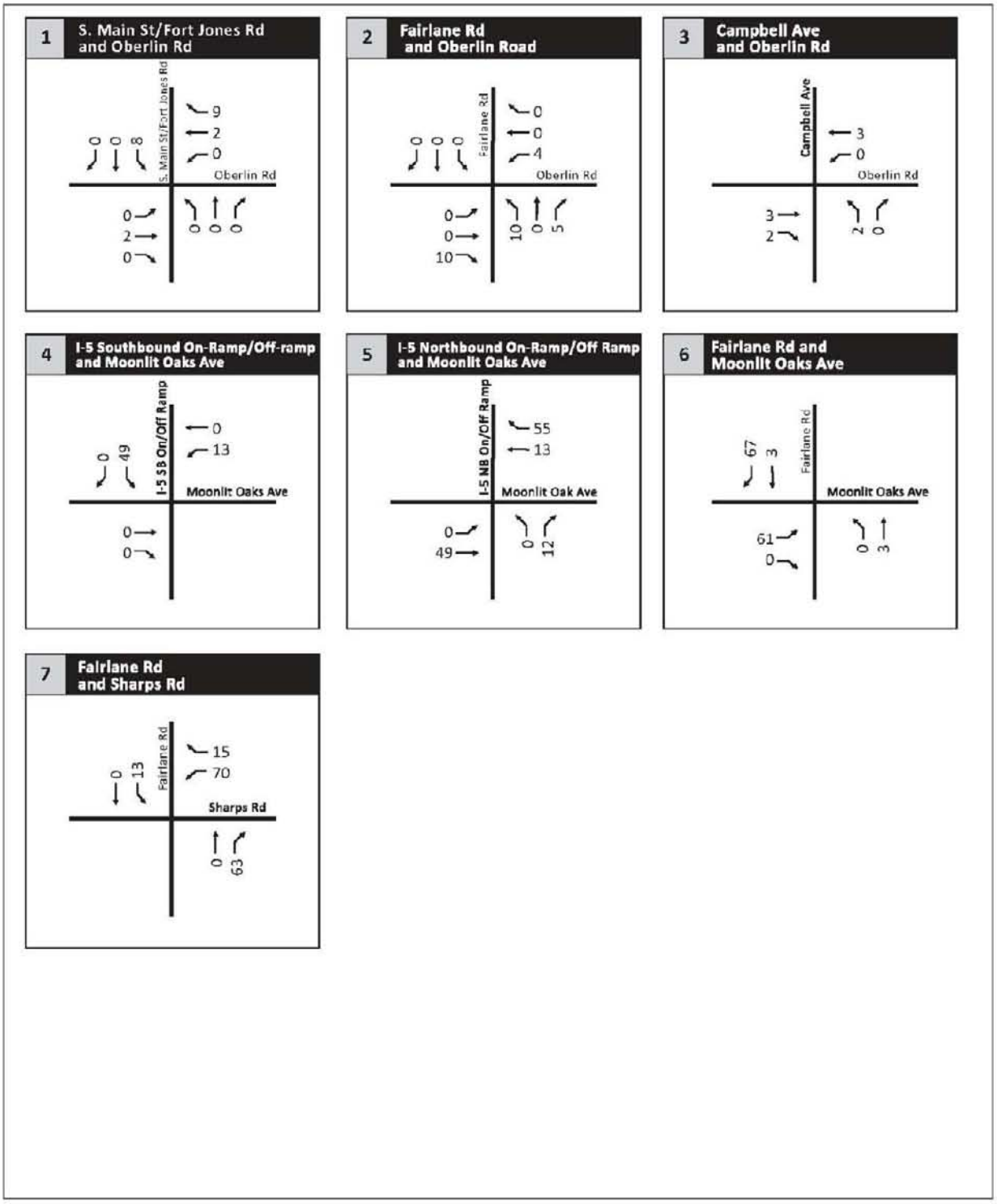


Figure 7: Existing Plus Project Phase 1 Peak Hour Volumes

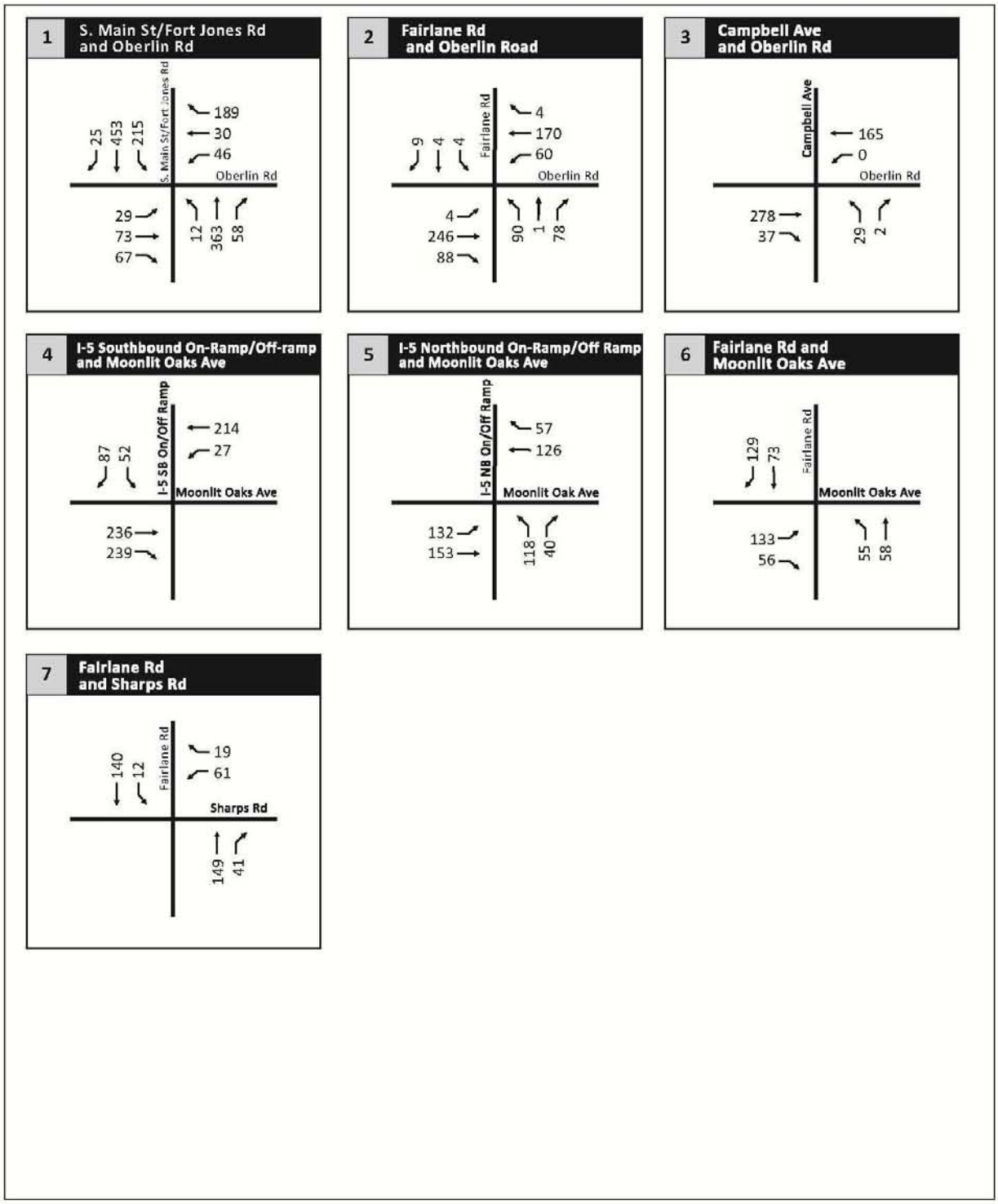
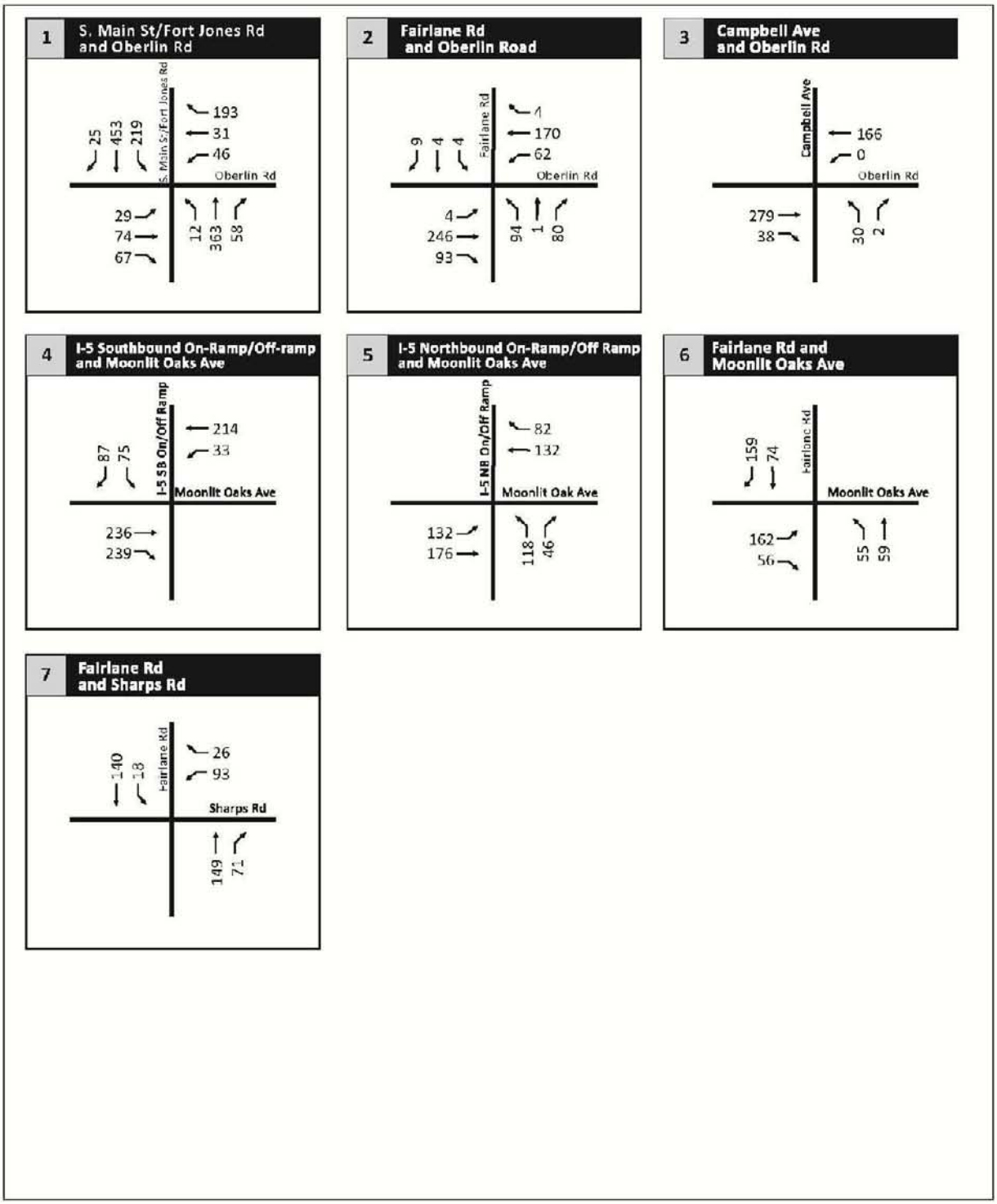


Figure 8: Existing Plus Project Phase 2 (Total Build Out) Peak Hour Volumes



Existing PM Traffic Volumes with Project Phase 2

Figure 8

LEVEL OF SERVICE ANALYSIS

Existing Plus Project intersection peak hour volumes for Phase 1 and Phase 2 were computed as the sum of the Existing peak hour volumes and Project Only peak hour volumes for Phase 1 and Phase 2, respectively. Figure 7 and Figure 8 present the peak hour volumes for each phase while Table 9 and Table 10 present the level of service at study intersections under Existing Plus Project conditions for Phase 1 and Phase 2, respectively. No intersections are expected to perform below their level of service standard for either the Phase 1 or Phase 2 conditions.

Intersection

Table 9: Existing Plus Project Phase 1 Intersection LOS Summary

#	Intersection	Control	Time	Minimum Acceptable LOS	Existing No Project		
					Worst Movement	Delay	LOS
1	South Main Street/Fort Jones Road & Oberlin Road	Signal	PM	C	-	9.9	A
2	Fairlane Road & Oberlin Road	TWSC	PM	C	NBL	17.5	C
3	Campbell Avenue & Oberlin Road	TWSC	PM	C	NBL	11.8	B
4	I-5 Southbound Ramps & Moonlit Oaks Avenue	TWSC	PM	C	SBL	16.5	C
5	I-5 Northbound Ramps & Moonlit Oaks Avenue	TWSC	PM	C	NBL	19.3	C
6	Fairlane Road & Moonlit Oaks Avenue	TWSC	PM	C	EBL	13.0	B
7	Fairlane Road & Sharps Road	TWSC	PM	C	WBL	11.4	B

For signalized intersection, the HCM 2010 intersection delay and LOS are reported. For two-way stop controlled (TWSC) intersections, the worst movement's delay and LOS are reported.

Table 10: Existing Plus Project Phase 2 (Total Build Out) Intersection LOS Summary

#	Intersection	Control	Time	Minimum Acceptable LOS	Existing No Project		
					Worst Movement	Delay	LOS
1	South Main Street/Fort Jones Road & Oberlin Road	Signal	PM	C	-	10.0	A
2	Fairlane Road & Oberlin Road	TWSC	PM	C	NBL	17.9	C
3	Campbell Avenue & Oberlin Road	TWSC	PM	C	NBL	11.8	B
4	I-5 Southbound Ramps & Moonlit Oaks Avenue	TWSC	PM	C	SBL	17.8	C
5	I-5 Northbound Ramps & Moonlit Oaks Avenue	TWSC	PM	C	NBL	21.0	C
6	Fairlane Road & Moonlit Oaks Avenue	TWSC	PM	C	EBL	14.0	B
7	Fairlane Road & Sharps Road	TWSC	PM	C	WBL	12.2	B

For signalized intersection, the HCM 2010 intersection delay and LOS are reported. For two-way stop controlled (TWSC) intersections, the worst movement's delay and LOS are reported.

SIGNAL WARRANTS ANALYSIS

Table 11 presents the results of the signal warrant analysis for the Existing Plus Project Phase 1 conditions. No intersections were found to meet the peak hour signal warrant in the PM peak hour.

Table 11: Existing Plus Project Phase 1 Signal Warrant Summary

#	Intersection	Control	Meets PM Peak Hour?
2	Fairlane Road & Oberlin Road	TWSC	No
3	Campbell Avenue & Oberlin Road	TWSC	No
4	I-5 Southbound Ramps & Moonlit Oaks Avenue	TWSC	No
5	I-5 Northbound Ramps & Moonlit Oaks Avenue	TWSC	No
6	Fairlane Road & Moonlit Oaks Avenue	TWSC	No
7	Fairlane Road & Sharps Road	TWSC	No

The California MUTCD Peak Hour Signal Warrant (#3) was used for the signal warrant analysis.

Table 12 presents the results of the signal warrant analysis for the Existing Plus Project Phase 2 conditions. No intersections were found to meet the peak hour signal warrant in the PM peak hour

Table 12: Existing Plus Project Phase 2 (Total Build Out) Signal Warrant Summary

#	Intersection	Control	Meets PM Peak Hour?
2	Fairlane Road & Oberlin Road	TWSC	No
3	Campbell Avenue & Oberlin Road	TWSC	No
4	I-5 Southbound Ramps & Moonlit Oaks Avenue	TWSC	No
5	I-5 Northbound Ramps & Moonlit Oaks Avenue	TWSC	No
6	Fairlane Road & Moonlit Oaks Avenue	TWSC	No
7	Fairlane Road & Sharps Road	TWSC	No

The California MUTCD Peak Hour Signal Warrant (#3) was used for the signal warrant analysis.

IMPACT DETERMINATION

No study facilities were found to be operating unsatisfactorily or meeting the peak hour signal warrants.

Section 5
Cumulative No Project Conditions

YEAR 2030 CUMULATIVE NO PROJECT CONDITIONS

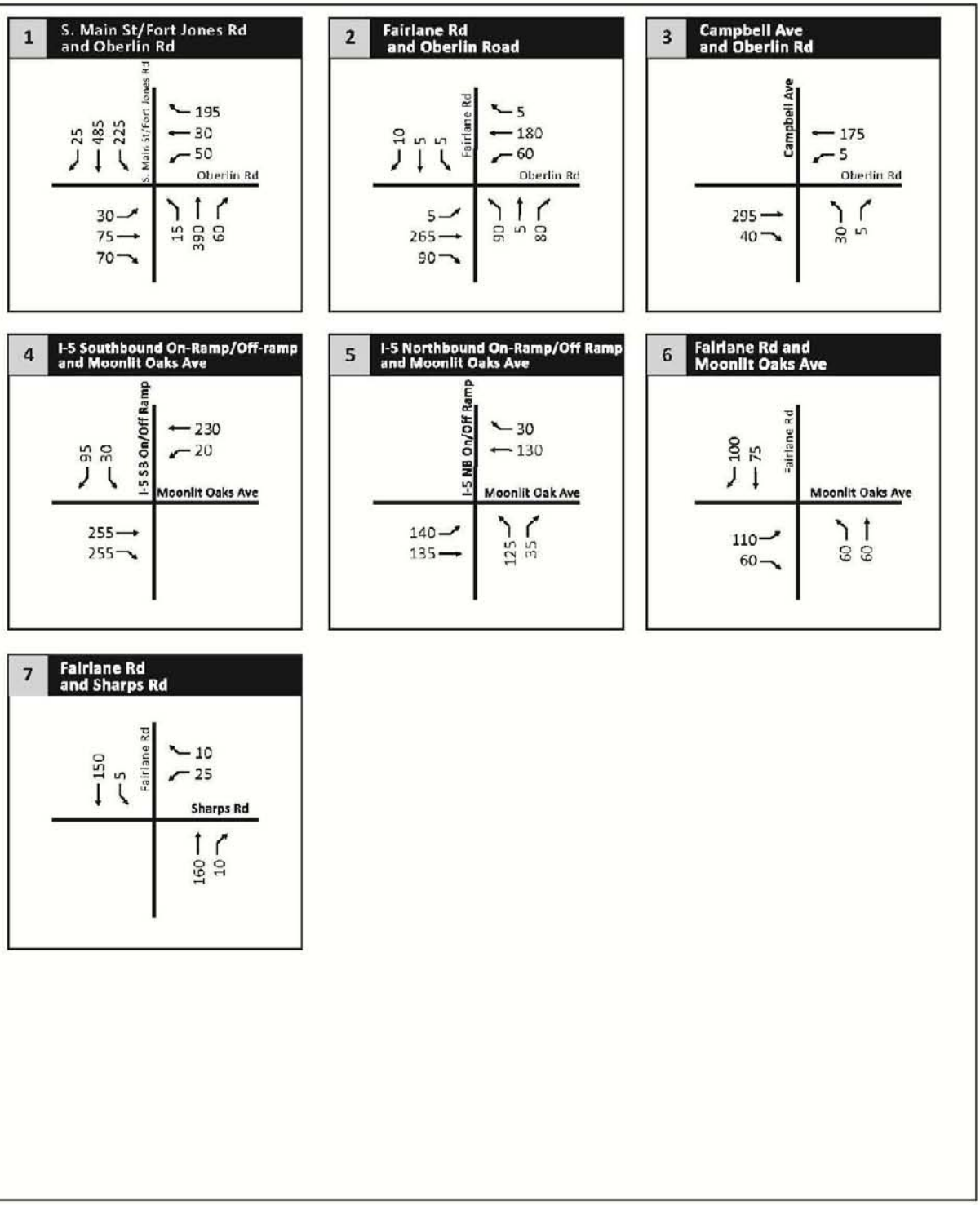
The cumulative condition, or the Cumulative (2030) No Project condition, is used as a future baseline to compare against the Cumulative Plus Project condition. No roadway improvements or development projects are scheduled to happen in the vicinity of the project according to conversations with the City and research into the Regional Transportation Plan. This comparison identifies long-term project-related impacts.

CUMULATIVE TRAFFIC VOLUMES

Due to the lack of a travel demand model that covers the City of Yreka, Caltrans' historical traffic count data was used to determine a historic growth rate in the vicinity of the project. The historic average annual growth rate on Interstate 5 between Miner Street and State Route 3 during the peak hour in both directions from 2001 to 2011 was calculated to be 0.41 percent. Existing PM peak hour turning movement volumes at the study intersections were increased using this annual growth rate to estimate the turning movement volumes in the cumulative (2030) year.

The Cumulative (2030) intersection lane configuration and control remained the same as under existing conditions. PM peak hour traffic volumes at the study intersections under Cumulative (No Project) conditions are shown in Figure 9.

Figure 9: Cumulative (2030) No Project Peak Hour Volumes



Cumulative Traffic Volumes without Project

Figure 9

LEVEL OF SERVICE ANALYSIS

Table 13 presents the results of the level of service analysis for the Cumulative (2030) No Project conditions. No intersections are expected to perform below their level of service standard in the Cumulative (2030) No Project scenario.

Intersection

Table 13: Cumulative (2030) No Project Intersection LOS Summary

#	Intersection	Control	Time	Existing No Project		
				Worst Approach	Delay	LOS
1	South Main Street/Fort Jones Road & Oberlin Road	Signal	PM	-	10.3	B
2	Fairlane Road & Oberlin Road	TWSC	PM	NBL	19.1	C
3	Campbell Avenue & Oberlin Road	TWSC	PM	NBL	12.7	B
4	I-5 Southbound Ramps & Moonlit Oaks Avenue	TWSC	PM	SBL	17.5	C
5	I-5 Northbound Ramps & Moonlit Oaks Avenue	TWSC	PM	NBL	20.7	C
6	Fairlane Road & Moonlit Oaks Avenue	TWSC	PM	EBL	12.3	B
7	Fairlane Road & Sharps Road	TWSC	PM	WBL	10.8	B

For signalized intersection, the HCM 2010 intersection delay and LOS are reported. For two-way stop controlled (TWSC) intersections, the worst movement's delay and LOS are reported.

SIGNAL WARRANTS ANALYSIS

Table 14 presents the results of the signal warrant analysis for the Cumulative (2030) No Project conditions. No intersections were found to meet the peak hour signal warrant in the PM peak hour.

Table 14: Cumulative (2030) No Project Signal Warrant Summary

#	Intersection	Control	Meets PM Peak Hour?
2	Fairlane Road & Oberlin Road	TWSC	No
3	Campbell Avenue & Oberlin Road	TWSC	No
4	I-5 Southbound Ramps & Moonlit Oaks Avenue	TWSC	No
5	I-5 Northbound Ramps & Moonlit Oaks Avenue	TWSC	No
6	Fairlane Road & Moonlit Oaks Avenue	TWSC	No
7	Fairlane Road & Sharps Road	TWSC	No

The California MUTCD Peak Hour Signal Warrant (#3) was used for the signal warrant analysis.

Section 6
Cumulative Plus Project Conditions

YEAR 2030 CUMULATIVE PLUS PROJECT CONDITIONS

This section describes Cumulative Plus Project conditions. Cumulative Plus Project conditions are defined as the addition of project traffic to the Cumulative No Project traffic volumes. The comparison of Cumulative Plus Project conditions to Cumulative No Project conditions demonstrates project-related impacts.

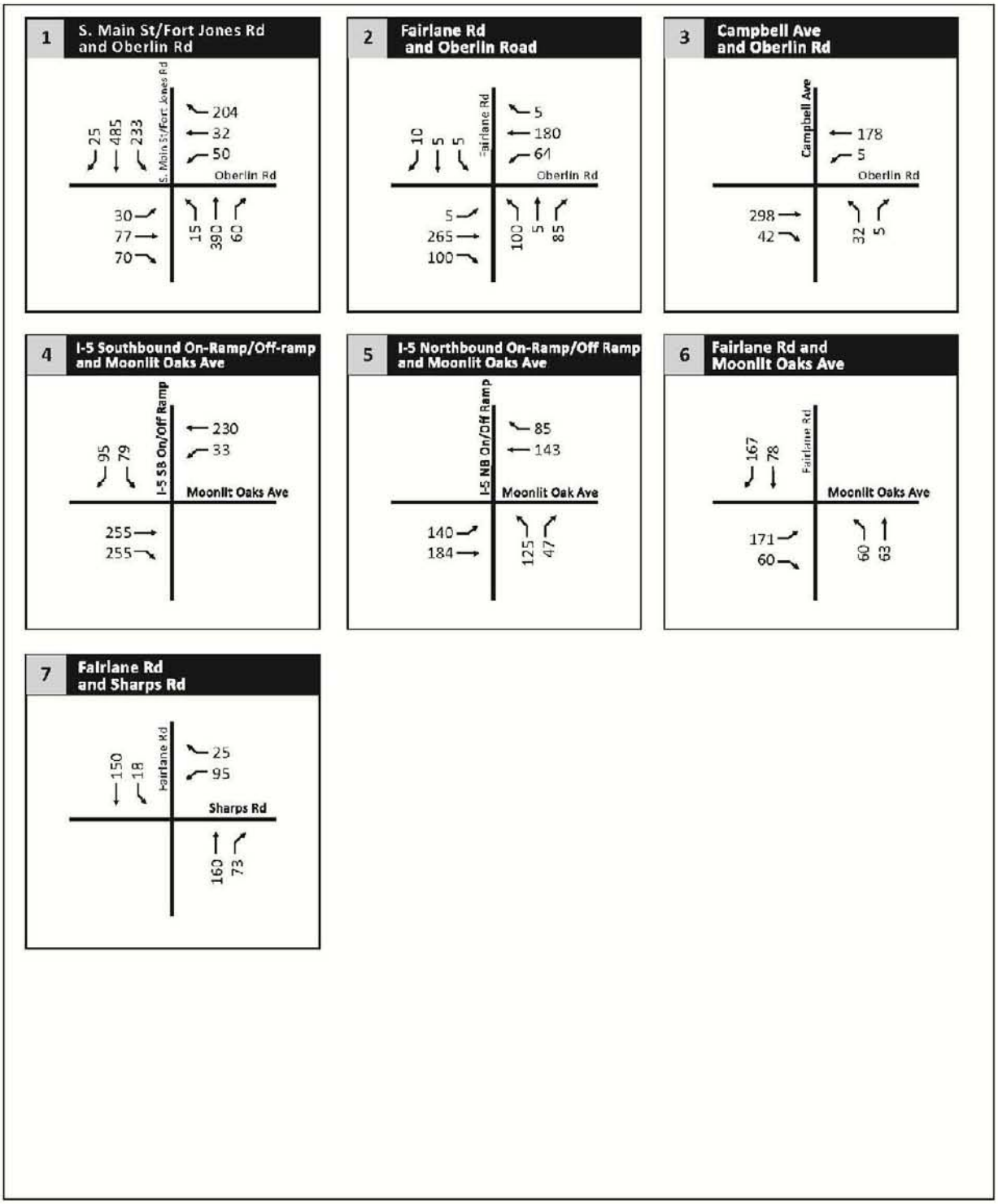
PROJECT TRAFFIC

Project traffic volumes were calculated using the same method discussed under the Existing Plus Project conditions. Only Phase 2 (including both the 80 room hotel and 800 gaming positions) is considered in the Cumulative (2030) Plus Project scenario.

TRAFFIC VOLUMES

Project generated traffic is added to the Cumulative No Project traffic volumes to obtain the Cumulative Plus Project traffic volumes. Cumulative Plus Project peak hour traffic volumes are graphically shown in Figure 10.

Figure 10: Cumulative (2030) Plus Project Peak Hour Volumes



Cumulative Traffic Volumes with Project Phase 2

Figure 10

LEVEL OF SERVICE ANALYSIS

Table 15 presents the results of the intersection level of service analysis in the Cumulative (2030) Plus Project conditions. The I-5 Northbound Ramps and Moonlit Oaks Avenue intersection (#5) is expected to perform below the applicable level of service standard.

Intersection

Table 15: Cumulative (2030) Plus Project Intersection LOS Summary

#	Intersection	Control	Time	Existing No Project		
				Worst Approach	Delay	LOS
1	South Main Street/Fort Jones Road & Oberlin Road	Signal	PM	-	10.4	B
2	Fairlane Road & Oberlin Road	TWSC	PM	NBL	20.4	C
3	Campbell Avenue & Oberlin Road	TWSC	PM	NBL	12.8	B
4	I-5 Southbound Ramps & Moonlit Oaks Avenue	TWSC	PM	SBL	21.4	C
5	I-5 Northbound Ramps & Moonlit Oaks Avenue	TWSC	PM	NBL	25.4	**D**
6	Fairlane Road & Moonlit Oaks Avenue	TWSC	PM	EBL	14.1	B
7	Fairlane Road & Sharps Road	TWSC	PM	WBL	12.5	B

For signalized intersection, the HCM 2010 intersection delay and LOS are reported. For two-way stop controlled (TWSC) intersections, the worst movement's delay and LOS are reported. Unacceptable LOS's are shaded in dark grey.

SIGNAL WARRANTS ANALYSIS

Table 16 presents the results of the signal warrant analysis for the Cumulative (2030) Plus Project conditions. No intersections were found to meet the peak hour signal warrant in the PM peak hour.

Table 16: Cumulative (2030) Plus Project Signal Warrant Summary

#	Intersection	Control	Meets PM Peak Hour?
2	Fairlane Road & Oberlin Road	TWSC	No
3	Campbell Avenue & Oberlin Road	TWSC	No
4	I-5 Southbound Ramps & Moonlit Oaks Avenue	TWSC	No
5	I-5 Northbound Ramps & Moonlit Oaks Avenue	TWSC	No
6	Fairlane Road & Moonlit Oaks Avenue	TWSC	No
7	Fairlane Road & Sharps Road	TWSC	No

The California MUTCD Peak Hour Signal Warrant (#3) was used for the signal warrant analysis.

IMPACT DETERMINATION

The following study intersections were found to be operating unsatisfactorily and/or meeting the peak hour signal warrant. A comparison of the project's effect on traffic operations and the impact significance criteria presented above yields the determinations presented below. Recommendations and mitigations to improve operations to an acceptable level are presented in the Recommendations and Mitigation Measures section.

I-5 Northbound Ramps and Moonlit Oaks Avenue

The operation of this intersection is expected to worsen to LOS D, an unacceptable LOS, in the Cumulative scenario with the project. As a result, the impact is considered **significant**.

Section 7
Recommendations and Mitigation Measures

RECOMMENDATIONS AND MITIGATION MEASURES

Mitigation share percentages for identified mitigation measures were calculated using intersection entering volumes (or segment volumes for roadways) and the equations below, obtained from the *Caltrans Guide for the Preparation of Traffic Impact Studies*, December 2002.

$$Mitigation\ Share\ \% = \begin{cases} \dfrac{Project\ Only\ Volume}{Existing\ Plus\ Project\ Volume}\ for\ Existing\ Scenario \\ \\ \dfrac{Project\ Only\ Volume}{Cumulative\ Plus\ Project - Existing\ No\ Project}\ for\ Cumulative\ Scenario \end{cases}$$

Mitigation share percentages are included in Table 1 above.

No queueing issues were identified at any of the study intersections using 95th percentile queue analysis for all scenarios.

EXISTING PLUS PROJECT CONDITIONS

The project doesn't trigger any significant impact therefore no mitigation is required.

Recommendations

Curbs, gutters, and sidewalks with pedestrian access into the proposed casino are recommended for Sharps Road, at a minimum in the vicinity of the project site. Similar improvements can be found along the short stretch of Sharps Road on the opposite side of the project.

CUMULATIVE (2030) PLUS PROJECT CONDITIONS

Mitigations

The project's impacts at the significantly impacted intersection below can be mitigated by implementing the listed improvements.

I-5 Northbound Ramps and Moonlit Oaks Avenue

This two-way stop controlled intersection deteriorates from an acceptable LOS C to an unacceptable LOS D in the Cumulative (2030) Plus Project scenario. As a result, the project causes a **significant** impact.

Either of the following mitigation measures was found to improve the intersection to an acceptable LOS:

- Conversion of the intersection into a single-lane roundabout

- Conversion of the intersection to a signalized intersection

Table 17 summarizes the expected intersection level of service upon implementation of either of the mitigation measures described above.

The project's mitigation share is calculated to be 75.0%. The fair share calculation is included below.

$$Mitigation\ Share\ \% = \frac{Project\ Only\ Volume}{Cumulative\ Plus\ Project - Existing\ No\ Project}$$

$$Mitigation\ Share\ \% = \frac{129}{729 - 557} = 75.0\%$$

Table 17: Cumulative (2030) Plus Project Level of Service (after Mitigation)

#	Intersection	Mitigated Control	Cumulative Plus Project (No Mitigation)		Cumulative Plus Project (After Mitigation)	
			Delay	LOS	Delay	LOS
5	I-5 Northbound Ramps & Moonlit Oaks Avenue	Roundabout	25.4	D	5.6[1]	A
5	I-5 Northbound Ramps & Moonlit Oaks Avenue	Signalized Control	25.4	D	15.3	B

[1]Average delay for all lanes of the intersection.

Recommendations

Aside from the proposed mitigation, it's recommended that improvements be made to Sharps Road, at a minimum in the vicinity of the project site, providing curbs, gutters, and sidewalks with pedestrian access into the proposed casino.

APPENDIX 1: TRAFFIC COUNT DATA

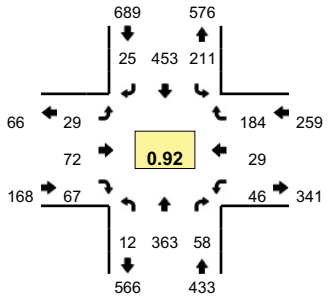
Type of peak hour being reported: System Peak

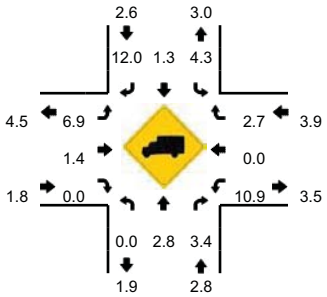
Method for determining peak hour: Total Entering Volume

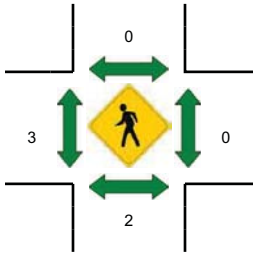
LOCATION: S Main St -- E Oberlin Rd
CITY/STATE: Yreka, CA

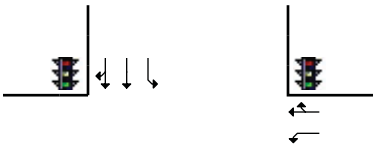
QC JOB #: 10973401
DATE: Tue, Jun 04 2013

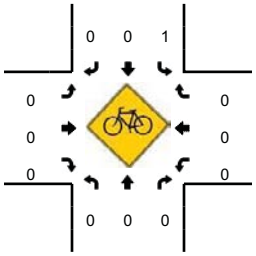
Peak-Hour: 4:30 PM -- 5:30 PM
Peak 15-Min: 4:55 PM -- 5:10 PM

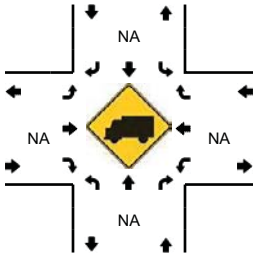


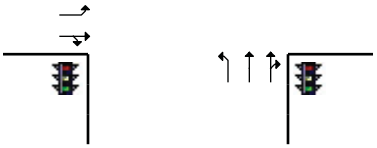


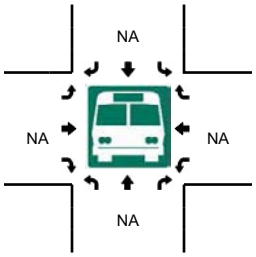












5-Min Count Period Beginning At	S Main St (Northbound)				S Main St (Southbound)				E Oberlin Rd (Eastbound)				E Oberlin Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	3	39	2	0	14	36	1	0	3	7	4	0	3	0	12	0	124	
4:05 PM	1	33	2	0	20	43	0	0	1	7	5	0	3	4	14	0	133	
4:10 PM	1	30	8	0	14	34	2	0	1	3	6	0	5	2	16	0	122	
4:15 PM	1	27	5	0	14	39	1	0	0	3	8	0	5	2	9	0	114	
4:20 PM	1	26	4	0	20	34	1	0	0	2	4	0	5	0	23	0	120	
4:25 PM	1	41	3	0	8	29	3	0	0	4	5	0	2	1	14	0	111	
4:30 PM	2	28	9	0	15	41	3	0	0	3	5	0	3	1	13	0	123	
4:35 PM	2	25	6	0	11	37	0	0	2	5	5	0	4	3	18	0	118	
4:40 PM	0	34	2	0	16	27	4	0	2	10	6	0	9	2	18	0	130	
4:45 PM	1	29	2	0	29	30	1	0	2	2	2	0	3	3	13	0	117	
4:50 PM	1	35	7	0	14	36	0	0	7	11	2	0	4	4	14	0	135	
4:55 PM	2	31	2	0	13	33	1	0	4	9	9	0	2	5	21	0	132	1479
5:00 PM	1	17	2	0	13	38	4	0	3	13	10	0	6	0	16	0	123	1478
5:05 PM	2	40	4	0	23	59	4	0	0	4	4	0	5	0	20	0	165	1510
5:10 PM	1	37	5	0	26	43	3	0	1	3	7	0	2	3	12	0	143	1531
5:15 PM	0	31	5	0	18	44	1	0	4	3	8	0	2	3	16	0	135	1552
5:20 PM	0	25	9	0	22	30	2	0	1	3	5	0	3	3	11	0	114	1546
5:25 PM	0	31	5	0	11	35	2	0	3	6	4	0	3	2	12	0	114	1549
5:30 PM	1	23	2	0	12	38	1	0	1	4	5	0	4	1	9	0	101	1527
5:35 PM	1	24	6	0	10	44	1	0	0	6	4	0	1	3	20	0	120	1529
5:40 PM	0	36	6	0	20	19	2	0	3	6	2	0	5	2	13	0	114	1513
5:45 PM	0	32	3	0	17	17	2	0	0	2	5	0	1	1	16	0	96	1492
5:50 PM	0	18	2	0	14	22	2	0	0	3	2	0	2	3	11	0	79	1436
5:55 PM	0	24	3	0	11	24	1	0	0	4	2	0	3	1	13	0	86	1390

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	20	352	32	0	196	520	36	0	28	104	92	0	52	20	228	0	1680
Heavy Trucks	0	4	0		4	4	4		4	0	0		12	0	12		44
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		1	0	0		0	0	0		0	0	0		1
Railroad																	
Stopped Buses																	

Comments:

Report generated on 6/11/2013 5:02 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

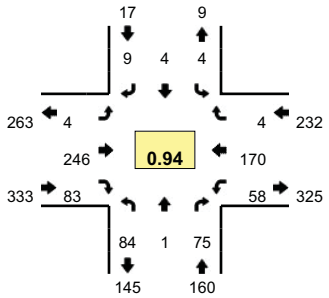
Type of peak hour being reported: System Peak

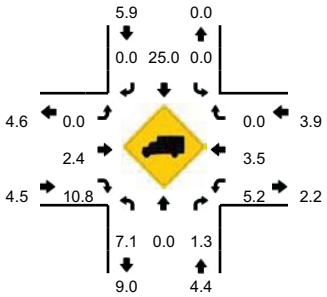
Method for determining peak hour: Total Entering Volume

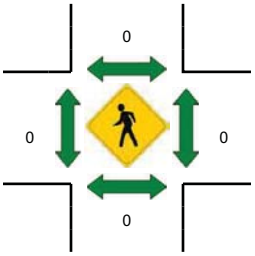
LOCATION: Fairlane Rd -- E Oberlin Rd
CITY/STATE: Yreka, CA

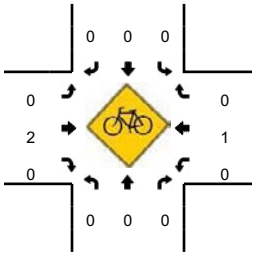
QC JOB #: 10973402
DATE: Tue, Jun 04 2013

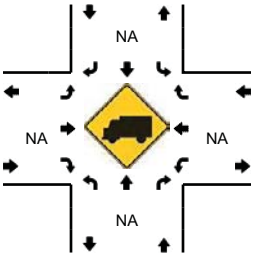
Peak-Hour: 4:30 PM -- 5:30 PM
Peak 15-Min: 4:55 PM -- 5:10 PM

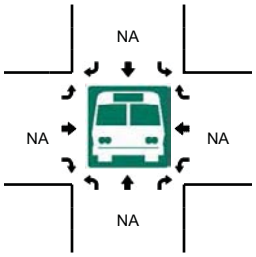












5-Min Count Period Beginning At	Fairlane Rd (Northbound)				Fairlane Rd (Southbound)				E Oberlin Rd (Eastbound)				E Oberlin Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	5	0	11	0	0	0	0	0	0	19	5	0	5	11	1	0	57	
4:05 PM	7	0	7	0	0	0	0	0	0	24	5	0	5	17	0	0	65	
4:10 PM	4	1	3	0	2	1	0	0	0	17	9	0	3	13	1	0	54	
4:15 PM	5	1	10	0	0	0	0	0	0	18	5	0	7	19	0	0	65	
4:20 PM	7	0	3	0	1	2	0	0	1	16	9	0	6	13	0	0	58	
4:25 PM	5	0	7	0	0	0	0	0	1	13	5	0	3	14	2	0	50	
4:30 PM	7	0	10	0	0	0	1	0	0	18	6	0	5	9	0	0	56	
4:35 PM	6	1	4	0	1	0	2	0	0	17	4	0	5	22	0	0	62	
4:40 PM	6	0	7	0	0	1	0	0	1	23	9	0	8	17	1	0	73	
4:45 PM	3	0	6	0	0	0	0	0	1	17	8	0	3	16	1	0	55	
4:50 PM	9	0	4	0	0	1	2	0	2	20	9	0	8	18	0	0	73	
4:55 PM	6	0	8	0	1	0	1	0	0	18	7	0	2	19	0	0	62	730
5:00 PM	7	0	9	0	0	2	1	0	0	21	8	0	1	15	1	0	65	738
5:05 PM	12	0	9	0	1	0	2	0	0	23	6	0	7	10	0	0	70	743
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5:15 PM	9	0	4	0	0	0	0	0	0	17	7	0	6	11	0	0	54	742
5:20 PM	8	0	3	0	1	0	0	0	0	28	6	0	5	9	0	0	60	744
5:25 PM	4	0	5	0	0	0	0	0	0	17	6	0	3	12	1	0	48	742
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5:35 PM	6	0	6	0	1	0	0	0	0	12	8	0	3	17	0	0	53	726
5:40 PM	8	0	14	0	0	0	0	0	0	26	7	0	2	12	0	0	69	722
5:45 PM	5	0	6	0	0	0	0	0	0	15	7	0	6	11	0	0	50	717
5:50 PM	3	0	9	0	0	0	0	0	0	17	5	0	9	15	0	0	58	702
5:55 PM	9	1	9	0	0	0	0	0	0	9	6	0	5	9	0	0	48	688

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	100	0	104	0	8	8	16	0	0	248	84	0	40	176	4	0	788
Heavy Trucks	16	0	0		0	0	0		0	4	0		8	12	0		40
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	1	0		0	1	0		2
Railroad																	
Stopped Buses																	

Comments:

Report generated on 6/11/2013 5:02 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

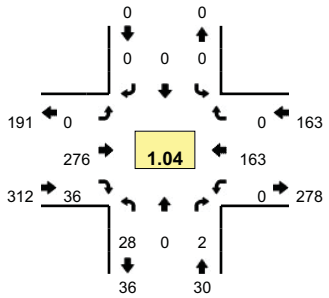
Type of peak hour being reported: System Peak

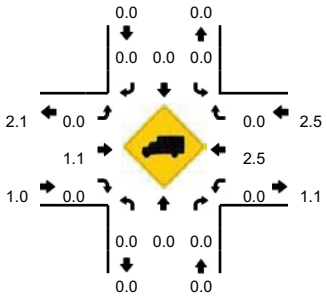
Method for determining peak hour: Total Entering Volume

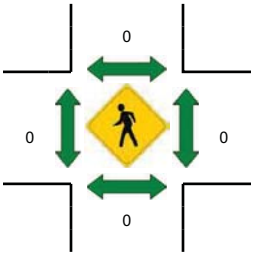
LOCATION: Campbell Ave -- E Oberlin Rd
CITY/STATE: Yreka, CA

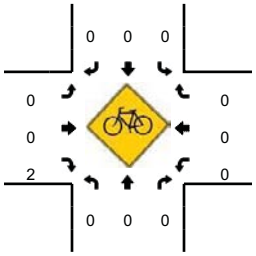
QC JOB #: 10973403
DATE: Tue, Jun 04 2013

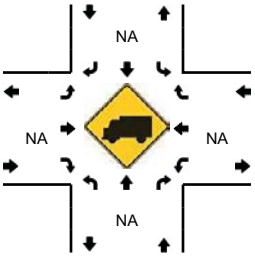
Peak-Hour: 4:30 PM -- 5:30 PM
Peak 15-Min: 4:55 PM -- 5:10 PM

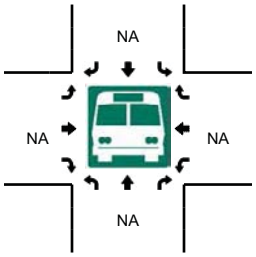












5-Min Count Period Beginning At	Campbell Ave (Northbound)				Campbell Ave (Southbound)				E Oberlin Rd (Eastbound)				E Oberlin Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	7	0	0	0	0	0	0	0	0	18	4	0	0	13	0	0	42	
4:05 PM	1	0	0	0	0	0	0	0	0	24	7	0	0	21	0	0	53	
4:10 PM	2	0	0	0	0	0	0	0	0	13	5	0	0	15	0	0	35	
4:15 PM	4	0	0	0	0	0	0	0	0	27	6	0	0	13	0	0	50	
4:20 PM	8	0	0	0	0	0	0	0	0	14	1	0	0	11	0	0	34	
4:25 PM	1	0	0	0	0	0	0	0	0	12	5	0	0	15	0	0	33	
4:30 PM	2	0	0	0	0	0	0	0	0	23	3	0	0	7	0	0	35	
4:35 PM	6	0	0	0	0	0	0	0	0	26	1	0	0	21	0	0	54	
4:40 PM	2	0	0	0	0	0	0	0	0	24	2	0	0	24	0	0	52	
4:45 PM	2	0	0	0	0	0	0	0	0	18	4	0	0	14	0	0	38	
4:50 PM	3	0	0	0	0	0	0	0	0	19	2	0	0	19	0	0	43	
4:55 PM	1	0	0	0	0	0	0	0	0	19	2	0	0	13	0	0	35	504
5:00 PM	1	0	0	0	0	0	0	0	0	29	4	0	0	11	0	0	45	507
5:05 PM	1	0	0	0	0	0	0	0	0	27	4	0	0	9	0	0	41	495
5:10 PM	0	0	1	0	0	0	0	0	0	28	4	0	0	14	0	0	47	507
5:15 PM	4	0	0	0	0	0	0	0	0	18	3	0	0	10	0	0	35	492
5:20 PM	1	0	1	0	0	0	0	0	0	32	2	0	0	10	0	0	46	504
5:25 PM	5	0	0	0	0	0	0	0	0	13	5	0	0	11	0	0	34	505
5:30 PM	2	0	0	0	0	0	0	0	0	15	5	0	0	9	0	0	31	501
5:35 PM	7	0	0	0	0	0	0	0	0	23	5	0	0	12	0	0	47	494
5:40 PM	2	0	3	0	0	0	0	0	0	27	5	0	0	11	0	0	48	490
5:45 PM	3	0	1	0	0	0	0	0	0	17	4	0	0	13	0	0	38	490
5:50 PM	4	0	0	0	0	0	0	0	0	18	3	0	0	15	0	0	40	487
5:55 PM	3	0	0	0	0	0	0	0	0	19	1	0	0	10	0	0	33	485

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	12	0	0	0	0	0	0	0	0	300	40	0	0	132	0	0	484
Heavy Trucks	0	0	0		0	0	0		0	0	0		0	8	0		8
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	1		0	0	0		1
Railroad																	
Stopped Buses																	

Comments:

Report generated on 6/11/2013 5:02 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

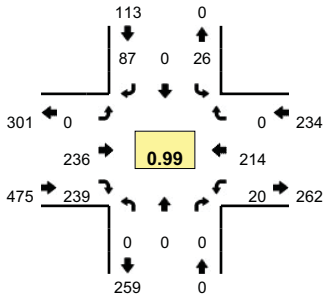
Type of peak hour being reported: System Peak

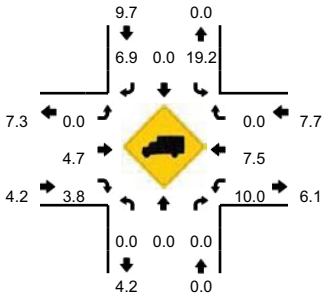
Method for determining peak hour: Total Entering Volume

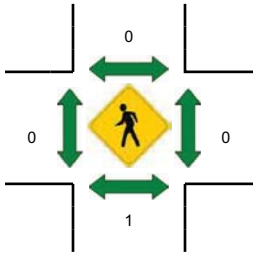
LOCATION: I-5 SB Ramps -- Moonlit Oaks Ave
CITY/STATE: Yreka, CA

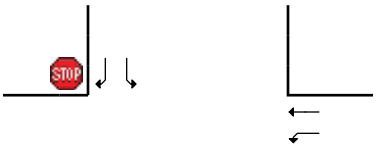
QC JOB #: 10973405
DATE: Tue, Jun 04 2013

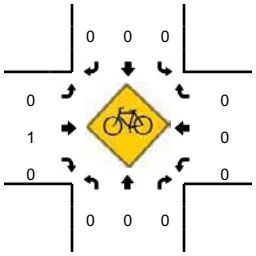
Peak-Hour: 4:30 PM -- 5:30 PM
Peak 15-Min: 4:55 PM -- 5:10 PM

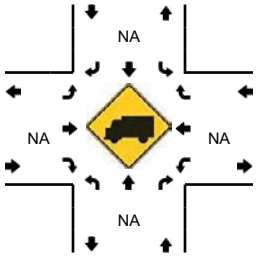


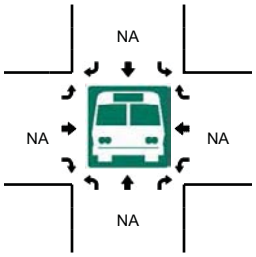












5-Min Count Period Beginning At	I-5 SB Ramps (Northbound)				I-5 SB Ramps (Southbound)				Moonlit Oaks Ave (Eastbound)				Moonlit Oaks Ave (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	0	0	0	2	0	5	0	0	21	10	0	3	22	0	0	63	
4:05 PM	0	0	0	0	0	0	7	0	0	26	23	0	1	16	0	0	73	
4:10 PM	0	0	0	0	1	0	12	0	0	19	16	0	1	16	0	0	65	
4:15 PM	0	0	0	0	1	0	4	0	0	24	33	0	4	10	0	0	76	
4:20 PM	0	0	0	0	3	0	7	0	0	16	13	0	2	18	0	0	59	
4:25 PM	0	0	0	0	1	0	7	0	0	21	17	0	0	16	0	0	62	
4:30 PM	0	0	0	0	2	0	4	0	0	16	21	0	3	16	0	0	62	
4:35 PM	0	0	0	0	7	0	6	0	0	6	20	0	1	25	0	0	65	
4:40 PM	0	0	0	0	2	0	13	0	0	21	21	0	4	20	0	0	81	
4:45 PM	0	0	0	0	0	0	6	0	0	29	22	0	0	16	0	0	73	
4:50 PM	0	0	0	0	2	0	9	0	0	8	16	0	1	26	0	0	62	
4:55 PM	0	0	0	0	4	0	7	0	0	24	18	0	1	22	0	0	76	817
5:00 PM	0	0	0	0	0	0	7	0	0	26	14	0	3	15	0	0	65	819
5:05 PM	0	0	0	0	2	0	9	0	0	18	24	0	2	11	0	0	66	812
5:10 PM	0	0	0	0	1	0	5	0	0	19	25	0	0	15	0	0	65	812
5:15 PM	0	0	0	0	1	0	9	0	0	20	17	0	1	14	0	0	62	798
5:20 PM	0	0	0	0	2	0	8	0	0	24	22	0	2	14	0	0	72	811
5:25 PM	0	0	0	0	3	0	4	0	0	25	19	0	2	20	0	0	73	822
5:30 PM	0	0	0	0	1	0	4	0	0	10	15	0	2	17	0	0	49	809
5:35 PM	0	0	0	0	3	0	6	0	0	18	24	0	0	11	0	0	62	806
5:40 PM	0	0	0	0	3	0	14	0	0	25	12	0	0	19	0	0	73	798
5:45 PM	0	0	0	0	5	0	6	0	0	18	10	0	0	18	0	0	57	782
5:50 PM	0	0	0	0	0	0	10	0	0	17	12	0	0	16	0	0	55	775
5:55 PM	0	0	0	0	0	0	6	0	0	20	6	0	0	12	0	0	44	743

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	0	0	24	0	92	0	0	272	224	0	24	192	0	0	828
Heavy Trucks	0	0	0		4	0	8		0	8	8		4	24	0		56
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 6/11/2013 5:02 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

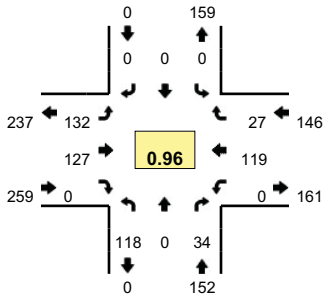
Type of peak hour being reported: System Peak

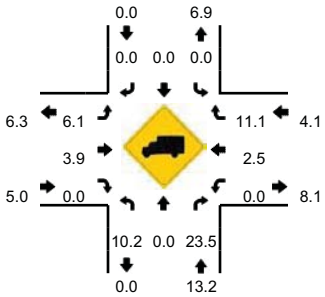
Method for determining peak hour: Total Entering Volume

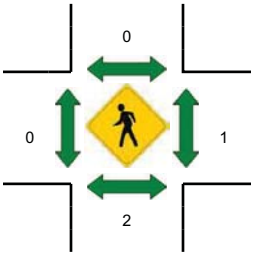
LOCATION: I-5 NB Ramps -- Moonlit Oaks Ave
CITY/STATE: Yreka, CA

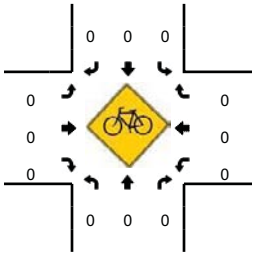
QC JOB #: 10973406
DATE: Tue, Jun 04 2013

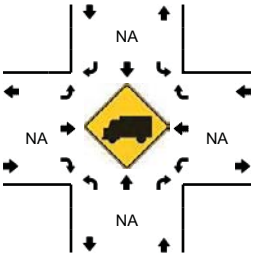
Peak-Hour: 4:30 PM -- 5:30 PM
Peak 15-Min: 4:55 PM -- 5:10 PM

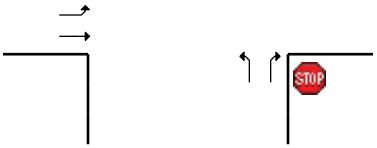


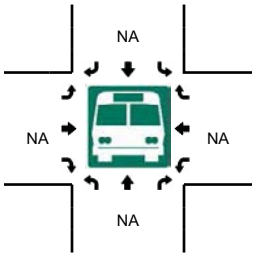












5-Min Count Period Beginning At	I-5 NB Ramps (Northbound)				I-5 NB Ramps (Southbound)				Moonlit Oaks Ave (Eastbound)				Moonlit Oaks Ave (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	10	0	0	0	0	0	0	0	4	16	0	0	0	11	2	0	43	
4:05 PM	9	0	2	0	0	0	0	0	8	13	0	0	0	11	1	0	44	
4:10 PM	9	0	1	0	0	0	0	0	15	11	0	0	0	6	0	0	42	
4:15 PM	6	0	1	0	0	0	0	0	12	11	0	0	0	7	1	0	38	
4:20 PM	11	0	3	0	0	0	0	0	13	9	0	0	0	10	3	0	49	
4:25 PM	15	0	2	0	0	0	0	0	9	12	0	0	0	2	6	0	46	
4:30 PM	6	0	4	0	0	0	0	0	7	12	0	0	0	12	1	0	42	
4:35 PM	15	0	3	0	0	0	0	0	4	10	0	0	0	11	4	0	47	
4:40 PM	7	0	3	0	0	0	0	0	11	13	0	0	0	12	3	0	49	
4:45 PM	9	0	3	0	0	0	0	0	17	9	0	0	0	10	1	0	49	
4:50 PM	13	0	2	0	0	0	0	0	7	7	0	0	0	13	2	0	44	
4:55 PM	17	0	3	0	0	0	0	0	7	15	0	0	0	9	2	0	53	546
5:00 PM	7	0	5	0	0	0	0	0	10	16	0	0	0	9	2	0	49	552
5:05 PM	7	0	3	0	0	0	0	0	11	13	0	0	0	6	3	0	43	551
5:10 PM	6	0	1	0	0	0	0	0	12	5	0	0	0	7	5	0	36	545
5:15 PM	10	0	2	0	0	0	0	0	12	10	0	0	0	11	1	0	46	553
5:20 PM	8	0	3	0	0	0	0	0	13	6	0	0	0	8	1	0	39	543
5:25 PM	13	0	2	0	0	0	0	0	21	11	0	0	0	11	2	0	60	557
5:30 PM	11	0	0	0	0	0	0	0	9	7	0	0	0	6	0	0	33	548
5:35 PM	6	0	2	0	0	0	0	0	11	7	0	0	0	6	1	0	33	534
5:40 PM	17	0	2	0	0	0	0	0	10	15	0	0	0	2	1	0	47	532
5:45 PM	8	0	2	0	0	0	0	0	12	12	0	0	0	11	0	0	45	528
5:50 PM	12	0	0	0	0	0	0	0	10	12	0	0	0	5	0	0	39	523
5:55 PM	7	0	4	0	0	0	0	0	11	9	0	0	0	5	1	0	37	507

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	124	0	44	0	0	0	0	0	112	176	0	0	0	96	28	0	580
Heavy Trucks	20	0	16		0	0	0		8	4	0		0	4	8		60
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 6/11/2013 5:02 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

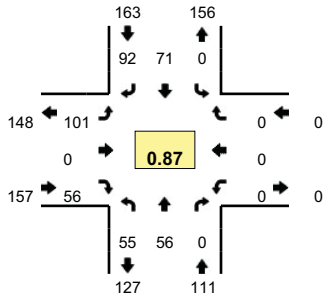
Type of peak hour being reported: System Peak

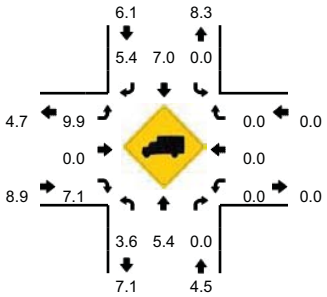
Method for determining peak hour: Total Entering Volume

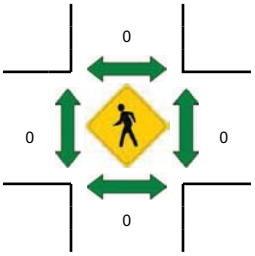
LOCATION: Fairlane Rd -- Moonlit Oaks Ave
CITY/STATE: Yreka, CA

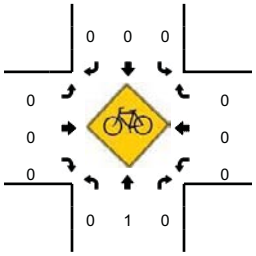
QC JOB #: 10973407
DATE: Tue, Jun 04 2013

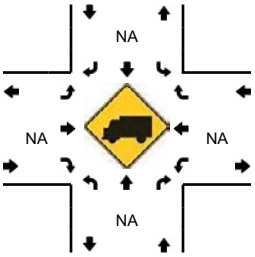
Peak-Hour: 4:30 PM -- 5:30 PM
Peak 15-Min: 4:55 PM -- 5:10 PM

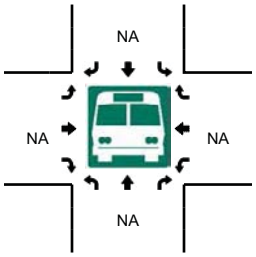












5-Min Count Period Beginning At	Fairlane Rd (Northbound)				Fairlane Rd (Southbound)				Moonlit Oaks Ave (Eastbound)				Moonlit Oaks Ave (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	8	5	0	0	0	2	8	0	13	0	2	0	0	0	0	0	38	
4:05 PM	2	2	0	0	0	7	6	0	9	0	6	0	0	0	0	0	32	
4:10 PM	3	3	0	0	0	7	4	0	9	0	3	0	0	0	0	0	29	
4:15 PM	3	2	0	0	0	6	7	0	8	0	4	0	0	0	0	0	30	
4:20 PM	5	4	0	0	0	7	7	0	5	0	7	0	0	0	0	0	35	
4:25 PM	6	2	0	0	0	3	2	0	10	0	5	0	0	0	0	0	28	
4:30 PM	5	3	0	0	0	3	9	0	8	0	6	0	0	0	0	0	34	
4:35 PM	6	6	0	0	0	4	9	0	7	0	6	0	0	0	0	0	38	
4:40 PM	5	6	0	0	0	6	13	0	12	0	5	0	0	0	0	0	47	
4:45 PM	4	2	0	0	0	10	4	0	7	0	5	0	0	0	0	0	32	
4:50 PM	2	8	0	0	0	6	13	0	4	0	3	0	0	0	0	0	36	
4:55 PM	3	5	0	0	0	7	8	0	14	0	4	0	0	0	0	0	41	420
5:00 PM	6	5	0	0	0	5	9	0	14	0	10	0	0	0	0	0	49	431
5:05 PM	2	4	0	0	0	9	5	0	11	0	2	1	0	0	0	0	34	433
5:10 PM	7	4	0	0	0	6	3	0	5	0	3	0	0	0	0	0	28	432
5:15 PM	4	6	0	0	0	9	8	0	6	0	4	0	0	0	0	0	37	439
5:20 PM	6	3	0	0	0	4	5	0	3	0	5	0	0	0	0	0	26	430
5:25 PM	5	4	0	0	0	2	6	0	9	0	3	0	0	0	0	0	29	431
5:30 PM	1	3	0	0	0	7	3	0	4	0	3	0	0	0	0	0	21	418
5:35 PM	2	6	0	0	0	9	2	0	6	0	3	0	0	0	0	0	28	408
5:40 PM	4	3	0	0	0	4	1	0	12	0	10	0	0	0	0	0	34	395
5:45 PM	2	5	0	0	0	5	6	0	6	0	6	0	0	0	0	0	30	393
5:50 PM	1	5	0	0	0	3	4	0	8	0	2	0	0	0	0	0	23	380
5:55 PM	2	1	0	0	0	5	4	0	11	0	3	0	0	0	0	0	26	365

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	44	56	0	0	0	84	88	0	156	0	64	4	0	0	0	0	496
Heavy Trucks	4	4	0		0	4	12		16	0	4		0	0	0		44
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 6/11/2013 5:02 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

APPENDIX 2: EXISTING NO PROJECT LOS WORKSHEETS

Lanes, Volumes, Timings
1: S. Main St / Fort Jones Rd & Oberlin Rd

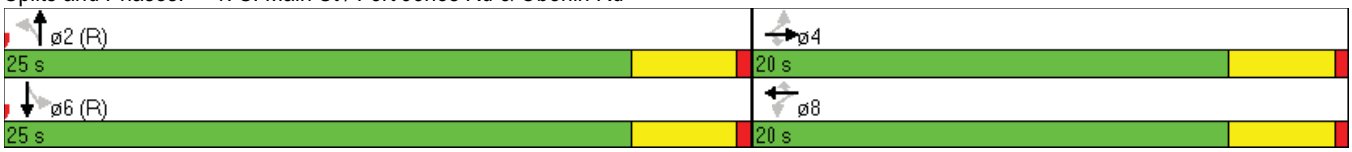
9/3/2013

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	29	72	67	46	29	184	12	363	58	211	453	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		25	0		100	125		0	150		0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt			0.850			0.850		0.979			0.992	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1687	1881	1615	1752	1900	1455	1805	3431	0	1736	3526	0
Flt Permitted	0.736			0.706			0.454			0.488		
Satd. Flow (perm)	1307	1881	1615	1302	1900	1455	863	3431	0	892	3526	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			73			200		53			16	
Link Speed (mph)		35			35			40			40	
Link Distance (ft)		376			361			996			241	
Travel Time (s)		7.3			7.0			17.0			4.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	7%	1%	0%	3%	0%	11%	0%	3%	3%	4%	1%	12%
Adj. Flow (vph)	32	78	73	50	32	200	13	395	63	229	492	27
Shared Lane Traffic (%)												
Lane Group Flow (vph)	32	78	73	50	32	200	13	458	0	229	519	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane								Yes			Yes	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8		8	2			6		
Minimum Split (s)	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0		20.0	20.0	
Total Split (s)	20.0	20.0	20.0	20.0	20.0	20.0	25.0	25.0		25.0	25.0	
Total Split (%)	44.4%	44.4%	44.4%	44.4%	44.4%	44.4%	55.6%	55.6%		55.6%	55.6%	
Maximum Green (s)	16.0	16.0	16.0	16.0	16.0	16.0	21.0	21.0		21.0	21.0	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5		3.5	3.5	
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5		0.5	0.5	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Flash Dont Walk (s)	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0	0	0	0	0	0	0		0	0	
Act Effct Green (s)	16.0	16.0	16.0	16.0	16.0	16.0	21.0	21.0		21.0	21.0	
Actuated g/C Ratio	0.36	0.36	0.36	0.36	0.36	0.36	0.47	0.47		0.47	0.47	
v/c Ratio	0.07	0.12	0.12	0.11	0.05	0.31	0.03	0.28		0.55	0.31	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	10.2	10.4	3.9	10.5	9.8	3.6	6.8	7.0		14.9	7.9	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	10.2	10.4	3.9	10.5	9.8	3.6	6.8	7.0		14.9	7.9	
LOS	B	B	A	B	A	A	A	A		B	A	
Approach Delay		7.7			5.6			7.0			10.0	
Approach LOS		A			A			A			B	

Intersection Summary	
Area Type:	Other
Cycle Length: 45	
Actuated Cycle Length: 45	
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 45	
Control Type: Pretimed	
Maximum v/c Ratio: 0.55	
Intersection Signal Delay: 8.2	Intersection LOS: A
Intersection Capacity Utilization 42.8%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 1: S. Main St / Fort Jones Rd & Oberlin Rd



Queues
1: S. Main St / Fort Jones Rd & Oberlin Rd

9/3/2013

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	32	78	73	50	32	200	13	458	229	519
v/c Ratio	0.07	0.12	0.12	0.11	0.05	0.31	0.03	0.28	0.55	0.31
Control Delay	10.2	10.4	3.9	10.5	9.8	3.6	6.8	7.0	14.9	7.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.2	10.4	3.9	10.5	9.8	3.6	6.8	7.0	14.9	7.9
Queue Length 50th (ft)	5	13	0	8	5	0	2	30	39	38
Queue Length 95th (ft)	18	33	18	25	18	30	8	52	94	63
Internal Link Dist (ft)		296			281			916		161
Turn Bay Length (ft)	100		25			100	125		150	
Base Capacity (vph)	464	668	621	462	675	646	402	1629	416	1654
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.07	0.12	0.12	0.11	0.05	0.31	0.03	0.28	0.55	0.31

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	29	72	67	46	29	184	12	363	58	211	453	25
Movement Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj. Factor (A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj. Factors	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Sat. Flow Rate, veh/h/ln	1776	1881	1900	1845	1900	1712	1900	1845	1845	1827	1871	1871
Lanes	1	1	1	1	1	1	1	2	0	1	2	0
Lane Assignment												
Capacity, veh/h	611	669	574	587	676	517	500	1451	230	514	1640	90
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Proportion Arriving On Green	0.36	0.36	0.36	0.36	0.36	0.36	0.47	0.47	0.47	0.47	0.47	0.47
Lane Group Delay, s/veh	10.1	10.1	10.2	10.9	9.6	13.0	8.9	8.1	8.2	14.0	8.3	8.3
Lane Group LOS	B	B	B	B	A	B	A	A	A	B	A	A
Approach Volume, veh/h		183			282			471			749	
Approach Delay, s/veh		10.2			12.3			8.2			10.1	
Approach LOS		B			B			A			B	

Timer:	1	2	3	4	5	6	7	8
Assigned Phase		2		4		6		8
Case No		6.0		5.0		6.0		5.0
Phase Duration (G+Y+Rc), s		25.00		20.00		25.00		20.00
Change Period (Y+Rc), s		4.00		4.00		4.00		4.00
Max. Allowable Headway (MAH), s		5.05		4.27		5.05		4.27
Maximum Green Setting (Gmax), s		21.00		16.00		21.00		16.00
Max. Queue Clearance Time (g_c+I1), s		6.33		3.37		14.76		6.62
Green Extension Time (g_e), s		6.06		1.45		3.44		1.26
Probability of Phase Call (p_c)		1.000		1.000		1.000		1.000
Probability of Max Out (p_x)		0.390		0.056		1.000		0.146

Left-Turn Movement Data				
Assigned Movement		5		7		1		3
Mvmt. Sat Flow, veh/h		895.99		1308.01		912.20		1302.53

Through Movement Data				
Assigned Movement		2		4		6		8
Mvmt. Sat Flow, veh/h		3109.41		1881.19		3513.54		1900.00

Right-Turn Movement Data				
Assigned Movement		12		14		16		18
Mvmt. Sat Flow, veh/h		492.92		1615.00		193.50		1454.95

Left Lane Group Data								
Assigned Movement	0	5	0	7	0	1	0	3
Lane Assignment		L		L		L		L
Lanes in Group	0	1	0	1	0	1	0	1
Group Volume (v), veh/h	0.0	13.0	0.0	31.5	0.0	229.3	0.0	50.0
Group Sat. Flow (s), veh/h/ln	0.0	896.0	0.0	1308.0	0.0	912.2	0.0	1302.5
Queue Serve Time (g_s), s	0.0	0.4	0.0	0.7	0.0	9.2	0.0	1.2
Cycle Queue Clear Time (g_c), s	0.0	4.3	0.0	1.2	0.0	12.8	0.0	2.5

Perm LT Sat Flow Rate (s_l), veh/h/ln	0.0	896.0	0.0	1308.0	0.0	912.2	0.0	1302.5
Shared LT Sat Flow (s_sh), veh/h/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Perm LT Eff. Green (g_p), s	0.0	21.0	0.0	16.0	0.0	21.0	0.0	16.0
Perm LT Serve Time (g_u), s	0.0	17.1	0.0	15.5	0.0	17.5	0.0	14.7
Perm LT Que Serve Time (g_ps), s	0.0	0.4	0.0	0.7	0.0	9.2	0.0	1.2
Time to First Blk (g_f), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Serve Time pre Blk (g_fs), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Proportion LT Inside Lane (P_L)	0.000	1.000	0.000	1.000	0.000	1.000	0.000	1.000
Lane Group Capacity (c), veh/h	0.0	500.1	0.0	610.8	0.0	514.3	0.0	586.7
Volume-to-Capacity Ratio (X)	0.000	0.026	0.000	0.052	0.000	0.446	0.000	0.085
Available Capacity (c_a), veh/h	0.0	500.1	0.0	610.8	0.0	514.3	0.0	586.7
Upstream Filter Factor (I)	0.000	1.000	0.000	1.000	0.000	1.000	0.000	1.000
Uniform Delay (d1), s/veh	0.0	8.8	0.0	9.9	0.0	11.2	0.0	10.6
Incremental Delay (d2), s/veh	0.0	0.1	0.0	0.2	0.0	2.8	0.0	0.3
Initial Queue Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	8.9	0.0	10.1	0.0	14.0	0.0	10.9
First-Term Queue (Q1), veh/ln	0.0	0.1	0.0	0.2	0.0	1.3	0.0	0.3
Second-Term Queue (Q2), veh/ln	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0
Third-Term Queue (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Percentile bk-of-que factor (f_B%)	0.000	1.000	0.000	1.000	0.000	1.000	0.000	1.000
Percentile Back of Queue (Q%), veh/ln	0.0	0.1	0.0	0.2	0.0	1.7	0.0	0.3
Percentile Storage Ratio (RQ%)	0.00	0.01	0.00	0.05	0.00	0.30	0.00	0.03
Initial Queue (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Queue (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Queue (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Capacity (cs), veh/h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Initial Queue Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Middle Lane Group Data								
Assigned Movement	0	2	0	4	0	6	0	8
Lane Assignment		T		T		T		T
Lanes in Group	0	1	0	1	0	1	0	1
Group Volume (v), veh/h	0.0	232.8	0.0	78.3	0.0	261.7	0.0	31.5
Group Sat. Flow (s), veh/h/ln	0.0	1844.7	0.0	1881.2	0.0	1870.6	0.0	1900.0
Queue Serve Time (g_s), s	0.0	3.5	0.0	1.3	0.0	3.9	0.0	0.5
Cycle Queue Clear Time (g_c), s	0.0	3.5	0.0	1.3	0.0	3.9	0.0	0.5
Lane Group Capacity (c), veh/h	0.0	860.8	0.0	668.9	0.0	872.9	0.0	675.6
Volume-to-Capacity Ratio (X)	0.000	0.270	0.000	0.117	0.000	0.300	0.000	0.047
Available Capacity (c_a), veh/h	0.0	860.8	0.0	668.9	0.0	872.9	0.0	675.6
Upstream Filter Factor (I)	0.000	1.000	0.000	1.000	0.000	1.000	0.000	1.000
Uniform Delay (d1), s/veh	0.0	7.3	0.0	9.8	0.0	7.4	0.0	9.5
Incremental Delay (d2), s/veh	0.0	0.8	0.0	0.4	0.0	0.9	0.0	0.1
Initial Queue Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	8.1	0.0	10.1	0.0	8.3	0.0	9.6
First-Term Queue (Q1), veh/ln	0.0	0.9	0.0	0.4	0.0	1.0	0.0	0.2
Second-Term Queue (Q2), veh/ln	0.0	0.2	0.0	0.1	0.0	0.2	0.0	0.0
Third-Term Queue (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Percentile bk-of-que factor (f_B%)	0.000	1.000	0.000	1.000	0.000	1.000	0.000	1.000
Percentile Back of Queue (Q%), veh/ln	0.0	1.1	0.0	0.5	0.0	1.2	0.0	0.2
Percentile Storage Ratio (RQ%)	0.00	0.03	0.00	0.04	0.00	0.16	0.00	0.02

Initial Queue (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Queue (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Queue (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Capacity (cs), veh/h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Initial Queue Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Right Lane Group Data								
Assigned Movement	0	12	0	14	0	16	0	18
Lane Assignment		T+R		R		T+R		R
Lanes in Group	0	1	0	1	0	1	0	1
Group Volume (v), veh/h	0.0	224.8	0.0	72.8	0.0	257.9	0.0	200.0
Group Sat. Flow (s), veh/h/ln	0.0	1757.7	0.0	1615.0	0.0	1836.4	0.0	1455.0
Queue Serve Time (g_s), s	0.0	3.5	0.0	1.4	0.0	3.9	0.0	4.6
Cycle Queue Clear Time (g_c), s	0.0	3.5	0.0	1.4	0.0	3.9	0.0	4.6
Prot RT Sat Flow Rate (s_R), veh/h/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prot RT Eff. Green (g_R), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Proportion RT Outside Lane (P_R)	0.000	0.280	0.000	1.000	0.000	0.105	0.000	1.000
Lane Group Capacity (c), veh/h	0.0	820.2	0.0	574.2	0.0	857.0	0.0	517.3
Volume-to-Capacity Ratio (X)	0.000	0.274	0.000	0.127	0.000	0.301	0.000	0.387
Available Capacity (c_a), veh/h	0.0	820.2	0.0	574.2	0.0	857.0	0.0	517.3
Upstream Filter Factor (I)	0.000	1.000	0.000	1.000	0.000	1.000	0.000	1.000
Uniform Delay (d1), s/veh	0.0	7.3	0.0	9.8	0.0	7.4	0.0	10.8
Incremental Delay (d2), s/veh	0.0	0.8	0.0	0.5	0.0	0.9	0.0	2.2
Initial Queue Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	8.2	0.0	10.2	0.0	8.3	0.0	13.0
First-Term Queue (Q1), veh/ln	0.0	0.9	0.0	0.4	0.0	1.0	0.0	1.1
Second-Term Queue (Q2), veh/ln	0.0	0.2	0.0	0.1	0.0	0.2	0.0	0.3
Third-Term Queue (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Percentile bk-of-que factor (f_B%)	0.000	1.000	0.000	1.000	0.000	1.000	0.000	1.000
Percentile Back of Queue (Q%), veh/ln	0.0	1.0	0.0	0.4	0.0	1.2	0.0	1.5
Percentile Storage Ratio (RQ%)	0.00	0.03	0.00	0.45	0.00	0.16	0.00	0.40
Initial Queue (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Queue (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Queue (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Capacity (cs), veh/h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Initial Queue Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Intersection Summary	
HCM 2010 Control Delay	9.9
HCM 2010 Level of Service	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	29	72	67	46	29	184	12	363	58	211	453	25
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1776	1881	1900	1845	1900	1712	1900	1845	1845	1827	1871	1871
Lanes	1	1	1	1	1	1	1	2	0	1	2	0
Capacity, veh/h	611	669	574	587	676	517	500	1451	230	514	1640	90
Arriving On Green	0.36	0.36	0.36	0.36	0.36	0.36	0.47	0.47	0.47	0.47	0.47	0.47
Sat Flow, veh/h	1308.0	1881.2	1615.0	1302.5	1900.0	1455.0	896.0	3109.4	492.9	912.2	3513.5	193.5
Grp Volume(v), veh/h	31.5	78.3	72.8	50.0	31.5	200.0	13.0	232.8	224.8	229.3	261.7	257.9
Grp Sat Flow(s),veh/h/ln	1308.0	1881.2	1615.0	1302.5	1900.0	1455.0	896.0	1844.7	1757.7	912.2	1870.6	1836.4
Q Serve(g_s), s	0.7	1.3	1.4	1.2	0.5	4.6	0.4	3.5	3.5	9.2	3.9	3.9
Cycle Q Clear(g_c), s	1.2	1.3	1.4	2.5	0.5	4.6	4.3	3.5	3.5	12.8	3.9	3.9
Proportion In Lane	1.000		1.000	1.000		1.000	1.000		0.280	1.000		0.105
Lane Grp Cap(c), veh/h	610.8	668.9	574.2	586.7	675.6	517.3	500.1	860.8	820.2	514.3	872.9	857.0
V/C Ratio(X)	0.052	0.117	0.127	0.085	0.047	0.387	0.026	0.270	0.274	0.446	0.300	0.301
Avail Cap(c_a), veh/h	610.8	668.9	574.2	586.7	675.6	517.3	500.1	860.8	820.2	514.3	872.9	857.0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Uniform Delay (d), s/veh	9.9	9.8	9.8	10.6	9.5	10.8	8.8	7.3	7.3	11.2	7.4	7.4
Incr Delay (d2), s/veh	0.2	0.4	0.5	0.3	0.1	2.2	0.1	0.8	0.8	2.8	0.9	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	10.1	10.1	10.2	10.9	9.6	13.0	8.9	8.1	8.2	14.0	8.3	8.3
Lane Group LOS	B	B	B	B	A	B	A	A	A	B	A	A
Approach Volume, veh/h		183			282			471			749	
Approach Delay, s/veh		10.2			12.3			8.2			10.1	
Approach LOS		B			B			A			B	

Timer				
Assigned Phase	4	8	2	6
Phase Duration (G+Y+Rc), s	20.00	20.00	25.00	25.00
Change Period (Y+Rc), s	4.00	4.00	4.00	4.00
Max Green Setting (Gmax), s	16.00	16.00	21.00	21.00
Max Q Clear Time (g_c+I1), s	3.37	6.62	6.33	14.76
Green Extension Time (p_c)	1.45	1.26	6.06	3.44

Intersection Summary	
HCM 2010 Control Delay	9.9
HCM 2010 Level of Service	A

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	4	246	83	58	170	4	84	1	75	4	4	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		50	0		0	175		100	0		0
Storage Lanes	0		1	0		0	1		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.998				0.850		0.925	
Flt Protected		0.999			0.988		0.950				0.989	
Satd. Flow (prot)	0	1861	1455	0	1819	0	1687	1900	1599	0	1647	0
Flt Permitted		0.999			0.988		0.950				0.989	
Satd. Flow (perm)	0	1861	1455	0	1819	0	1687	1900	1599	0	1647	0
Link Speed (mph)		35			35			45			25	
Link Distance (ft)		361			2791			2602			293	
Travel Time (s)		7.0			54.4			39.4			8.0	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	2%	11%	0%	4%	5%	7%	0%	1%	0%	25%	0%
Adj. Flow (vph)	4	262	88	62	181	4	89	1	80	4	4	10
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	266	88	0	247	0	89	1	80	0	18	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane								Yes				
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 46.9%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Intersection Delay (sec/veh):	3.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	4	246	83	58	170	4	84	1	75	4	4	9
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		50	0		0	175		100	0		0
Median Width		0			0			12			12	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles(%)	0	2	11	0	4	5	7	0	1	0	25	0
Movement Flow Rate	4	262	88	62	181	4	89	1	80	4	4	10
Number of Lanes	0	1	1	0	1	0	1	1	1	0	1	0

Major/Minor	Major 1			Major 2			Minor 1			Minor 2		
Conflicting Flow Rate - All	185	0	0	350	0	0	628	623	175	662	665	183
Stage 1	-	-	-	-	-	-	314	314	-	307	307	-
Stage 2	-	-	-	-	-	-	314	309	-	355	358	-
Follow-up Headway	2.2	-	-	2.2	-	-	3.563	4	3.309	3.5	4.225	3.3
Pot Capacity-1 Maneuver	1402	-	-	1228	-	-	416	420	*1287	401	365	865
Stage 1	-	-	-	-	-	-	751	688	-	707	621	-
Stage 2	-	-	-	-	-	-	686	663	-	721	615	-
Time blocked-Platoon(%)	0	-	-	14	-	-	14	14	14	14	14	0
Mov Capacity-1 Maneuver	1402	-	-	1228	-	-	389	395	*1287	359	344	865
Mov Capacity-2 Maneuver	-	-	-	-	-	-	389	395	-	359	344	-
Stage 1	-	-	-	-	-	-	748	685	-	704	586	-
Stage 2	-	-	-	-	-	-	636	626	-	673	613	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	0.1	2	12.8	12.3
HCM LOS	A	A	B	B

Lane	NBLn1	NBLn2	NBLn3	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (vph)	*389	*395	*1287							*512
HCM Control Delay (s)	17	14.1	8	7.576	-	-	8.087	0	-	12.3
HCM Lane VC Ratio	0.23	0.003	0.062	0.003	-	-	0.05	-	-	0.035
HCM Lane LOS	C	B	A	A	-	-	A	A	-	B
HCM 95th Percentile Queue (veh)	0.874	0.008	0.198	0.009	-	-	0.159	-	-	0.11

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	276	36	0	163	28	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		250	0		0	50
Storage Lanes		1	0		1	1
Taper Length (ft)			25		25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850				0.850
Flt Protected					0.950	
Satd. Flow (prot)	1881	1615	0	1845	1805	1615
Flt Permitted					0.950	
Satd. Flow (perm)	1881	1615	0	1845	1805	1615
Link Speed (mph)	45			45	25	
Link Distance (ft)	2791			348	365	
Travel Time (s)	42.3			5.3	10.0	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	1%	0%	0%	3%	0%	0%
Adj. Flow (vph)	276	36	0	163	28	2
Shared Lane Traffic (%)						
Lane Group Flow (vph)	276	36	0	163	28	2
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 24.5%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Intersection Delay (sec/veh):	0.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Volume (vph)	276	36	0	163	28	2
Conflicting Peds.(#/hr)	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None
Storage Length		250	0		0	50
Median Width	0			0	12	
Grade (%)	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles(%)	1	0	0	3	0	0
Movement Flow Rate	276	36	0	163	28	2
Number of Lanes	1	1	0	1	1	1

Major/Minor	Major 1			Major 2		
Conflicting Flow Rate - All	0	0	-	0	457	156
Stage 1	-	-	-	-	294	-
Stage 2	-	-	-	-	163	-
Follow-up Headway	-	-	0	-	3.5	3.3
Pot Capacity-1 Maneuver	-	-	0	-	565	895
Stage 1	-	-	0	-	761	-
Stage 2	-	-	0	-	871	-
Time blocked-Platoon(%)	-	-	0	-	0	0
Mov Capacity-1 Maneuver	-	-	-	-	565	895
Mov Capacity-2 Maneuver	-	-	-	-	565	-
Stage 1	-	-	-	-	761	-
Stage 2	-	-	-	-	871	-

Approach	EB	WB	NB
HCM Control Delay (s)	0	0	11.5
HCM LOS	A	A	B

Lane	NBLn1	NBLn2	EBT	EBR	WBT
Capacity (vph)	565	895			
HCM Control Delay (s)	11.7	9	-	-	-
HCM Lane VC Ratio	0.05	0.002	-	-	-
HCM Lane LOS	B	A	-	-	-
HCM 95th Percentile Queue (veh)	0.156	0.007	-	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	236	239	20	214	0	0	0	0	26	0	87
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		25	125		0	0		0	0		100
Storage Lanes	0		1	1		0	0		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850									0.850
Flt Protected				0.950						0.950		
Satd. Flow (prot)	0	1810	1553	1641	1776	0	0	0	0	1517	0	1509
Flt Permitted				0.950						0.950		
Satd. Flow (perm)	0	1810	1553	1641	1776	0	0	0	0	1517	0	1509
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		185			391			858			818	
Travel Time (s)		3.6			7.6			16.7			15.9	
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Heavy Vehicles (%)	0%	5%	4%	10%	7%	0%	0%	0%	0%	19%	0%	7%
Adj. Flow (vph)	0	238	241	20	216	0	0	0	0	26	0	88
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	238	241	20	216	0	0	0	0	26	0	88
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 31.5%	ICU Level of Service A
Analysis Period (min) 15	

Intersection	
Intersection Delay (sec/veh):	1.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	0	236	239	20	214	0	0	0	0	26	0	87
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		25	125		0	0		0	0		100
Median Width		12			12			12			12	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Heavy Vehicles(%)	0	5	4	10	7	0	0	0	0	19	0	7
Movement Flow Rate	0	238	241	20	216	0	0	0	0	26	0	88
Number of Lanes	0	1	1	1	1	0	0	0	0	1	0	1

Major/Minor	Major 1			Major 2			Minor 2		
Conflicting Flow Rate - All	-	0	0	479	0	-	615	~	108
Stage 1	-	-	-	-	-	-	256	-	-
Stage 2	-	-	-	-	-	-	359	-	-
Follow-up Headway	0	-	-	2.29	-	0	3.671	0	3.363
Pot Capacity-1 Maneuver	0	-	-	1043	-	0	380	0	932
Stage 1	0	-	-	-	-	0	712	0	-
Stage 2	0	-	-	-	-	0	625	0	-
Time blocked-Platoon(%)	0	-	-	0	-	0	0	0	0
Mov Capacity-1 Maneuver	-	-	-	1043	-	-	374	-	932
Mov Capacity-2 Maneuver	-	-	-	-	-	-	374	-	-
Stage 1	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	625	-	-

Approach	EB	WB	SB
HCM Control Delay (s)	0	0.7	10.7
HCM LOS	A	A	B

Lane	EBT	EBR	WBL	WBT	SBLn1	SBLn2
Capacity (vph)					374	932
HCM Control Delay (s)	-	-	8.52	-	15.4	9.3
HCM Lane VC Ratio	-	-	0.019	-	0.07	0.094
HCM Lane LOS	-	-	A	-	C	A
HCM 95th Percentile Queue (veh)	-	-	0.059	-	0.225	0.311

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	132	127	0	0	119	27	118	0	34	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	125		0	0		25	0		100	0		0
Storage Lanes	1		0	0		1	1		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt						0.850			0.850			
Flt Protected	0.950						0.950					
Satd. Flow (prot)	1703	1827	0	0	1845	1455	1641	0	1302	0	0	0
Flt Permitted	0.950						0.950					
Satd. Flow (perm)	1703	1827	0	0	1845	1455	1641	0	1302	0	0	0
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		391			304			479			519	
Travel Time (s)		7.6			5.9			9.3			10.1	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	6%	4%	0%	0%	3%	11%	10%	0%	24%	0%	0%	0%
Adj. Flow (vph)	138	132	0	0	124	28	123	0	35	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	138	132	0	0	124	28	123	0	35	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 31.5%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Intersection Delay (sec/veh):	6.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	132	127	0	0	119	27	118	0	34	0	0	0
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	125		0	0		25	0		100	0		0
Median Width		12			12			12			12	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles(%)	6	4	0	0	3	11	10	0	24	0	0	0
Movement Flow Rate	138	132	0	0	124	28	123	0	35	0	0	0
Number of Lanes	1	1	0	0	1	1	1	0	1	0	0	0

Major/Minor	Major 1				Major 2		Minor 1		
Conflicting Flow Rate - All	152	0	-	-	0	0	546	~	66
Stage 1	-	-	-	-	-	-	408	-	-
Stage 2	-	-	-	-	-	-	138	-	-
Follow-up Headway	2.254	-	0	0	-	-	3.59	0	3.516
Pot Capacity-1 Maneuver	1405	-	0	0	-	-	436	0	940
Stage 1	-	-	0	0	-	-	605	0	-
Stage 2	-	-	0	0	-	-	846	0	-
Time blocked-Platoon(%)	0	-	0	0	-	-	0	0	0
Mov Capacity-1 Maneuver	1405	-	-	-	-	-	403	-	940
Mov Capacity-2 Maneuver	-	-	-	-	-	-	403	-	-
Stage 1	-	-	-	-	-	-	546	-	-
Stage 2	-	-	-	-	-	-	846	-	-

Approach	EB	WB	NB
HCM Control Delay (s)	4	0	15.8
HCM LOS	A	A	C

Lane	NBLn1	NBLn2	EBL	EBT	WBT	WBR
Capacity (vph)	403	940				
HCM Control Delay (s)	17.8	9	7.84	-	-	-
HCM Lane VC Ratio	0.305	0.038	0.098	-	-	-
HCM Lane LOS	C	A	A	-	-	-
HCM 95th Percentile Queue (veh)	1.27	0.117	0.325	-	-	-

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	101	56	55	56	71	92
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	25	0			25
Storage Lanes	1	1	0			1
Taper Length (ft)	25		25			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850				0.850
Flt Protected	0.950			0.976		
Satd. Flow (prot)	1641	1509	0	1774	1776	1538
Flt Permitted	0.950			0.976		
Satd. Flow (perm)	1641	1509	0	1774	1776	1538
Link Speed (mph)	35			35	35	
Link Distance (ft)	304			349	1203	
Travel Time (s)	5.9			6.8	23.4	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles (%)	10%	7%	4%	5%	7%	5%
Adj. Flow (vph)	116	64	63	64	82	106
Shared Lane Traffic (%)						
Lane Group Flow (vph)	116	64	0	127	82	106
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 24.9%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Intersection Delay (sec/veh):	5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Volume (vph)	101	56	55	56	71	92
Conflicting Peds.(#/hr)	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
Right Turn Channelized	None	None	None	None	None	None
Storage Length	0	25	0			25
Median Width	12			0	0	
Grade (%)	0%			0%	0%	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles(%)	10	7	4	5	7	5
Movement Flow Rate	116	64	63	64	82	106
Number of Lanes	1	1	0	1	1	1

Major/Minor				Major 1	Major 2	
Conflicting Flow Rate - All	325	94	188	0	0	0
Stage 1	135	-	-	-	-	-
Stage 2	190	-	-	-	-	-
Follow-up Headway	3.59	3.363	2.236	-	-	-
Pot Capacity-1 Maneuver	653	949	1374	-	-	-
Stage 1	872	-	-	-	-	-
Stage 2	823	-	-	-	-	-
Time blocked-Platoon(%)	0	0	0	-	-	-
Mov Capacity-1 Maneuver	622	949	1374	-	-	-
Mov Capacity-2 Maneuver	622	-	-	-	-	-
Stage 1	872	-	-	-	-	-
Stage 2	783	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay (s)	11	3.8	0
HCM LOS	B	A	A

Lane	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (vph)			622	949		
HCM Control Delay (s)	7.746	-	12.1	9.1	-	-
HCM Lane VC Ratio	0.046	-	0.187	0.068	-	-
HCM Lane LOS	A	-	B	A	-	-
HCM 95th Percentile Queue (veh)	0.145	-	0.681	0.218	-	-

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	23	11	149	8	5	140
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	100		0	450	
Storage Lanes	1	1		0	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850	0.993			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	1583	1850	0	1770	1863
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1770	1583	1850	0	1770	1863
Link Speed (mph)	30		45			35
Link Distance (ft)	2276		718			2602
Travel Time (s)	51.7		10.9			50.7
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	25	12	162	9	5	152
Shared Lane Traffic (%)						
Lane Group Flow (vph)	25	12	171	0	5	152
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						Yes
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 18.3%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Intersection Delay (sec/veh):	1.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Volume (vph)	23	11	149	8	5	140
Conflicting Peds.(#/hr)	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
Right Turn Channelized	None	None	None	None	None	None
Storage Length	0	100		0	450	
Median Width	12		12			12
Grade (%)	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles(%)	2	2	2	2	2	2
Movement Flow Rate	25	12	162	9	5	152
Number of Lanes	1	1	1	0	1	1

Major/Minor			Major 1			Major 2
Conflicting Flow Rate - All	329	167	0	0	171	0
Stage 1	167	-	-	-	-	-
Stage 2	162	-	-	-	-	-
Follow-up Headway	3.518	3.318	-	-	2.218	-
Pot Capacity-1 Maneuver	665	877	-	-	1406	-
Stage 1	863	-	-	-	-	-
Stage 2	867	-	-	-	-	-
Time blocked-Platoon(%)	0	0	-	-	0	-
Mov Capacity-1 Maneuver	663	877	-	-	1406	-
Mov Capacity-2 Maneuver	663	-	-	-	-	-
Stage 1	863	-	-	-	-	-
Stage 2	864	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay (s)	10.1	0	0.3
HCM LOS	B	A	A

Lane	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (vph)			663	877		
HCM Control Delay (s)	-	-	10.6	9.2	7.57	-
HCM Lane VC Ratio	-	-	0.038	0.014	0.004	-
HCM Lane LOS	-	-	B	A	A	-
HCM 95th Percentile Queue (veh)	-	-	0.117	0.041	0.012	-

APPENDIX 3: PROJECT TRIP GENERATION

Land Use	Size	Daily Trip Rates	PM Peak-Hour Trip Rates		
			In	Out	Total
Casino (per 1000 sq. ft.)	square feet	61.20	2.74	3.21	5.95
Casino Hotel (per room)	80 rooms	2.98	0.13	0.09	0.22

Land Use	Size	Daily Trip Rates	PM Peak-Hour Trip Rates		
			In	Out	Total
Phase I					
Casino (per 1000 sq. ft.)	14200 square feet	869.04	38.91	45.58	84.49
Total		869.04	38.91	45.58	84.49
Phase II					
Casino (per 1000 sq. ft.)	23700 square feet	1450.44	64.94	76.08	141.02
Casino Hotel (per room)	80 rooms	238.40	10.40	7.20	17.60
Total		1688.84	75.34	83.28	158.62

APPENDIX 4: EXISTING PLUS PROJECT LOS WORKSHEETS

Lanes, Volumes, Timings
1: S. Main St / Fort Jones Rd & Oberlin Rd

9/3/2013

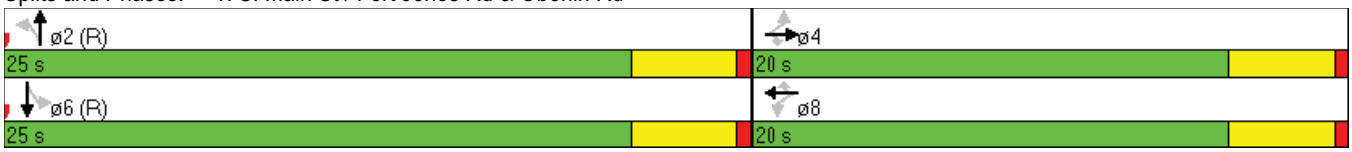
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	29	73	67	46	30	189	12	363	58	215	453	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		25	0		100	125		0	150		0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt			0.850			0.850		0.979			0.992	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1687	1881	1615	1626	1900	1568	1805	3431	0	1736	3526	0
Flt Permitted	0.736			0.706			0.454			0.488		
Satd. Flow (perm)	1307	1881	1615	1208	1900	1568	863	3431	0	892	3526	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			73			205		53			16	
Link Speed (mph)		35			35			40			40	
Link Distance (ft)		376			361			996			241	
Travel Time (s)		7.3			7.0			17.0			4.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	7%	1%	0%	11%	0%	3%	0%	3%	3%	4%	1%	12%
Adj. Flow (vph)	32	79	73	50	33	205	13	395	63	234	492	27
Shared Lane Traffic (%)												
Lane Group Flow (vph)	32	79	73	50	33	205	13	458	0	234	519	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane								Yes			Yes	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8		8	2			6		
Minimum Split (s)	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0		20.0	20.0	
Total Split (s)	20.0	20.0	20.0	20.0	20.0	20.0	25.0	25.0		25.0	25.0	
Total Split (%)	44.4%	44.4%	44.4%	44.4%	44.4%	44.4%	55.6%	55.6%		55.6%	55.6%	
Maximum Green (s)	16.0	16.0	16.0	16.0	16.0	16.0	21.0	21.0		21.0	21.0	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5		3.5	3.5	
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5		0.5	0.5	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Flash Dont Walk (s)	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0	0	0	0	0	0	0		0	0	
Act Effct Green (s)	16.0	16.0	16.0	16.0	16.0	16.0	21.0	21.0		21.0	21.0	
Actuated g/C Ratio	0.36	0.36	0.36	0.36	0.36	0.36	0.47	0.47		0.47	0.47	
v/c Ratio	0.07	0.12	0.12	0.12	0.05	0.30	0.03	0.28		0.56	0.31	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	10.2	10.4	3.9	10.7	9.8	3.4	6.8	7.0		15.3	7.9	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	10.2	10.4	3.9	10.7	9.8	3.4	6.8	7.0		15.3	7.9	
LOS	B	B	A	B	A	A	A	A		B	A	
Approach Delay		7.8			5.4			7.0			10.2	
Approach LOS		A			A			A			B	

Intersection Summary

Area Type: Other
Cycle Length: 45
Actuated Cycle Length: 45
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 45
Control Type: Pretimed
Maximum v/c Ratio: 0.56
Intersection Signal Delay: 8.2 Intersection LOS: A
Intersection Capacity Utilization 43.0% ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 1: S. Main St / Fort Jones Rd & Oberlin Rd



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	32	79	73	50	33	205	13	458	234	519
v/c Ratio	0.07	0.12	0.12	0.12	0.05	0.30	0.03	0.28	0.56	0.31
Control Delay	10.2	10.4	3.9	10.7	9.8	3.4	6.8	7.0	15.3	7.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.2	10.4	3.9	10.7	9.8	3.4	6.8	7.0	15.3	7.9
Queue Length 50th (ft)	5	13	0	8	5	0	2	30	40	38
Queue Length 95th (ft)	18	34	18	25	18	30	8	52	96	63
Internal Link Dist (ft)		296			281			916		161
Turn Bay Length (ft)	100		25			100	125		150	
Base Capacity (vph)	464	668	621	429	675	689	402	1629	416	1654
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.07	0.12	0.12	0.12	0.05	0.30	0.03	0.28	0.56	0.31

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	29	73	67	46	30	189	12	363	58	215	453	25
Movement Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj. Factor (A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj. Factors	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Sat. Flow Rate, veh/h/ln	1776	1881	1900	1712	1900	1845	1900	1845	1845	1827	1871	1871
Lanes	1	1	1	1	1	1	1	2	0	1	2	0
Lane Assignment												
Capacity, veh/h	610	669	574	555	676	557	500	1451	230	514	1640	90
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Proportion Arriving On Green	0.36	0.36	0.36	0.36	0.36	0.36	0.47	0.47	0.47	0.47	0.47	0.47
Lane Group Delay, s/veh	10.1	10.1	10.2	10.9	9.6	12.6	8.9	8.1	8.2	14.2	8.3	8.3
Lane Group LOS	B	B	B	B	A	B	A	A	A	B	A	A
Approach Volume, veh/h		184			288			471			753	
Approach Delay, s/veh		10.2			12.0			8.2			10.2	
Approach LOS		B			B			A			B	

Timer:	1	2	3	4	5	6	7	8
Assigned Phase		2		4		6		8
Case No		6.0		5.0		6.0		5.0
Phase Duration (G+Y+Rc), s		25.00		20.00		25.00		20.00
Change Period (Y+Rc), s		4.00		4.00		4.00		4.00
Max. Allowable Headway (MAH), s		5.05		4.28		5.05		4.28
Maximum Green Setting (Gmax), s		21.00		16.00		21.00		16.00
Max. Queue Clearance Time (g_c+I1), s		6.33		3.37		15.00		6.37
Green Extension Time (g_e), s		6.08		1.48		3.35		1.31
Probability of Phase Call (p_c)		1.000		1.000		1.000		1.000
Probability of Max Out (p_x)		0.392		0.058		1.000		0.150

Left-Turn Movement Data				
Assigned Movement	5	7	1	3
Mvmt. Sat Flow, veh/h	895.99	1306.73	912.20	1207.46

Through Movement Data				
Assigned Movement	2	4	6	8
Mvmt. Sat Flow, veh/h	3109.41	1881.19	3513.54	1900.00

Right-Turn Movement Data				
Assigned Movement	12	14	16	18
Mvmt. Sat Flow, veh/h	492.92	1615.00	193.50	1567.96

Left Lane Group Data								
Assigned Movement	0	5	0	7	0	1	0	3
Lane Assignment		L		L		L		L
Lanes in Group	0	1	0	1	0	1	0	1
Group Volume (v), veh/h	0.0	13.0	0.0	31.5	0.0	233.7	0.0	50.0
Group Sat. Flow (s), veh/h/ln	0.0	896.0	0.0	1306.7	0.0	912.2	0.0	1207.5
Queue Serve Time (g_s), s	0.0	0.4	0.0	0.7	0.0	9.5	0.0	1.3
Cycle Queue Clear Time (g_c), s	0.0	4.3	0.0	1.2	0.0	13.0	0.0	2.6

Perm LT Sat Flow Rate (s_l), veh/h/ln	0.0	896.0	0.0	1306.7	0.0	912.2	0.0	1207.5
Shared LT Sat Flow (s_sh), veh/h/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Perm LT Eff. Green (g_p), s	0.0	21.0	0.0	16.0	0.0	21.0	0.0	16.0
Perm LT Serve Time (g_u), s	0.0	17.1	0.0	15.5	0.0	17.5	0.0	14.7
Perm LT Que Serve Time (g_ps), s	0.0	0.4	0.0	0.7	0.0	9.5	0.0	1.3
Time to First Blk (g_f), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Serve Time pre Blk (g_fs), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Proportion LT Inside Lane (P_L)	0.000	1.000	0.000	1.000	0.000	1.000	0.000	1.000
Lane Group Capacity (c), veh/h	0.0	500.1	0.0	609.9	0.0	514.3	0.0	555.1
Volume-to-Capacity Ratio (X)	0.000	0.026	0.000	0.052	0.000	0.454	0.000	0.090
Available Capacity (c_a), veh/h	0.0	500.1	0.0	609.9	0.0	514.3	0.0	555.1
Upstream Filter Factor (I)	0.000	1.000	0.000	1.000	0.000	1.000	0.000	1.000
Uniform Delay (d1), s/veh	0.0	8.8	0.0	9.9	0.0	11.3	0.0	10.6
Incremental Delay (d2), s/veh	0.0	0.1	0.0	0.2	0.0	2.9	0.0	0.3
Initial Queue Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	8.9	0.0	10.1	0.0	14.2	0.0	10.9
First-Term Queue (Q1), veh/ln	0.0	0.1	0.0	0.2	0.0	1.4	0.0	0.3
Second-Term Queue (Q2), veh/ln	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0
Third-Term Queue (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Percentile bk-of-que factor (f_B%)	0.000	1.000	0.000	1.000	0.000	1.000	0.000	1.000
Percentile Back of Queue (Q%), veh/ln	0.0	0.1	0.0	0.2	0.0	1.8	0.0	0.3
Percentile Storage Ratio (RQ%)	0.00	0.01	0.00	0.05	0.00	0.30	0.00	0.03
Initial Queue (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Queue (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Queue (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Capacity (cs), veh/h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Initial Queue Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Middle Lane Group Data								
Assigned Movement	0	2	0	4	0	6	0	8
Lane Assignment		T		T		T		T
Lanes in Group	0	1	0	1	0	1	0	1
Group Volume (v), veh/h	0.0	232.8	0.0	79.3	0.0	261.7	0.0	32.6
Group Sat. Flow (s), veh/h/ln	0.0	1844.7	0.0	1881.2	0.0	1870.6	0.0	1900.0
Queue Serve Time (g_s), s	0.0	3.5	0.0	1.3	0.0	3.9	0.0	0.5
Cycle Queue Clear Time (g_c), s	0.0	3.5	0.0	1.3	0.0	3.9	0.0	0.5
Lane Group Capacity (c), veh/h	0.0	860.8	0.0	668.9	0.0	872.9	0.0	675.6
Volume-to-Capacity Ratio (X)	0.000	0.270	0.000	0.119	0.000	0.300	0.000	0.048
Available Capacity (c_a), veh/h	0.0	860.8	0.0	668.9	0.0	872.9	0.0	675.6
Upstream Filter Factor (I)	0.000	1.000	0.000	1.000	0.000	1.000	0.000	1.000
Uniform Delay (d1), s/veh	0.0	7.3	0.0	9.8	0.0	7.4	0.0	9.5
Incremental Delay (d2), s/veh	0.0	0.8	0.0	0.4	0.0	0.9	0.0	0.1
Initial Queue Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	8.1	0.0	10.1	0.0	8.3	0.0	9.6
First-Term Queue (Q1), veh/ln	0.0	0.9	0.0	0.4	0.0	1.0	0.0	0.2
Second-Term Queue (Q2), veh/ln	0.0	0.2	0.0	0.1	0.0	0.2	0.0	0.0
Third-Term Queue (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Percentile bk-of-que factor (f_B%)	0.000	1.000	0.000	1.000	0.000	1.000	0.000	1.000
Percentile Back of Queue (Q%), veh/ln	0.0	1.1	0.0	0.5	0.0	1.2	0.0	0.2
Percentile Storage Ratio (RQ%)	0.00	0.03	0.00	0.04	0.00	0.16	0.00	0.02

Initial Queue (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Queue (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Queue (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Capacity (cs), veh/h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Initial Queue Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Right Lane Group Data								
Assigned Movement	0	12	0	14	0	16	0	18
Lane Assignment		T+R		R		T+R		R
Lanes in Group	0	1	0	1	0	1	0	1
Group Volume (v), veh/h	0.0	224.8	0.0	72.8	0.0	257.9	0.0	205.4
Group Sat. Flow (s), veh/h/ln	0.0	1757.7	0.0	1615.0	0.0	1836.4	0.0	1568.0
Queue Serve Time (g_s), s	0.0	3.5	0.0	1.4	0.0	3.9	0.0	4.4
Cycle Queue Clear Time (g_c), s	0.0	3.5	0.0	1.4	0.0	3.9	0.0	4.4
Prot RT Sat Flow Rate (s_R), veh/h/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prot RT Eff. Green (g_R), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Proportion RT Outside Lane (P_R)	0.000	0.280	0.000	1.000	0.000	0.105	0.000	1.000
Lane Group Capacity (c), veh/h	0.0	820.2	0.0	574.2	0.0	857.0	0.0	557.5
Volume-to-Capacity Ratio (X)	0.000	0.274	0.000	0.127	0.000	0.301	0.000	0.368
Available Capacity (c_a), veh/h	0.0	820.2	0.0	574.2	0.0	857.0	0.0	557.5
Upstream Filter Factor (I)	0.000	1.000	0.000	1.000	0.000	1.000	0.000	1.000
Uniform Delay (d1), s/veh	0.0	7.3	0.0	9.8	0.0	7.4	0.0	10.8
Incremental Delay (d2), s/veh	0.0	0.8	0.0	0.5	0.0	0.9	0.0	1.9
Initial Queue Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	8.2	0.0	10.2	0.0	8.3	0.0	12.6
First-Term Queue (Q1), veh/ln	0.0	0.9	0.0	0.4	0.0	1.0	0.0	1.2
Second-Term Queue (Q2), veh/ln	0.0	0.2	0.0	0.1	0.0	0.2	0.0	0.3
Third-Term Queue (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Percentile bk-of-que factor (f_B%)	0.000	1.000	0.000	1.000	0.000	1.000	0.000	1.000
Percentile Back of Queue (Q%), veh/ln	0.0	1.0	0.0	0.4	0.0	1.2	0.0	1.5
Percentile Storage Ratio (RQ%)	0.00	0.03	0.00	0.45	0.00	0.16	0.00	0.37
Initial Queue (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Queue (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Queue (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Capacity (cs), veh/h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Initial Queue Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Intersection Summary	
HCM 2010 Control Delay	9.9
HCM 2010 Level of Service	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	29	73	67	46	30	189	12	363	58	215	453	25
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1776	1881	1900	1712	1900	1845	1900	1845	1845	1827	1871	1871
Lanes	1	1	1	1	1	1	1	2	0	1	2	0
Capacity, veh/h	610	669	574	555	676	557	500	1451	230	514	1640	90
Arriving On Green	0.36	0.36	0.36	0.36	0.36	0.36	0.47	0.47	0.47	0.47	0.47	0.47
Sat Flow, veh/h	1306.7	1881.2	1615.0	1207.5	1900.0	1568.0	896.0	3109.4	492.9	912.2	3513.5	193.5
Grp Volume(v), veh/h	31.5	79.3	72.8	50.0	32.6	205.4	13.0	232.8	224.8	233.7	261.7	257.9
Grp Sat Flow(s),veh/h/ln	1306.7	1881.2	1615.0	1207.5	1900.0	1568.0	896.0	1844.7	1757.7	912.2	1870.6	1836.4
Q Serve(g_s), s	0.7	1.3	1.4	1.3	0.5	4.4	0.4	3.5	3.5	9.5	3.9	3.9
Cycle Q Clear(g_c), s	1.2	1.3	1.4	2.6	0.5	4.4	4.3	3.5	3.5	13.0	3.9	3.9
Proportion In Lane	1.000		1.000	1.000		1.000	1.000		0.280	1.000		0.105
Lane Grp Cap(c), veh/h	609.9	668.9	574.2	555.1	675.6	557.5	500.1	860.8	820.2	514.3	872.9	857.0
V/C Ratio(X)	0.052	0.119	0.127	0.090	0.048	0.368	0.026	0.270	0.274	0.454	0.300	0.301
Avail Cap(c_a), veh/h	609.9	668.9	574.2	555.1	675.6	557.5	500.1	860.8	820.2	514.3	872.9	857.0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Uniform Delay (d), s/veh	9.9	9.8	9.8	10.6	9.5	10.8	8.8	7.3	7.3	11.3	7.4	7.4
Incr Delay (d2), s/veh	0.2	0.4	0.5	0.3	0.1	1.9	0.1	0.8	0.8	2.9	0.9	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	10.1	10.1	10.2	10.9	9.6	12.6	8.9	8.1	8.2	14.2	8.3	8.3
Lane Group LOS	B	B	B	B	A	B	A	A	A	B	A	A
Approach Volume, veh/h		184			288			471			753	
Approach Delay, s/veh		10.2			12.0			8.2			10.2	
Approach LOS		B			B			A			B	

Timer				
Assigned Phase	4	8	2	6
Phase Duration (G+Y+Rc), s	20.00	20.00	25.00	25.00
Change Period (Y+Rc), s	4.00	4.00	4.00	4.00
Max Green Setting (Gmax), s	16.00	16.00	21.00	21.00
Max Q Clear Time (g_c+I1), s	3.37	6.37	6.33	15.00
Green Extension Time (p_c)	1.48	1.31	6.08	3.35

Intersection Summary	
HCM 2010 Control Delay	9.9
HCM 2010 Level of Service	A

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	4	246	88	60	170	4	90	1	78	4	4	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		50	0		0	175		100	0		0
Storage Lanes	0		1	0		0	1		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.998				0.850		0.925	
Flt Protected		0.999			0.987		0.950				0.989	
Satd. Flow (prot)	0	1861	1455	0	1817	0	1687	1900	1599	0	1647	0
Flt Permitted		0.999			0.987		0.950				0.989	
Satd. Flow (perm)	0	1861	1455	0	1817	0	1687	1900	1599	0	1647	0
Link Speed (mph)		35			35			45			25	
Link Distance (ft)		361			2791			2602			293	
Travel Time (s)		7.0			54.4			39.4			8.0	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	2%	11%	0%	4%	5%	7%	0%	1%	0%	25%	0%
Adj. Flow (vph)	4	262	94	64	181	4	96	1	83	4	4	10
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	266	94	0	249	0	96	1	83	0	18	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane								Yes				
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 47.3%	ICU Level of Service A
Analysis Period (min) 15	

Intersection	
Intersection Delay (sec/veh):	3.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	4	246	88	60	170	4	90	1	78	4	4	9
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		50	0		0	175		100	0		0
Median Width		0			0			12			12	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles(%)	0	2	11	0	4	5	7	0	1	0	25	0
Movement Flow Rate	4	262	94	64	181	4	96	1	83	4	4	10
Number of Lanes	0	1	1	0	1	0	1	1	1	0	1	0

Major/Minor	Major 1			Major 2			Minor 1			Minor 2		
Conflicting Flow Rate - All	185	0	0	356	0	0	635	630	178	670	675	183
Stage 1	-	-	-	-	-	-	317	317	-	311	311	-
Stage 2	-	-	-	-	-	-	318	313	-	359	364	-
Follow-up Headway	2.2	-	-	2.2	-	-	3.563	4	3.309	3.5	4.225	3.3
Pot Capacity-1 Maneuver	1402	-	-	1222	-	-	411	415	*1287	395	359	865
Stage 1	-	-	-	-	-	-	747	686	-	704	619	-
Stage 2	-	-	-	-	-	-	683	661	-	718	611	-
Time blocked-Platoon(%)	0	-	-	14	-	-	14	14	14	14	14	0
Mov Capacity-1 Maneuver	1402	-	-	1222	-	-	383	390	*1287	352	337	865
Mov Capacity-2 Maneuver	-	-	-	-	-	-	383	390	-	352	337	-
Stage 1	-	-	-	-	-	-	744	684	-	701	583	-
Stage 2	-	-	-	-	-	-	632	623	-	668	608	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	0.1	2.1	13.1	12.4
HCM LOS	A	A	B	B

Lane	NBLn1	NBLn2	NBLn3	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (vph)	*383	*390	*1287							*505
HCM Control Delay (s)	17.5	14.3	8	7.576	-	-	8.108	0	-	12.4
HCM Lane VC Ratio	0.25	0.003	0.064	0.003	-	-	0.052	-	-	0.036
HCM Lane LOS	C	B	A	A	-	-	A	A	-	B
HCM 95th Percentile Queue (veh)	0.974	0.008	0.206	0.009	-	-	0.165	-	-	0.111

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	278	37	0	165	29	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		250	0		0	50
Storage Lanes		1	0		1	1
Taper Length (ft)			25		25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850				0.850
Flt Protected					0.950	
Satd. Flow (prot)	1881	1615	0	1863	1805	1615
Flt Permitted					0.950	
Satd. Flow (perm)	1881	1615	0	1863	1805	1615
Link Speed (mph)	45			45	25	
Link Distance (ft)	2791			348	365	
Travel Time (s)	42.3			5.3	10.0	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	1%	0%	0%	2%	0%	0%
Adj. Flow (vph)	278	37	0	165	29	2
Shared Lane Traffic (%)						
Lane Group Flow (vph)	278	37	0	165	29	2
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 24.6%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Intersection Delay (sec/veh):	0.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Volume (vph)	278	37	0	165	29	2
Conflicting Peds.(#/hr)	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None
Storage Length		250	0		0	50
Median Width	0			0	12	
Grade (%)	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles(%)	1	0	0	2	0	0
Movement Flow Rate	278	37	0	165	29	2
Number of Lanes	1	1	0	1	1	1

Major/Minor	Major 1			Major 2		
Conflicting Flow Rate - All	0	0	-	0	462	158
Stage 1	-	-	-	-	297	-
Stage 2	-	-	-	-	165	-
Follow-up Headway	-	-	0	-	3.5	3.3
Pot Capacity-1 Maneuver	-	-	0	-	562	893
Stage 1	-	-	0	-	758	-
Stage 2	-	-	0	-	869	-
Time blocked-Platoon(%)	-	-	0	-	0	0
Mov Capacity-1 Maneuver	-	-	-	-	562	893
Mov Capacity-2 Maneuver	-	-	-	-	562	-
Stage 1	-	-	-	-	758	-
Stage 2	-	-	-	-	869	-

Approach	EB	WB	NB
HCM Control Delay (s)	0	0	11.6
HCM LOS	A	A	B

Lane	NBLn1	NBLn2	EBT	EBR	WBT
Capacity (vph)	562	893			
HCM Control Delay (s)	11.8	9	-	-	-
HCM Lane VC Ratio	0.052	0.002	-	-	-
HCM Lane LOS	B	A	-	-	-
HCM 95th Percentile Queue (veh)	0.163	0.007	-	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	236	239	27	214	0	0	0	0	52	0	87
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		25	125		0	0		0	0		100
Storage Lanes	0		1	1		0	0		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850									0.850
Flt Protected				0.950						0.950		
Satd. Flow (prot)	0	1810	1553	1641	1759	0	0	0	0	1517	0	1509
Flt Permitted				0.950						0.950		
Satd. Flow (perm)	0	1810	1553	1641	1759	0	0	0	0	1517	0	1509
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		185			391			858			818	
Travel Time (s)		3.6			7.6			16.7			15.9	
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Heavy Vehicles (%)	0%	5%	4%	10%	8%	0%	0%	0%	0%	19%	0%	7%
Adj. Flow (vph)	0	238	241	27	216	0	0	0	0	53	0	88
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	238	241	27	216	0	0	0	0	53	0	88
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 31.5%	ICU Level of Service A
Analysis Period (min) 15	

Intersection	
Intersection Delay (sec/veh):	2.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	0	236	239	27	214	0	0	0	0	52	0	87
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		25	125		0	0		0	0		100
Median Width		12			12			12			12	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Heavy Vehicles(%)	0	5	4	10	8	0	0	0	0	19	0	7
Movement Flow Rate	0	238	241	27	216	0	0	0	0	53	0	88
Number of Lanes	0	1	1	1	1	0	0	0	0	1	0	1

Major/Minor	Major 1			Major 2			Minor 2		
Conflicting Flow Rate - All	-	0	0	479	0	-	629	~	108
Stage 1	-	-	-	-	-	-	270	-	-
Stage 2	-	-	-	-	-	-	359	-	-
Follow-up Headway	0	-	-	2.29	-	0	3.671	0	3.363
Pot Capacity-1 Maneuver	0	-	-	1043	-	0	372	0	932
Stage 1	0	-	-	-	-	0	700	0	-
Stage 2	0	-	-	-	-	0	625	0	-
Time blocked-Platoon(%)	0	-	-	0	-	0	0	0	0
Mov Capacity-1 Maneuver	-	-	-	1043	-	-	365	-	932
Mov Capacity-2 Maneuver	-	-	-	-	-	-	365	-	-
Stage 1	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	625	-	-

Approach	EB	WB	SB
HCM Control Delay (s)	0	1	12
HCM LOS	A	A	B

Lane	EBT	EBR	WBL	WBT	SBLn1	SBLn2
Capacity (vph)					365	932
HCM Control Delay (s)	-	-	8.544	-	16.5	9.3
HCM Lane VC Ratio	-	-	0.026	-	0.144	0.094
HCM Lane LOS	-	-	A	-	C	A
HCM 95th Percentile Queue (veh)	-	-	0.081	-	0.498	0.311

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	132	153	0	0	126	57	118	0	40	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	125		0	0		25	0		100	0		0
Storage Lanes	1		0	0		1	1		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt						0.850			0.850			
Flt Protected	0.950						0.950					
Satd. Flow (prot)	1703	1827	0	0	1863	1455	1641	0	1302	0	0	0
Flt Permitted	0.950						0.950					
Satd. Flow (perm)	1703	1827	0	0	1863	1455	1641	0	1302	0	0	0
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		391			304			479			519	
Travel Time (s)		7.6			5.9			9.3			10.1	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	6%	4%	0%	0%	2%	11%	10%	0%	24%	0%	0%	0%
Adj. Flow (vph)	138	159	0	0	131	59	123	0	42	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	138	159	0	0	131	59	123	0	42	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 31.5%	ICU Level of Service A
Analysis Period (min) 15	

Intersection	
Intersection Delay (sec/veh):	5.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	132	153	0	0	126	57	118	0	40	0	0	0
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	125		0	0		25	0		100	0		0
Median Width		12			12			12			12	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles(%)	6	4	0	0	2	11	10	0	24	0	0	0
Movement Flow Rate	138	159	0	0	131	59	123	0	42	0	0	0
Number of Lanes	1	1	0	0	1	1	1	0	1	0	0	0

Major/Minor	Major 1				Major 2		Minor 1		
Conflicting Flow Rate - All	190	0	-	-	0	0	596	~	80
Stage 1	-	-	-	-	-	-	435	-	-
Stage 2	-	-	-	-	-	-	161	-	-
Follow-up Headway	2.254	-	0	0	-	-	3.59	0	3.516
Pot Capacity-1 Maneuver	1360	-	0	0	-	-	404	0	922
Stage 1	-	-	0	0	-	-	584	0	-
Stage 2	-	-	0	0	-	-	823	0	-
Time blocked-Platoon(%)	0	-	0	0	-	-	0	0	0
Mov Capacity-1 Maneuver	1360	-	-	-	-	-	373	-	922
Mov Capacity-2 Maneuver	-	-	-	-	-	-	373	-	-
Stage 1	-	-	-	-	-	-	525	-	-
Stage 2	-	-	-	-	-	-	823	-	-

Approach	EB	WB	NB
HCM Control Delay (s)	3.7	0	16.7
HCM LOS	A	A	C

Lane	NBLn1	NBLn2	EBL	EBT	WBT	WBR
Capacity (vph)	373	922				
HCM Control Delay (s)	19.3	9.1	7.945	-	-	-
HCM Lane VC Ratio	0.33	0.045	0.101	-	-	-
HCM Lane LOS	C	A	A	-	-	-
HCM 95th Percentile Queue (veh)	1.411	0.142	0.337	-	-	-

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	133	56	55	58	73	129
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	25	0			25
Storage Lanes	1	1	0			1
Taper Length (ft)	25		25			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850				0.850
Flt Protected	0.950			0.976		
Satd. Flow (prot)	1641	1509	0	1774	1776	1538
Flt Permitted	0.950			0.976		
Satd. Flow (perm)	1641	1509	0	1774	1776	1538
Link Speed (mph)	35			35	35	
Link Distance (ft)	304			349	1203	
Travel Time (s)	5.9			6.8	23.4	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles (%)	10%	7%	4%	5%	7%	5%
Adj. Flow (vph)	153	64	63	67	84	148
Shared Lane Traffic (%)						
Lane Group Flow (vph)	153	64	0	130	84	148
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 26.8%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Intersection Delay (sec/veh):	5.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Volume (vph)	133	56	55	58	73	129
Conflicting Peds.(#/hr)	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
Right Turn Channelized	None	None	None	None	None	None
Storage Length	0	25	0			25
Median Width	12			0	0	
Grade (%)	0%			0%	0%	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles(%)	10	7	4	5	7	5
Movement Flow Rate	153	64	63	67	84	148
Number of Lanes	1	1	0	1	1	1

Major/Minor				Major 1	Major 2	
Conflicting Flow Rate - All	351	116	232	0	0	0
Stage 1	158	-	-	-	-	-
Stage 2	193	-	-	-	-	-
Follow-up Headway	3.59	3.363	2.236	-	-	-
Pot Capacity-1 Maneuver	631	923	1324	-	-	-
Stage 1	851	-	-	-	-	-
Stage 2	821	-	-	-	-	-
Time blocked-Platoon(%)	0	0	0	-	-	-
Mov Capacity-1 Maneuver	600	923	1324	-	-	-
Mov Capacity-2 Maneuver	600	-	-	-	-	-
Stage 1	851	-	-	-	-	-
Stage 2	781	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay (s)	11.9	3.8	0
HCM LOS	B	A	A

Lane	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (vph)			600	923		
HCM Control Delay (s)	7.855	-	13	9.2	-	-
HCM Lane VC Ratio	0.048	-	0.255	0.07	-	-
HCM Lane LOS	A	-	B	A	-	-
HCM 95th Percentile Queue (veh)	0.15	-	1.008	0.224	-	-

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	61	19	149	41	12	140
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	100		0	450	
Storage Lanes	1	1		0	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850	0.971			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	1583	1809	0	1770	1863
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1770	1583	1809	0	1770	1863
Link Speed (mph)	30		45			35
Link Distance (ft)	2276		718			2602
Travel Time (s)	51.7		10.9			50.7
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	66	21	162	45	13	152
Shared Lane Traffic (%)						
Lane Group Flow (vph)	66	21	207	0	13	152
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						Yes
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 20.4%	ICU Level of Service A
Analysis Period (min) 15	

Intersection	
Intersection Delay (sec/veh):	2.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Volume (vph)	61	19	149	41	12	140
Conflicting Peds.(#/hr)	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
Right Turn Channelized	None	None	None	None	None	None
Storage Length	0	100		0	450	
Median Width	12		12			12
Grade (%)	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles(%)	2	2	2	2	2	2
Movement Flow Rate	66	21	162	45	13	152
Number of Lanes	1	1	1	0	1	1

Major/Minor			Major 1			Major 2
Conflicting Flow Rate - All	363	185	0	0	207	0
Stage 1	185	-	-	-	-	-
Stage 2	178	-	-	-	-	-
Follow-up Headway	3.518	3.318	-	-	2.218	-
Pot Capacity-1 Maneuver	636	857	-	-	1364	-
Stage 1	847	-	-	-	-	-
Stage 2	853	-	-	-	-	-
Time blocked-Platoon(%)	0	0	-	-	0	-
Mov Capacity-1 Maneuver	630	857	-	-	1364	-
Mov Capacity-2 Maneuver	630	-	-	-	-	-
Stage 1	847	-	-	-	-	-
Stage 2	845	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay (s)	10.9	0	0.6
HCM LOS	B	A	A

Lane	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (vph)			630	857		
HCM Control Delay (s)	-	-	11.4	9.3	7.665	-
HCM Lane VC Ratio	-	-	0.105	0.024	0.01	-
HCM Lane LOS	-	-	B	A	A	-
HCM 95th Percentile Queue (veh)	-	-	0.351	0.074	0.029	-

Lanes, Volumes, Timings
1: S. Main St / Fort Jones Rd & Oberlin Rd

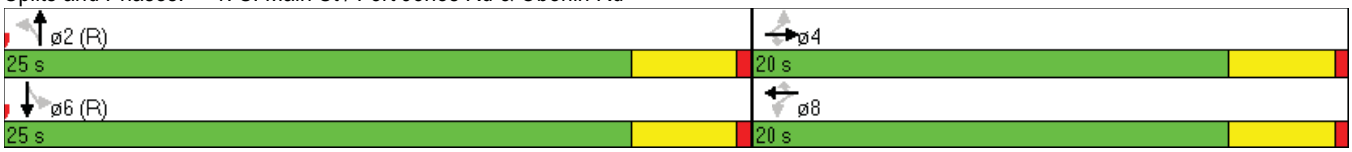
9/3/2013

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	29	74	67	46	31	193	12	363	58	219	453	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		25	0		100	125		0	150		0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt			0.850			0.850		0.979			0.992	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1687	1881	1615	1626	1900	1568	1805	3431	0	1736	3526	0
Flt Permitted	0.735			0.705			0.454			0.488		
Satd. Flow (perm)	1305	1881	1615	1207	1900	1568	863	3431	0	892	3526	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			73			210		53			16	
Link Speed (mph)		35			35			40			40	
Link Distance (ft)		376			361			996			241	
Travel Time (s)		7.3			7.0			17.0			4.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	7%	1%	0%	11%	0%	3%	0%	3%	3%	4%	1%	12%
Adj. Flow (vph)	32	80	73	50	34	210	13	395	63	238	492	27
Shared Lane Traffic (%)												
Lane Group Flow (vph)	32	80	73	50	34	210	13	458	0	238	519	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane								Yes			Yes	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8		8	2			6		
Minimum Split (s)	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0		20.0	20.0	
Total Split (s)	20.0	20.0	20.0	20.0	20.0	20.0	25.0	25.0		25.0	25.0	
Total Split (%)	44.4%	44.4%	44.4%	44.4%	44.4%	44.4%	55.6%	55.6%		55.6%	55.6%	
Maximum Green (s)	16.0	16.0	16.0	16.0	16.0	16.0	21.0	21.0		21.0	21.0	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5		3.5	3.5	
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5		0.5	0.5	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Flash Dont Walk (s)	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0	0	0	0	0	0	0		0	0	
Act Effct Green (s)	16.0	16.0	16.0	16.0	16.0	16.0	21.0	21.0		21.0	21.0	
Actuated g/C Ratio	0.36	0.36	0.36	0.36	0.36	0.36	0.47	0.47		0.47	0.47	
v/c Ratio	0.07	0.12	0.12	0.12	0.05	0.30	0.03	0.28		0.57	0.31	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	10.2	10.4	3.9	10.7	9.9	3.4	6.8	7.0		15.5	7.9	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	10.2	10.4	3.9	10.7	9.9	3.4	6.8	7.0		15.5	7.9	
LOS	B	B	A	B	A	A	A	A		B	A	
Approach Delay		7.8			5.4			7.0			10.3	
Approach LOS		A			A			A			B	

Intersection Summary	
Area Type:	Other
Cycle Length: 45	
Actuated Cycle Length: 45	
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 45	
Control Type: Pretimed	
Maximum v/c Ratio: 0.57	
Intersection Signal Delay: 8.3	Intersection LOS: A
Intersection Capacity Utilization 43.2%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 1: S. Main St / Fort Jones Rd & Oberlin Rd



Queues
1: S. Main St / Fort Jones Rd & Oberlin Rd

9/3/2013

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	32	80	73	50	34	210	13	458	238	519
v/c Ratio	0.07	0.12	0.12	0.12	0.05	0.30	0.03	0.28	0.57	0.31
Control Delay	10.2	10.4	3.9	10.7	9.9	3.4	6.8	7.0	15.5	7.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.2	10.4	3.9	10.7	9.9	3.4	6.8	7.0	15.5	7.9
Queue Length 50th (ft)	5	13	0	8	6	0	2	30	41	38
Queue Length 95th (ft)	18	34	18	25	18	31	8	52	#100	63
Internal Link Dist (ft)		296			281			916		161
Turn Bay Length (ft)	100		25			100	125		150	
Base Capacity (vph)	464	668	621	429	675	692	402	1629	416	1654
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.07	0.12	0.12	0.12	0.05	0.30	0.03	0.28	0.57	0.31

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	29	74	67	46	31	193	12	363	58	219	453	25
Movement Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj. Factor (A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj. Factors	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Sat. Flow Rate, veh/h/ln	1776	1881	1900	1712	1900	1845	1900	1845	1845	1827	1871	1871
Lanes	1	1	1	1	1	1	1	2	0	1	2	0
Lane Assignment												
Capacity, veh/h	609	669	574	554	676	557	500	1451	230	514	1640	90
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Proportion Arriving On Green	0.36	0.36	0.36	0.36	0.36	0.36	0.47	0.47	0.47	0.47	0.47	0.47
Lane Group Delay, s/veh	10.1	10.1	10.2	11.0	9.7	12.7	8.9	8.1	8.2	14.4	8.3	8.3
Lane Group LOS	B	B	B	B	A	B	A	A	A	B	A	A
Approach Volume, veh/h		185			293			471			758	
Approach Delay, s/veh		10.2			12.1			8.2			10.2	
Approach LOS		B			B			A			B	

Timer:	1	2	3	4	5	6	7	8
Assigned Phase		2		4		6		8
Case No		6.0		5.0		6.0		5.0
Phase Duration (G+Y+Rc), s		25.00		20.00		25.00		20.00
Change Period (Y+Rc), s		4.00		4.00		4.00		4.00
Max. Allowable Headway (MAH), s		5.05		4.28		5.05		4.28
Maximum Green Setting (Gmax), s		21.00		16.00		21.00		16.00
Max. Queue Clearance Time (g_c+I1), s		6.33		3.37		15.24		6.48
Green Extension Time (g_e), s		6.11		1.51		3.26		1.32
Probability of Phase Call (p_c)		1.000		1.000		1.000		1.000
Probability of Max Out (p_x)		0.395		0.060		1.000		0.154

Left-Turn Movement Data				
Assigned Movement	5	7	1	3
Mvmt. Sat Flow, veh/h	895.99	1305.44	912.20	1206.28

Through Movement Data				
Assigned Movement	2	4	6	8
Mvmt. Sat Flow, veh/h	3109.41	1881.19	3513.54	1900.00

Right-Turn Movement Data				
Assigned Movement	12	14	16	18
Mvmt. Sat Flow, veh/h	492.92	1615.00	193.50	1567.96

Left Lane Group Data								
Assigned Movement	0	5	0	7	0	1	0	3
Lane Assignment		L		L		L		L
Lanes in Group	0	1	0	1	0	1	0	1
Group Volume (v), veh/h	0.0	13.0	0.0	31.5	0.0	238.0	0.0	50.0
Group Sat. Flow (s), veh/h/ln	0.0	896.0	0.0	1305.4	0.0	912.2	0.0	1206.3
Queue Serve Time (g_s), s	0.0	0.4	0.0	0.7	0.0	9.7	0.0	1.3
Cycle Queue Clear Time (g_c), s	0.0	4.3	0.0	1.3	0.0	13.2	0.0	2.6

Perm LT Sat Flow Rate (s_l), veh/h/ln	0.0	896.0	0.0	1305.4	0.0	912.2	0.0	1206.3
Shared LT Sat Flow (s_sh), veh/h/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Perm LT Eff. Green (g_p), s	0.0	21.0	0.0	16.0	0.0	21.0	0.0	16.0
Perm LT Serve Time (g_u), s	0.0	17.1	0.0	15.5	0.0	17.5	0.0	14.7
Perm LT Que Serve Time (g_ps), s	0.0	0.4	0.0	0.7	0.0	9.7	0.0	1.3
Time to First Blk (g_f), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Serve Time pre Blk (g_fs), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Proportion LT Inside Lane (P_L)	0.000	1.000	0.000	1.000	0.000	1.000	0.000	1.000
Lane Group Capacity (c), veh/h	0.0	500.1	0.0	609.0	0.0	514.3	0.0	554.2
Volume-to-Capacity Ratio (X)	0.000	0.026	0.000	0.052	0.000	0.463	0.000	0.090
Available Capacity (c_a), veh/h	0.0	500.1	0.0	609.0	0.0	514.3	0.0	554.2
Upstream Filter Factor (I)	0.000	1.000	0.000	1.000	0.000	1.000	0.000	1.000
Uniform Delay (d1), s/veh	0.0	8.8	0.0	9.9	0.0	11.4	0.0	10.6
Incremental Delay (d2), s/veh	0.0	0.1	0.0	0.2	0.0	3.0	0.0	0.3
Initial Queue Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	8.9	0.0	10.1	0.0	14.4	0.0	11.0
First-Term Queue (Q1), veh/ln	0.0	0.1	0.0	0.2	0.0	1.4	0.0	0.3
Second-Term Queue (Q2), veh/ln	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0
Third-Term Queue (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Percentile bk-of-que factor (f_B%)	0.000	1.000	0.000	1.000	0.000	1.000	0.000	1.000
Percentile Back of Queue (Q%), veh/ln	0.0	0.1	0.0	0.2	0.0	1.8	0.0	0.3
Percentile Storage Ratio (RQ%)	0.00	0.01	0.00	0.05	0.00	0.31	0.00	0.03
Initial Queue (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Queue (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Queue (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Capacity (cs), veh/h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Initial Queue Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Middle Lane Group Data								
Assigned Movement	0	2	0	4	0	6	0	8
Lane Assignment		T		T		T		T
Lanes in Group	0	1	0	1	0	1	0	1
Group Volume (v), veh/h	0.0	232.8	0.0	80.4	0.0	261.7	0.0	33.7
Group Sat. Flow (s), veh/h/ln	0.0	1844.7	0.0	1881.2	0.0	1870.6	0.0	1900.0
Queue Serve Time (g_s), s	0.0	3.5	0.0	1.3	0.0	3.9	0.0	0.5
Cycle Queue Clear Time (g_c), s	0.0	3.5	0.0	1.3	0.0	3.9	0.0	0.5
Lane Group Capacity (c), veh/h	0.0	860.8	0.0	668.9	0.0	872.9	0.0	675.6
Volume-to-Capacity Ratio (X)	0.000	0.270	0.000	0.120	0.000	0.300	0.000	0.050
Available Capacity (c_a), veh/h	0.0	860.8	0.0	668.9	0.0	872.9	0.0	675.6
Upstream Filter Factor (I)	0.000	1.000	0.000	1.000	0.000	1.000	0.000	1.000
Uniform Delay (d1), s/veh	0.0	7.3	0.0	9.8	0.0	7.4	0.0	9.5
Incremental Delay (d2), s/veh	0.0	0.8	0.0	0.4	0.0	0.9	0.0	0.1
Initial Queue Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	8.1	0.0	10.1	0.0	8.3	0.0	9.7
First-Term Queue (Q1), veh/ln	0.0	0.9	0.0	0.4	0.0	1.0	0.0	0.2
Second-Term Queue (Q2), veh/ln	0.0	0.2	0.0	0.1	0.0	0.2	0.0	0.0
Third-Term Queue (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Percentile bk-of-que factor (f_B%)	0.000	1.000	0.000	1.000	0.000	1.000	0.000	1.000
Percentile Back of Queue (Q%), veh/ln	0.0	1.1	0.0	0.5	0.0	1.2	0.0	0.2
Percentile Storage Ratio (RQ%)	0.00	0.03	0.00	0.04	0.00	0.16	0.00	0.02

Initial Queue (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Queue (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Queue (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Capacity (cs), veh/h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Initial Queue Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Right Lane Group Data								
Assigned Movement	0	12	0	14	0	16	0	18
Lane Assignment		T+R		R		T+R		R
Lanes in Group	0	1	0	1	0	1	0	1
Group Volume (v), veh/h	0.0	224.8	0.0	72.8	0.0	257.9	0.0	209.8
Group Sat. Flow (s), veh/h/ln	0.0	1757.7	0.0	1615.0	0.0	1836.4	0.0	1568.0
Queue Serve Time (g_s), s	0.0	3.5	0.0	1.4	0.0	3.9	0.0	4.5
Cycle Queue Clear Time (g_c), s	0.0	3.5	0.0	1.4	0.0	3.9	0.0	4.5
Prot RT Sat Flow Rate (s_R), veh/h/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prot RT Eff. Green (g_R), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Proportion RT Outside Lane (P_R)	0.000	0.280	0.000	1.000	0.000	0.105	0.000	1.000
Lane Group Capacity (c), veh/h	0.0	820.2	0.0	574.2	0.0	857.0	0.0	557.5
Volume-to-Capacity Ratio (X)	0.000	0.274	0.000	0.127	0.000	0.301	0.000	0.376
Available Capacity (c_a), veh/h	0.0	820.2	0.0	574.2	0.0	857.0	0.0	557.5
Upstream Filter Factor (I)	0.000	1.000	0.000	1.000	0.000	1.000	0.000	1.000
Uniform Delay (d1), s/veh	0.0	7.3	0.0	9.8	0.0	7.4	0.0	10.8
Incremental Delay (d2), s/veh	0.0	0.8	0.0	0.5	0.0	0.9	0.0	1.9
Initial Queue Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	8.2	0.0	10.2	0.0	8.3	0.0	12.7
First-Term Queue (Q1), veh/ln	0.0	0.9	0.0	0.4	0.0	1.0	0.0	1.2
Second-Term Queue (Q2), veh/ln	0.0	0.2	0.0	0.1	0.0	0.2	0.0	0.3
Third-Term Queue (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Percentile bk-of-que factor (f_B%)	0.000	1.000	0.000	1.000	0.000	1.000	0.000	1.000
Percentile Back of Queue (Q%), veh/ln	0.0	1.0	0.0	0.4	0.0	1.2	0.0	1.5
Percentile Storage Ratio (RQ%)	0.00	0.03	0.00	0.45	0.00	0.16	0.00	0.38
Initial Queue (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Queue (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Queue (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Capacity (cs), veh/h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Initial Queue Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Intersection Summary	
HCM 2010 Control Delay	10.0
HCM 2010 Level of Service	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	29	74	67	46	31	193	12	363	58	219	453	25
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1776	1881	1900	1712	1900	1845	1900	1845	1845	1827	1871	1871
Lanes	1	1	1	1	1	1	1	2	0	1	2	0
Capacity, veh/h	609	669	574	554	676	557	500	1451	230	514	1640	90
Arriving On Green	0.36	0.36	0.36	0.36	0.36	0.36	0.47	0.47	0.47	0.47	0.47	0.47
Sat Flow, veh/h	1305.4	1881.2	1615.0	1206.3	1900.0	1568.0	896.0	3109.4	492.9	912.2	3513.5	193.5
Grp Volume(v), veh/h	31.5	80.4	72.8	50.0	33.7	209.8	13.0	232.8	224.8	238.0	261.7	257.9
Grp Sat Flow(s),veh/h/ln	1305.4	1881.2	1615.0	1206.3	1900.0	1568.0	896.0	1844.7	1757.7	912.2	1870.6	1836.4
Q Serve(g_s), s	0.7	1.3	1.4	1.3	0.5	4.5	0.4	3.5	3.5	9.7	3.9	3.9
Cycle Q Clear(g_c), s	1.3	1.3	1.4	2.6	0.5	4.5	4.3	3.5	3.5	13.2	3.9	3.9
Proportion In Lane	1.000		1.000	1.000		1.000	1.000		0.280	1.000		0.105
Lane Grp Cap(c), veh/h	609.0	668.9	574.2	554.2	675.6	557.5	500.1	860.8	820.2	514.3	872.9	857.0
V/C Ratio(X)	0.052	0.120	0.127	0.090	0.050	0.376	0.026	0.270	0.274	0.463	0.300	0.301
Avail Cap(c_a), veh/h	609.0	668.9	574.2	554.2	675.6	557.5	500.1	860.8	820.2	514.3	872.9	857.0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Uniform Delay (d), s/veh	9.9	9.8	9.8	10.6	9.5	10.8	8.8	7.3	7.3	11.4	7.4	7.4
Incr Delay (d2), s/veh	0.2	0.4	0.5	0.3	0.1	1.9	0.1	0.8	0.8	3.0	0.9	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	10.1	10.1	10.2	11.0	9.7	12.7	8.9	8.1	8.2	14.4	8.3	8.3
Lane Group LOS	B	B	B	B	A	B	A	A	A	B	A	A
Approach Volume, veh/h		185			293			471			758	
Approach Delay, s/veh		10.2			12.1			8.2			10.2	
Approach LOS		B			B			A			B	

Timer				
Assigned Phase	4	8	2	6
Phase Duration (G+Y+Rc), s	20.00	20.00	25.00	25.00
Change Period (Y+Rc), s	4.00	4.00	4.00	4.00
Max Green Setting (Gmax), s	16.00	16.00	21.00	21.00
Max Q Clear Time (g_c+I1), s	3.37	6.48	6.33	15.24
Green Extension Time (p_c)	1.51	1.32	6.11	3.26

Intersection Summary	
HCM 2010 Control Delay	10.0
HCM 2010 Level of Service	A

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	4	246	93	62	170	4	94	1	80	4	4	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		50	0		0	175		100	0		0
Storage Lanes	0		1	0		0	1		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.998				0.850		0.925	
Flt Protected		0.999			0.987		0.950				0.989	
Satd. Flow (prot)	0	1861	1455	0	1818	0	1687	1900	1599	0	1647	0
Flt Permitted		0.999			0.987		0.950				0.989	
Satd. Flow (perm)	0	1861	1455	0	1818	0	1687	1900	1599	0	1647	0
Link Speed (mph)		35			35			45			25	
Link Distance (ft)		361			2791			2602			293	
Travel Time (s)		7.0			54.4			39.4			8.0	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	2%	11%	0%	4%	5%	7%	0%	1%	0%	25%	0%
Adj. Flow (vph)	4	262	99	66	181	4	100	1	85	4	4	10
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	266	99	0	251	0	100	1	85	0	18	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane								Yes				
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 47.7%	ICU Level of Service A
Analysis Period (min) 15	

Intersection	
Intersection Delay (sec/veh):	4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	4	246	93	62	170	4	94	1	80	4	4	9
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		50	0		0	175		100	0		0
Median Width		0			0			12			12	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles(%)	0	2	11	0	4	5	7	0	1	0	25	0
Movement Flow Rate	4	262	99	66	181	4	100	1	85	4	4	10
Number of Lanes	0	1	1	0	1	0	1	1	1	0	1	0

Major/Minor	Major 1			Major 2			Minor 1			Minor 2		
Conflicting Flow Rate - All	185	0	0	361	0	0	642	637	181	678	684	183
Stage 1	-	-	-	-	-	-	320	320	-	315	315	-
Stage 2	-	-	-	-	-	-	322	317	-	363	369	-
Follow-up Headway	2.2	-	-	2.2	-	-	3.563	4	3.309	3.5	4.225	3.3
Pot Capacity-1 Maneuver	1402	-	-	1216	-	-	406	412	*1287	390	354	865
Stage 1	-	-	-	-	-	-	745	684	-	700	616	-
Stage 2	-	-	-	-	-	-	679	658	-	714	607	-
Time blocked-Platoon(%)	0	-	-	14	-	-	14	14	14	14	14	0
Mov Capacity-1 Maneuver	1402	-	-	1216	-	-	378	385	*1287	346	331	865
Mov Capacity-2 Maneuver	-	-	-	-	-	-	378	385	-	346	331	-
Stage 1	-	-	-	-	-	-	742	681	-	697	578	-
Stage 2	-	-	-	-	-	-	626	618	-	663	605	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	0.1	2.1	13.4	12.5
HCM LOS	A	A	B	B

Lane	NBLn1	NBLn2	NBLn3	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (vph)	*378	*385	*1287							*499
HCM Control Delay (s)	17.9	14.4	8	7.576	-	-	8.13	0	-	12.5
HCM Lane VC Ratio	0.265	0.003	0.066	0.003	-	-	0.054	-	-	0.036
HCM Lane LOS	C	B	A	A	-	-	A	A	-	B
HCM 95th Percentile Queue (veh)	1.048	0.008	0.212	0.009	-	-	0.172	-	-	0.113

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	279	38	0	166	30	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		250	0		0	50
Storage Lanes		1	0		1	1
Taper Length (ft)			25		25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850				0.850
Flt Protected					0.950	
Satd. Flow (prot)	1881	1615	0	1863	1805	1615
Flt Permitted					0.950	
Satd. Flow (perm)	1881	1615	0	1863	1805	1615
Link Speed (mph)	45			45	25	
Link Distance (ft)	2791			348	365	
Travel Time (s)	42.3			5.3	10.0	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	1%	0%	0%	2%	0%	0%
Adj. Flow (vph)	279	38	0	166	30	2
Shared Lane Traffic (%)						
Lane Group Flow (vph)	279	38	0	166	30	2
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 24.7%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Intersection Delay (sec/veh):	0.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Volume (vph)	279	38	0	166	30	2
Conflicting Peds.(#/hr)	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None
Storage Length		250	0		0	50
Median Width	0			0	12	
Grade (%)	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles(%)	1	0	0	2	0	0
Movement Flow Rate	279	38	0	166	30	2
Number of Lanes	1	1	0	1	1	1

Major/Minor	Major 1			Major 2		
Conflicting Flow Rate - All	0	0	-	0	464	159
Stage 1	-	-	-	-	298	-
Stage 2	-	-	-	-	166	-
Follow-up Headway	-	-	0	-	3.5	3.3
Pot Capacity-1 Maneuver	-	-	0	-	560	892
Stage 1	-	-	0	-	758	-
Stage 2	-	-	0	-	868	-
Time blocked-Platoon(%)	-	-	0	-	0	0
Mov Capacity-1 Maneuver	-	-	-	-	560	892
Mov Capacity-2 Maneuver	-	-	-	-	560	-
Stage 1	-	-	-	-	758	-
Stage 2	-	-	-	-	868	-

Approach	EB	WB	NB
HCM Control Delay (s)	0	0	11.6
HCM LOS	A	A	B

Lane	NBLn1	NBLn2	EBT	EBR	WBT
Capacity (vph)	560	892			
HCM Control Delay (s)	11.8	9	-	-	-
HCM Lane VC Ratio	0.054	0.002	-	-	-
HCM Lane LOS	B	A	-	-	-
HCM 95th Percentile Queue (veh)	0.169	0.007	-	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	236	239	33	214	0	0	0	0	75	0	87
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		25	125		0	0		0	0		100
Storage Lanes	0		1	1		0	0		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850									0.850
Flt Protected				0.950						0.950		
Satd. Flow (prot)	0	1810	1553	1641	1759	0	0	0	0	1517	0	1509
Flt Permitted				0.950						0.950		
Satd. Flow (perm)	0	1810	1553	1641	1759	0	0	0	0	1517	0	1509
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		185			391			858			818	
Travel Time (s)		3.6			7.6			16.7			15.9	
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Heavy Vehicles (%)	0%	5%	4%	10%	8%	0%	0%	0%	0%	19%	0%	7%
Adj. Flow (vph)	0	238	241	33	216	0	0	0	0	76	0	88
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	238	241	33	216	0	0	0	0	76	0	88
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 32.3%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Intersection Delay (sec/veh):	2.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	0	236	239	33	214	0	0	0	0	75	0	87
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		25	125		0	0		0	0		100
Median Width		12			12			12			12	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Heavy Vehicles(%)	0	5	4	10	8	0	0	0	0	19	0	7
Movement Flow Rate	0	238	241	33	216	0	0	0	0	76	0	88
Number of Lanes	0	1	1	1	1	0	0	0	0	1	0	1

Major/Minor	Major 1			Major 2			Minor 2		
Conflicting Flow Rate - All	-	0	0	479	0	-	641	~	108
Stage 1	-	-	-	-	-	-	282	-	-
Stage 2	-	-	-	-	-	-	359	-	-
Follow-up Headway	0	-	-	2.29	-	0	3.671	0	3.363
Pot Capacity-1 Maneuver	0	-	-	1043	-	0	365	0	932
Stage 1	0	-	-	-	-	0	689	0	-
Stage 2	0	-	-	-	-	0	625	0	-
Time blocked-Platoon(%)	0	-	-	0	-	0	0	0	0
Mov Capacity-1 Maneuver	-	-	-	1043	-	-	356	-	932
Mov Capacity-2 Maneuver	-	-	-	-	-	-	356	-	-
Stage 1	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	625	-	-

Approach	EB	WB	SB
HCM Control Delay (s)	0	1.1	13.2
HCM LOS	A	A	B

Lane	EBT	EBR	WBL	WBT	SBLn1	SBLn2
Capacity (vph)					356	932
HCM Control Delay (s)	-	-	8.566	-	17.8	9.3
HCM Lane VC Ratio	-	-	0.032	-	0.213	0.094
HCM Lane LOS	-	-	A	-	C	A
HCM 95th Percentile Queue (veh)	-	-	0.099	-	0.793	0.311

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	132	176	0	0	132	82	118	0	46	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	125		0	0		25	0		100	0		0
Storage Lanes	1		0	0		1	1		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt						0.850			0.850			
Flt Protected	0.950						0.950					
Satd. Flow (prot)	1703	1827	0	0	1863	1455	1641	0	1302	0	0	0
Flt Permitted	0.950						0.950					
Satd. Flow (perm)	1703	1827	0	0	1863	1455	1641	0	1302	0	0	0
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		391			304			479			519	
Travel Time (s)		7.6			5.9			9.3			10.1	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	6%	4%	0%	0%	2%	11%	10%	0%	24%	0%	0%	0%
Adj. Flow (vph)	138	183	0	0	138	85	123	0	48	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	138	183	0	0	138	85	123	0	48	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 32.3%	ICU Level of Service A
Analysis Period (min) 15	

Intersection	
Intersection Delay (sec/veh):	5.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	132	176	0	0	132	82	118	0	46	0	0	0
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	125		0	0		25	0		100	0		0
Median Width		12			12			12			12	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles(%)	6	4	0	0	2	11	10	0	24	0	0	0
Movement Flow Rate	138	183	0	0	138	85	123	0	48	0	0	0
Number of Lanes	1	1	0	0	1	1	1	0	1	0	0	0

Major/Minor	Major 1				Major 2		Minor 1		
Conflicting Flow Rate - All	223	0	-	-	0	0	640	~	92
Stage 1	-	-	-	-	-	-	459	-	-
Stage 2	-	-	-	-	-	-	181	-	-
Follow-up Headway	2.254	-	0	0	-	-	3.59	0	3.516
Pot Capacity-1 Maneuver	1323	-	0	0	-	-	377	0	908
Stage 1	-	-	0	0	-	-	567	0	-
Stage 2	-	-	0	0	-	-	802	0	-
Time blocked-Platoon(%)	0	-	0	0	-	-	0	0	0
Mov Capacity-1 Maneuver	1323	-	-	-	-	-	347	-	908
Mov Capacity-2 Maneuver	-	-	-	-	-	-	347	-	-
Stage 1	-	-	-	-	-	-	508	-	-
Stage 2	-	-	-	-	-	-	802	-	-

Approach	EB	WB	NB
HCM Control Delay (s)	3.4	0	17.7
HCM LOS	A	A	C

Lane	NBLn1	NBLn2	EBL	EBT	WBT	WBR
Capacity (vph)	347	908				
HCM Control Delay (s)	21	9.2	8.036	-	-	-
HCM Lane VC Ratio	0.354	0.053	0.104	-	-	-
HCM Lane LOS	C	A	A	-	-	-
HCM 95th Percentile Queue (veh)	1.559	0.167	0.347	-	-	-

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	162	56	55	59	74	159
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	25	0			25
Storage Lanes	1	1	0			1
Taper Length (ft)	25		25			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850				0.850
Flt Protected	0.950			0.977		
Satd. Flow (prot)	1641	1509	0	1776	1776	1538
Flt Permitted	0.950			0.977		
Satd. Flow (perm)	1641	1509	0	1776	1776	1538
Link Speed (mph)	35			35	35	
Link Distance (ft)	304			349	1203	
Travel Time (s)	5.9			6.8	23.4	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles (%)	10%	7%	4%	5%	7%	5%
Adj. Flow (vph)	186	64	63	68	85	183
Shared Lane Traffic (%)						
Lane Group Flow (vph)	186	64	0	131	85	183
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 28.5%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Intersection Delay (sec/veh):	5.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Volume (vph)	162	56	55	59	74	159
Conflicting Peds.(#/hr)	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
Right Turn Channelized	None	None	None	None	None	None
Storage Length	0	25	0			25
Median Width	12			0	0	
Grade (%)	0%			0%	0%	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles(%)	10	7	4	5	7	5
Movement Flow Rate	186	64	63	68	85	183
Number of Lanes	1	1	0	1	1	1

Major/Minor				Major 1	Major 2	
Conflicting Flow Rate - All	371	135	268	0	0	0
Stage 1	177	-	-	-	-	-
Stage 2	194	-	-	-	-	-
Follow-up Headway	3.59	3.363	2.236	-	-	-
Pot Capacity-1 Maneuver	614	901	1284	-	-	-
Stage 1	835	-	-	-	-	-
Stage 2	820	-	-	-	-	-
Time blocked-Platoon(%)	0	0	0	-	-	-
Mov Capacity-1 Maneuver	583	901	1284	-	-	-
Mov Capacity-2 Maneuver	583	-	-	-	-	-
Stage 1	835	-	-	-	-	-
Stage 2	778	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay (s)	12.8	3.8	0
HCM LOS	B	A	A

Lane	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (vph)			583	901		
HCM Control Delay (s)	7.949	-	14	9.3	-	-
HCM Lane VC Ratio	0.049	-	0.319	0.071	-	-
HCM Lane LOS	A	-	B	A	-	-
HCM 95th Percentile Queue (veh)	0.155	-	1.37	0.23	-	-

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	93	26	149	71	18	140
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	100		0	450	
Storage Lanes	1	1		0	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850	0.957			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	1583	1783	0	1770	1863
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1770	1583	1783	0	1770	1863
Link Speed (mph)	30		45			35
Link Distance (ft)	2276		718			2602
Travel Time (s)	51.7		10.9			50.7
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	101	28	162	77	20	152
Shared Lane Traffic (%)						
Lane Group Flow (vph)	101	28	239	0	20	152
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						Yes
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 26.8%	ICU Level of Service A
Analysis Period (min) 15	

Intersection	
Intersection Delay (sec/veh):	3.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Volume (vph)	93	26	149	71	18	140
Conflicting Peds.(#/hr)	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
Right Turn Channelized	None	None	None	None	None	None
Storage Length	0	100		0	450	
Median Width	12		12			12
Grade (%)	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles(%)	2	2	2	2	2	2
Movement Flow Rate	101	28	162	77	20	152
Number of Lanes	1	1	1	0	1	1

Major/Minor			Major 1			Major 2
Conflicting Flow Rate - All	393	201	0	0	239	0
Stage 1	201	-	-	-	-	-
Stage 2	192	-	-	-	-	-
Follow-up Headway	3.518	3.318	-	-	2.218	-
Pot Capacity-1 Maneuver	611	840	-	-	1328	-
Stage 1	833	-	-	-	-	-
Stage 2	841	-	-	-	-	-
Time blocked-Platoon(%)	0	0	-	-	0	-
Mov Capacity-1 Maneuver	602	840	-	-	1328	-
Mov Capacity-2 Maneuver	602	-	-	-	-	-
Stage 1	833	-	-	-	-	-
Stage 2	828	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay (s)	11.6	0	0.9
HCM LOS	B	A	A

Lane	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (vph)			602	840		
HCM Control Delay (s)	-	-	12.2	9.4	7.751	-
HCM Lane VC Ratio	-	-	0.168	0.034	0.015	-
HCM Lane LOS	-	-	B	A	A	-
HCM 95th Percentile Queue (veh)	-	-	0.6	0.104	0.045	-

APPENDIX 5: CUMULATIVE NO PROJECT LOS WORKSHEETS

Lanes, Volumes, Timings
1: S. Main St / Fort Jones Rd & Oberlin Rd

9/3/2013

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	30	75	70	50	30	195	15	390	60	225	485	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		25	0		100	125		0	150		0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt			0.850			0.850		0.980			0.993	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1687	1881	1615	1626	1900	1568	1805	3435	0	1736	3530	0
Flt Permitted	0.736			0.704			0.435			0.474		
Satd. Flow (perm)	1307	1881	1615	1205	1900	1568	826	3435	0	866	3530	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			76			212		51			15	
Link Speed (mph)		35			35			40			40	
Link Distance (ft)		376			361			996			241	
Travel Time (s)		7.3			7.0			17.0			4.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	7%	1%	0%	11%	0%	3%	0%	3%	3%	4%	1%	12%
Adj. Flow (vph)	33	82	76	54	33	212	16	424	65	245	527	27
Shared Lane Traffic (%)												
Lane Group Flow (vph)	33	82	76	54	33	212	16	489	0	245	554	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane								Yes			Yes	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8		8	2			6		
Minimum Split (s)	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0		20.0	20.0	
Total Split (s)	20.0	20.0	20.0	20.0	20.0	20.0	35.0	35.0		35.0	35.0	
Total Split (%)	36.4%	36.4%	36.4%	36.4%	36.4%	36.4%	63.6%	63.6%		63.6%	63.6%	
Maximum Green (s)	16.0	16.0	16.0	16.0	16.0	16.0	31.0	31.0		31.0	31.0	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5		3.5	3.5	
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5		0.5	0.5	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Flash Dont Walk (s)	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0	0	0	0	0	0	0		0	0	
Act Effct Green (s)	16.0	16.0	16.0	16.0	16.0	16.0	31.0	31.0		31.0	31.0	
Actuated g/C Ratio	0.29	0.29	0.29	0.29	0.29	0.29	0.56	0.56		0.56	0.56	
v/c Ratio	0.09	0.15	0.15	0.15	0.06	0.35	0.03	0.25		0.50	0.28	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	15.0	15.4	5.3	15.9	14.5	4.6	5.7	5.8		11.8	6.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	15.0	15.4	5.3	15.9	14.5	4.6	5.7	5.8		11.8	6.5	
LOS	B	B	A	B	B	A	A	A		B	A	
Approach Delay		11.3			7.8			5.8			8.1	
Approach LOS		B			A			A			A	

Intersection Summary	
Area Type: Other	
Cycle Length: 55	
Actuated Cycle Length: 55	
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 45	
Control Type: Pretimed	
Maximum v/c Ratio: 0.50	
Intersection Signal Delay: 7.7	Intersection LOS: A
Intersection Capacity Utilization 44.6%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 1: S. Main St / Fort Jones Rd & Oberlin Rd

Queues
1: S. Main St / Fort Jones Rd & Oberlin Rd

9/3/2013

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	33	82	76	54	33	212	16	489	245	554
v/c Ratio	0.09	0.15	0.15	0.15	0.06	0.35	0.03	0.25	0.50	0.28
Control Delay	15.0	15.4	5.3	15.9	14.5	4.6	5.7	5.8	11.8	6.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.0	15.4	5.3	15.9	14.5	4.6	5.7	5.8	11.8	6.5
Queue Length 50th (ft)	8	20	0	13	8	0	2	33	43	42
Queue Length 95th (ft)	24	47	24	35	24	39	8	53	97	64
Internal Link Dist (ft)		296			281			916		161
Turn Bay Length (ft)	100		25			100	125		150	
Base Capacity (vph)	380	547	523	350	552	606	465	1958	488	1996
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.09	0.15	0.15	0.15	0.06	0.35	0.03	0.25	0.50	0.28

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	30	75	70	50	30	195	15	390	60	225	485	25
Movement Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj. Factor (A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj. Factors	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Sat. Flow Rate, veh/h/ln	1776	1881	1900	1712	1900	1845	1900	1845	1845	1827	1871	1871
Lanes	1	1	1	1	1	1	1	2	0	1	2	0
Lane Assignment												
Capacity, veh/h	495	547	470	443	553	456	553	1763	269	569	1989	102
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Proportion Arriving On Green	0.29	0.29	0.29	0.29	0.29	0.29	0.56	0.56	0.56	0.56	0.56	0.56
Lane Group Delay, s/veh	14.9	15.0	15.2	16.4	14.3	19.4	7.5	6.6	6.6	12.1	6.8	6.8
Lane Group LOS	B	B	B	B	B	B	A	A	A	B	A	A
Approach Volume, veh/h		190			299			505			799	
Approach Delay, s/veh		15.1			18.3			6.6			8.4	
Approach LOS		B			B			A			A	

Timer:	1	2	3	4	5	6	7	8
Assigned Phase		2		4		6		8
Case No		6.0		5.0		6.0		5.0
Phase Duration (G+Y+Rc), s		35.00		20.00		35.00		20.00
Change Period (Y+Rc), s		4.00		4.00		4.00		4.00
Max. Allowable Headway (MAH), s		5.07		4.28		5.07		4.28
Maximum Green Setting (Gmax), s		31.00		16.00		31.00		16.00
Max. Queue Clearance Time (g_c+I1), s		6.76		3.93		16.39		8.10
Green Extension Time (g_e), s		8.23		1.52		6.53		1.22
Probability of Phase Call (p_c)		1.000		1.000		1.000		1.000
Probability of Max Out (p_x)		0.193		0.063		0.440		0.399

Left-Turn Movement Data				
Assigned Movement	5	7	1	3
Mvmt. Sat Flow, veh/h	867.64	1306.73	886.07	1205.09

Through Movement Data				
Assigned Movement	2	4	6	8
Mvmt. Sat Flow, veh/h	3127.10	1881.19	3528.87	1900.00

Right-Turn Movement Data				
Assigned Movement	12	14	16	18
Mvmt. Sat Flow, veh/h	477.88	1615.00	181.60	1567.96

Left Lane Group Data								
Assigned Movement	0	5	0	7	0	1	0	3
Lane Assignment		L		L		L		L
Lanes in Group	0	1	0	1	0	1	0	1
Group Volume (v), veh/h	0.0	16.3	0.0	32.6	0.0	244.6	0.0	54.3
Group Sat. Flow (s), veh/h/ln	0.0	867.6	0.0	1306.7	0.0	886.1	0.0	1205.1
Queue Serve Time (g_s), s	0.0	0.5	0.0	1.0	0.0	10.6	0.0	1.9
Cycle Queue Clear Time (g_c), s	0.0	4.8	0.0	1.7	0.0	14.4	0.0	3.7

Perm LT Sat Flow Rate (s_l), veh/h/ln	0.0	867.6	0.0	1306.7	0.0	886.1	0.0	1205.1
Shared LT Sat Flow (s_sh), veh/h/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Perm LT Eff. Green (g_p), s	0.0	31.0	0.0	16.0	0.0	31.0	0.0	16.0
Perm LT Serve Time (g_u), s	0.0	26.8	0.0	15.3	0.0	27.2	0.0	14.2
Perm LT Que Serve Time (g_ps), s	0.0	0.5	0.0	1.0	0.0	10.6	0.0	1.9
Time to First Blk (g_f), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Serve Time pre Blk (g_fs), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Proportion LT Inside Lane (P_L)	0.000	1.000	0.000	1.000	0.000	1.000	0.000	1.000
Lane Group Capacity (c), veh/h	0.0	553.3	0.0	494.9	0.0	569.2	0.0	442.8
Volume-to-Capacity Ratio (X)	0.000	0.029	0.000	0.066	0.000	0.430	0.000	0.123
Available Capacity (c_a), veh/h	0.0	553.3	0.0	494.9	0.0	569.2	0.0	442.8
Upstream Filter Factor (I)	0.000	1.000	0.000	1.000	0.000	1.000	0.000	1.000
Uniform Delay (d1), s/veh	0.0	7.4	0.0	14.7	0.0	9.7	0.0	15.8
Incremental Delay (d2), s/veh	0.0	0.1	0.0	0.3	0.0	2.4	0.0	0.6
Initial Queue Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	7.5	0.0	14.9	0.0	12.1	0.0	16.4
First-Term Queue (Q1), veh/ln	0.0	0.1	0.0	0.3	0.0	1.5	0.0	0.5
Second-Term Queue (Q2), veh/ln	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.1
Third-Term Queue (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Percentile bk-of-que factor (f_B%)	0.000	1.000	0.000	1.000	0.000	1.000	0.000	1.000
Percentile Back of Queue (Q%), veh/ln	0.0	0.1	0.0	0.3	0.0	1.9	0.0	0.5
Percentile Storage Ratio (RQ%)	0.00	0.02	0.00	0.08	0.00	0.32	0.00	0.05
Initial Queue (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Queue (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Queue (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Capacity (cs), veh/h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Initial Queue Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Middle Lane Group Data								
Assigned Movement	0	2	0	4	0	6	0	8
Lane Assignment		T		T		T		T
Lanes in Group	0	1	0	1	0	1	0	1
Group Volume (v), veh/h	0.0	248.9	0.0	81.5	0.0	279.1	0.0	32.6
Group Sat. Flow (s), veh/h/ln	0.0	1844.7	0.0	1881.2	0.0	1871.3	0.0	1900.0
Queue Serve Time (g_s), s	0.0	3.7	0.0	1.8	0.0	4.2	0.0	0.7
Cycle Queue Clear Time (g_c), s	0.0	3.7	0.0	1.8	0.0	4.2	0.0	0.7
Lane Group Capacity (c), veh/h	0.0	1039.7	0.0	547.3	0.0	1054.7	0.0	552.7
Volume-to-Capacity Ratio (X)	0.000	0.239	0.000	0.149	0.000	0.265	0.000	0.059
Available Capacity (c_a), veh/h	0.0	1039.7	0.0	547.3	0.0	1054.7	0.0	552.7
Upstream Filter Factor (I)	0.000	1.000	0.000	1.000	0.000	1.000	0.000	1.000
Uniform Delay (d1), s/veh	0.0	6.1	0.0	14.5	0.0	6.2	0.0	14.1
Incremental Delay (d2), s/veh	0.0	0.5	0.0	0.6	0.0	0.6	0.0	0.2
Initial Queue Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	6.6	0.0	15.0	0.0	6.8	0.0	14.3
First-Term Queue (Q1), veh/ln	0.0	1.0	0.0	0.7	0.0	1.1	0.0	0.3
Second-Term Queue (Q2), veh/ln	0.0	0.2	0.0	0.1	0.0	0.2	0.0	0.0
Third-Term Queue (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Percentile bk-of-que factor (f_B%)	0.000	1.000	0.000	1.000	0.000	1.000	0.000	1.000
Percentile Back of Queue (Q%), veh/ln	0.0	1.1	0.0	0.7	0.0	1.3	0.0	0.3
Percentile Storage Ratio (RQ%)	0.00	0.03	0.00	0.06	0.00	0.17	0.00	0.03

Initial Queue (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Queue (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Queue (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Capacity (cs), veh/h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Initial Queue Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Right Lane Group Data								
Assigned Movement	0	12	0	14	0	16	0	18
Lane Assignment		T+R		R		T+R		R
Lanes in Group	0	1	0	1	0	1	0	1
Group Volume (v), veh/h	0.0	240.2	0.0	76.1	0.0	275.2	0.0	212.0
Group Sat. Flow (s), veh/h/ln	0.0	1760.3	0.0	1615.0	0.0	1839.2	0.0	1568.0
Queue Serve Time (g_s), s	0.0	3.8	0.0	1.9	0.0	4.2	0.0	6.1
Cycle Queue Clear Time (g_c), s	0.0	3.8	0.0	1.9	0.0	4.2	0.0	6.1
Prot RT Sat Flow Rate (s_R), veh/h/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prot RT Eff. Green (g_R), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Proportion RT Outside Lane (P_R)	0.000	0.271	0.000	1.000	0.000	0.099	0.000	1.000
Lane Group Capacity (c), veh/h	0.0	992.2	0.0	469.8	0.0	1036.6	0.0	456.1
Volume-to-Capacity Ratio (X)	0.000	0.242	0.000	0.162	0.000	0.265	0.000	0.465
Available Capacity (c_a), veh/h	0.0	992.2	0.0	469.8	0.0	1036.6	0.0	456.1
Upstream Filter Factor (I)	0.000	1.000	0.000	1.000	0.000	1.000	0.000	1.000
Uniform Delay (d1), s/veh	0.0	6.1	0.0	14.5	0.0	6.2	0.0	16.0
Incremental Delay (d2), s/veh	0.0	0.6	0.0	0.7	0.0	0.6	0.0	3.4
Initial Queue Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	6.6	0.0	15.2	0.0	6.8	0.0	19.4
First-Term Queue (Q1), veh/ln	0.0	0.9	0.0	0.6	0.0	1.1	0.0	1.9
Second-Term Queue (Q2), veh/ln	0.0	0.2	0.0	0.1	0.0	0.2	0.0	0.4
Third-Term Queue (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Percentile bk-of-que factor (f_B%)	0.000	1.000	0.000	1.000	0.000	1.000	0.000	1.000
Percentile Back of Queue (Q%), veh/ln	0.0	1.1	0.0	0.7	0.0	1.3	0.0	2.3
Percentile Storage Ratio (RQ%)	0.00	0.03	0.00	0.71	0.00	0.17	0.00	0.59
Initial Queue (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Queue (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Queue (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Capacity (cs), veh/h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Initial Queue Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Intersection Summary	
HCM 2010 Control Delay	10.3
HCM 2010 Level of Service	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	30	75	70	50	30	195	15	390	60	225	485	25
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1776	1881	1900	1712	1900	1845	1900	1845	1845	1827	1871	1871
Lanes	1	1	1	1	1	1	1	2	0	1	2	0
Capacity, veh/h	495	547	470	443	553	456	553	1763	269	569	1989	102
Arriving On Green	0.29	0.29	0.29	0.29	0.29	0.29	0.56	0.56	0.56	0.56	0.56	0.56
Sat Flow, veh/h	1306.7	1881.2	1615.0	1205.1	1900.0	1568.0	867.6	3127.1	477.9	886.1	3528.9	181.6
Grp Volume(v), veh/h	32.6	81.5	76.1	54.3	32.6	212.0	16.3	248.9	240.2	244.6	279.1	275.2
Grp Sat Flow(s),veh/h/ln	1306.7	1881.2	1615.0	1205.1	1900.0	1568.0	867.6	1844.7	1760.3	886.1	1871.3	1839.2
Q Serve(g_s), s	1.0	1.8	1.9	1.9	0.7	6.1	0.5	3.7	3.8	10.6	4.2	4.2
Cycle Q Clear(g_c), s	1.7	1.8	1.9	3.7	0.7	6.1	4.8	3.7	3.8	14.4	4.2	4.2
Proportion In Lane	1.000		1.000	1.000		1.000	1.000		0.271	1.000		0.099
Lane Grp Cap(c), veh/h	494.9	547.3	469.8	442.8	552.7	456.1	553.3	1039.7	992.2	569.2	1054.7	1036.6
V/C Ratio(X)	0.066	0.149	0.162	0.123	0.059	0.465	0.029	0.239	0.242	0.430	0.265	0.265
Avail Cap(c_a), veh/h	494.9	547.3	469.8	442.8	552.7	456.1	553.3	1039.7	992.2	569.2	1054.7	1036.6
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Uniform Delay (d), s/veh	14.7	14.5	14.5	15.8	14.1	16.0	7.4	6.1	6.1	9.7	6.2	6.2
Incr Delay (d2), s/veh	0.3	0.6	0.7	0.6	0.2	3.4	0.1	0.5	0.6	2.4	0.6	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	14.9	15.0	15.2	16.4	14.3	19.4	7.5	6.6	6.6	12.1	6.8	6.8
Lane Group LOS	B	B	B	B	B	B	A	A	A	B	A	A
Approach Volume, veh/h		190			299			505			799	
Approach Delay, s/veh		15.1			18.3			6.6			8.4	
Approach LOS		B			B			A			A	

Timer				
Assigned Phase	4	8	2	6
Phase Duration (G+Y+Rc), s	20.00	20.00	35.00	35.00
Change Period (Y+Rc), s	4.00	4.00	4.00	4.00
Max Green Setting (Gmax), s	16.00	16.00	31.00	31.00
Max Q Clear Time (g_c+I1), s	3.93	8.10	6.76	16.39
Green Extension Time (p_c)	1.52	1.22	8.23	6.53

Intersection Summary	
HCM 2010 Control Delay	10.3
HCM 2010 Level of Service	B

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	5	265	90	60	180	5	90	5	80	5	5	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		50	0		0	175		100	0		0
Storage Lanes	0		1	0		0	1		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.997				0.850		0.929	
Flt Protected		0.999			0.988		0.950				0.988	
Satd. Flow (prot)	0	1862	1455	0	1816	0	1687	1900	1599	0	1646	0
Flt Permitted		0.999			0.988		0.950				0.988	
Satd. Flow (perm)	0	1862	1455	0	1816	0	1687	1900	1599	0	1646	0
Link Speed (mph)		35			35			45			25	
Link Distance (ft)		361			2791			2602			293	
Travel Time (s)		7.0			54.4			39.4			8.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	2%	11%	0%	4%	5%	7%	0%	1%	0%	25%	0%
Adj. Flow (vph)	5	288	98	65	196	5	98	5	87	5	5	11
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	293	98	0	266	0	98	5	87	0	21	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane								Yes				
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 49.0%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Intersection Delay (sec/veh):	4.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	5	265	90	60	180	5	90	5	80	5	5	10
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		50	0		0	175		100	0		0
Median Width		0			0			12			12	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles(%)	0	2	11	0	4	5	7	0	1	0	25	0
Movement Flow Rate	5	288	98	65	196	5	98	5	87	5	5	11
Number of Lanes	0	1	1	0	1	0	1	1	1	0	1	0

Major/Minor	Major 1			Major 2			Minor 1			Minor 2		
Conflicting Flow Rate - All	201	0	0	386	0	0	684	678	193	722	725	199
Stage 1	-	-	-	-	-	-	347	347	-	329	329	-
Stage 2	-	-	-	-	-	-	337	331	-	393	396	-
Follow-up Headway	2.2	-	-	2.2	-	-	3.563	4	3.309	3.5	4.225	3.3
Pot Capacity-1 Maneuver	1383	-	-	1190	-	-	382	389	*1248	365	334	847
Stage 1	-	-	-	-	-	-	731	670	-	688	608	-
Stage 2	-	-	-	-	-	-	667	649	-	696	594	-
Time blocked-Platoon(%)	0	-	-	17	-	-	17	17	17	17	17	0
Mov Capacity-1 Maneuver	1383	-	-	1190	-	-	353	363	*1248	319	312	847
Mov Capacity-2 Maneuver	-	-	-	-	-	-	353	363	-	319	312	-
Stage 1	-	-	-	-	-	-	728	666	-	685	570	-
Stage 2	-	-	-	-	-	-	612	609	-	639	591	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	0.1	2	14	13.2
HCM LOS	A	A	B	B

Lane	NBLn1	NBLn2	NBLn3	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (vph)	*353	*363	*1248							*460
HCM Control Delay (s)	19.1	15.1	8.1	7.613	-	-	8.201	0	-	13.2
HCM Lane VC Ratio	0.277	0.015	0.07	0.004	-	-	0.055	-	-	0.047
HCM Lane LOS	C	C	A	A	-	-	A	A	-	B
HCM 95th Percentile Queue (veh)	1.111	0.046	0.224	0.012	-	-	0.174	-	-	0.148

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	295	40	5	175	30	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		250	0		0	50
Storage Lanes		1	0		1	1
Taper Length (ft)			25		25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850				0.850
Flt Protected				0.999	0.950	
Satd. Flow (prot)	1881	1615	0	1862	1805	1615
Flt Permitted				0.999	0.950	
Satd. Flow (perm)	1881	1615	0	1862	1805	1615
Link Speed (mph)	45			45	25	
Link Distance (ft)	2791			348	365	
Travel Time (s)	42.3			5.3	10.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	1%	0%	0%	2%	0%	0%
Adj. Flow (vph)	321	43	5	190	33	5
Shared Lane Traffic (%)						
Lane Group Flow (vph)	321	43	0	195	33	5
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 25.5%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Intersection Delay (sec/veh):	0.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Volume (vph)	295	40	5	175	30	5
Conflicting Peds.(#/hr)	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None
Storage Length		250	0		0	50
Median Width	0			0	12	
Grade (%)	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles(%)	1	0	0	2	0	0
Movement Flow Rate	321	43	5	190	33	5
Number of Lanes	1	1	0	1	1	1

Major/Minor	Major 1			Major 2		
Conflicting Flow Rate - All	0	0	364	0	543	183
Stage 1	-	-	-	-	343	-
Stage 2	-	-	-	-	200	-
Follow-up Headway	-	-	2.2	-	3.5	3.3
Pot Capacity-1 Maneuver	-	-	1206	-	504	865
Stage 1	-	-	-	-	723	-
Stage 2	-	-	-	-	838	-
Time blocked-Platoon(%)	-	-	0	-	0	0
Mov Capacity-1 Maneuver	-	-	1206	-	501	865
Mov Capacity-2 Maneuver	-	-	-	-	501	-
Stage 1	-	-	-	-	723	-
Stage 2	-	-	-	-	834	-

Approach	EB	WB	NB
HCM Control Delay (s)	0	0.2	12.2
HCM LOS	A	A	B

Lane	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (vph)	501	865				
HCM Control Delay (s)	12.7	9.2	-	-	7.999	-
HCM Lane VC Ratio	0.065	0.006	-	-	0.005	-
HCM Lane LOS	B	A	-	-	A	-
HCM 95th Percentile Queue (veh)	0.208	0.019	-	-	0.014	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	255	255	20	230	0	0	0	0	30	5	95
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		25	125		0	0		0	0		100
Storage Lanes	0		1	1		0	0		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850									0.850
Flt Protected				0.950						0.950		
Satd. Flow (prot)	0	1810	1553	1641	1759	0	0	0	0	1517	0	1509
Flt Permitted				0.950						0.950		
Satd. Flow (perm)	0	1810	1553	1641	1759	0	0	0	0	1517	0	1509
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		185			391			858			818	
Travel Time (s)		3.6			7.6			16.7			15.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	5%	4%	10%	8%	0%	0%	0%	0%	19%	0%	7%
Adj. Flow (vph)	0	277	277	22	250	0	0	0	0	33	5	103
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	277	277	22	250	0	0	0	0	33	5	103
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization Err%	ICU Level of Service H
Analysis Period (min) 15	

Intersection	
Intersection Delay (sec/veh):	1.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	0	255	255	20	230	0	0	0	0	30	5	95
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		25	125		0	0		0	0		100
Median Width		12			12			12			12	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles(%)	0	5	4	10	8	0	0	0	0	19	0	7
Movement Flow Rate	0	277	277	22	250	0	0	0	0	33	5	103
Number of Lanes	0	1	1	1	1	0	0	0	0	1	0	1

Major/Minor	Major 1			Major 2			Minor 2		
Conflicting Flow Rate - All	-	0	0	554	0	-	710	848	125
Stage 1	-	-	-	-	-	-	294	294	-
Stage 2	-	-	-	-	-	-	416	554	-
Follow-up Headway	0	-	-	2.29	-	0	3.671	4	3.363
Pot Capacity-1 Maneuver	0	-	-	977	-	0	327	301	912
Stage 1	0	-	-	-	-	0	679	673	-
Stage 2	0	-	-	-	-	0	582	517	-
Time blocked-Platoon(%)	0	-	-	0	-	0	0	0	0
Mov Capacity-1 Maneuver	-	-	-	977	-	-	321	294	912
Mov Capacity-2 Maneuver	-	-	-	-	-	-	321	294	-
Stage 1	-	-	-	-	-	-	-	658	-
Stage 2	-	-	-	-	-	-	582	517	-

Approach	EB	WB	SB
HCM Control Delay (s)	0	0.7	11.4
HCM LOS	A	A	B

Lane	EBT	EBR	WBL	WBT	SBLn1	SBLn2
Capacity (vph)					321	912
HCM Control Delay (s)	-	-	8.769	-	17.5	9.5
HCM Lane VC Ratio	-	-	0.022	-	0.102	0.113
HCM Lane LOS	-	-	A	-	C	A
HCM 95th Percentile Queue (veh)	-	-	0.068	-	0.336	0.382

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	140	135	0	0	130	30	125	5	35	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	125		0	0		25	0		100	0		0
Storage Lanes	1		0	0		1	1		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt						0.850			0.850			
Flt Protected	0.950						0.950					
Satd. Flow (prot)	1703	1827	0	0	1863	1455	1641	0	1302	0	0	0
Flt Permitted	0.950						0.950					
Satd. Flow (perm)	1703	1827	0	0	1863	1455	1641	0	1302	0	0	0
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		391			304			479			519	
Travel Time (s)		7.6			5.9			9.3			10.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	6%	4%	0%	0%	2%	11%	10%	0%	24%	0%	0%	0%
Adj. Flow (vph)	152	147	0	0	141	33	136	5	38	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	152	147	0	0	141	33	136	5	38	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization Err%	ICU Level of Service H
Analysis Period (min) 15	

Intersection	
Intersection Delay (sec/veh):	6.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	140	135	0	0	130	30	125	5	35	0	0	0
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	125		0	0		25	0		100	0		0
Median Width		12			12			12			12	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles(%)	6	4	0	0	2	11	10	0	24	0	0	0
Movement Flow Rate	152	147	0	0	141	33	136	5	38	0	0	0
Number of Lanes	1	1	0	0	1	1	1	0	1	0	0	0

Major/Minor	Major 1				Major 2		Minor 1		
Conflicting Flow Rate - All	174	0	-	-	0	0	609	625	74
Stage 1	-	-	-	-	-	-	451	451	-
Stage 2	-	-	-	-	-	-	158	174	-
Follow-up Headway	2.254	-	0	0	-	-	3.59	4	3.516
Pot Capacity-1 Maneuver	1379	-	0	0	-	-	396	404	930
Stage 1	-	-	0	0	-	-	573	574	-
Stage 2	-	-	0	0	-	-	826	759	-
Time blocked-Platoon(%)	0	-	0	0	-	-	0	0	0
Mov Capacity-1 Maneuver	1379	-	-	-	-	-	363	359	930
Mov Capacity-2 Maneuver	-	-	-	-	-	-	363	359	-
Stage 1	-	-	-	-	-	-	510	511	-
Stage 2	-	-	-	-	-	-	826	759	-

Approach	EB	WB	NB
HCM Control Delay (s)	4	0	18.1
HCM LOS	A	A	C

Lane	NBLn1	NBLn2	EBL	EBT	WBT	WBR
Capacity (vph)	363	930				
HCM Control Delay (s)	20.7	9	7.934	-	-	-
HCM Lane VC Ratio	0.374	0.041	0.11	-	-	-
HCM Lane LOS	C	A	A	-	-	-
HCM 95th Percentile Queue (veh)	1.694	0.128	0.371	-	-	-

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	110	60	60	60	75	100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	25	0			25
Storage Lanes	1	1	0			1
Taper Length (ft)	25		25			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850				0.850
Flt Protected	0.950			0.976		
Satd. Flow (prot)	1641	1509	0	1775	1776	1538
Flt Permitted	0.950			0.976		
Satd. Flow (perm)	1641	1509	0	1775	1776	1538
Link Speed (mph)	35			35	35	
Link Distance (ft)	304			349	1203	
Travel Time (s)	5.9			6.8	23.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	10%	7%	4%	5%	7%	5%
Adj. Flow (vph)	120	65	65	65	82	109
Shared Lane Traffic (%)						
Lane Group Flow (vph)	120	65	0	130	82	109
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 25.9%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Intersection Delay (sec/veh):	5.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Volume (vph)	110	60	60	60	75	100
Conflicting Peds.(#/hr)	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
Right Turn Channelized	None	None	None	None	None	None
Storage Length	0	25	0			25
Median Width	12			0	0	
Grade (%)	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles(%)	10	7	4	5	7	5
Movement Flow Rate	120	65	65	65	82	109
Number of Lanes	1	1	0	1	1	1

Major/Minor				Major 1	Major 2	
Conflicting Flow Rate - All	332	96	191	0	0	0
Stage 1	137	-	-	-	-	-
Stage 2	195	-	-	-	-	-
Follow-up Headway	3.59	3.363	2.236	-	-	-
Pot Capacity-1 Maneuver	647	947	1371	-	-	-
Stage 1	870	-	-	-	-	-
Stage 2	819	-	-	-	-	-
Time blocked-Platoon(%)	0	0	0	-	-	-
Mov Capacity-1 Maneuver	615	947	1371	-	-	-
Mov Capacity-2 Maneuver	615	-	-	-	-	-
Stage 1	870	-	-	-	-	-
Stage 2	779	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay (s)	11.2	3.9	0
HCM LOS	B	A	A

Lane	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (vph)			615	947		
HCM Control Delay (s)	7.757	-	12.3	9.1	-	-
HCM Lane VC Ratio	0.048	-	0.194	0.069	-	-
HCM Lane LOS	A	-	B	A	-	-
HCM 95th Percentile Queue (veh)	0.15	-	0.716	0.221	-	-

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	25	10	160	10	5	150
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	100		0	450	
Storage Lanes	1	1		0	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850	0.992			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	1583	1848	0	1770	1863
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1770	1583	1848	0	1770	1863
Link Speed (mph)	30		45			35
Link Distance (ft)	2276		718			2602
Travel Time (s)	51.7		10.9			50.7
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	27	11	174	11	5	163
Shared Lane Traffic (%)						
Lane Group Flow (vph)	27	11	185	0	5	163
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						Yes
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 19.0%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Intersection Delay (sec/veh):	1.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Volume (vph)	25	10	160	10	5	150
Conflicting Peds.(#/hr)	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
Right Turn Channelized	None	None	None	None	None	None
Storage Length	0	100		0	450	
Median Width	12		12			12
Grade (%)	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles(%)	2	2	2	2	2	2
Movement Flow Rate	27	11	174	11	5	163
Number of Lanes	1	1	1	0	1	1

Major/Minor			Major 1			Major 2
Conflicting Flow Rate - All	353	180	0	0	185	0
Stage 1	180	-	-	-	-	-
Stage 2	173	-	-	-	-	-
Follow-up Headway	3.518	3.318	-	-	2.218	-
Pot Capacity-1 Maneuver	645	863	-	-	1390	-
Stage 1	851	-	-	-	-	-
Stage 2	857	-	-	-	-	-
Time blocked-Platoon(%)	0	0	-	-	0	-
Mov Capacity-1 Maneuver	643	863	-	-	1390	-
Mov Capacity-2 Maneuver	643	-	-	-	-	-
Stage 1	851	-	-	-	-	-
Stage 2	854	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay (s)	10.3	0	0.2
HCM LOS	B	A	A

Lane	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (vph)			643	863		
HCM Control Delay (s)	-	-	10.8	9.2	7.6	-
HCM Lane VC Ratio	-	-	0.042	0.013	0.004	-
HCM Lane LOS	-	-	B	A	A	-
HCM 95th Percentile Queue (veh)	-	-	0.132	0.038	0.012	-

APPENDIX 6: CUMULATIVE PLUS PROJECT LOS WORKSHEET

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	30	77	70	50	32	204	15	390	60	233	485	25
Movement Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj. Factor (A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj. Factors	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Sat. Flow Rate, veh/h/ln	1776	1881	1900	1712	1900	1845	1900	1845	1845	1827	1871	1871
Lanes	1	1	1	1	1	1	1	2	0	1	2	0
Lane Assignment												
Capacity, veh/h	493	547	470	441	553	456	553	1763	269	569	1989	102
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Proportion Arriving On Green	0.29	0.29	0.29	0.29	0.29	0.29	0.56	0.56	0.56	0.56	0.56	0.56
Lane Group Delay, s/veh	15.0	15.1	15.2	16.4	14.3	19.8	7.5	6.6	6.6	12.3	6.8	6.8
Lane Group LOS	B	B	B	B	B	B	A	A	A	B	A	A
Approach Volume, veh/h		192			311			505			808	
Approach Delay, s/veh		15.1			18.6			6.6			8.5	
Approach LOS		B			B			A			A	

Timer:	1	2	3	4	5	6	7	8
Assigned Phase		2		4		6		8
Case No		6.0		5.0		6.0		5.0
Phase Duration (G+Y+Rc), s		35.00		20.00		35.00		20.00
Change Period (Y+Rc), s		4.00		4.00		4.00		4.00
Max. Allowable Headway (MAH), s		5.07		4.28		5.07		4.28
Maximum Green Setting (Gmax), s		31.00		16.00		31.00		16.00
Max. Queue Clearance Time (g_c+I1), s		6.76		3.93		16.92		8.42
Green Extension Time (g_e), s		8.30		1.57		6.45		1.23
Probability of Phase Call (p_c)		1.000		1.000		1.000		1.000
Probability of Max Out (p_x)		0.198		0.068		0.445		0.408

Left-Turn Movement Data				
Assigned Movement		5		7		1		3
Mvmt. Sat Flow, veh/h		867.64		1304.16		886.07		1202.72

Through Movement Data				
Assigned Movement		2		4		6		8
Mvmt. Sat Flow, veh/h		3127.10		1881.19		3528.87		1900.00

Right-Turn Movement Data				
Assigned Movement		12		14		16		18
Mvmt. Sat Flow, veh/h		477.88		1615.00		181.60		1567.96

Left Lane Group Data								
Assigned Movement	0	5	0	7	0	1	0	3
Lane Assignment		L		L		L		L
Lanes in Group	0	1	0	1	0	1	0	1
Group Volume (v), veh/h	0.0	16.3	0.0	32.6	0.0	253.3	0.0	54.3
Group Sat. Flow (s), veh/h/ln	0.0	867.6	0.0	1304.2	0.0	886.1	0.0	1202.7
Queue Serve Time (g_s), s	0.0	0.5	0.0	1.0	0.0	11.1	0.0	1.9
Cycle Queue Clear Time (g_c), s	0.0	4.8	0.0	1.7	0.0	14.9	0.0	3.7

Perm LT Sat Flow Rate (s_l), veh/h/ln	0.0	867.6	0.0	1304.2	0.0	886.1	0.0	1202.7
Shared LT Sat Flow (s_sh), veh/h/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Perm LT Eff. Green (g_p), s	0.0	31.0	0.0	16.0	0.0	31.0	0.0	16.0
Perm LT Serve Time (g_u), s	0.0	26.8	0.0	15.3	0.0	27.2	0.0	14.2
Perm LT Que Serve Time (g_ps), s	0.0	0.5	0.0	1.0	0.0	11.1	0.0	1.9
Time to First Blk (g_f), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Serve Time pre Blk (g_fs), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Proportion LT Inside Lane (P_L)	0.000	1.000	0.000	1.000	0.000	1.000	0.000	1.000
Lane Group Capacity (c), veh/h	0.0	553.3	0.0	493.1	0.0	569.2	0.0	441.1
Volume-to-Capacity Ratio (X)	0.000	0.029	0.000	0.066	0.000	0.445	0.000	0.123
Available Capacity (c_a), veh/h	0.0	553.3	0.0	493.1	0.0	569.2	0.0	441.1
Upstream Filter Factor (I)	0.000	1.000	0.000	1.000	0.000	1.000	0.000	1.000
Uniform Delay (d1), s/veh	0.0	7.4	0.0	14.7	0.0	9.8	0.0	15.9
Incremental Delay (d2), s/veh	0.0	0.1	0.0	0.3	0.0	2.5	0.0	0.6
Initial Queue Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	7.5	0.0	15.0	0.0	12.3	0.0	16.4
First-Term Queue (Q1), veh/ln	0.0	0.1	0.0	0.3	0.0	1.6	0.0	0.5
Second-Term Queue (Q2), veh/ln	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.1
Third-Term Queue (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Percentile bk-of-que factor (f_B%)	0.000	1.000	0.000	1.000	0.000	1.000	0.000	1.000
Percentile Back of Queue (Q%), veh/ln	0.0	0.1	0.0	0.3	0.0	2.0	0.0	0.5
Percentile Storage Ratio (RQ%)	0.00	0.02	0.00	0.08	0.00	0.34	0.00	0.05
Initial Queue (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Queue (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Queue (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Capacity (cs), veh/h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Initial Queue Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Middle Lane Group Data								
Assigned Movement	0	2	0	4	0	6	0	8
Lane Assignment		T		T		T		T
Lanes in Group	0	1	0	1	0	1	0	1
Group Volume (v), veh/h	0.0	248.9	0.0	83.7	0.0	279.1	0.0	34.8
Group Sat. Flow (s), veh/h/ln	0.0	1844.7	0.0	1881.2	0.0	1871.3	0.0	1900.0
Queue Serve Time (g_s), s	0.0	3.7	0.0	1.8	0.0	4.2	0.0	0.7
Cycle Queue Clear Time (g_c), s	0.0	3.7	0.0	1.8	0.0	4.2	0.0	0.7
Lane Group Capacity (c), veh/h	0.0	1039.7	0.0	547.3	0.0	1054.7	0.0	552.7
Volume-to-Capacity Ratio (X)	0.000	0.239	0.000	0.153	0.000	0.265	0.000	0.063
Available Capacity (c_a), veh/h	0.0	1039.7	0.0	547.3	0.0	1054.7	0.0	552.7
Upstream Filter Factor (I)	0.000	1.000	0.000	1.000	0.000	1.000	0.000	1.000
Uniform Delay (d1), s/veh	0.0	6.1	0.0	14.5	0.0	6.2	0.0	14.1
Incremental Delay (d2), s/veh	0.0	0.5	0.0	0.6	0.0	0.6	0.0	0.2
Initial Queue Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	6.6	0.0	15.1	0.0	6.8	0.0	14.3
First-Term Queue (Q1), veh/ln	0.0	1.0	0.0	0.7	0.0	1.1	0.0	0.3
Second-Term Queue (Q2), veh/ln	0.0	0.2	0.0	0.1	0.0	0.2	0.0	0.0
Third-Term Queue (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Percentile bk-of-que factor (f_B%)	0.000	1.000	0.000	1.000	0.000	1.000	0.000	1.000
Percentile Back of Queue (Q%), veh/ln	0.0	1.1	0.0	0.8	0.0	1.3	0.0	0.3
Percentile Storage Ratio (RQ%)	0.00	0.03	0.00	0.06	0.00	0.17	0.00	0.03

Initial Queue (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Queue (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Queue (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Capacity (cs), veh/h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Initial Queue Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Right Lane Group Data								
Assigned Movement	0	12	0	14	0	16	0	18
Lane Assignment		T+R		R		T+R		R
Lanes in Group	0	1	0	1	0	1	0	1
Group Volume (v), veh/h	0.0	240.2	0.0	76.1	0.0	275.2	0.0	221.7
Group Sat. Flow (s), veh/h/ln	0.0	1760.3	0.0	1615.0	0.0	1839.2	0.0	1568.0
Queue Serve Time (g_s), s	0.0	3.8	0.0	1.9	0.0	4.2	0.0	6.4
Cycle Queue Clear Time (g_c), s	0.0	3.8	0.0	1.9	0.0	4.2	0.0	6.4
Prot RT Sat Flow Rate (s_R), veh/h/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prot RT Eff. Green (g_R), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Proportion RT Outside Lane (P_R)	0.000	0.271	0.000	1.000	0.000	0.099	0.000	1.000
Lane Group Capacity (c), veh/h	0.0	992.2	0.0	469.8	0.0	1036.6	0.0	456.1
Volume-to-Capacity Ratio (X)	0.000	0.242	0.000	0.162	0.000	0.265	0.000	0.486
Available Capacity (c_a), veh/h	0.0	992.2	0.0	469.8	0.0	1036.6	0.0	456.1
Upstream Filter Factor (I)	0.000	1.000	0.000	1.000	0.000	1.000	0.000	1.000
Uniform Delay (d1), s/veh	0.0	6.1	0.0	14.5	0.0	6.2	0.0	16.1
Incremental Delay (d2), s/veh	0.0	0.6	0.0	0.7	0.0	0.6	0.0	3.7
Initial Queue Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	6.6	0.0	15.2	0.0	6.8	0.0	19.8
First-Term Queue (Q1), veh/ln	0.0	0.9	0.0	0.6	0.0	1.1	0.0	2.0
Second-Term Queue (Q2), veh/ln	0.0	0.2	0.0	0.1	0.0	0.2	0.0	0.5
Third-Term Queue (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Percentile bk-of-que factor (f_B%)	0.000	1.000	0.000	1.000	0.000	1.000	0.000	1.000
Percentile Back of Queue (Q%), veh/ln	0.0	1.1	0.0	0.7	0.0	1.3	0.0	2.5
Percentile Storage Ratio (RQ%)	0.00	0.03	0.00	0.71	0.00	0.17	0.00	0.63
Initial Queue (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Queue (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Queue (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Capacity (cs), veh/h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Initial Queue Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Intersection Summary	
HCM 2010 Control Delay	10.4
HCM 2010 Level of Service	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	30	77	70	50	32	204	15	390	60	233	485	25
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1776	1881	1900	1712	1900	1845	1900	1845	1845	1827	1871	1871
Lanes	1	1	1	1	1	1	1	2	0	1	2	0
Capacity, veh/h	493	547	470	441	553	456	553	1763	269	569	1989	102
Arriving On Green	0.29	0.29	0.29	0.29	0.29	0.29	0.56	0.56	0.56	0.56	0.56	0.56
Sat Flow, veh/h	1304.2	1881.2	1615.0	1202.7	1900.0	1568.0	867.6	3127.1	477.9	886.1	3528.9	181.6
Grp Volume(v), veh/h	32.6	83.7	76.1	54.3	34.8	221.7	16.3	248.9	240.2	253.3	279.1	275.2
Grp Sat Flow(s),veh/h/ln	1304.2	1881.2	1615.0	1202.7	1900.0	1568.0	867.6	1844.7	1760.3	886.1	1871.3	1839.2
Q Serve(g_s), s	1.0	1.8	1.9	1.9	0.7	6.4	0.5	3.7	3.8	11.1	4.2	4.2
Cycle Q Clear(g_c), s	1.7	1.8	1.9	3.7	0.7	6.4	4.8	3.7	3.8	14.9	4.2	4.2
Proportion In Lane	1.000		1.000	1.000		1.000	1.000		0.271	1.000		0.099
Lane Grp Cap(c), veh/h	493.1	547.3	469.8	441.1	552.7	456.1	553.3	1039.7	992.2	569.2	1054.7	1036.6
V/C Ratio(X)	0.066	0.153	0.162	0.123	0.063	0.486	0.029	0.239	0.242	0.445	0.265	0.265
Avail Cap(c_a), veh/h	493.1	547.3	469.8	441.1	552.7	456.1	553.3	1039.7	992.2	569.2	1054.7	1036.6
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Uniform Delay (d), s/veh	14.7	14.5	14.5	15.9	14.1	16.1	7.4	6.1	6.1	9.8	6.2	6.2
Incr Delay (d2), s/veh	0.3	0.6	0.7	0.6	0.2	3.7	0.1	0.5	0.6	2.5	0.6	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	15.0	15.1	15.2	16.4	14.3	19.8	7.5	6.6	6.6	12.3	6.8	6.8
Lane Group LOS	B	B	B	B	B	B	A	A	A	B	A	A
Approach Volume, veh/h		192			311			505			808	
Approach Delay, s/veh		15.1			18.6			6.6			8.5	
Approach LOS		B			B			A			A	

Timer				
Assigned Phase	4	8	2	6
Phase Duration (G+Y+Rc), s	20.00	20.00	35.00	35.00
Change Period (Y+Rc), s	4.00	4.00	4.00	4.00
Max Green Setting (Gmax), s	16.00	16.00	31.00	31.00
Max Q Clear Time (g_c+I1), s	3.93	8.42	6.76	16.92
Green Extension Time (p_c)	1.57	1.23	8.30	6.45

Intersection Summary	
HCM 2010 Control Delay	10.4
HCM 2010 Level of Service	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	5	265	100	64	180	5	100	5	85	5	5	10
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	288	109	70	196	5	109	5	92	5	5	11
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)									4			
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		361										
pX, platoon unblocked												
vC, conflicting volume	201			397			650	639	288	685	745	198
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	201			397			650	639	288	685	745	198
tC, single (s)	4.1			4.1			7.2	6.5	6.2	7.1	6.8	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.6	4.0	3.3	3.5	4.2	3.3
p0 queue free %	100			94			69	99	88	98	98	99
cM capacity (veh/h)	1383			1173			348	371	753	301	296	848

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	NB 2	SB 1
Volume Total	293	109	271	109	98	22
Volume Left	5	0	70	109	0	5
Volume Right	0	109	5	0	92	11
cSH	1383	1700	1173	348	798	442
Volume to Capacity	0.00	0.06	0.06	0.31	0.12	0.05
Queue Length 95th (ft)	0	0	5	33	10	4
Control Delay (s)	0.2	0.0	2.5	20.0	10.7	13.6
Lane LOS	A		A	C	B	B
Approach Delay (s)	0.1		2.5	15.6		13.6
Approach LOS				C		B

Intersection Summary			
Average Delay	4.7		
Intersection Capacity Utilization	49.7%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Intersection Delay (sec/veh):	4.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	5	265	100	64	180	5	100	5	85	5	5	10
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		50	0		0	175		100	0		0
Median Width		0			0			12			12	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles(%)	0	2	11	0	4	5	7	0	1	0	25	0
Movement Flow Rate	5	288	109	70	196	5	109	5	92	5	5	11
Number of Lanes	0	1	1	0	1	0	1	1	1	0	1	0

Major/Minor	Major 1			Major 2			Minor 1			Minor 2		
Conflicting Flow Rate - All	201	0	0	397	0	0	700	694	199	740	746	199
Stage 1	-	-	-	-	-	-	353	353	-	339	339	-
Stage 2	-	-	-	-	-	-	347	341	-	401	407	-
Follow-up Headway	2.2	-	-	2.2	-	-	3.563	4	3.309	3.5	4.225	3.3
Pot Capacity-1 Maneuver	1383	-	-	1177	-	-	371	380	*1248	353	324	847
Stage 1	-	-	-	-	-	-	725	666	-	680	601	-
Stage 2	-	-	-	-	-	-	659	642	-	688	586	-
Time blocked-Platoon(%)	0	-	-	17	-	-	17	17	17	17	17	0
Mov Capacity-1 Maneuver	1383	-	-	1177	-	-	342	353	*1248	305	300	847
Mov Capacity-2 Maneuver	-	-	-	-	-	-	342	353	-	305	300	-
Stage 1	-	-	-	-	-	-	721	662	-	677	561	-
Stage 2	-	-	-	-	-	-	601	599	-	629	583	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	0.1	2.1	14.8	13.5
HCM LOS	A	A	B	B

Lane	NBLn1	NBLn2	NBLn3	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (vph)	*342	*353	*1248							*446
HCM Control Delay (s)	20.4	15.4	8.1	7.613	-	-	8.251	0	-	13.5
HCM Lane VC Ratio	0.318	0.015	0.074	0.004	-	-	0.059	-	-	0.049
HCM Lane LOS	C	C	A	A	-	-	A	A	-	B
HCM 95th Percentile Queue (veh)	1.336	0.047	0.239	0.012	-	-	0.188	-	-	0.153

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	298	42	5	178	32	5
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	324	46	5	193	35	5
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						2
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			370		528	324
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			370		528	324
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		93	99
cM capacity (veh/h)			1200		512	722

Direction, Lane #	EB 1	EB 2	WB 1	NB 1
Volume Total	324	46	199	40
Volume Left	0	0	5	35
Volume Right	0	46	0	5
cSH	1700	1700	1200	592
Volume to Capacity	0.19	0.03	0.00	0.07
Queue Length 95th (ft)	0	0	0	5
Control Delay (s)	0.0	0.0	0.3	12.2
Lane LOS			A	B
Approach Delay (s)	0.0		0.3	12.2
Approach LOS				B

Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	25.7%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Intersection Delay (sec/veh):	0.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Volume (vph)	298	42	5	178	32	5
Conflicting Peds.(#/hr)	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None
Storage Length		250	0		0	50
Median Width	0			0	12	
Grade (%)	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles(%)	1	0	0	2	0	0
Movement Flow Rate	324	46	5	193	35	5
Number of Lanes	1	1	0	1	1	1

Major/Minor	Major 1			Major 2		
Conflicting Flow Rate - All	0	0	370	0	550	185
Stage 1	-	-	-	-	347	-
Stage 2	-	-	-	-	203	-
Follow-up Headway	-	-	2.2	-	3.5	3.3
Pot Capacity-1 Maneuver	-	-	1200	-	500	862
Stage 1	-	-	-	-	720	-
Stage 2	-	-	-	-	836	-
Time blocked-Platoon(%)	-	-	0	-	0	0
Mov Capacity-1 Maneuver	-	-	1200	-	498	862
Mov Capacity-2 Maneuver	-	-	-	-	498	-
Stage 1	-	-	-	-	720	-
Stage 2	-	-	-	-	832	-

Approach	EB	WB	NB
HCM Control Delay (s)	0	0.2	12.3
HCM LOS	A	A	B

Lane	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (vph)	498	862				
HCM Control Delay (s)	12.8	9.2	-	-	8.014	-
HCM Lane VC Ratio	0.07	0.006	-	-	0.005	-
HCM Lane LOS	B	A	-	-	A	-
HCM 95th Percentile Queue (veh)	0.224	0.019	-	-	0.014	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	255	255	33	230	0	0	0	0	79	5	95
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	277	277	36	250	0	0	0	0	86	5	103
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												4
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	250			554			653	599	277	599	876	250
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	250			554			653	599	277	599	876	250
tC, single (s)	4.1			4.2			7.1	6.5	6.2	7.3	6.5	6.3
tC, 2 stage (s)												
tF (s)	2.2			2.3			3.5	4.0	3.3	3.7	4.0	3.4
p0 queue free %	100			96			100	100	100	77	98	87
cM capacity (veh/h)	1327			977			318	403	766	379	279	777

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	277	277	36	250	189
Volume Left	0	0	36	0	86
Volume Right	0	277	0	0	103
cSH	1700	1700	977	1700	834
Volume to Capacity	0.16	0.16	0.04	0.15	0.23
Queue Length 95th (ft)	0	0	3	0	22
Control Delay (s)	0.0	0.0	8.8	0.0	13.5
Lane LOS			A		B
Approach Delay (s)	0.0		1.1		Err
Approach LOS					F

Intersection Summary			
Average Delay	Err		
Intersection Capacity Utilization	Err%	ICU Level of Service	H
Analysis Period (min)	15		

Intersection	
Intersection Delay (sec/veh):	3.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	0	255	255	33	230	0	0	0	0	79	5	95
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		25	125		0	0		0	0		100
Median Width		12			12			12			12	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles(%)	0	5	4	10	8	0	0	0	0	19	0	7
Movement Flow Rate	0	277	277	36	250	0	0	0	0	86	5	103
Number of Lanes	0	1	1	1	1	0	0	0	0	1	0	1

Major/Minor	Major 1			Major 2			Minor 2		
Conflicting Flow Rate - All	-	0	0	554	0	-	738	876	125
Stage 1	-	-	-	-	-	-	322	322	-
Stage 2	-	-	-	-	-	-	416	554	-
Follow-up Headway	0	-	-	2.29	-	0	3.671	4	3.363
Pot Capacity-1 Maneuver	0	-	-	977	-	0	313	290	912
Stage 1	0	-	-	-	-	0	655	655	-
Stage 2	0	-	-	-	-	0	582	517	-
Time blocked-Platoon(%)	0	-	-	0	-	0	0	0	0
Mov Capacity-1 Maneuver	-	-	-	977	-	-	304	279	912
Mov Capacity-2 Maneuver	-	-	-	-	-	-	304	279	-
Stage 1	-	-	-	-	-	-	-	631	-
Stage 2	-	-	-	-	-	-	582	517	-

Approach	EB	WB	SB
HCM Control Delay (s)	0	1.1	14.9
HCM LOS	A	A	B

Lane	EBT	EBR	WBL	WBT	SBLn1	SBLn2
Capacity (vph)					304	912
HCM Control Delay (s)	-	-	8.825	-	21.4	9.5
HCM Lane VC Ratio	-	-	0.037	-	0.282	0.113
HCM Lane LOS	-	-	A	-	C	A
HCM 95th Percentile Queue (veh)	-	-	0.114	-	1.134	0.382

HCM Unsignalized Intersection Capacity Analysis
5: I-5 Northbound Off-Ramp/I-5 Northbound On-Ramp & Moonlit Oaks Ave

9/3/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	140	184	0	0	143	85	125	5	47	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	152	200	0	0	155	92	136	5	51	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)									4			
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	248			200			660	752	200	688	660	155
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	248			200			660	752	200	688	660	155
tC, single (s)	4.2			4.1			7.2	6.5	6.4	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.3			2.2			3.6	4.0	3.5	3.5	4.0	3.3
p0 queue free %	88			100			59	98	94	100	100	100
cM capacity (veh/h)	1295			1384			333	301	788	305	340	896

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	152	200	155	92	187
Volume Left	152	0	0	0	136
Volume Right	0	0	0	92	51
cSH	1295	1700	1700	1700	458
Volume to Capacity	0.12	0.12	0.09	0.05	0.41
Queue Length 95th (ft)	10	0	0	0	49
Control Delay (s)	8.2	0.0	0.0	0.0	19.5
Lane LOS	A				C
Approach Delay (s)	3.5		0.0		Err
Approach LOS					F

Intersection Summary			
Average Delay	Err		
Intersection Capacity Utilization	Err%	ICU Level of Service	H
Analysis Period (min)	15		

Intersection	
Intersection Delay (sec/veh):	6.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	140	184	0	0	143	85	125	5	47	0	0	0
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	125		0	0		25	0		100	0		0
Median Width		12			12			12			12	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles(%)	6	4	0	0	2	11	10	0	24	0	0	0
Movement Flow Rate	152	200	0	0	155	92	136	5	51	0	0	0
Number of Lanes	1	1	0	0	1	1	1	0	1	0	0	0

Major/Minor	Major 1				Major 2		Minor 1		
Conflicting Flow Rate - All	247	0	-	-	0	0	705	751	100
Stage 1	-	-	-	-	-	-	504	504	-
Stage 2	-	-	-	-	-	-	201	247	-
Follow-up Headway	2.254	-	0	0	-	-	3.59	4	3.516
Pot Capacity-1 Maneuver	1296	-	0	0	-	-	341	342	899
Stage 1	-	-	0	0	-	-	536	544	-
Stage 2	-	-	0	0	-	-	783	706	-
Time blocked-Platoon(%)	0	-	0	0	-	-	0	0	0
Mov Capacity-1 Maneuver	1296	-	-	-	-	-	310	302	899
Mov Capacity-2 Maneuver	-	-	-	-	-	-	310	302	-
Stage 1	-	-	-	-	-	-	473	480	-
Stage 2	-	-	-	-	-	-	783	706	-

Approach	EB	WB	NB
HCM Control Delay (s)	3.5	0	21
HCM LOS	A	A	C

Lane	NBLn1	NBLn2	EBL	EBT	WBT	WBR
Capacity (vph)	310	899				
HCM Control Delay (s)	25.4	9.2	8.147	-	-	-
HCM Lane VC Ratio	0.438	0.057	0.117	-	-	-
HCM Lane LOS	D	A	A	-	-	-
HCM 95th Percentile Queue (veh)	2.132	0.18	0.398	-	-	-

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	171	60	60	63	78	167
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	186	65	65	68	85	182
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)		1				
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	284	85	266			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	284	85	266			
tC, single (s)	6.5	6.3	4.1			
tC, 2 stage (s)						
tF (s)	3.6	3.4	2.2			
p0 queue free %	72	93	95			
cM capacity (veh/h)	655	961	1286			

Direction, Lane #	EB 1	NB 1	SB 1	SB 2
Volume Total	251	134	85	182
Volume Left	186	65	0	0
Volume Right	65	0	0	182
cSH	799	1286	1700	1700
Volume to Capacity	0.31	0.05	0.05	0.11
Queue Length 95th (ft)	34	4	0	0
Control Delay (s)	11.6	4.1	0.0	0.0
Lane LOS	B	A		
Approach Delay (s)	11.6	4.1	0.0	
Approach LOS	B			

Intersection Summary			
Average Delay	5.3		
Intersection Capacity Utilization	29.4%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Intersection Delay (sec/veh):	5.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Volume (vph)	171	60	60	63	78	167
Conflicting Peds.(#/hr)	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
Right Turn Channelized	None	None	None	None	None	None
Storage Length	0	25	0			25
Median Width	12			0	0	
Grade (%)	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles(%)	10	7	4	5	7	5
Movement Flow Rate	186	65	65	68	85	182
Number of Lanes	1	1	0	1	1	1

Major/Minor				Major 1	Major 2	
Conflicting Flow Rate - All	374	134	267	0	0	0
Stage 1	176	-	-	-	-	-
Stage 2	198	-	-	-	-	-
Follow-up Headway	3.59	3.363	2.236	-	-	-
Pot Capacity-1 Maneuver	612	902	1285	-	-	-
Stage 1	836	-	-	-	-	-
Stage 2	817	-	-	-	-	-
Time blocked-Platoon(%)	0	0	0	-	-	-
Mov Capacity-1 Maneuver	580	902	1285	-	-	-
Mov Capacity-2 Maneuver	580	-	-	-	-	-
Stage 1	836	-	-	-	-	-
Stage 2	774	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay (s)	12.9	3.9	0
HCM LOS	B	A	A

Lane	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (vph)			580	902		
HCM Control Delay (s)	7.951	-	14.1	9.3	-	-
HCM Lane VC Ratio	0.051	-	0.32	0.072	-	-
HCM Lane LOS	A	-	B	A	-	-
HCM 95th Percentile Queue (veh)	0.16	-	1.376	0.233	-	-

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	95	25	160	73	18	150
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	103	27	174	79	20	163
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)		4				
Median type			None			TWLTL
Median storage veh)						2
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	416	214			253	
vC1, stage 1 conf vol	214					
vC2, stage 2 conf vol	202					
vCu, unblocked vol	416	214			253	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	86	97			99	
cM capacity (veh/h)	724	826			1312	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	130	253	20	163
Volume Left	103	0	20	0
Volume Right	27	79	0	0
cSH	915	1700	1312	1700
Volume to Capacity	0.14	0.15	0.01	0.10
Queue Length 95th (ft)	12	0	1	0
Control Delay (s)	10.5	0.0	7.8	0.0
Lane LOS	B		A	
Approach Delay (s)	10.5	0.0	0.8	
Approach LOS	B			

Intersection Summary			
Average Delay	2.7		
Intersection Capacity Utilization	26.9%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Intersection Delay (sec/veh):	3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Volume (vph)	95	25	160	73	18	150
Conflicting Peds.(#/hr)	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
Right Turn Channelized	None	None	None	None	None	None
Storage Length	0	100		0	450	
Median Width	12		12			12
Grade (%)	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles(%)	2	2	2	2	2	2
Movement Flow Rate	103	27	174	79	20	163
Number of Lanes	1	1	1	0	1	1

Major/Minor			Major 1			Major 2
Conflicting Flow Rate - All	417	214	0	0	253	0
Stage 1	214	-	-	-	-	-
Stage 2	203	-	-	-	-	-
Follow-up Headway	3.518	3.318	-	-	2.218	-
Pot Capacity-1 Maneuver	592	826	-	-	1312	-
Stage 1	822	-	-	-	-	-
Stage 2	831	-	-	-	-	-
Time blocked-Platoon(%)	0	0	-	-	0	-
Mov Capacity-1 Maneuver	583	826	-	-	1312	-
Mov Capacity-2 Maneuver	583	-	-	-	-	-
Stage 1	822	-	-	-	-	-
Stage 2	818	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay (s)	11.9	0	0.8
HCM LOS	B	A	A

Lane	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (vph)			583	826		
HCM Control Delay (s)	-	-	12.5	9.5	7.785	-
HCM Lane VC Ratio	-	-	0.177	0.033	0.015	-
HCM Lane LOS	-	-	B	A	A	-
HCM 95th Percentile Queue (veh)	-	-	0.639	0.102	0.045	-

APPENDIX 7: CUMULATIVE PLUS PROJECT MITIGATED LOS WORKSHEETS

Lanes, Volumes, Timings
5: I-5 Northbound Off-Ramp/I-5 Northbound On-Ramp & Moonlit Oaks Ave

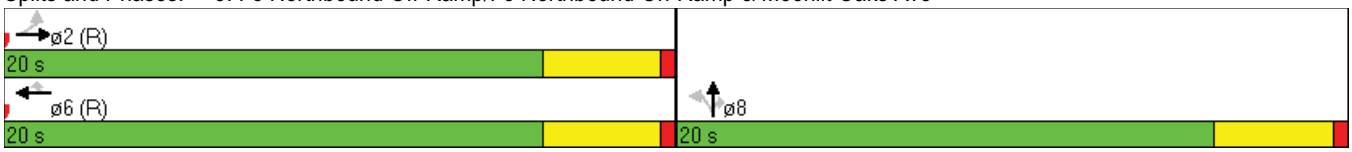
9/3/2013

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	140	184	0	0	143	85	125	5	47	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	125		0	0		25	0		100	0		0
Storage Lanes	1		0	0		1	1		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt						0.850			0.850			
Flt Protected	0.950						0.950					
Satd. Flow (prot)	1703	1827	0	0	1863	1455	1641	1900	1302	0	0	0
Flt Permitted	0.659						0.950					
Satd. Flow (perm)	1181	1827	0	0	1863	1455	1641	1900	1302	0	0	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						92			51			
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		391			304			479			519	
Travel Time (s)		7.6			5.9			9.3			10.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	6%	4%	0%	0%	2%	11%	10%	0%	24%	0%	0%	0%
Adj. Flow (vph)	152	200	0	0	155	92	136	5	51	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	152	200	0	0	155	92	136	5	51	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA			NA	Perm	Perm	NA	Perm			
Protected Phases		2			6			8				
Permitted Phases	2					6	8		8			
Minimum Split (s)	20.0	20.0			20.0	20.0	20.0	20.0	20.0			
Total Split (s)	20.0	20.0			20.0	20.0	20.0	20.0	20.0			
Total Split (%)	50.0%	50.0%			50.0%	50.0%	50.0%	50.0%	50.0%			
Maximum Green (s)	16.0	16.0			16.0	16.0	16.0	16.0	16.0			
Yellow Time (s)	3.5	3.5			3.5	3.5	3.5	3.5	3.5			
All-Red Time (s)	0.5	0.5			0.5	0.5	0.5	0.5	0.5			
Lost Time Adjust (s)	0.0	0.0			0.0	0.0	0.0	0.0	0.0			
Total Lost Time (s)	4.0	4.0			4.0	4.0	4.0	4.0	4.0			
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	5.0	5.0			5.0	5.0	5.0	5.0	5.0			
Flash Dont Walk (s)	11.0	11.0			11.0	11.0	11.0	11.0	11.0			
Pedestrian Calls (#/hr)	0	0			0	0	0	0	0			
Act Effct Green (s)	16.0	16.0			16.0	16.0	16.0	16.0	16.0			
Actuated g/C Ratio	0.40	0.40			0.40	0.40	0.40	0.40	0.40			
v/c Ratio	0.32	0.27			0.21	0.14	0.21	0.01	0.09			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	10.7	9.4			8.8	3.1	8.9	7.2	3.6			
Queue Delay	0.0	0.0			0.0	0.0	0.0	0.0	0.0			
Total Delay	10.7	9.4			8.8	3.1	8.9	7.2	3.6			
LOS	B	A			A	A	A	A	A			
Approach Delay		10.0			6.7			7.5				
Approach LOS		A			A			A				

Intersection Summary	
Area Type:	Other
Cycle Length: 40	
Actuated Cycle Length: 40	
Offset: 20 (50%), Referenced to phase 2:EBTL and 6:WBT, Start of Green	
Natural Cycle: 40	
Control Type: Pretimed	
Maximum v/c Ratio: 0.32	
Intersection Signal Delay: 8.3	Intersection LOS: A
Intersection Capacity Utilization Err%	ICU Level of Service H
Analysis Period (min) 15	

Splits and Phases: 5: I-5 Northbound Off-Ramp/I-5 Northbound On-Ramp & Moonlit Oaks Ave



Queues

5: I-5 Northbound Off-Ramp/I-5 Northbound On-Ramp & Moonlit Oaks Ave

9/3/2013

Lane Group	EBL	EBT	WBT	WBR	NBL	NBT	NBR
Lane Group Flow (vph)	152	200	155	92	136	5	51
v/c Ratio	0.32	0.27	0.21	0.14	0.21	0.01	0.09
Control Delay	10.7	9.4	8.8	3.1	8.9	7.2	3.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.7	9.4	8.8	3.1	8.9	7.2	3.6
Queue Length 50th (ft)	22	28	21	0	19	1	0
Queue Length 95th (ft)	53	60	47	17	43	5	13
Internal Link Dist (ft)		311	224			399	
Turn Bay Length (ft)	125			25			100
Base Capacity (vph)	472	730	745	637	656	760	551
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.32	0.27	0.21	0.14	0.21	0.01	0.09

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	140	184	0	0	143	85	125	5	47	0	0	0
Movement Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj. Factor (A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj. Factors	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	0.00
Adj. Sat. Flow Rate, veh/h/ln	1792	1827	0	0	1863	1712	1727	1900	1532	0	0	0
Lanes	1	1	0	0	1	1	1	1	1	0	0	0
Lane Assignment												
Capacity, veh/h	588	731	0	0	745	582	180	760	521	0	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Proportion Arriving On Green	0.40	0.40	0.00	0.00	0.40	0.40	0.40	0.40	0.40	0.00	0.00	0.00
Lane Group Delay, s/veh	10.9	9.0	0.0	0.0	8.5	8.3	45.1	7.2	7.9	0.0	0.0	0.0
Lane Group LOS	B	A			A	A	D	A	A			
Approach Volume, veh/h		352			248			192			0	
Approach Delay, s/veh		9.8			8.4			34.1			0.0	
Approach LOS		A			A			C				

Timer:	1	2	3	4	5	6	7	8
Assigned Phase		2				6		8
Case No		6.0				7.0		5.0
Phase Duration (G+Y+Rc), s		20.00				20.00		20.00
Change Period (Y+Rc), s		4.00				4.00		4.00
Max. Allowable Headway (MAH), s		4.73				4.73		3.84
Maximum Green Setting (Gmax), s		16.00				16.00		16.00
Max. Queue Clearance Time (g_c+I1), s		8.06				4.18		18.00
Green Extension Time (g_e), s		1.84				2.29		0.00
Probability of Phase Call (p_c)		1.000				1.000		1.000
Probability of Max Out (p_x)		0.506				0.129		1.000

Left-Turn Movement Data								
Assigned Movement		5						3
Mvmt. Sat Flow, veh/h		1180.06						1645.02

Through Movement Data								
Assigned Movement		2				6		8
Mvmt. Sat Flow, veh/h		1826.92				1862.73		1900.00

Right-Turn Movement Data								
Assigned Movement		12				16		18
Mvmt. Sat Flow, veh/h		0.00				1454.95		1302.42

Left Lane Group Data								
Assigned Movement	0	5	0	0	0	0	0	3
Lane Assignment		L						L
Lanes in Group	0	1	0	0	0	0	0	1
Group Volume (v), veh/h	0.0	152.2	0.0	0.0	0.0	0.0	0.0	135.9
Group Sat. Flow (s), veh/h/ln	0.0	1180.1	0.0	0.0	0.0	0.0	0.0	1645.0
Queue Serve Time (g_s), s	0.0	3.9	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Queue Clear Time (g_c), s	0.0	6.1	0.0	0.0	0.0	0.0	0.0	16.0

Perm LT Sat Flow Rate (s_l), veh/h/ln	0.0	1180.1	0.0	0.0	0.0	0.0	0.0	1645.0
Shared LT Sat Flow (s_sh), veh/h/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Perm LT Eff. Green (g_p), s	0.0	16.0	0.0	0.0	0.0	0.0	0.0	16.0
Perm LT Serve Time (g_u), s	0.0	13.8	0.0	0.0	0.0	0.0	0.0	0.0
Perm LT Que Serve Time (g_ps), s	0.0	3.9	0.0	0.0	0.0	0.0	0.0	0.0
Time to First Blk (g_f), s	0.0	0.0	0.0	0.0	0.0	16.0	0.0	0.0
Serve Time pre Blk (g_fs), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Proportion LT Inside Lane (P_L)	0.000	1.000	0.000	0.000	0.000	0.000	0.000	1.000
Lane Group Capacity (c), veh/h	0.0	587.6	0.0	0.0	0.0	0.0	0.0	180.0
Volume-to-Capacity Ratio (X)	0.000	0.259	0.000	0.000	0.000	0.000	0.000	0.755
Available Capacity (c_a), veh/h	0.0	587.6	0.0	0.0	0.0	0.0	0.0	180.0
Upstream Filter Factor (I)	0.000	1.000	0.000	0.000	0.000	0.000	0.000	1.000
Uniform Delay (d1), s/veh	0.0	9.8	0.0	0.0	0.0	0.0	0.0	20.0
Incremental Delay (d2), s/veh	0.0	1.1	0.0	0.0	0.0	0.0	0.0	25.1
Initial Queue Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	10.9	0.0	0.0	0.0	0.0	0.0	45.1
First-Term Queue (Q1), veh/ln	0.0	0.7	0.0	0.0	0.0	0.0	0.0	1.1
Second-Term Queue (Q2), veh/ln	0.0	0.2	0.0	0.0	0.0	0.0	0.0	1.3
Third-Term Queue (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Percentile bk-of-que factor (f_B%)	0.000	1.000	0.000	0.000	0.000	0.000	0.000	1.000
Percentile Back of Queue (Q%), veh/ln	0.0	0.9	0.0	0.0	0.0	0.0	0.0	2.3
Percentile Storage Ratio (RQ%)	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.14
Initial Queue (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Queue (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Queue (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Capacity (cs), veh/h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Initial Queue Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Middle Lane Group Data								
Assigned Movement	0	2	0	0	0	6	0	8
Lane Assignment		T				T		T
Lanes in Group	0	1	0	0	0	1	0	1
Group Volume (v), veh/h	0.0	200.0	0.0	0.0	0.0	155.4	0.0	5.4
Group Sat. Flow (s), veh/h/ln	0.0	1826.9	0.0	0.0	0.0	1862.7	0.0	1900.0
Queue Serve Time (g_s), s	0.0	3.0	0.0	0.0	0.0	2.2	0.0	0.1
Cycle Queue Clear Time (g_c), s	0.0	3.0	0.0	0.0	0.0	2.2	0.0	0.1
Lane Group Capacity (c), veh/h	0.0	730.8	0.0	0.0	0.0	745.1	0.0	760.0
Volume-to-Capacity Ratio (X)	0.000	0.274	0.000	0.000	0.000	0.209	0.000	0.007
Available Capacity (c_a), veh/h	0.0	730.8	0.0	0.0	0.0	745.1	0.0	760.0
Upstream Filter Factor (I)	0.000	1.000	0.000	0.000	0.000	1.000	0.000	1.000
Uniform Delay (d1), s/veh	0.0	8.1	0.0	0.0	0.0	7.9	0.0	7.2
Incremental Delay (d2), s/veh	0.0	0.9	0.0	0.0	0.0	0.6	0.0	0.0
Initial Queue Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	9.0	0.0	0.0	0.0	8.5	0.0	7.2
First-Term Queue (Q1), veh/ln	0.0	0.8	0.0	0.0	0.0	0.6	0.0	0.0
Second-Term Queue (Q2), veh/ln	0.0	0.2	0.0	0.0	0.0	0.1	0.0	0.0
Third-Term Queue (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Percentile bk-of-que factor (f_B%)	0.000	1.000	0.000	0.000	0.000	1.000	0.000	1.000
Percentile Back of Queue (Q%), veh/ln	0.0	1.0	0.0	0.0	0.0	0.7	0.0	0.0
Percentile Storage Ratio (RQ%)	0.00	0.07	0.00	0.00	0.00	0.09	0.00	0.00

Initial Queue (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Queue (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Queue (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Capacity (cs), veh/h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Initial Queue Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Right Lane Group Data								
Assigned Movement	0	12	0	0	0	16	0	18
Lane Assignment						R		R
Lanes in Group	0	0	0	0	0	1	0	1
Group Volume (v), veh/h	0.0	0.0	0.0	0.0	0.0	92.4	0.0	51.1
Group Sat. Flow (s), veh/h/ln	0.0	0.0	0.0	0.0	0.0	1455.0	0.0	1302.4
Queue Serve Time (g_s), s	0.0	0.0	0.0	0.0	0.0	1.6	0.0	1.0
Cycle Queue Clear Time (g_c), s	0.0	0.0	0.0	0.0	0.0	1.6	0.0	1.0
Prot RT Sat Flow Rate (s_R), veh/h/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prot RT Eff. Green (g_R), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Proportion RT Outside Lane (P_R)	0.000	0.000	0.000	0.000	0.000	1.000	0.000	1.000
Lane Group Capacity (c), veh/h	0.0	0.0	0.0	0.0	0.0	582.0	0.0	521.0
Volume-to-Capacity Ratio (X)	0.000	0.000	0.000	0.000	0.000	0.159	0.000	0.098
Available Capacity (c_a), veh/h	0.0	0.0	0.0	0.0	0.0	582.0	0.0	521.0
Upstream Filter Factor (I)	0.000	0.000	0.000	0.000	0.000	1.000	0.000	1.000
Uniform Delay (d1), s/veh	0.0	0.0	0.0	0.0	0.0	7.7	0.0	7.5
Incremental Delay (d2), s/veh	0.0	0.0	0.0	0.0	0.0	0.6	0.0	0.4
Initial Queue Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	0.0	0.0	0.0	0.0	8.3	0.0	7.9
First-Term Queue (Q1), veh/ln	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.2
Second-Term Queue (Q2), veh/ln	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1
Third-Term Queue (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Percentile bk-of-que factor (f_B%)	0.000	1.000	0.000	0.000	0.000	1.000	0.000	1.000
Percentile Back of Queue (Q%), veh/ln	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.2
Percentile Storage Ratio (RQ%)	0.00	0.00	0.00	0.00	0.00	0.48	0.00	0.07
Initial Queue (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Queue (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Queue (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Capacity (cs), veh/h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Initial Queue Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Intersection Summary	
HCM 2010 Control Delay	15.3
HCM 2010 Level of Service	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	140	184	0	0	143	85	125	5	47	0	0	0
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	0.00
Adj Sat Flow Rate	1792	1827	0	0	1863	1712	1727	1900	1532	0	0	0
Lanes	1	1	0	0	1	1	1	1	1	0	0	0
Capacity, veh/h	588	731	0	0	745	582	180	760	521	0	0	0
Arriving On Green	0.40	0.40	0.00	0.00	0.40	0.40	0.40	0.40	0.40	0.00	0.00	0.00
Sat Flow, veh/h	1180.1	1826.9	0.0		1862.7	1455.0	1645.0	1900.0	1302.4		0	
Grp Volume(v), veh/h	152.2	200.0	0.0		155.4	92.4	135.9	5.4	51.1		0.0	
Grp Sat Flow(s),veh/h/ln	1180.1	1826.9	0.0		1862.7	1455.0	1645.0	1900.0	1302.4			
Q Serve(g_s), s	3.9	3.0	0.0		2.2	1.6	0.0	0.1	1.0			
Cycle Q Clear(g_c), s	6.1	3.0	0.0		2.2	1.6	16.0	0.1	1.0			
Proportion In Lane	1.000		0.000			1.000	1.000		1.000			
Lane Grp Cap(c), veh/h	587.6	730.8	0.0		745.1	582.0	180.0	760.0	521.0			
V/C Ratio(X)	0.259	0.274	0.000		0.209	0.159	0.755	0.007	0.098			
Avail Cap(c_a), veh/h	587.6	730.8	0.0		745.1	582.0	180.0	760.0	521.0			
HCM Platoon Ratio	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	1.000	1.000	0.000		1.000	1.000	1.000	1.000	1.000			
Uniform Delay (d), s/veh	9.8	8.1	0.0		7.9	7.7	20.0	7.2	7.5			
Incr Delay (d2), s/veh	1.1	0.9	0.0		0.6	0.6	25.1	0.0	0.4			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0			
Lane Group Delay (d), s/veh	10.9	9.0	0.0		8.5	8.3	45.1	7.2	7.9			
Lane Group LOS	B	A			A	A	D	A	A			
Approach Volume, veh/h		352			248			192				
Approach Delay, s/veh		9.8			8.4			34.1				
Approach LOS		A			A			C				

Timer			
Assigned Phase	2	6	8
Phase Duration (G+Y+Rc), s	20.00	20.00	20.00
Change Period (Y+Rc), s	4.00	4.00	4.00
Max Green Setting (Gmax), s	16.00	16.00	16.00
Max Q Clear Time (g_c+I1), s	8.06	4.18	18.00
Green Extension Time (p_c)	1.84	2.29	0.00

Intersection Summary	
HCM 2010 Control Delay	15.3
HCM 2010 Level of Service	B

APPENDIX 8: SIGNAL WARRANT ANALYSIS WORKSHEETS

KITTELSON & ASSOCIATES, INC.
610 SW Alder, Suite 700
Portland, Oregon 97205
(503) 228-5230
Fax: (503) 273-8169

Project #: 13592
Project Name: Karuk Casino
Analyst: MYB
Date: 8/13/2013
File: H:\projfile\13592 - Yreka Casino\signal_warrants\[2_SigWarrant_OberlinFairlane_Existing.x
Intersection: Oberlin / Fairlane
Scenario: Existing

Warrant Summary

Warrant	Name	Analyzed?	Met?
#1	Eight-Hour Vehicular Volume	Yes	No
#2	Four-Hour Vehicular volume	Yes	No
#3	Peak Hour	Yes	No
#4	Pedestrian Volume	No	-
#5	School Crossing	No	-
#6	Coordinated Signal System	No	-
#7	Crash Experience	No	-
#8	Roadway Network	No	-

Input Parameters

Volume Adjustment Factor =	1.0
North-South Approach =	Minor
East-West Approach =	Major
Major Street Thru Lanes =	1
Minor Street Thru Lanes =	2
Speed > 40 mph?	No
Population < 10,000?	Yes
Warrant Factor	70%
Peak Hour or Daily Count?	Peak Hour
Major Street: 4th-Highest Hour / Peak Hour	80%
Major Street: 8th-Highest Hour / Peak Hour	60%
Minor Street: 4th-Highest Hour / Peak Hour	80%
Minor Street: 8th-Highest Hour / Peak Hour	60%

Raw Traffic Volumes

Hour		Major Street		Minor Street	
Begin	End	EB	WB	NB	SB
5:00 PM	6:00 PM	320	249	165	19
2nd	Highest Hour	307	239	158	18
3rd	Highest Hour	301	234	155	18
4th	Highest Hour	256	199	132	15
5th	Highest Hour	243	189	125	14
6th	Highest Hour	218	169	112	13
7th	Highest Hour	202	157	104	12
8th	Highest Hour	192	149	99	11
9th	Highest Hour	154	120	79	9
10th	Highest Hour	144	112	74	9
11th	Highest Hour	144	112	74	9
12th	Highest Hour	138	107	71	8
13th	Highest Hour	125	97	64	7
14th	Highest Hour	115	90	59	7
15th	Highest Hour	115	90	59	7
16th	Highest Hour	112	87	58	7
17th	Highest Hour	64	50	33	4
18th	Highest Hour	35	27	18	2
19th	Highest Hour	32	25	17	2
20th	Highest Hour	13	10	7	1
21st	Highest Hour	10	7	5	1
22nd	Highest Hour	10	7	5	1
23rd	Highest Hour	6	5	3	0
24th	Highest Hour	6	5	3	0

Analysis Traffic Volumes

Hour		Major Street		Minor Street	
Begin	End	EB	WB	NB	SB
5:00 PM	6:00 PM	320	249	165	19
2nd	Highest Hour	307	239	158	18
3rd	Highest Hour	301	234	155	18
4th	Highest Hour	256	199	132	15
5th	Highest Hour	243	189	125	14
6th	Highest Hour	218	169	112	13
7th	Highest Hour	202	157	104	12
8th	Highest Hour	192	149	99	11
9th	Highest Hour	154	120	79	9
10th	Highest Hour	144	112	74	9
11th	Highest Hour	144	112	74	9
12th	Highest Hour	138	107	71	8
13th	Highest Hour	125	97	64	7
14th	Highest Hour	115	90	59	7
15th	Highest Hour	115	90	59	7
16th	Highest Hour	112	87	58	7
17th	Highest Hour	64	50	33	4
18th	Highest Hour	35	27	18	2
19th	Highest Hour	32	25	17	2
20th	Highest Hour	13	10	7	1
21st	Highest Hour	10	7	5	1
22nd	Highest Hour	10	7	5	1
23rd	Highest Hour	6	5	3	0
24th	Highest Hour	6	5	3	0

KITTELSON & ASSOCIATES, INC.
610 SW Alder, Suite 700
Portland, Oregon 97205
(503) 228-5230
Fax: (503) 273-8169

Project #: 13592
Project Name: Karuk Casino
Analyst: MYB
Date: 8/13/2013
File: H:\projfile\13592 - Yreka Casino\signal_warrants\[2_SigWarrant_OberlinFairlane_ExistingP
Intersection: Oberlin / Fairlane
Scenario: Existing Plus Project Phase 1

Warrant Summary

Warrant	Name	Analyzed?	Met?
#1	Eight-Hour Vehicular Volume	Yes	No
#2	Four-Hour Vehicular volume	Yes	No
#3	Peak Hour	Yes	No
#4	Pedestrian Volume	No	-
#5	School Crossing	No	-
#6	Coordinated Signal System	No	-
#7	Crash Experience	No	-
#8	Roadway Network	No	-

Raw Traffic Volumes

Hour		Major Street		Minor Street	
Begin	End	EB	WB	NB	SB
5:00 PM	6:00 PM	325	251	174	19
2nd	Highest Hour	312	241	167	18
3rd	Highest Hour	306	236	164	18
4th	Highest Hour	260	201	139	15
5th	Highest Hour	247	191	132	14
6th	Highest Hour	221	171	118	13
7th	Highest Hour	205	158	110	12
8th	Highest Hour	195	151	104	11
9th	Highest Hour	156	120	84	9
10th	Highest Hour	146	113	78	9
11th	Highest Hour	146	113	78	9
12th	Highest Hour	140	108	75	8
13th	Highest Hour	127	98	68	7
14th	Highest Hour	117	90	63	7
15th	Highest Hour	117	90	63	7
16th	Highest Hour	114	88	61	7
17th	Highest Hour	65	50	35	4
18th	Highest Hour	36	28	19	2
19th	Highest Hour	33	25	17	2
20th	Highest Hour	13	10	7	1
21st	Highest Hour	10	8	5	1
22nd	Highest Hour	10	8	5	1
23rd	Highest Hour	7	5	3	0
24th	Highest Hour	7	5	3	0

Input Parameters

Volume Adjustment Factor =	1.0
North-South Approach =	Minor
East-West Approach =	Major
Major Street Thru Lanes =	1
Minor Street Thru Lanes =	2
Speed > 40 mph?	No
Population < 10,000?	Yes
Warrant Factor	70%
Peak Hour or Daily Count?	Peak Hour
Major Street: 4th-Highest Hour / Peak Hour	80%
Major Street: 8th-Highest Hour / Peak Hour	60%
Minor Street: 4th-Highest Hour / Peak Hour	80%
Minor Street: 8th-Highest Hour / Peak Hour	60%

Analysis Traffic Volumes

Hour		Major Street		Minor Street	
Begin	End	EB	WB	NB	SB
5:00 PM	6:00 PM	325	251	174	19
2nd	Highest Hour	312	241	167	18
3rd	Highest Hour	306	236	164	18
4th	Highest Hour	260	201	139	15
5th	Highest Hour	247	191	132	14
6th	Highest Hour	221	171	118	13
7th	Highest Hour	205	158	110	12
8th	Highest Hour	195	151	104	11
9th	Highest Hour	156	120	84	9
10th	Highest Hour	146	113	78	9
11th	Highest Hour	146	113	78	9
12th	Highest Hour	140	108	75	8
13th	Highest Hour	127	98	68	7
14th	Highest Hour	117	90	63	7
15th	Highest Hour	117	90	63	7
16th	Highest Hour	114	88	61	7
17th	Highest Hour	65	50	35	4
18th	Highest Hour	36	28	19	2
19th	Highest Hour	33	25	17	2
20th	Highest Hour	13	10	7	1
21st	Highest Hour	10	8	5	1
22nd	Highest Hour	10	8	5	1
23rd	Highest Hour	7	5	3	0
24th	Highest Hour	7	5	3	0

KITTELSON & ASSOCIATES, INC.
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Portland, Oregon 97205
(503) 228-5230
Fax: (503) 273-8169

Project #: 13592
Project Name: Karuk Casino
Analyst: MYB
Date: 8/13/2013
File: H:\projfile\13592 - Yreka Casino\signal_warrants\[2_SigWarrant_OberlinFairlane_ExistingP
Intersection: Oberlin / Fairlane
Scenario: Existing Plus Project Phase 2

Warrant Summary

Warrant	Name	Analyzed?	Met?
#1	Eight-Hour Vehicular Volume	Yes	No
#2	Four-Hour Vehicular volume	Yes	No
#3	Peak Hour	Yes	No
#4	Pedestrian Volume	No	-
#5	School Crossing	No	-
#6	Coordinated Signal System	No	-
#7	Crash Experience	No	-
#8	Roadway Network	No	-

Raw Traffic Volumes

Hour		Major Street		Minor Street	
Begin	End	EB	WB	NB	SB
5:00 PM	6:00 PM	330	253	180	19
2nd	Highest Hour	317	243	173	18
3rd	Highest Hour	310	238	169	18
4th	Highest Hour	264	202	144	15
5th	Highest Hour	251	192	137	14
6th	Highest Hour	224	172	122	13
7th	Highest Hour	208	159	113	12
8th	Highest Hour	198	152	108	11
9th	Highest Hour	158	121	86	9
10th	Highest Hour	149	114	81	9
11th	Highest Hour	149	114	81	9
12th	Highest Hour	142	109	77	8
13th	Highest Hour	129	99	70	7
14th	Highest Hour	119	91	65	7
15th	Highest Hour	119	91	65	7
16th	Highest Hour	116	89	63	7
17th	Highest Hour	66	51	36	4
18th	Highest Hour	36	28	20	2
19th	Highest Hour	33	25	18	2
20th	Highest Hour	13	10	7	1
21st	Highest Hour	10	8	5	1
22nd	Highest Hour	10	8	5	1
23rd	Highest Hour	7	5	4	0
24th	Highest Hour	7	5	4	0

Input Parameters

Volume Adjustment Factor =	1.0
North-South Approach =	Minor
East-West Approach =	Major
Major Street Thru Lanes =	1
Minor Street Thru Lanes =	2
Speed > 40 mph?	No
Population < 10,000?	Yes
Warrant Factor	70%
Peak Hour or Daily Count?	Peak Hour
Major Street: 4th-Highest Hour / Peak Hour	80%
Major Street: 8th-Highest Hour / Peak Hour	60%
Minor Street: 4th-Highest Hour / Peak Hour	80%
Minor Street: 8th-Highest Hour / Peak Hour	60%

Analysis Traffic Volumes

Hour		Major Street		Minor Street	
Begin	End	EB	WB	NB	SB
5:00 PM	6:00 PM	330	253	180	19
2nd	Highest Hour	317	243	173	18
3rd	Highest Hour	310	238	169	18
4th	Highest Hour	264	202	144	15
5th	Highest Hour	251	192	137	14
6th	Highest Hour	224	172	122	13
7th	Highest Hour	208	159	113	12
8th	Highest Hour	198	152	108	11
9th	Highest Hour	158	121	86	9
10th	Highest Hour	149	114	81	9
11th	Highest Hour	149	114	81	9
12th	Highest Hour	142	109	77	8
13th	Highest Hour	129	99	70	7
14th	Highest Hour	119	91	65	7
15th	Highest Hour	119	91	65	7
16th	Highest Hour	116	89	63	7
17th	Highest Hour	66	51	36	4
18th	Highest Hour	36	28	20	2
19th	Highest Hour	33	25	18	2
20th	Highest Hour	13	10	7	1
21st	Highest Hour	10	8	5	1
22nd	Highest Hour	10	8	5	1
23rd	Highest Hour	7	5	4	0
24th	Highest Hour	7	5	4	0

KITTELSON & ASSOCIATES, INC.
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Project #: 13592
Project Name: Karuk Casino
Analyst: MYB
Date: 8/13/2013
File: H:\projfile\13592 - Yreka Casino\signal_warrants\[2_SigWarrant_OberlinFairlane_CumNP.xls
Intersection: Oberlin / Fairlane
Scenario: Cumulative No Project

Warrant Summary

Warrant	Name	Analyzed?	Met?
#1	Eight-Hour Vehicular Volume	Yes	No
#2	Four-Hour Vehicular volume	Yes	No
#3	Peak Hour	Yes	No
#4	Pedestrian Volume	No	-
#5	School Crossing	No	-
#6	Coordinated Signal System	No	-
#7	Crash Experience	No	-
#8	Roadway Network	No	-

Raw Traffic Volumes

Hour		Major Street		Minor Street	
Begin	End	EB	WB	NB	SB
5:00 PM	6:00 PM	345	265	180	20
2nd	Highest Hour	331	254	173	19
3rd	Highest Hour	324	249	169	19
4th	Highest Hour	276	212	144	16
5th	Highest Hour	262	201	137	15
6th	Highest Hour	235	180	122	14
7th	Highest Hour	217	167	113	13
8th	Highest Hour	207	159	108	12
9th	Highest Hour	166	127	86	10
10th	Highest Hour	155	119	81	9
11th	Highest Hour	155	119	81	9
12th	Highest Hour	148	114	77	9
13th	Highest Hour	135	103	70	8
14th	Highest Hour	124	95	65	7
15th	Highest Hour	124	95	65	7
16th	Highest Hour	121	93	63	7
17th	Highest Hour	69	53	36	4
18th	Highest Hour	38	29	20	2
19th	Highest Hour	35	27	18	2
20th	Highest Hour	14	11	7	1
21st	Highest Hour	10	8	5	1
22nd	Highest Hour	10	8	5	1
23rd	Highest Hour	7	5	4	0
24th	Highest Hour	7	5	4	0

Input Parameters

Volume Adjustment Factor =	1.0
North-South Approach =	Minor
East-West Approach =	Major
Major Street Thru Lanes =	1
Minor Street Thru Lanes =	2
Speed > 40 mph?	No
Population < 10,000?	Yes
Warrant Factor	70%
Peak Hour or Daily Count?	Peak Hour
Major Street: 4th-Highest Hour / Peak Hour	80%
Major Street: 8th-Highest Hour / Peak Hour	60%
Minor Street: 4th-Highest Hour / Peak Hour	80%
Minor Street: 8th-Highest Hour / Peak Hour	60%

Analysis Traffic Volumes

Hour		Major Street		Minor Street	
Begin	End	EB	WB	NB	SB
5:00 PM	6:00 PM	345	265	180	20
2nd	Highest Hour	331	254	173	19
3rd	Highest Hour	324	249	169	19
4th	Highest Hour	276	212	144	16
5th	Highest Hour	262	201	137	15
6th	Highest Hour	235	180	122	14
7th	Highest Hour	217	167	113	13
8th	Highest Hour	207	159	108	12
9th	Highest Hour	166	127	86	10
10th	Highest Hour	155	119	81	9
11th	Highest Hour	155	119	81	9
12th	Highest Hour	148	114	77	9
13th	Highest Hour	135	103	70	8
14th	Highest Hour	124	95	65	7
15th	Highest Hour	124	95	65	7
16th	Highest Hour	121	93	63	7
17th	Highest Hour	69	53	36	4
18th	Highest Hour	38	29	20	2
19th	Highest Hour	35	27	18	2
20th	Highest Hour	14	11	7	1
21st	Highest Hour	10	8	5	1
22nd	Highest Hour	10	8	5	1
23rd	Highest Hour	7	5	4	0
24th	Highest Hour	7	5	4	0

KITTELSON & ASSOCIATES, INC.
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Project #: 13592
Project Name: Karuk Casino
Analyst: MYB
Date: 8/13/2013
File: H:\projfile\13592 - Yreka Casino\signal_warrants\[2_SigWarrant_OberlinFairlane_CumPP.xls
Intersection: Oberlin / Fairlane
Scenario: Cumulative Plus Project

Warrant Summary

Warrant	Name	Analyzed?	Met?
#1	Eight-Hour Vehicular Volume	Yes	No
#2	Four-Hour Vehicular volume	Yes	No
#3	Peak Hour	Yes	No
#4	Pedestrian Volume	No	-
#5	School Crossing	No	-
#6	Coordinated Signal System	No	-
#7	Crash Experience	No	-
#8	Roadway Network	No	-

Input Parameters

Volume Adjustment Factor =	1.0
North-South Approach =	Minor
East-West Approach =	Major
Major Street Thru Lanes =	1
Minor Street Thru Lanes =	2
Speed > 40 mph?	No
Population < 10,000?	Yes
Warrant Factor	70%
Peak Hour or Daily Count?	Peak Hour
Major Street: 4th-Highest Hour / Peak Hour	80%
Major Street: 8th-Highest Hour / Peak Hour	60%
Minor Street: 4th-Highest Hour / Peak Hour	80%
Minor Street: 8th-Highest Hour / Peak Hour	60%

Raw Traffic Volumes

Hour		Major Street		Minor Street	
Begin	End	EB	WB	NB	SB
5:00 PM	6:00 PM	355	269	195	20
2nd	Highest Hour	341	258	187	19
3rd	Highest Hour	334	253	183	19
4th	Highest Hour	284	215	156	16
5th	Highest Hour	270	204	148	15
6th	Highest Hour	241	183	133	14
7th	Highest Hour	224	169	123	13
8th	Highest Hour	213	161	117	12
9th	Highest Hour	170	129	94	10
10th	Highest Hour	160	121	88	9
11th	Highest Hour	160	121	88	9
12th	Highest Hour	153	116	84	9
13th	Highest Hour	138	105	76	8
14th	Highest Hour	128	97	70	7
15th	Highest Hour	128	97	70	7
16th	Highest Hour	124	94	68	7
17th	Highest Hour	71	54	39	4
18th	Highest Hour	39	30	21	2
19th	Highest Hour	36	27	20	2
20th	Highest Hour	14	11	8	1
21st	Highest Hour	11	8	6	1
22nd	Highest Hour	11	8	6	1
23rd	Highest Hour	7	5	4	0
24th	Highest Hour	7	5	4	0

Analysis Traffic Volumes

Hour		Major Street		Minor Street	
Begin	End	EB	WB	NB	SB
5:00 PM	6:00 PM	355	269	195	20
2nd	Highest Hour	341	258	187	19
3rd	Highest Hour	334	253	183	19
4th	Highest Hour	284	215	156	16
5th	Highest Hour	270	204	148	15
6th	Highest Hour	241	183	133	14
7th	Highest Hour	224	169	123	13
8th	Highest Hour	213	161	117	12
9th	Highest Hour	170	129	94	10
10th	Highest Hour	160	121	88	9
11th	Highest Hour	160	121	88	9
12th	Highest Hour	153	116	84	9
13th	Highest Hour	138	105	76	8
14th	Highest Hour	128	97	70	7
15th	Highest Hour	128	97	70	7
16th	Highest Hour	124	94	68	7
17th	Highest Hour	71	54	39	4
18th	Highest Hour	39	30	21	2
19th	Highest Hour	36	27	20	2
20th	Highest Hour	14	11	8	1
21st	Highest Hour	11	8	6	1
22nd	Highest Hour	11	8	6	1
23rd	Highest Hour	7	5	4	0
24th	Highest Hour	7	5	4	0

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Project #: 13592
Project Name: Karuk Casino
Analyst: MYB
Date: 9/3/2013
File: K:\H_Sacramento\projfile\13592 - Yreka Casino\signal_warrants\[3_SigWarrant_OberlinCampbell_Existing.
Intersection: Oberlin / Campbell
Scenario: Existing

Warrant Summary

Warrant	Name	Analyzed?	Met?
#1	Eight-Hour Vehicular Volume	Yes	No
#2	Four-Hour Vehicular volume	Yes	No
#3	Peak Hour	Yes	No
#4	Pedestrian Volume	No	-
#5	School Crossing	No	-
#6	Coordinated Signal System	No	-
#7	Crash Experience	No	-
#8	Roadway Network	No	-

Input Parameters

Volume Adjustment Factor =	1.0
North-South Approach =	Minor
East-West Approach =	Major
Major Street Thru Lanes =	1
Minor Street Thru Lanes =	1
Speed > 40 mph?	No
Population < 10,000?	Yes
Warrant Factor	70%
Peak Hour or Daily Count?	Peak Hour
Major Street: 4th-Highest Hour / Peak Hour	80%
Major Street: 8th-Highest Hour / Peak Hour	60%
Minor Street: 4th-Highest Hour / Peak Hour	80%
Minor Street: 8th-Highest Hour / Peak Hour	60%

Raw Traffic Volumes

Hour		Major Street		Minor Street	
Begin	End	EB	WB	NB	SB
5:00 PM	6:00 PM	312	163	30	0
2nd	Highest Hour	300	156	29	0
3rd	Highest Hour	293	153	28	0
4th	Highest Hour	250	130	24	0
5th	Highest Hour	237	124	23	0
6th	Highest Hour	212	111	20	0
7th	Highest Hour	197	103	19	0
8th	Highest Hour	187	98	18	0
9th	Highest Hour	150	78	14	0
10th	Highest Hour	140	73	14	0
11th	Highest Hour	140	73	14	0
12th	Highest Hour	134	70	13	0
13th	Highest Hour	122	64	12	0
14th	Highest Hour	112	59	11	0
15th	Highest Hour	112	59	11	0
16th	Highest Hour	109	57	11	0
17th	Highest Hour	62	33	6	0
18th	Highest Hour	34	18	3	0
19th	Highest Hour	31	16	3	0
20th	Highest Hour	12	7	1	0
21st	Highest Hour	9	5	1	0
22nd	Highest Hour	9	5	1	0
23rd	Highest Hour	6	3	1	0
24th	Highest Hour	6	3	1	0

Analysis Traffic Volumes

Hour		Major Street		Minor Street	
Begin	End	EB	WB	NB	SB
5:00 PM	6:00 PM	312	163	30	0
2nd	Highest Hour	300	156	29	0
3rd	Highest Hour	293	153	28	0
4th	Highest Hour	250	130	24	0
5th	Highest Hour	237	124	23	0
6th	Highest Hour	212	111	20	0
7th	Highest Hour	197	103	19	0
8th	Highest Hour	187	98	18	0
9th	Highest Hour	150	78	14	0
10th	Highest Hour	140	73	14	0
11th	Highest Hour	140	73	14	0
12th	Highest Hour	134	70	13	0
13th	Highest Hour	122	64	12	0
14th	Highest Hour	112	59	11	0
15th	Highest Hour	112	59	11	0
16th	Highest Hour	109	57	11	0
17th	Highest Hour	62	33	6	0
18th	Highest Hour	34	18	3	0
19th	Highest Hour	31	16	3	0
20th	Highest Hour	12	7	1	0
21st	Highest Hour	9	5	1	0
22nd	Highest Hour	9	5	1	0
23rd	Highest Hour	6	3	1	0
24th	Highest Hour	6	3	1	0

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Project #: 13592
Project Name: Karuk Casino
Analyst: MYB
Date: 9/3/2013
File: K:\H_Sacramento\projfile\13592 - Yreka Casino\signal_warrants\[3_SigWarrant_OberlinCampbell_PP_Phase
Intersection: Oberlin / Campbell
Scenario: Existing Plus Project Phase 1

Warrant Summary

Warrant	Name	Analyzed?	Met?
#1	Eight-Hour Vehicular Volume	Yes	No
#2	Four-Hour Vehicular volume	Yes	No
#3	Peak Hour	Yes	No
#4	Pedestrian Volume	No	-
#5	School Crossing	No	-
#6	Coordinated Signal System	No	-
#7	Crash Experience	No	-
#8	Roadway Network	No	-

Input Parameters

Volume Adjustment Factor =	1.0
North-South Approach =	Minor
East-West Approach =	Major
Major Street Thru Lanes =	1
Minor Street Thru Lanes =	1
Speed > 40 mph?	No
Population < 10,000?	Yes
Warrant Factor	70%
Peak Hour or Daily Count?	Peak Hour
Major Street: 4th-Highest Hour / Peak Hour	80%
Major Street: 8th-Highest Hour / Peak Hour	60%
Minor Street: 4th-Highest Hour / Peak Hour	80%
Minor Street: 8th-Highest Hour / Peak Hour	60%

Raw Traffic Volumes

Hour		Major Street		Minor Street	
Begin	End	EB	WB	NB	SB
5:00 PM	6:00 PM	315	165	31	0
2nd	Highest Hour	302	158	30	0
3rd	Highest Hour	296	155	29	0
4th	Highest Hour	252	132	25	0
5th	Highest Hour	239	125	24	0
6th	Highest Hour	214	112	21	0
7th	Highest Hour	198	104	20	0
8th	Highest Hour	189	99	19	0
9th	Highest Hour	151	79	15	0
10th	Highest Hour	142	74	14	0
11th	Highest Hour	142	74	14	0
12th	Highest Hour	135	71	13	0
13th	Highest Hour	123	64	12	0
14th	Highest Hour	113	59	11	0
15th	Highest Hour	113	59	11	0
16th	Highest Hour	110	58	11	0
17th	Highest Hour	63	33	6	0
18th	Highest Hour	35	18	3	0
19th	Highest Hour	32	17	3	0
20th	Highest Hour	13	7	1	0
21st	Highest Hour	9	5	1	0
22nd	Highest Hour	9	5	1	0
23rd	Highest Hour	6	3	1	0
24th	Highest Hour	6	3	1	0

Analysis Traffic Volumes

Hour		Major Street		Minor Street	
Begin	End	EB	WB	NB	SB
5:00 PM	6:00 PM	315	165	31	0
2nd	Highest Hour	302	158	30	0
3rd	Highest Hour	296	155	29	0
4th	Highest Hour	252	132	25	0
5th	Highest Hour	239	125	24	0
6th	Highest Hour	214	112	21	0
7th	Highest Hour	198	104	20	0
8th	Highest Hour	189	99	19	0
9th	Highest Hour	151	79	15	0
10th	Highest Hour	142	74	14	0
11th	Highest Hour	142	74	14	0
12th	Highest Hour	135	71	13	0
13th	Highest Hour	123	64	12	0
14th	Highest Hour	113	59	11	0
15th	Highest Hour	113	59	11	0
16th	Highest Hour	110	58	11	0
17th	Highest Hour	63	33	6	0
18th	Highest Hour	35	18	3	0
19th	Highest Hour	32	17	3	0
20th	Highest Hour	13	7	1	0
21st	Highest Hour	9	5	1	0
22nd	Highest Hour	9	5	1	0
23rd	Highest Hour	6	3	1	0
24th	Highest Hour	6	3	1	0

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Project #: 13592
Project Name: Karuk Casino
Analyst: MYB
Date: 9/3/2013
File: K:\H_Sacramento\projfile\13592 - Yreka Casino\signal_warrants\[3_SigWarrant_OberlinCampbell_CumNP.xl
Intersection: Oberlin / Campbell
Scenario: Existing Plus Project Phase 2

Warrant Summary

Warrant	Name	Analyzed?	Met?
#1	Eight-Hour Vehicular Volume	Yes	No
#2	Four-Hour Vehicular volume	Yes	No
#3	Peak Hour	Yes	No
#4	Pedestrian Volume	No	-
#5	School Crossing	No	-
#6	Coordinated Signal System	No	-
#7	Crash Experience	No	-
#8	Roadway Network	No	-

Input Parameters

Volume Adjustment Factor =	1.0
North-South Approach =	Minor
East-West Approach =	Major
Major Street Thru Lanes =	1
Minor Street Thru Lanes =	1
Speed > 40 mph?	No
Population < 10,000?	Yes
Warrant Factor	70%
Peak Hour or Daily Count?	Peak Hour
Major Street: 4th-Highest Hour / Peak Hour	80%
Major Street: 8th-Highest Hour / Peak Hour	60%
Minor Street: 4th-Highest Hour / Peak Hour	80%
Minor Street: 8th-Highest Hour / Peak Hour	60%

Raw Traffic Volumes

Hour		Major Street		Minor Street	
Begin	End	EB	WB	NB	SB
5:00 PM	6:00 PM	317	166	32	0
2nd	Highest Hour	304	159	31	0
3rd	Highest Hour	298	156	30	0
4th	Highest Hour	254	133	26	0
5th	Highest Hour	241	126	24	0
6th	Highest Hour	216	113	22	0
7th	Highest Hour	200	105	20	0
8th	Highest Hour	190	100	19	0
9th	Highest Hour	152	80	15	0
10th	Highest Hour	143	75	14	0
11th	Highest Hour	143	75	14	0
12th	Highest Hour	136	71	14	0
13th	Highest Hour	124	65	12	0
14th	Highest Hour	114	60	12	0
15th	Highest Hour	114	60	12	0
16th	Highest Hour	111	58	11	0
17th	Highest Hour	63	33	6	0
18th	Highest Hour	35	18	4	0
19th	Highest Hour	32	17	3	0
20th	Highest Hour	13	7	1	0
21st	Highest Hour	10	5	1	0
22nd	Highest Hour	10	5	1	0
23rd	Highest Hour	6	3	1	0
24th	Highest Hour	6	3	1	0

Analysis Traffic Volumes

Hour		Major Street		Minor Street	
Begin	End	EB	WB	NB	SB
5:00 PM	6:00 PM	317	166	32	0
2nd	Highest Hour	304	159	31	0
3rd	Highest Hour	298	156	30	0
4th	Highest Hour	254	133	26	0
5th	Highest Hour	241	126	24	0
6th	Highest Hour	216	113	22	0
7th	Highest Hour	200	105	20	0
8th	Highest Hour	190	100	19	0
9th	Highest Hour	152	80	15	0
10th	Highest Hour	143	75	14	0
11th	Highest Hour	143	75	14	0
12th	Highest Hour	136	71	14	0
13th	Highest Hour	124	65	12	0
14th	Highest Hour	114	60	12	0
15th	Highest Hour	114	60	12	0
16th	Highest Hour	111	58	11	0
17th	Highest Hour	63	33	6	0
18th	Highest Hour	35	18	4	0
19th	Highest Hour	32	17	3	0
20th	Highest Hour	13	7	1	0
21st	Highest Hour	10	5	1	0
22nd	Highest Hour	10	5	1	0
23rd	Highest Hour	6	3	1	0
24th	Highest Hour	6	3	1	0

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Project #: 13592
Project Name: Karuk Casino
Analyst: MYB
Date: 9/3/2013
File: K:\H_Sacramento\projfile\13592 - Yreka Casino\signal_warrants\[3_SigWarrant_OberlinCampbell_CumNP.xl
Intersection: Oberlin / Campbell
Scenario: Cumulative No Project

Warrant Summary

Warrant	Name	Analyzed?	Met?
#1	Eight-Hour Vehicular Volume	Yes	No
#2	Four-Hour Vehicular volume	Yes	No
#3	Peak Hour	Yes	No
#4	Pedestrian Volume	No	-
#5	School Crossing	No	-
#6	Coordinated Signal System	No	-
#7	Crash Experience	No	-
#8	Roadway Network	No	-

Raw Traffic Volumes

Hour		Major Street		Minor Street	
Begin	End	EB	WB	NB	SB
5:00 PM	6:00 PM	335	180	35	0
2nd	Highest Hour	322	173	34	0
3rd	Highest Hour	315	169	33	0
4th	Highest Hour	268	144	28	0
5th	Highest Hour	255	137	27	0
6th	Highest Hour	228	122	24	0
7th	Highest Hour	211	113	22	0
8th	Highest Hour	201	108	21	0
9th	Highest Hour	161	86	17	0
10th	Highest Hour	151	81	16	0
11th	Highest Hour	151	81	16	0
12th	Highest Hour	144	77	15	0
13th	Highest Hour	131	70	14	0
14th	Highest Hour	121	65	13	0
15th	Highest Hour	121	65	13	0
16th	Highest Hour	117	63	12	0
17th	Highest Hour	67	36	7	0
18th	Highest Hour	37	20	4	0
19th	Highest Hour	34	18	4	0
20th	Highest Hour	13	7	1	0
21st	Highest Hour	10	5	1	0
22nd	Highest Hour	10	5	1	0
23rd	Highest Hour	7	4	1	0
24th	Highest Hour	7	4	1	0

Input Parameters

Volume Adjustment Factor =	1.0
North-South Approach =	Minor
East-West Approach =	Major
Major Street Thru Lanes =	1
Minor Street Thru Lanes =	1
Speed > 40 mph?	No
Population < 10,000?	Yes
Warrant Factor	70%
Peak Hour or Daily Count?	Peak Hour
Major Street: 4th-Highest Hour / Peak Hour	80%
Major Street: 8th-Highest Hour / Peak Hour	60%
Minor Street: 4th-Highest Hour / Peak Hour	80%
Minor Street: 8th-Highest Hour / Peak Hour	60%

Analysis Traffic Volumes

Hour		Major Street		Minor Street	
Begin	End	EB	WB	NB	SB
5:00 PM	6:00 PM	335	180	35	0
2nd	Highest Hour	322	173	34	0
3rd	Highest Hour	315	169	33	0
4th	Highest Hour	268	144	28	0
5th	Highest Hour	255	137	27	0
6th	Highest Hour	228	122	24	0
7th	Highest Hour	211	113	22	0
8th	Highest Hour	201	108	21	0
9th	Highest Hour	161	86	17	0
10th	Highest Hour	151	81	16	0
11th	Highest Hour	151	81	16	0
12th	Highest Hour	144	77	15	0
13th	Highest Hour	131	70	14	0
14th	Highest Hour	121	65	13	0
15th	Highest Hour	121	65	13	0
16th	Highest Hour	117	63	12	0
17th	Highest Hour	67	36	7	0
18th	Highest Hour	37	20	4	0
19th	Highest Hour	34	18	4	0
20th	Highest Hour	13	7	1	0
21st	Highest Hour	10	5	1	0
22nd	Highest Hour	10	5	1	0
23rd	Highest Hour	7	4	1	0
24th	Highest Hour	7	4	1	0

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Project #: 13592
Project Name: Karuk Casino
Analyst: MYB
Date: 9/3/2013
File: K:\H_Sacramento\projfile\13592 - Yreka Casino\signal_warrants\[3_SigWarrant_OberlinCampbell_CumPP.xl
Intersection: Oberlin / Campbell
Scenario: Cumulative Plus Project

Warrant Summary

Warrant	Name	Analyzed?	Met?
#1	Eight-Hour Vehicular Volume	Yes	No
#2	Four-Hour Vehicular volume	Yes	No
#3	Peak Hour	Yes	No
#4	Pedestrian Volume	No	-
#5	School Crossing	No	-
#6	Coordinated Signal System	No	-
#7	Crash Experience	No	-
#8	Roadway Network	No	-

Raw Traffic Volumes

Hour		Major Street		Minor Street	
Begin	End	EB	WB	NB	SB
5:00 PM	6:00 PM	340	183	37	0
2nd	Highest Hour	326	176	36	0
3rd	Highest Hour	320	172	35	0
4th	Highest Hour	272	146	30	0
5th	Highest Hour	258	139	28	0
6th	Highest Hour	231	124	25	0
7th	Highest Hour	214	115	23	0
8th	Highest Hour	204	110	22	0
9th	Highest Hour	163	88	18	0
10th	Highest Hour	153	82	17	0
11th	Highest Hour	153	82	17	0
12th	Highest Hour	146	79	16	0
13th	Highest Hour	133	71	14	0
14th	Highest Hour	122	66	13	0
15th	Highest Hour	122	66	13	0
16th	Highest Hour	119	64	13	0
17th	Highest Hour	68	37	7	0
18th	Highest Hour	37	20	4	0
19th	Highest Hour	34	18	4	0
20th	Highest Hour	14	7	1	0
21st	Highest Hour	10	5	1	0
22nd	Highest Hour	10	5	1	0
23rd	Highest Hour	7	4	1	0
24th	Highest Hour	7	4	1	0

Input Parameters

Volume Adjustment Factor =	1.0
North-South Approach =	Minor
East-West Approach =	Major
Major Street Thru Lanes =	1
Minor Street Thru Lanes =	1
Speed > 40 mph?	No
Population < 10,000?	Yes
Warrant Factor	70%
Peak Hour or Daily Count?	Peak Hour
Major Street: 4th-Highest Hour / Peak Hour	80%
Major Street: 8th-Highest Hour / Peak Hour	60%
Minor Street: 4th-Highest Hour / Peak Hour	80%
Minor Street: 8th-Highest Hour / Peak Hour	60%

Analysis Traffic Volumes

Hour		Major Street		Minor Street	
Begin	End	EB	WB	NB	SB
5:00 PM	6:00 PM	340	183	37	0
2nd	Highest Hour	326	176	36	0
3rd	Highest Hour	320	172	35	0
4th	Highest Hour	272	146	30	0
5th	Highest Hour	258	139	28	0
6th	Highest Hour	231	124	25	0
7th	Highest Hour	214	115	23	0
8th	Highest Hour	204	110	22	0
9th	Highest Hour	163	88	18	0
10th	Highest Hour	153	82	17	0
11th	Highest Hour	153	82	17	0
12th	Highest Hour	146	79	16	0
13th	Highest Hour	133	71	14	0
14th	Highest Hour	122	66	13	0
15th	Highest Hour	122	66	13	0
16th	Highest Hour	119	64	13	0
17th	Highest Hour	68	37	7	0
18th	Highest Hour	37	20	4	0
19th	Highest Hour	34	18	4	0
20th	Highest Hour	14	7	1	0
21st	Highest Hour	10	5	1	0
22nd	Highest Hour	10	5	1	0
23rd	Highest Hour	7	4	1	0
24th	Highest Hour	7	4	1	0

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Project #: 13592
Project Name: Karuk Casino
Analyst: MYB
Date: 8/13/2013
File: H:\projfile\13592 - Yreka Casino\signal_warrants\[4_SigWarrant_I5SBMoonlitOaks_Existin
Intersection: Moonlit Oaks / I5 SB
Scenario: Existing

Warrant Summary

Warrant	Name	Analyzed?	Met?
#1	Eight-Hour Vehicular Volume	Yes	No
#2	Four-Hour Vehicular volume	Yes	No
#3	Peak Hour	Yes	No
#4	Pedestrian Volume	No	-
#5	School Crossing	No	-
#6	Coordinated Signal System	No	-
#7	Crash Experience	No	-
#8	Roadway Network	No	-

Input Parameters

Volume Adjustment Factor =	1.0
North-South Approach =	Minor
East-West Approach =	Major
Major Street Thru Lanes =	1
Minor Street Thru Lanes =	1
Speed > 40 mph?	No
Population < 10,000?	Yes
Warrant Factor	70%
Peak Hour or Daily Count?	Peak Hour
Major Street: 4th-Highest Hour / Peak Hour	80%
Major Street: 8th-Highest Hour / Peak Hour	60%
Minor Street: 4th-Highest Hour / Peak Hour	80%
Minor Street: 8th-Highest Hour / Peak Hour	60%

Raw Traffic Volumes

Hour		Major Street		Minor Street	
Begin	End	EB	WB	NB	SB
5:00 PM	6:00 PM	475	234	0	26
2nd	Highest Hour	456	225	0	25
3rd	Highest Hour	447	220	0	24
4th	Highest Hour	380	187	0	21
5th	Highest Hour	361	178	0	20
6th	Highest Hour	323	159	0	18
7th	Highest Hour	299	147	0	16
8th	Highest Hour	285	140	0	16
9th	Highest Hour	228	112	0	12
10th	Highest Hour	214	105	0	12
11th	Highest Hour	214	105	0	12
12th	Highest Hour	204	101	0	11
13th	Highest Hour	185	91	0	10
14th	Highest Hour	171	84	0	9
15th	Highest Hour	171	84	0	9
16th	Highest Hour	166	82	0	9
17th	Highest Hour	95	47	0	5
18th	Highest Hour	52	26	0	3
19th	Highest Hour	48	23	0	3
20th	Highest Hour	19	9	0	1
21st	Highest Hour	14	7	0	1
22nd	Highest Hour	14	7	0	1
23rd	Highest Hour	10	5	0	1
24th	Highest Hour	10	5	0	1

Analysis Traffic Volumes

Hour		Major Street		Minor Street	
Begin	End	EB	WB	NB	SB
5:00 PM	6:00 PM	475	234	0	26
2nd	Highest Hour	456	225	0	25
3rd	Highest Hour	447	220	0	24
4th	Highest Hour	380	187	0	21
5th	Highest Hour	361	178	0	20
6th	Highest Hour	323	159	0	18
7th	Highest Hour	299	147	0	16
8th	Highest Hour	285	140	0	16
9th	Highest Hour	228	112	0	12
10th	Highest Hour	214	105	0	12
11th	Highest Hour	214	105	0	12
12th	Highest Hour	204	101	0	11
13th	Highest Hour	185	91	0	10
14th	Highest Hour	171	84	0	9
15th	Highest Hour	171	84	0	9
16th	Highest Hour	166	82	0	9
17th	Highest Hour	95	47	0	5
18th	Highest Hour	52	26	0	3
19th	Highest Hour	48	23	0	3
20th	Highest Hour	19	9	0	1
21st	Highest Hour	14	7	0	1
22nd	Highest Hour	14	7	0	1
23rd	Highest Hour	10	5	0	1
24th	Highest Hour	10	5	0	1

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Project #: 13592
Project Name: Karuk Casino
Analyst: MYB
Date: 8/13/2013
File: H:\projfile\13592 - Yreka Casino\signal_warrants\[4_SigWarrant_I5SBMoonlitOaks_Existin
Intersection: Moonlit Oaks / I5 SB
Scenario: Existing Plus Project Phase 1

Warrant Summary

Warrant	Name	Analyzed?	Met?
#1	Eight-Hour Vehicular Volume	Yes	No
#2	Four-Hour Vehicular volume	Yes	No
#3	Peak Hour	Yes	No
#4	Pedestrian Volume	No	-
#5	School Crossing	No	-
#6	Coordinated Signal System	No	-
#7	Crash Experience	No	-
#8	Roadway Network	No	-

Input Parameters

Volume Adjustment Factor =	1.0
North-South Approach =	Minor
East-West Approach =	Major
Major Street Thru Lanes =	1
Minor Street Thru Lanes =	1
Speed > 40 mph?	No
Population < 10,000?	Yes
Warrant Factor	70%
Peak Hour or Daily Count?	Peak Hour
Major Street: 4th-Highest Hour / Peak Hour	80%
Major Street: 8th-Highest Hour / Peak Hour	60%
Minor Street: 4th-Highest Hour / Peak Hour	80%
Minor Street: 8th-Highest Hour / Peak Hour	60%

Raw Traffic Volumes

Hour		Major Street		Minor Street	
Begin	End	EB	WB	NB	SB
5:00 PM	6:00 PM	475	241	0	52
2nd	Highest Hour	456	231	0	50
3rd	Highest Hour	447	227	0	49
4th	Highest Hour	380	193	0	42
5th	Highest Hour	361	183	0	40
6th	Highest Hour	323	164	0	35
7th	Highest Hour	299	152	0	33
8th	Highest Hour	285	145	0	31
9th	Highest Hour	228	116	0	25
10th	Highest Hour	214	108	0	23
11th	Highest Hour	214	108	0	23
12th	Highest Hour	204	104	0	22
13th	Highest Hour	185	94	0	20
14th	Highest Hour	171	87	0	19
15th	Highest Hour	171	87	0	19
16th	Highest Hour	166	84	0	18
17th	Highest Hour	95	48	0	10
18th	Highest Hour	52	27	0	6
19th	Highest Hour	48	24	0	5
20th	Highest Hour	19	10	0	2
21st	Highest Hour	14	7	0	2
22nd	Highest Hour	14	7	0	2
23rd	Highest Hour	10	5	0	1
24th	Highest Hour	10	5	0	1

Analysis Traffic Volumes

Hour		Major Street		Minor Street	
Begin	End	EB	WB	NB	SB
5:00 PM	6:00 PM	475	241	0	52
2nd	Highest Hour	456	231	0	50
3rd	Highest Hour	447	227	0	49
4th	Highest Hour	380	193	0	42
5th	Highest Hour	361	183	0	40
6th	Highest Hour	323	164	0	35
7th	Highest Hour	299	152	0	33
8th	Highest Hour	285	145	0	31
9th	Highest Hour	228	116	0	25
10th	Highest Hour	214	108	0	23
11th	Highest Hour	214	108	0	23
12th	Highest Hour	204	104	0	22
13th	Highest Hour	185	94	0	20
14th	Highest Hour	171	87	0	19
15th	Highest Hour	171	87	0	19
16th	Highest Hour	166	84	0	18
17th	Highest Hour	95	48	0	10
18th	Highest Hour	52	27	0	6
19th	Highest Hour	48	24	0	5
20th	Highest Hour	19	10	0	2
21st	Highest Hour	14	7	0	2
22nd	Highest Hour	14	7	0	2
23rd	Highest Hour	10	5	0	1
24th	Highest Hour	10	5	0	1

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Project #: 13592
Project Name: Karuk Casino
Analyst: MYB
Date: 8/13/2013
File: H:\projfile\13592 - Yreka Casino\signal_warrants\[4_SigWarrant_I5SBMoonlitOaks_Existin
Intersection: Moonlit Oaks / I5 SB
Scenario: Existing PP Phase 2

Warrant Summary

Warrant	Name	Analyzed?	Met?
#1	Eight-Hour Vehicular Volume	Yes	No
#2	Four-Hour Vehicular volume	Yes	No
#3	Peak Hour	Yes	No
#4	Pedestrian Volume	No	-
#5	School Crossing	No	-
#6	Coordinated Signal System	No	-
#7	Crash Experience	No	-
#8	Roadway Network	No	-

Input Parameters

Volume Adjustment Factor =	1.0
North-South Approach =	Minor
East-West Approach =	Major
Major Street Thru Lanes =	1
Minor Street Thru Lanes =	1
Speed > 40 mph?	No
Population < 10,000?	Yes
Warrant Factor	70%
Peak Hour or Daily Count?	Peak Hour
Major Street: 4th-Highest Hour / Peak Hour	80%
Major Street: 8th-Highest Hour / Peak Hour	60%
Minor Street: 4th-Highest Hour / Peak Hour	80%
Minor Street: 8th-Highest Hour / Peak Hour	60%

Raw Traffic Volumes

Hour		Major Street		Minor Street	
Begin	End	EB	WB	NB	SB
5:00 PM	6:00 PM	475	247	0	75
2nd	Highest Hour	456	237	0	72
3rd	Highest Hour	447	232	0	71
4th	Highest Hour	380	198	0	60
5th	Highest Hour	361	188	0	57
6th	Highest Hour	323	168	0	51
7th	Highest Hour	299	156	0	47
8th	Highest Hour	285	148	0	45
9th	Highest Hour	228	119	0	36
10th	Highest Hour	214	111	0	34
11th	Highest Hour	214	111	0	34
12th	Highest Hour	204	106	0	32
13th	Highest Hour	185	96	0	29
14th	Highest Hour	171	89	0	27
15th	Highest Hour	171	89	0	27
16th	Highest Hour	166	86	0	26
17th	Highest Hour	95	49	0	15
18th	Highest Hour	52	27	0	8
19th	Highest Hour	48	25	0	8
20th	Highest Hour	19	10	0	3
21st	Highest Hour	14	7	0	2
22nd	Highest Hour	14	7	0	2
23rd	Highest Hour	10	5	0	2
24th	Highest Hour	10	5	0	2

Analysis Traffic Volumes

Hour		Major Street		Minor Street	
Begin	End	EB	WB	NB	SB
5:00 PM	6:00 PM	475	247	0	75
2nd	Highest Hour	456	237	0	72
3rd	Highest Hour	447	232	0	71
4th	Highest Hour	380	198	0	60
5th	Highest Hour	361	188	0	57
6th	Highest Hour	323	168	0	51
7th	Highest Hour	299	156	0	47
8th	Highest Hour	285	148	0	45
9th	Highest Hour	228	119	0	36
10th	Highest Hour	214	111	0	34
11th	Highest Hour	214	111	0	34
12th	Highest Hour	204	106	0	32
13th	Highest Hour	185	96	0	29
14th	Highest Hour	171	89	0	27
15th	Highest Hour	171	89	0	27
16th	Highest Hour	166	86	0	26
17th	Highest Hour	95	49	0	15
18th	Highest Hour	52	27	0	8
19th	Highest Hour	48	25	0	8
20th	Highest Hour	19	10	0	3
21st	Highest Hour	14	7	0	2
22nd	Highest Hour	14	7	0	2
23rd	Highest Hour	10	5	0	2
24th	Highest Hour	10	5	0	2

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Project #: 13592
Project Name: Karuk Casino
Analyst: MYB
Date: 8/13/2013
File: H:\projfile\13592 - Yreka Casino\signal_warrants\[4_SigWarrant_I5SBMoonlitOaks_CumNP.
Intersection: Moonlit Oaks / I5 SB
Scenario: Cumulative No Project

Warrant Summary

Warrant	Name	Analyzed?	Met?
#1	Eight-Hour Vehicular Volume	Yes	No
#2	Four-Hour Vehicular volume	Yes	No
#3	Peak Hour	Yes	No
#4	Pedestrian Volume	No	-
#5	School Crossing	No	-
#6	Coordinated Signal System	No	-
#7	Crash Experience	No	-
#8	Roadway Network	No	-

Input Parameters

Volume Adjustment Factor =	1.0
North-South Approach =	Minor
East-West Approach =	Major
Major Street Thru Lanes =	1
Minor Street Thru Lanes =	1
Speed > 40 mph?	No
Population < 10,000?	Yes
Warrant Factor	70%
Peak Hour or Daily Count?	Peak Hour
Major Street: 4th-Highest Hour / Peak Hour	80%
Major Street: 8th-Highest Hour / Peak Hour	60%
Minor Street: 4th-Highest Hour / Peak Hour	80%
Minor Street: 8th-Highest Hour / Peak Hour	60%

Raw Traffic Volumes

Hour		Major Street		Minor Street	
Begin	End	EB	WB	NB	SB
5:00 PM	6:00 PM	510	250	0	35
2nd	Highest Hour	490	240	0	34
3rd	Highest Hour	479	235	0	33
4th	Highest Hour	408	200	0	28
5th	Highest Hour	388	190	0	27
6th	Highest Hour	347	170	0	24
7th	Highest Hour	321	158	0	22
8th	Highest Hour	306	150	0	21
9th	Highest Hour	245	120	0	17
10th	Highest Hour	230	113	0	16
11th	Highest Hour	230	113	0	16
12th	Highest Hour	219	108	0	15
13th	Highest Hour	199	98	0	14
14th	Highest Hour	184	90	0	13
15th	Highest Hour	184	90	0	13
16th	Highest Hour	179	88	0	12
17th	Highest Hour	102	50	0	7
18th	Highest Hour	56	28	0	4
19th	Highest Hour	51	25	0	4
20th	Highest Hour	20	10	0	1
21st	Highest Hour	15	8	0	1
22nd	Highest Hour	15	8	0	1
23rd	Highest Hour	10	5	0	1
24th	Highest Hour	10	5	0	1

Analysis Traffic Volumes

Hour		Major Street		Minor Street	
Begin	End	EB	WB	NB	SB
5:00 PM	6:00 PM	510	250	0	35
2nd	Highest Hour	490	240	0	34
3rd	Highest Hour	479	235	0	33
4th	Highest Hour	408	200	0	28
5th	Highest Hour	388	190	0	27
6th	Highest Hour	347	170	0	24
7th	Highest Hour	321	158	0	22
8th	Highest Hour	306	150	0	21
9th	Highest Hour	245	120	0	17
10th	Highest Hour	230	113	0	16
11th	Highest Hour	230	113	0	16
12th	Highest Hour	219	108	0	15
13th	Highest Hour	199	98	0	14
14th	Highest Hour	184	90	0	13
15th	Highest Hour	184	90	0	13
16th	Highest Hour	179	88	0	12
17th	Highest Hour	102	50	0	7
18th	Highest Hour	56	28	0	4
19th	Highest Hour	51	25	0	4
20th	Highest Hour	20	10	0	1
21st	Highest Hour	15	8	0	1
22nd	Highest Hour	15	8	0	1
23rd	Highest Hour	10	5	0	1
24th	Highest Hour	10	5	0	1

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Project #: 13592
Project Name: Karuk Casino
Analyst: MYB
Date: 8/13/2013
File: H:\projfile\13592 - Yreka Casino\signal_warrants\[4_SigWarrant_I5SBMoonlitOaks_CumPP.x
Intersection: Moonlit Oaks / I5 SB
Scenario: Cumulative Plus Project

Warrant Summary

Warrant	Name	Analyzed?	Met?
#1	Eight-Hour Vehicular Volume	Yes	No
#2	Four-Hour Vehicular volume	Yes	No
#3	Peak Hour	Yes	No
#4	Pedestrian Volume	No	-
#5	School Crossing	No	-
#6	Coordinated Signal System	No	-
#7	Crash Experience	No	-
#8	Roadway Network	No	-

Input Parameters

Volume Adjustment Factor =	1.0
North-South Approach =	Minor
East-West Approach =	Major
Major Street Thru Lanes =	1
Minor Street Thru Lanes =	1
Speed > 40 mph?	No
Population < 10,000?	Yes
Warrant Factor	70%
Peak Hour or Daily Count?	Peak Hour
Major Street: 4th-Highest Hour / Peak Hour	80%
Major Street: 8th-Highest Hour / Peak Hour	60%
Minor Street: 4th-Highest Hour / Peak Hour	80%
Minor Street: 8th-Highest Hour / Peak Hour	60%

Raw Traffic Volumes

Hour		Major Street		Minor Street	
Begin	End	EB	WB	NB	SB
5:00 PM	6:00 PM	510	263	0	84
2nd	Highest Hour	490	252	0	81
3rd	Highest Hour	479	247	0	79
4th	Highest Hour	408	210	0	67
5th	Highest Hour	388	200	0	64
6th	Highest Hour	347	179	0	57
7th	Highest Hour	321	166	0	53
8th	Highest Hour	306	158	0	50
9th	Highest Hour	245	126	0	40
10th	Highest Hour	230	118	0	38
11th	Highest Hour	230	118	0	38
12th	Highest Hour	219	113	0	36
13th	Highest Hour	199	103	0	33
14th	Highest Hour	184	95	0	30
15th	Highest Hour	184	95	0	30
16th	Highest Hour	179	92	0	29
17th	Highest Hour	102	53	0	17
18th	Highest Hour	56	29	0	9
19th	Highest Hour	51	26	0	8
20th	Highest Hour	20	11	0	3
21st	Highest Hour	15	8	0	3
22nd	Highest Hour	15	8	0	3
23rd	Highest Hour	10	5	0	2
24th	Highest Hour	10	5	0	2

Analysis Traffic Volumes

Hour		Major Street		Minor Street	
Begin	End	EB	WB	NB	SB
5:00 PM	6:00 PM	510	263	0	84
2nd	Highest Hour	490	252	0	81
3rd	Highest Hour	479	247	0	79
4th	Highest Hour	408	210	0	67
5th	Highest Hour	388	200	0	64
6th	Highest Hour	347	179	0	57
7th	Highest Hour	321	166	0	53
8th	Highest Hour	306	158	0	50
9th	Highest Hour	245	126	0	40
10th	Highest Hour	230	118	0	38
11th	Highest Hour	230	118	0	38
12th	Highest Hour	219	113	0	36
13th	Highest Hour	199	103	0	33
14th	Highest Hour	184	95	0	30
15th	Highest Hour	184	95	0	30
16th	Highest Hour	179	92	0	29
17th	Highest Hour	102	53	0	17
18th	Highest Hour	56	29	0	9
19th	Highest Hour	51	26	0	8
20th	Highest Hour	20	11	0	3
21st	Highest Hour	15	8	0	3
22nd	Highest Hour	15	8	0	3
23rd	Highest Hour	10	5	0	2
24th	Highest Hour	10	5	0	2

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Project #: 13592
Project Name: Karuk Casino
Analyst: MYB
Date: 7/19/2013
File: C:\Users\mbroughton\Desktop\SigWarrants\[7_SigWarrant_FairlaneSharps_ExistingPP_Phase2.xls]War #3 - Peak HR
Intersection: Moonlit Oaks / I5 NB
Scenario: Existing

Warrant Summary

Warrant	Name	Analyzed?	Met?
#1	Eight-Hour Vehicular Volume	Yes	No
#2	Four-Hour Vehicular volume	Yes	No
#3	Peak Hour	Yes	No
#4	Pedestrian Volume	No	-
#5	School Crossing	No	-
#6	Coordinated Signal System	No	-
#7	Crash Experience	No	-
#8	Roadway Network	No	-

Input Parameters

Volume Adjustment Factor =	1.0
North-South Approach =	Minor
East-West Approach =	Major
Major Street Thru Lanes =	1
Minor Street Thru Lanes =	1
Speed > 40 mph?	No
Population < 10,000?	Yes
Warrant Factor	70%
Peak Hour or Daily Count?	Peak Hour
Major Street: 4th-Highest Hour / Peak Hour	80%
Major Street: 8th-Highest Hour / Peak Hour	60%
Minor Street: 4th-Highest Hour / Peak Hour	80%
Minor Street: 8th-Highest Hour / Peak Hour	60%

Raw Traffic Volumes

Hour		Major Street		Minor Street	
Begin	End	EB	WB	NB	SB
5:00 PM	6:00 PM	259	146	152	0
2nd	Highest Hour	249	140	146	0
3rd	Highest Hour	243	137	143	0
4th	Highest Hour	207	117	122	0
5th	Highest Hour	197	111	116	0
6th	Highest Hour	176	99	103	0
7th	Highest Hour	163	92	96	0
8th	Highest Hour	155	88	91	0
9th	Highest Hour	124	70	73	0
10th	Highest Hour	117	66	68	0
11th	Highest Hour	117	66	68	0
12th	Highest Hour	111	63	65	0
13th	Highest Hour	101	57	59	0
14th	Highest Hour	93	53	55	0
15th	Highest Hour	93	53	55	0
16th	Highest Hour	91	51	53	0
17th	Highest Hour	52	29	30	0
18th	Highest Hour	28	16	17	0
19th	Highest Hour	26	15	15	0
20th	Highest Hour	10	6	6	0
21st	Highest Hour	8	4	5	0
22nd	Highest Hour	8	4	5	0
23rd	Highest Hour	5	3	3	0
24th	Highest Hour	5	3	3	0

Analysis Traffic Volumes

Hour		Major Street		Minor Street	
Begin	End	EB	WB	NB	SB
5:00 PM	6:00 PM	259	146	152	0
2nd	Highest Hour	249	140	146	0
3rd	Highest Hour	243	137	143	0
4th	Highest Hour	207	117	122	0
5th	Highest Hour	197	111	116	0
6th	Highest Hour	176	99	103	0
7th	Highest Hour	163	92	96	0
8th	Highest Hour	155	88	91	0
9th	Highest Hour	124	70	73	0
10th	Highest Hour	117	66	68	0
11th	Highest Hour	117	66	68	0
12th	Highest Hour	111	63	65	0
13th	Highest Hour	101	57	59	0
14th	Highest Hour	93	53	55	0
15th	Highest Hour	93	53	55	0
16th	Highest Hour	91	51	53	0
17th	Highest Hour	52	29	30	0
18th	Highest Hour	28	16	17	0
19th	Highest Hour	26	15	15	0
20th	Highest Hour	10	6	6	0
21st	Highest Hour	8	4	5	0
22nd	Highest Hour	8	4	5	0
23rd	Highest Hour	5	3	3	0
24th	Highest Hour	5	3	3	0

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Project #: 13592
Project Name: Karuk Casino
Analyst: MYB
Date: 7/19/2013
File: C:\Users\mbroughton\Desktop\SigWarrants\[7_SigWarrant_FairlaneSharps_ExistingPP_Phase2.xls]War #3 - Peak HR
Intersection: Moonlit Oaks / I5 NB
Scenario: Existing Plus Project Phase 1

Warrant Summary

Warrant	Name	Analyzed?	Met?
#1	Eight-Hour Vehicular Volume	Yes	No
#2	Four-Hour Vehicular volume	Yes	No
#3	Peak Hour	Yes	No
#4	Pedestrian Volume	No	-
#5	School Crossing	No	-
#6	Coordinated Signal System	No	-
#7	Crash Experience	No	-
#8	Roadway Network	No	-

Raw Traffic Volumes

Hour		Major Street		Minor Street	
Begin	End	EB	WB	NB	SB
5:00 PM	6:00 PM	285	183	158	0
2nd	Highest Hour	274	176	152	0
3rd	Highest Hour	268	172	149	0
4th	Highest Hour	228	146	126	0
5th	Highest Hour	217	139	120	0
6th	Highest Hour	194	124	107	0
7th	Highest Hour	180	115	100	0
8th	Highest Hour	171	110	95	0
9th	Highest Hour	137	88	76	0
10th	Highest Hour	128	82	71	0
11th	Highest Hour	128	82	71	0
12th	Highest Hour	123	79	68	0
13th	Highest Hour	111	71	62	0
14th	Highest Hour	103	66	57	0
15th	Highest Hour	103	66	57	0
16th	Highest Hour	100	64	55	0
17th	Highest Hour	57	37	32	0
18th	Highest Hour	31	20	17	0
19th	Highest Hour	29	18	16	0
20th	Highest Hour	11	7	6	0
21st	Highest Hour	9	5	5	0
22nd	Highest Hour	9	5	5	0
23rd	Highest Hour	6	4	3	0
24th	Highest Hour	6	4	3	0

Input Parameters

Volume Adjustment Factor =	1.0
North-South Approach =	Minor
East-West Approach =	Major
Major Street Thru Lanes =	1
Minor Street Thru Lanes =	1
Speed > 40 mph?	No
Population < 10,000?	Yes
Warrant Factor	70%
Peak Hour or Daily Count?	Peak Hour
Major Street: 4th-Highest Hour / Peak Hour	80%
Major Street: 8th-Highest Hour / Peak Hour	60%
Minor Street: 4th-Highest Hour / Peak Hour	80%
Minor Street: 8th-Highest Hour / Peak Hour	60%

Analysis Traffic Volumes

Hour		Major Street		Minor Street	
Begin	End	EB	WB	NB	SB
5:00 PM	6:00 PM	285	183	158	0
2nd	Highest Hour	274	176	152	0
3rd	Highest Hour	268	172	149	0
4th	Highest Hour	228	146	126	0
5th	Highest Hour	217	139	120	0
6th	Highest Hour	194	124	107	0
7th	Highest Hour	180	115	100	0
8th	Highest Hour	171	110	95	0
9th	Highest Hour	137	88	76	0
10th	Highest Hour	128	82	71	0
11th	Highest Hour	128	82	71	0
12th	Highest Hour	123	79	68	0
13th	Highest Hour	111	71	62	0
14th	Highest Hour	103	66	57	0
15th	Highest Hour	103	66	57	0
16th	Highest Hour	100	64	55	0
17th	Highest Hour	57	37	32	0
18th	Highest Hour	31	20	17	0
19th	Highest Hour	29	18	16	0
20th	Highest Hour	11	7	6	0
21st	Highest Hour	9	5	5	0
22nd	Highest Hour	9	5	5	0
23rd	Highest Hour	6	4	3	0
24th	Highest Hour	6	4	3	0

KITTELSON & ASSOCIATES, INC.
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Project #: 13592
Project Name: Karuk Casino
Analyst: MYB
Date: 7/19/2013
File: C:\Users\mbroughton\Desktop\SigWarrants\[7_SigWarrant_FairlaneSharps_ExistingPP_Phase2.xls]War #3 - Peak HR
Intersection: Moonlit Oaks / I5 NB
Scenario: Existing Plus Project Phase 2

Warrant Summary

Warrant	Name	Analyzed?	Met?
#1	Eight-Hour Vehicular Volume	Yes	No
#2	Four-Hour Vehicular volume	Yes	No
#3	Peak Hour	Yes	No
#4	Pedestrian Volume	No	-
#5	School Crossing	No	-
#6	Coordinated Signal System	No	-
#7	Crash Experience	No	-
#8	Roadway Network	No	-

Raw Traffic Volumes

Hour		Major Street		Minor Street	
Begin	End	EB	WB	NB	SB
5:00 PM	6:00 PM	308	214	164	0
2nd	Highest Hour	296	205	157	0
3rd	Highest Hour	290	201	154	0
4th	Highest Hour	246	171	131	0
5th	Highest Hour	234	163	125	0
6th	Highest Hour	209	146	112	0
7th	Highest Hour	194	135	103	0
8th	Highest Hour	185	128	98	0
9th	Highest Hour	148	103	79	0
10th	Highest Hour	139	96	74	0
11th	Highest Hour	139	96	74	0
12th	Highest Hour	132	92	71	0
13th	Highest Hour	120	83	64	0
14th	Highest Hour	111	77	59	0
15th	Highest Hour	111	77	59	0
16th	Highest Hour	108	75	57	0
17th	Highest Hour	62	43	33	0
18th	Highest Hour	34	24	18	0
19th	Highest Hour	31	21	16	0
20th	Highest Hour	12	9	7	0
21st	Highest Hour	9	6	5	0
22nd	Highest Hour	9	6	5	0
23rd	Highest Hour	6	4	3	0
24th	Highest Hour	6	4	3	0

Input Parameters

Volume Adjustment Factor =	1.0
North-South Approach =	Minor
East-West Approach =	Major
Major Street Thru Lanes =	1
Minor Street Thru Lanes =	1
Speed > 40 mph?	No
Population < 10,000?	Yes
Warrant Factor	70%
Peak Hour or Daily Count?	Peak Hour
Major Street: 4th-Highest Hour / Peak Hour	80%
Major Street: 8th-Highest Hour / Peak Hour	60%
Minor Street: 4th-Highest Hour / Peak Hour	80%
Minor Street: 8th-Highest Hour / Peak Hour	60%

Analysis Traffic Volumes

Hour		Major Street		Minor Street	
Begin	End	EB	WB	NB	SB
5:00 PM	6:00 PM	308	214	164	0
2nd	Highest Hour	296	205	157	0
3rd	Highest Hour	290	201	154	0
4th	Highest Hour	246	171	131	0
5th	Highest Hour	234	163	125	0
6th	Highest Hour	209	146	112	0
7th	Highest Hour	194	135	103	0
8th	Highest Hour	185	128	98	0
9th	Highest Hour	148	103	79	0
10th	Highest Hour	139	96	74	0
11th	Highest Hour	139	96	74	0
12th	Highest Hour	132	92	71	0
13th	Highest Hour	120	83	64	0
14th	Highest Hour	111	77	59	0
15th	Highest Hour	111	77	59	0
16th	Highest Hour	108	75	57	0
17th	Highest Hour	62	43	33	0
18th	Highest Hour	34	24	18	0
19th	Highest Hour	31	21	16	0
20th	Highest Hour	12	9	7	0
21st	Highest Hour	9	6	5	0
22nd	Highest Hour	9	6	5	0
23rd	Highest Hour	6	4	3	0
24th	Highest Hour	6	4	3	0

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Project #: 13592
Project Name: Karuk Casino
Analyst: MYB
Date: 7/19/2013
File: C:\Users\mbroughton\Desktop\SigWarrants\[7_SigWarrant_FairlaneSharps_ExistingPP_Phase2.xls]War #3 - Peak HR
Intersection: Moonlit Oaks / I5 NB
Scenario: Cumulative No Project

Warrant Summary

Warrant	Name	Analyzed?	Met?
#1	Eight-Hour Vehicular Volume	Yes	No
#2	Four-Hour Vehicular volume	Yes	No
#3	Peak Hour	Yes	No
#4	Pedestrian Volume	No	-
#5	School Crossing	No	-
#6	Coordinated Signal System	No	-
#7	Crash Experience	No	-
#8	Roadway Network	No	-

Raw Traffic Volumes

Hour		Major Street		Minor Street	
Begin	End	EB	WB	NB	SB
5:00 PM	6:00 PM	275	160	165	0
2nd	Highest Hour	264	154	158	0
3rd	Highest Hour	259	150	155	0
4th	Highest Hour	220	128	132	0
5th	Highest Hour	209	122	125	0
6th	Highest Hour	187	109	112	0
7th	Highest Hour	173	101	104	0
8th	Highest Hour	165	96	99	0
9th	Highest Hour	132	77	79	0
10th	Highest Hour	124	72	74	0
11th	Highest Hour	124	72	74	0
12th	Highest Hour	118	69	71	0
13th	Highest Hour	107	62	64	0
14th	Highest Hour	99	58	59	0
15th	Highest Hour	99	58	59	0
16th	Highest Hour	96	56	58	0
17th	Highest Hour	55	32	33	0
18th	Highest Hour	30	18	18	0
19th	Highest Hour	28	16	17	0
20th	Highest Hour	11	6	7	0
21st	Highest Hour	8	5	5	0
22nd	Highest Hour	8	5	5	0
23rd	Highest Hour	6	3	3	0
24th	Highest Hour	6	3	3	0

Input Parameters

Volume Adjustment Factor =	1.0
North-South Approach =	Minor
East-West Approach =	Major
Major Street Thru Lanes =	1
Minor Street Thru Lanes =	1
Speed > 40 mph?	No
Population < 10,000?	Yes
Warrant Factor	70%
Peak Hour or Daily Count?	Peak Hour
Major Street: 4th-Highest Hour / Peak Hour	80%
Major Street: 8th-Highest Hour / Peak Hour	60%
Minor Street: 4th-Highest Hour / Peak Hour	80%
Minor Street: 8th-Highest Hour / Peak Hour	60%

Analysis Traffic Volumes

Hour		Major Street		Minor Street	
Begin	End	EB	WB	NB	SB
5:00 PM	6:00 PM	275	160	165	0
2nd	Highest Hour	264	154	158	0
3rd	Highest Hour	259	150	155	0
4th	Highest Hour	220	128	132	0
5th	Highest Hour	209	122	125	0
6th	Highest Hour	187	109	112	0
7th	Highest Hour	173	101	104	0
8th	Highest Hour	165	96	99	0
9th	Highest Hour	132	77	79	0
10th	Highest Hour	124	72	74	0
11th	Highest Hour	124	72	74	0
12th	Highest Hour	118	69	71	0
13th	Highest Hour	107	62	64	0
14th	Highest Hour	99	58	59	0
15th	Highest Hour	99	58	59	0
16th	Highest Hour	96	56	58	0
17th	Highest Hour	55	32	33	0
18th	Highest Hour	30	18	18	0
19th	Highest Hour	28	16	17	0
20th	Highest Hour	11	6	7	0
21st	Highest Hour	8	5	5	0
22nd	Highest Hour	8	5	5	0
23rd	Highest Hour	6	3	3	0
24th	Highest Hour	6	3	3	0

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Project #: 13592
Project Name: Karuk Casino
Analyst: MYB
Date: 7/19/2013
File: C:\Users\mbroughton\Desktop\SigWarrants\[7_SigWarrant_FairlaneSharps_ExistingPP_Phase2.xls]War #3 - Peak HR
Intersection: Moonlit Oaks / I5 NB
Scenario: Cumulative Plus Project

Warrant Summary

Warrant	Name	Analyzed?	Met?
#1	Eight-Hour Vehicular Volume	Yes	No
#2	Four-Hour Vehicular volume	Yes	No
#3	Peak Hour	Yes	No
#4	Pedestrian Volume	No	-
#5	School Crossing	No	-
#6	Coordinated Signal System	No	-
#7	Crash Experience	No	-
#8	Roadway Network	No	-

Input Parameters

Volume Adjustment Factor =	1.0
North-South Approach =	Minor
East-West Approach =	Major
Major Street Thru Lanes =	1
Minor Street Thru Lanes =	1
Speed > 40 mph?	No
Population < 10,000?	Yes
Warrant Factor	70%
Peak Hour or Daily Count?	Peak Hour
Major Street: 4th-Highest Hour / Peak Hour	80%
Major Street: 8th-Highest Hour / Peak Hour	60%
Minor Street: 4th-Highest Hour / Peak Hour	80%
Minor Street: 8th-Highest Hour / Peak Hour	60%

Raw Traffic Volumes

Hour		Major Street		Minor Street	
Begin	End	EB	WB	NB	SB
5:00 PM	6:00 PM	324	228	177	0
2nd	Highest Hour	311	219	170	0
3rd	Highest Hour	305	214	166	0
4th	Highest Hour	259	182	142	0
5th	Highest Hour	246	173	135	0
6th	Highest Hour	220	155	120	0
7th	Highest Hour	204	144	112	0
8th	Highest Hour	194	137	106	0
9th	Highest Hour	156	109	85	0
10th	Highest Hour	146	103	80	0
11th	Highest Hour	146	103	80	0
12th	Highest Hour	139	98	76	0
13th	Highest Hour	126	89	69	0
14th	Highest Hour	117	82	64	0
15th	Highest Hour	117	82	64	0
16th	Highest Hour	113	80	62	0
17th	Highest Hour	65	46	35	0
18th	Highest Hour	36	25	19	0
19th	Highest Hour	32	23	18	0
20th	Highest Hour	13	9	7	0
21st	Highest Hour	10	7	5	0
22nd	Highest Hour	10	7	5	0
23rd	Highest Hour	6	5	4	0
24th	Highest Hour	6	5	4	0

Analysis Traffic Volumes

Hour		Major Street		Minor Street	
Begin	End	EB	WB	NB	SB
5:00 PM	6:00 PM	324	228	177	0
2nd	Highest Hour	311	219	170	0
3rd	Highest Hour	305	214	166	0
4th	Highest Hour	259	182	142	0
5th	Highest Hour	246	173	135	0
6th	Highest Hour	220	155	120	0
7th	Highest Hour	204	144	112	0
8th	Highest Hour	194	137	106	0
9th	Highest Hour	156	109	85	0
10th	Highest Hour	146	103	80	0
11th	Highest Hour	146	103	80	0
12th	Highest Hour	139	98	76	0
13th	Highest Hour	126	89	69	0
14th	Highest Hour	117	82	64	0
15th	Highest Hour	117	82	64	0
16th	Highest Hour	113	80	62	0
17th	Highest Hour	65	46	35	0
18th	Highest Hour	36	25	19	0
19th	Highest Hour	32	23	18	0
20th	Highest Hour	13	9	7	0
21st	Highest Hour	10	7	5	0
22nd	Highest Hour	10	7	5	0
23rd	Highest Hour	6	5	4	0
24th	Highest Hour	6	5	4	0

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Project #: 13592
Project Name: Karuk Casino
Analyst: MYB
Date: 7/19/2013
File: C:\Users\mbroughton\Desktop\SigWarrants\[7_SigWarrant_FairlaneSharps_ExistingPP_Phase2.xls]War #3 - Peak HR
Intersection: Fairlane / Moonlit Oaks
Scenario: Existing

Warrant Summary

Warrant	Name	Analyzed?	Met?
#1	Eight-Hour Vehicular Volume	Yes	No
#2	Four-Hour Vehicular volume	Yes	No
#3	Peak Hour	Yes	No
#4	Pedestrian Volume	No	-
#5	School Crossing	No	-
#6	Coordinated Signal System	No	-
#7	Crash Experience	No	-
#8	Roadway Network	No	-

Input Parameters

Volume Adjustment Factor =	1.0
North-South Approach =	Major
East-West Approach =	Minor
Major Street Thru Lanes =	1
Minor Street Thru Lanes =	1
Speed > 40 mph?	No
Population < 10,000?	Yes
Warrant Factor	70%
Peak Hour or Daily Count?	Peak Hour
Major Street: 4th-Highest Hour / Peak Hour	80%
Major Street: 8th-Highest Hour / Peak Hour	60%
Minor Street: 4th-Highest Hour / Peak Hour	80%
Minor Street: 8th-Highest Hour / Peak Hour	60%

Raw Traffic Volumes

Hour		Major Street		Minor Street	
Begin	End	NB	SB	EB	WB
5:00 PM	6:00 PM	110	165	164	0
2nd	Highest Hour	106	158	157	0
3rd	Highest Hour	103	155	154	0
4th	Highest Hour	88	132	131	0
5th	Highest Hour	84	125	125	0
6th	Highest Hour	75	112	112	0
7th	Highest Hour	69	104	103	0
8th	Highest Hour	66	99	98	0
9th	Highest Hour	53	79	79	0
10th	Highest Hour	50	74	74	0
11th	Highest Hour	50	74	74	0
12th	Highest Hour	47	71	71	0
13th	Highest Hour	43	64	64	0
14th	Highest Hour	40	59	59	0
15th	Highest Hour	40	59	59	0
16th	Highest Hour	39	58	57	0
17th	Highest Hour	22	33	33	0
18th	Highest Hour	12	18	18	0
19th	Highest Hour	11	17	16	0
20th	Highest Hour	4	7	7	0
21st	Highest Hour	3	5	5	0
22nd	Highest Hour	3	5	5	0
23rd	Highest Hour	2	3	3	0
24th	Highest Hour	2	3	3	0

Analysis Traffic Volumes

Hour		Major Street		Minor Street	
Begin	End	NB	SB	EB	WB
5:00 PM	6:00 PM	110	165	164	0
2nd	Highest Hour	106	158	157	0
3rd	Highest Hour	103	155	154	0
4th	Highest Hour	88	132	131	0
5th	Highest Hour	84	125	125	0
6th	Highest Hour	75	112	112	0
7th	Highest Hour	69	104	103	0
8th	Highest Hour	66	99	98	0
9th	Highest Hour	53	79	79	0
10th	Highest Hour	50	74	74	0
11th	Highest Hour	50	74	74	0
12th	Highest Hour	47	71	71	0
13th	Highest Hour	43	64	64	0
14th	Highest Hour	40	59	59	0
15th	Highest Hour	40	59	59	0
16th	Highest Hour	39	58	57	0
17th	Highest Hour	22	33	33	0
18th	Highest Hour	12	18	18	0
19th	Highest Hour	11	17	16	0
20th	Highest Hour	4	7	7	0
21st	Highest Hour	3	5	5	0
22nd	Highest Hour	3	5	5	0
23rd	Highest Hour	2	3	3	0
24th	Highest Hour	2	3	3	0

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Project #: 13592
Project Name: Karuk Casino
Analyst: MYB
Date: 7/19/2013
File: C:\Users\mbroughton\Desktop\SigWarrants\[7_SigWarrant_FairlaneSharps_ExistingPP_Phase2.xls]War #3 - Peak HR
Intersection: Fairlane / Moonlit Oaks
Scenario: Existing Plus Project Phase 1

Warrant Summary

Warrant	Name	Analyzed?	Met?
#1	Eight-Hour Vehicular Volume	Yes	No
#2	Four-Hour Vehicular volume	Yes	No
#3	Peak Hour	Yes	No
#4	Pedestrian Volume	No	-
#5	School Crossing	No	-
#6	Coordinated Signal System	No	-
#7	Crash Experience	No	-
#8	Roadway Network	No	-

Raw Traffic Volumes

Hour		Major Street		Minor Street	
Begin	End	NB	SB	EB	WB
5:00 PM	6:00 PM	112	204	196	0
2nd	Highest Hour	108	196	188	0
3rd	Highest Hour	105	192	184	0
4th	Highest Hour	90	163	157	0
5th	Highest Hour	85	155	149	0
6th	Highest Hour	76	139	133	0
7th	Highest Hour	71	129	123	0
8th	Highest Hour	67	122	118	0
9th	Highest Hour	54	98	94	0
10th	Highest Hour	50	92	88	0
11th	Highest Hour	50	92	88	0
12th	Highest Hour	48	88	84	0
13th	Highest Hour	44	80	76	0
14th	Highest Hour	40	73	71	0
15th	Highest Hour	40	73	71	0
16th	Highest Hour	39	71	69	0
17th	Highest Hour	22	41	39	0
18th	Highest Hour	12	22	22	0
19th	Highest Hour	11	20	20	0
20th	Highest Hour	4	8	8	0
21st	Highest Hour	3	6	6	0
22nd	Highest Hour	3	6	6	0
23rd	Highest Hour	2	4	4	0
24th	Highest Hour	2	4	4	0

Input Parameters

Volume Adjustment Factor =	1.0
North-South Approach =	Major
East-West Approach =	Minor
Major Street Thru Lanes =	1
Minor Street Thru Lanes =	1
Speed > 40 mph?	No
Population < 10,000?	Yes
Warrant Factor	70%
Peak Hour or Daily Count?	Peak Hour
Major Street: 4th-Highest Hour / Peak Hour	80%
Major Street: 8th-Highest Hour / Peak Hour	60%
Minor Street: 4th-Highest Hour / Peak Hour	80%
Minor Street: 8th-Highest Hour / Peak Hour	60%

Analysis Traffic Volumes

Hour		Major Street		Minor Street	
Begin	End	NB	SB	EB	WB
5:00 PM	6:00 PM	112	204	196	0
2nd	Highest Hour	108	196	188	0
3rd	Highest Hour	105	192	184	0
4th	Highest Hour	90	163	157	0
5th	Highest Hour	85	155	149	0
6th	Highest Hour	76	139	133	0
7th	Highest Hour	71	129	123	0
8th	Highest Hour	67	122	118	0
9th	Highest Hour	54	98	94	0
10th	Highest Hour	50	92	88	0
11th	Highest Hour	50	92	88	0
12th	Highest Hour	48	88	84	0
13th	Highest Hour	44	80	76	0
14th	Highest Hour	40	73	71	0
15th	Highest Hour	40	73	71	0
16th	Highest Hour	39	71	69	0
17th	Highest Hour	22	41	39	0
18th	Highest Hour	12	22	22	0
19th	Highest Hour	11	20	20	0
20th	Highest Hour	4	8	8	0
21st	Highest Hour	3	6	6	0
22nd	Highest Hour	3	6	6	0
23rd	Highest Hour	2	4	4	0
24th	Highest Hour	2	4	4	0

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Project #: 13592
Project Name: Karuk Casino
Analyst: MYB
Date: 7/19/2013
File: C:\Users\mbroughton\Desktop\SigWarrants\[7_SigWarrant_FairlaneSharps_ExistingPP_Phase2.xls]War #3 - Peak HR
Intersection: Fairlane / Moonlit Oaks
Scenario: Existing Plus Project Phase 2

Warrant Summary

Warrant	Name	Analyzed?	Met?
#1	Eight-Hour Vehicular Volume	Yes	No
#2	Four-Hour Vehicular volume	Yes	No
#3	Peak Hour	Yes	No
#4	Pedestrian Volume	No	-
#5	School Crossing	No	-
#6	Coordinated Signal System	No	-
#7	Crash Experience	No	-
#8	Roadway Network	No	-

Input Parameters

Volume Adjustment Factor =	1.0
North-South Approach =	Major
East-West Approach =	Minor
Major Street Thru Lanes =	1
Minor Street Thru Lanes =	1
Speed > 40 mph?	No
Population < 10,000?	Yes
Warrant Factor	70%
Peak Hour or Daily Count?	Peak Hour
Major Street: 4th-Highest Hour / Peak Hour	80%
Major Street: 8th-Highest Hour / Peak Hour	60%
Minor Street: 4th-Highest Hour / Peak Hour	80%
Minor Street: 8th-Highest Hour / Peak Hour	60%

Raw Traffic Volumes

Hour		Major Street		Minor Street	
Begin	End	NB	SB	EB	WB
5:00 PM	6:00 PM	113	235	225	0
2nd	Highest Hour	108	226	216	0
3rd	Highest Hour	106	221	212	0
4th	Highest Hour	90	188	180	0
5th	Highest Hour	86	179	171	0
6th	Highest Hour	77	160	153	0
7th	Highest Hour	71	148	142	0
8th	Highest Hour	68	141	135	0
9th	Highest Hour	54	113	108	0
10th	Highest Hour	51	106	101	0
11th	Highest Hour	51	106	101	0
12th	Highest Hour	49	101	97	0
13th	Highest Hour	44	92	88	0
14th	Highest Hour	41	85	81	0
15th	Highest Hour	41	85	81	0
16th	Highest Hour	40	82	79	0
17th	Highest Hour	23	47	45	0
18th	Highest Hour	12	26	25	0
19th	Highest Hour	11	24	23	0
20th	Highest Hour	5	9	9	0
21st	Highest Hour	3	7	7	0
22nd	Highest Hour	3	7	7	0
23rd	Highest Hour	2	5	5	0
24th	Highest Hour	2	5	5	0

Analysis Traffic Volumes

Hour		Major Street		Minor Street	
Begin	End	NB	SB	EB	WB
5:00 PM	6:00 PM	113	235	225	0
2nd	Highest Hour	108	226	216	0
3rd	Highest Hour	106	221	212	0
4th	Highest Hour	90	188	180	0
5th	Highest Hour	86	179	171	0
6th	Highest Hour	77	160	153	0
7th	Highest Hour	71	148	142	0
8th	Highest Hour	68	141	135	0
9th	Highest Hour	54	113	108	0
10th	Highest Hour	51	106	101	0
11th	Highest Hour	51	106	101	0
12th	Highest Hour	49	101	97	0
13th	Highest Hour	44	92	88	0
14th	Highest Hour	41	85	81	0
15th	Highest Hour	41	85	81	0
16th	Highest Hour	40	82	79	0
17th	Highest Hour	23	47	45	0
18th	Highest Hour	12	26	25	0
19th	Highest Hour	11	24	23	0
20th	Highest Hour	5	9	9	0
21st	Highest Hour	3	7	7	0
22nd	Highest Hour	3	7	7	0
23rd	Highest Hour	2	5	5	0
24th	Highest Hour	2	5	5	0

KITTELSON & ASSOCIATES, INC.
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Project #: 13592
Project Name: Karuk Casino
Analyst: MYB
Date: 7/19/2013
File: C:\Users\mbroughton\Desktop\SigWarrants\[7_SigWarrant_FairlaneSharps_ExistingPP_Phase2.xls]War #3 - Peak HR
Intersection: Fairlane / Moonlit Oaks
Scenario: Cumulative No Project

Warrant Summary

Warrant	Name	Analyzed?	Met?
#1	Eight-Hour Vehicular Volume	Yes	No
#2	Four-Hour Vehicular volume	Yes	No
#3	Peak Hour	Yes	No
#4	Pedestrian Volume	No	-
#5	School Crossing	No	-
#6	Coordinated Signal System	No	-
#7	Crash Experience	No	-
#8	Roadway Network	No	-

Raw Traffic Volumes

Hour		Major Street		Minor Street	
Begin	End	NB	SB	EB	WB
5:00 PM	6:00 PM	120	175	175	0
2nd	Highest Hour	115	168	168	0
3rd	Highest Hour	113	165	165	0
4th	Highest Hour	96	140	140	0
5th	Highest Hour	91	133	133	0
6th	Highest Hour	82	119	119	0
7th	Highest Hour	76	110	110	0
8th	Highest Hour	72	105	105	0
9th	Highest Hour	58	84	84	0
10th	Highest Hour	54	79	79	0
11th	Highest Hour	54	79	79	0
12th	Highest Hour	52	75	75	0
13th	Highest Hour	47	68	68	0
14th	Highest Hour	43	63	63	0
15th	Highest Hour	43	63	63	0
16th	Highest Hour	42	61	61	0
17th	Highest Hour	24	35	35	0
18th	Highest Hour	13	19	19	0
19th	Highest Hour	12	18	18	0
20th	Highest Hour	5	7	7	0
21st	Highest Hour	4	5	5	0
22nd	Highest Hour	4	5	5	0
23rd	Highest Hour	2	4	4	0
24th	Highest Hour	2	4	4	0

Input Parameters

Volume Adjustment Factor =	1.0
North-South Approach =	Major
East-West Approach =	Minor
Major Street Thru Lanes =	1
Minor Street Thru Lanes =	1
Speed > 40 mph?	No
Population < 10,000?	Yes
Warrant Factor	70%
Peak Hour or Daily Count?	Peak Hour
Major Street: 4th-Highest Hour / Peak Hour	80%
Major Street: 8th-Highest Hour / Peak Hour	60%
Minor Street: 4th-Highest Hour / Peak Hour	80%
Minor Street: 8th-Highest Hour / Peak Hour	60%

Analysis Traffic Volumes

Hour		Major Street		Minor Street	
Begin	End	NB	SB	EB	WB
5:00 PM	6:00 PM	120	175	175	0
2nd	Highest Hour	115	168	168	0
3rd	Highest Hour	113	165	165	0
4th	Highest Hour	96	140	140	0
5th	Highest Hour	91	133	133	0
6th	Highest Hour	82	119	119	0
7th	Highest Hour	76	110	110	0
8th	Highest Hour	72	105	105	0
9th	Highest Hour	58	84	84	0
10th	Highest Hour	54	79	79	0
11th	Highest Hour	54	79	79	0
12th	Highest Hour	52	75	75	0
13th	Highest Hour	47	68	68	0
14th	Highest Hour	43	63	63	0
15th	Highest Hour	43	63	63	0
16th	Highest Hour	42	61	61	0
17th	Highest Hour	24	35	35	0
18th	Highest Hour	13	19	19	0
19th	Highest Hour	12	18	18	0
20th	Highest Hour	5	7	7	0
21st	Highest Hour	4	5	5	0
22nd	Highest Hour	4	5	5	0
23rd	Highest Hour	2	4	4	0
24th	Highest Hour	2	4	4	0

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Project #: 13592
Project Name: Karuk Casino
Analyst: MYB
Date: 7/19/2013
File: C:\Users\mbroughton\Desktop\SigWarrants\[7_SigWarrant_FairlaneSharps_ExistingPP_Phase2.xls]War #3 - Peak HR
Intersection: Fairlane / Moonlit Oaks
Scenario: Cumulative Plus Project

Warrant Summary

Warrant	Name	Analyzed?	Met?
#1	Eight-Hour Vehicular Volume	Yes	No
#2	Four-Hour Vehicular volume	Yes	No
#3	Peak Hour	Yes	No
#4	Pedestrian Volume	No	-
#5	School Crossing	No	-
#6	Coordinated Signal System	No	-
#7	Crash Experience	No	-
#8	Roadway Network	No	-

Input Parameters

Volume Adjustment Factor =	1.0
North-South Approach =	Major
East-West Approach =	Minor
Major Street Thru Lanes =	1
Minor Street Thru Lanes =	1
Speed > 40 mph?	No
Population < 10,000?	Yes
Warrant Factor	70%
Peak Hour or Daily Count?	Peak Hour
Major Street: 4th-Highest Hour / Peak Hour	80%
Major Street: 8th-Highest Hour / Peak Hour	60%
Minor Street: 4th-Highest Hour / Peak Hour	80%
Minor Street: 8th-Highest Hour / Peak Hour	60%

Raw Traffic Volumes

Hour		Major Street		Minor Street	
Begin	End	NB	SB	EB	WB
5:00 PM	6:00 PM	123	245	236	0
2nd	Highest Hour	118	235	227	0
3rd	Highest Hour	116	230	222	0
4th	Highest Hour	98	196	189	0
5th	Highest Hour	93	186	179	0
6th	Highest Hour	84	167	160	0
7th	Highest Hour	77	154	149	0
8th	Highest Hour	74	147	142	0
9th	Highest Hour	59	118	113	0
10th	Highest Hour	55	110	106	0
11th	Highest Hour	55	110	106	0
12th	Highest Hour	53	105	101	0
13th	Highest Hour	48	96	92	0
14th	Highest Hour	44	88	85	0
15th	Highest Hour	44	88	85	0
16th	Highest Hour	43	86	83	0
17th	Highest Hour	25	49	47	0
18th	Highest Hour	14	27	26	0
19th	Highest Hour	12	25	24	0
20th	Highest Hour	5	10	9	0
21st	Highest Hour	4	7	7	0
22nd	Highest Hour	4	7	7	0
23rd	Highest Hour	2	5	5	0
24th	Highest Hour	2	5	5	0

Analysis Traffic Volumes

Hour		Major Street		Minor Street	
Begin	End	NB	SB	EB	WB
5:00 PM	6:00 PM	123	245	236	0
2nd	Highest Hour	118	235	227	0
3rd	Highest Hour	116	230	222	0
4th	Highest Hour	98	196	189	0
5th	Highest Hour	93	186	179	0
6th	Highest Hour	84	167	160	0
7th	Highest Hour	77	154	149	0
8th	Highest Hour	74	147	142	0
9th	Highest Hour	59	118	113	0
10th	Highest Hour	55	110	106	0
11th	Highest Hour	55	110	106	0
12th	Highest Hour	53	105	101	0
13th	Highest Hour	48	96	92	0
14th	Highest Hour	44	88	85	0
15th	Highest Hour	44	88	85	0
16th	Highest Hour	43	86	83	0
17th	Highest Hour	25	49	47	0
18th	Highest Hour	14	27	26	0
19th	Highest Hour	12	25	24	0
20th	Highest Hour	5	10	9	0
21st	Highest Hour	4	7	7	0
22nd	Highest Hour	4	7	7	0
23rd	Highest Hour	2	5	5	0
24th	Highest Hour	2	5	5	0

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Project #: 13592
Project Name: Karuk Casino
Analyst: MYB
Date: 9/3/2013
File: K:\H_Sacramento\projfile\13592 - Yreka Casino\signal_warrants\[7_SigWarrant_FairlaneSharps_Existing.xl
Intersection: Fairlane / Sharps
Scenario: Existing

Warrant Summary

Warrant	Name	Analyzed?	Met?
#1	Eight-Hour Vehicular Volume	Yes	No
#2	Four-Hour Vehicular volume	Yes	No
#3	Peak Hour	Yes	No
#4	Pedestrian Volume	No	-
#5	School Crossing	No	-
#6	Coordinated Signal System	No	-
#7	Crash Experience	No	-
#8	Roadway Network	No	-

Input Parameters

Volume Adjustment Factor =	1.0
North-South Approach =	Major
East-West Approach =	Minor
Major Street Thru Lanes =	1
Minor Street Thru Lanes =	1
Speed > 40 mph?	No
Population < 10,000?	Yes
Warrant Factor	70%
Peak Hour or Daily Count?	Peak Hour
Major Street: 4th-Highest Hour / Peak Hour	80%
Major Street: 8th-Highest Hour / Peak Hour	60%
Minor Street: 4th-Highest Hour / Peak Hour	80%
Minor Street: 8th-Highest Hour / Peak Hour	60%

Raw Traffic Volumes

Hour		Major Street		Minor Street	
Begin	End	NB	SB	EB	WB
5:00 PM	6:00 PM	157	145	0	34
2nd	Highest Hour	151	139	0	33
3rd	Highest Hour	148	136	0	32
4th	Highest Hour	126	116	0	27
5th	Highest Hour	119	110	0	26
6th	Highest Hour	107	99	0	23
7th	Highest Hour	99	91	0	21
8th	Highest Hour	94	87	0	20
9th	Highest Hour	75	70	0	16
10th	Highest Hour	71	65	0	15
11th	Highest Hour	71	65	0	15
12th	Highest Hour	68	62	0	15
13th	Highest Hour	61	57	0	13
14th	Highest Hour	57	52	0	12
15th	Highest Hour	57	52	0	12
16th	Highest Hour	55	51	0	12
17th	Highest Hour	31	29	0	7
18th	Highest Hour	17	16	0	4
19th	Highest Hour	16	15	0	3
20th	Highest Hour	6	6	0	1
21st	Highest Hour	5	4	0	1
22nd	Highest Hour	5	4	0	1
23rd	Highest Hour	3	3	0	1
24th	Highest Hour	3	3	0	1

Analysis Traffic Volumes

Hour		Major Street		Minor Street	
Begin	End	NB	SB	EB	WB
5:00 PM	6:00 PM	157	145	0	34
2nd	Highest Hour	151	139	0	33
3rd	Highest Hour	148	136	0	32
4th	Highest Hour	126	116	0	27
5th	Highest Hour	119	110	0	26
6th	Highest Hour	107	99	0	23
7th	Highest Hour	99	91	0	21
8th	Highest Hour	94	87	0	20
9th	Highest Hour	75	70	0	16
10th	Highest Hour	71	65	0	15
11th	Highest Hour	71	65	0	15
12th	Highest Hour	68	62	0	15
13th	Highest Hour	61	57	0	13
14th	Highest Hour	57	52	0	12
15th	Highest Hour	57	52	0	12
16th	Highest Hour	55	51	0	12
17th	Highest Hour	31	29	0	7
18th	Highest Hour	17	16	0	4
19th	Highest Hour	16	15	0	3
20th	Highest Hour	6	6	0	1
21st	Highest Hour	5	4	0	1
22nd	Highest Hour	5	4	0	1
23rd	Highest Hour	3	3	0	1
24th	Highest Hour	3	3	0	1

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Project #: 13592
Project Name: Karuk Casino
Analyst: MYB
Date: 9/3/2013
File: K:\H_Sacramento\projfile\13592 - Yreka Casino\signal_warrants\[7_SigWarrant_FairlaneSharps_ExistingPP
Intersection: Fairlane / Sharps
Scenario: Existing PP Phase 1

Warrant Summary

Warrant	Name	Analyzed?	Met?
#1	Eight-Hour Vehicular Volume	Yes	No
#2	Four-Hour Vehicular volume	Yes	No
#3	Peak Hour	Yes	No
#4	Pedestrian Volume	No	-
#5	School Crossing	No	-
#6	Coordinated Signal System	No	-
#7	Crash Experience	No	-
#8	Roadway Network	No	-

Input Parameters

Volume Adjustment Factor =	1.0
North-South Approach =	Major
East-West Approach =	Minor
Major Street Thru Lanes =	1
Minor Street Thru Lanes =	1
Speed > 40 mph?	No
Population < 10,000?	Yes
Warrant Factor	70%
Peak Hour or Daily Count?	Peak Hour
Major Street: 4th-Highest Hour / Peak Hour	80%
Major Street: 8th-Highest Hour / Peak Hour	60%
Minor Street: 4th-Highest Hour / Peak Hour	80%
Minor Street: 8th-Highest Hour / Peak Hour	60%

Raw Traffic Volumes

Hour		Major Street		Minor Street	
Begin	End	NB	SB	EB	WB
5:00 PM	6:00 PM	190	152	0	80
2nd	Highest Hour	182	146	0	77
3rd	Highest Hour	179	143	0	75
4th	Highest Hour	152	122	0	64
5th	Highest Hour	144	116	0	61
6th	Highest Hour	129	103	0	54
7th	Highest Hour	120	96	0	50
8th	Highest Hour	114	91	0	48
9th	Highest Hour	91	73	0	38
10th	Highest Hour	86	68	0	36
11th	Highest Hour	86	68	0	36
12th	Highest Hour	82	65	0	34
13th	Highest Hour	74	59	0	31
14th	Highest Hour	68	55	0	29
15th	Highest Hour	68	55	0	29
16th	Highest Hour	67	53	0	28
17th	Highest Hour	38	30	0	16
18th	Highest Hour	21	17	0	9
19th	Highest Hour	19	15	0	8
20th	Highest Hour	8	6	0	3
21st	Highest Hour	6	5	0	2
22nd	Highest Hour	6	5	0	2
23rd	Highest Hour	4	3	0	2
24th	Highest Hour	4	3	0	2

Analysis Traffic Volumes

Hour		Major Street		Minor Street	
Begin	End	NB	SB	EB	WB
5:00 PM	6:00 PM	190	152	0	80
2nd	Highest Hour	182	146	0	77
3rd	Highest Hour	179	143	0	75
4th	Highest Hour	152	122	0	64
5th	Highest Hour	144	116	0	61
6th	Highest Hour	129	103	0	54
7th	Highest Hour	120	96	0	50
8th	Highest Hour	114	91	0	48
9th	Highest Hour	91	73	0	38
10th	Highest Hour	86	68	0	36
11th	Highest Hour	86	68	0	36
12th	Highest Hour	82	65	0	34
13th	Highest Hour	74	59	0	31
14th	Highest Hour	68	55	0	29
15th	Highest Hour	68	55	0	29
16th	Highest Hour	67	53	0	28
17th	Highest Hour	38	30	0	16
18th	Highest Hour	21	17	0	9
19th	Highest Hour	19	15	0	8
20th	Highest Hour	8	6	0	3
21st	Highest Hour	6	5	0	2
22nd	Highest Hour	6	5	0	2
23rd	Highest Hour	4	3	0	2
24th	Highest Hour	4	3	0	2

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Project #: 13592
Project Name: Karuk Casino
Analyst: MYB
Date: 9/3/2013
File: K:\H_Sacramento\projfile\13592 - Yreka Casino\signal_warrants\[7_SigWarrant_FairlaneSharps_ExistingPP
Intersection: Fairlane / Sharps
Scenario: Existing PP Phase 2

Warrant Summary

Warrant	Name	Analyzed?	Met?
#1	Eight-Hour Vehicular Volume	Yes	No
#2	Four-Hour Vehicular volume	Yes	No
#3	Peak Hour	Yes	No
#4	Pedestrian Volume	No	-
#5	School Crossing	No	-
#6	Coordinated Signal System	No	-
#7	Crash Experience	No	-
#8	Roadway Network	No	-

Raw Traffic Volumes

Hour		Major Street		Minor Street	
Begin	End	NB	SB	EB	WB
5:00 PM	6:00 PM	220	158	0	119
2nd	Highest Hour	211	152	0	114
3rd	Highest Hour	207	149	0	112
4th	Highest Hour	176	126	0	95
5th	Highest Hour	167	120	0	90
6th	Highest Hour	150	107	0	81
7th	Highest Hour	139	100	0	75
8th	Highest Hour	132	95	0	71
9th	Highest Hour	106	76	0	57
10th	Highest Hour	99	71	0	54
11th	Highest Hour	99	71	0	54
12th	Highest Hour	95	68	0	51
13th	Highest Hour	86	62	0	46
14th	Highest Hour	79	57	0	43
15th	Highest Hour	79	57	0	43
16th	Highest Hour	77	55	0	42
17th	Highest Hour	44	32	0	24
18th	Highest Hour	24	17	0	13
19th	Highest Hour	22	16	0	12
20th	Highest Hour	9	6	0	5
21st	Highest Hour	7	5	0	4
22nd	Highest Hour	7	5	0	4
23rd	Highest Hour	4	3	0	2
24th	Highest Hour	4	3	0	2

Input Parameters

Volume Adjustment Factor =	1.0
North-South Approach =	Major
East-West Approach =	Minor
Major Street Thru Lanes =	1
Minor Street Thru Lanes =	1
Speed > 40 mph?	No
Population < 10,000?	Yes
Warrant Factor	70%
Peak Hour or Daily Count?	Peak Hour
Major Street: 4th-Highest Hour / Peak Hour	80%
Major Street: 8th-Highest Hour / Peak Hour	60%
Minor Street: 4th-Highest Hour / Peak Hour	80%
Minor Street: 8th-Highest Hour / Peak Hour	60%

Analysis Traffic Volumes

Hour		Major Street		Minor Street	
Begin	End	NB	SB	EB	WB
5:00 PM	6:00 PM	220	158	0	119
2nd	Highest Hour	211	152	0	114
3rd	Highest Hour	207	149	0	112
4th	Highest Hour	176	126	0	95
5th	Highest Hour	167	120	0	90
6th	Highest Hour	150	107	0	81
7th	Highest Hour	139	100	0	75
8th	Highest Hour	132	95	0	71
9th	Highest Hour	106	76	0	57
10th	Highest Hour	99	71	0	54
11th	Highest Hour	99	71	0	54
12th	Highest Hour	95	68	0	51
13th	Highest Hour	86	62	0	46
14th	Highest Hour	79	57	0	43
15th	Highest Hour	79	57	0	43
16th	Highest Hour	77	55	0	42
17th	Highest Hour	44	32	0	24
18th	Highest Hour	24	17	0	13
19th	Highest Hour	22	16	0	12
20th	Highest Hour	9	6	0	5
21st	Highest Hour	7	5	0	4
22nd	Highest Hour	7	5	0	4
23rd	Highest Hour	4	3	0	2
24th	Highest Hour	4	3	0	2

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Project #: 13592
Project Name: Karuk Casino
Analyst: MYB
Date: 9/3/2013
File: K:\H_Sacramento\projfile\13592 - Yreka Casino\signal_warrants\[7_SigWarrant_FairlaneSharps_CumNP.xls
Intersection: Fairlane / Sharps
Scenario: Cumulative No Project

Warrant Summary

Warrant	Name	Analyzed?	Met?
#1	Eight-Hour Vehicular Volume	Yes	No
#2	Four-Hour Vehicular volume	Yes	No
#3	Peak Hour	Yes	No
#4	Pedestrian Volume	No	-
#5	School Crossing	No	-
#6	Coordinated Signal System	No	-
#7	Crash Experience	No	-
#8	Roadway Network	No	-

Input Parameters

Volume Adjustment Factor =	1.0
North-South Approach =	Major
East-West Approach =	Minor
Major Street Thru Lanes =	1
Minor Street Thru Lanes =	1
Speed > 40 mph?	No
Population < 10,000?	Yes
Warrant Factor	70%
Peak Hour or Daily Count?	Peak Hour
Major Street: 4th-Highest Hour / Peak Hour	80%
Major Street: 8th-Highest Hour / Peak Hour	60%
Minor Street: 4th-Highest Hour / Peak Hour	80%
Minor Street: 8th-Highest Hour / Peak Hour	60%

Raw Traffic Volumes

Hour		Major Street		Minor Street	
Begin	End	NB	SB	EB	WB
5:00 PM	6:00 PM	170	155	0	35
2nd	Highest Hour	163	149	0	34
3rd	Highest Hour	160	146	0	33
4th	Highest Hour	136	124	0	28
5th	Highest Hour	129	118	0	27
6th	Highest Hour	116	105	0	24
7th	Highest Hour	107	98	0	22
8th	Highest Hour	102	93	0	21
9th	Highest Hour	82	74	0	17
10th	Highest Hour	77	70	0	16
11th	Highest Hour	77	70	0	16
12th	Highest Hour	73	67	0	15
13th	Highest Hour	66	60	0	14
14th	Highest Hour	61	56	0	13
15th	Highest Hour	61	56	0	13
16th	Highest Hour	60	54	0	12
17th	Highest Hour	34	31	0	7
18th	Highest Hour	19	17	0	4
19th	Highest Hour	17	16	0	4
20th	Highest Hour	7	6	0	1
21st	Highest Hour	5	5	0	1
22nd	Highest Hour	5	5	0	1
23rd	Highest Hour	3	3	0	1
24th	Highest Hour	3	3	0	1

Analysis Traffic Volumes

Hour		Major Street		Minor Street	
Begin	End	NB	SB	EB	WB
5:00 PM	6:00 PM	170	155	0	35
2nd	Highest Hour	163	149	0	34
3rd	Highest Hour	160	146	0	33
4th	Highest Hour	136	124	0	28
5th	Highest Hour	129	118	0	27
6th	Highest Hour	116	105	0	24
7th	Highest Hour	107	98	0	22
8th	Highest Hour	102	93	0	21
9th	Highest Hour	82	74	0	17
10th	Highest Hour	77	70	0	16
11th	Highest Hour	77	70	0	16
12th	Highest Hour	73	67	0	15
13th	Highest Hour	66	60	0	14
14th	Highest Hour	61	56	0	13
15th	Highest Hour	61	56	0	13
16th	Highest Hour	60	54	0	12
17th	Highest Hour	34	31	0	7
18th	Highest Hour	19	17	0	4
19th	Highest Hour	17	16	0	4
20th	Highest Hour	7	6	0	1
21st	Highest Hour	5	5	0	1
22nd	Highest Hour	5	5	0	1
23rd	Highest Hour	3	3	0	1
24th	Highest Hour	3	3	0	1

KITTELSON & ASSOCIATES, INC.
610 SW Alder, Suite 700
Portland, Oregon 97205
(503) 228-5230
Fax: (503) 273-8169

Project #: 13592
Project Name: Karuk Casino
Analyst: MYB
Date: 9/3/2013
File: K:\H_Sacramento\projfile\13592 - Yreka Casino\signal_warrants\[7_SigWarrant_FairlaneSharps_CumPP.xls]
Intersection: Fairlane / Sharps
Scenario: Cumulative Plus Project

Warrant Summary

Warrant	Name	Analyzed?	Met?
#1	Eight-Hour Vehicular Volume	Yes	No
#2	Four-Hour Vehicular volume	Yes	No
#3	Peak Hour	Yes	No
#4	Pedestrian Volume	No	-
#5	School Crossing	No	-
#6	Coordinated Signal System	No	-
#7	Crash Experience	No	-
#8	Roadway Network	No	-

Input Parameters

Volume Adjustment Factor =	1.0
North-South Approach =	Major
East-West Approach =	Minor
Major Street Thru Lanes =	1
Minor Street Thru Lanes =	1
Speed > 40 mph?	No
Population < 10,000?	Yes
Warrant Factor	70%
Peak Hour or Daily Count?	Peak Hour
Major Street: 4th-Highest Hour / Peak Hour	80%
Major Street: 8th-Highest Hour / Peak Hour	60%
Minor Street: 4th-Highest Hour / Peak Hour	80%
Minor Street: 8th-Highest Hour / Peak Hour	60%

Raw Traffic Volumes

Hour		Major Street		Minor Street	
Begin	End	NB	SB	EB	WB
5:00 PM	6:00 PM	233	168	0	120
2nd	Highest Hour	224	161	0	115
3rd	Highest Hour	219	158	0	113
4th	Highest Hour	186	134	0	96
5th	Highest Hour	177	128	0	91
6th	Highest Hour	158	114	0	82
7th	Highest Hour	147	106	0	76
8th	Highest Hour	140	101	0	72
9th	Highest Hour	112	81	0	58
10th	Highest Hour	105	76	0	54
11th	Highest Hour	105	76	0	54
12th	Highest Hour	100	72	0	52
13th	Highest Hour	91	66	0	47
14th	Highest Hour	84	60	0	43
15th	Highest Hour	84	60	0	43
16th	Highest Hour	82	59	0	42
17th	Highest Hour	47	34	0	24
18th	Highest Hour	26	18	0	13
19th	Highest Hour	23	17	0	12
20th	Highest Hour	9	7	0	5
21st	Highest Hour	7	5	0	4
22nd	Highest Hour	7	5	0	4
23rd	Highest Hour	5	3	0	2
24th	Highest Hour	5	3	0	2

Analysis Traffic Volumes

Hour		Major Street		Minor Street	
Begin	End	NB	SB	EB	WB
5:00 PM	6:00 PM	233	168	0	120
2nd	Highest Hour	224	161	0	115
3rd	Highest Hour	219	158	0	113
4th	Highest Hour	186	134	0	96
5th	Highest Hour	177	128	0	91
6th	Highest Hour	158	114	0	82
7th	Highest Hour	147	106	0	76
8th	Highest Hour	140	101	0	72
9th	Highest Hour	112	81	0	58
10th	Highest Hour	105	76	0	54
11th	Highest Hour	105	76	0	54
12th	Highest Hour	100	72	0	52
13th	Highest Hour	91	66	0	47
14th	Highest Hour	84	60	0	43
15th	Highest Hour	84	60	0	43
16th	Highest Hour	82	59	0	42
17th	Highest Hour	47	34	0	24
18th	Highest Hour	26	18	0	13
19th	Highest Hour	23	17	0	12
20th	Highest Hour	9	7	0	5
21st	Highest Hour	7	5	0	4
22nd	Highest Hour	7	5	0	4
23rd	Highest Hour	5	3	0	2
24th	Highest Hour	5	3	0	2

APPENDIX G

ENVIRONMENTAL DATA RESOURCES, INC. REPORT

The EDR Radius Map
with GeoCheck®

Karuk Trust Conveyance
Sharps Road
Yreka, CA 96097

Inquiry Number: 2201538.1s

April 22, 2008

EDR® Environmental Data Resources Inc

The Standard in Environmental Risk Information

440 Wheelers Farms Road
Milford, Connecticut 06461

Nationwide Customer Service

Telephone: 1-800-352-0050
Fax: 1-800-231-6802
Internet: www.edrnet.com

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Overview Map	2
Detail Map	3
Map Findings Summary	4
Map Findings	6
Orphan Summary	14
Government Records Searched/Data Currency Tracking	GR-1

GEOCHECK ADDENDUM

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Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

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EXECUTIVE SUMMARY

A search of available environmental records was conducted by Environmental Data Resources, Inc (EDR). The report was designed to assist parties seeking to meet the search requirements of EPA's Standards and Practices for All Appropriate Inquiries (40 CFR Part 312), the ASTM Standard Practice for Environmental Site Assessments (E 1527-05) or custom requirements developed for the evaluation of environmental risk associated with a parcel of real estate.

TARGET PROPERTY INFORMATION

ADDRESS

SHARPS ROAD
YREKA, CA 96097

COORDINATES

Latitude (North):	41.709600 - 41˚ 42' 34.6''
Longitude (West):	122.632200 - 122˚ 37' 55.9''
Universal Tranverse Mercator:	Zone 10
UTM X (Meters):	530599.3
UTM Y (Meters):	4617386.5
Elevation:	2702 ft. above sea level

USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

Target Property Map:	41122-F6 YREKA, CA
Most Recent Revision:	1984
East Map:	41122-F5 MONTAGUE, CA
Most Recent Revision:	1984

TARGET PROPERTY SEARCH RESULTS

The target property was not listed in any of the databases searched by EDR.

DATABASES WITH NO MAPPED SITES

No mapped sites were found in EDR's search of available ("reasonably ascertainable ") government records either on the target property or within the search radius around the target property for the following databases:

FEDERAL RECORDS

NPL ..... National Priority List
Proposed NPL ..... Proposed National Priority List Sites
Delisted NPL ..... National Priority List Deletions
NPL LIENS ..... Federal Superfund Liens
CERCLIS ..... Comprehensive Environmental Response, Compensation, and Liability Information System
CERC-NFRAP ..... CERCLIS No Further Remedial Action Planned
LIENS 2 ..... CERCLA Lien Information

EXECUTIVE SUMMARY

CORRACTS	Corrective Action Report
RCRA-TSDF	RCRA - Transporters, Storage and Disposal
RCRA-LQG	RCRA - Large Quantity Generators
RCRA-SQG	RCRA - Small Quantity Generators
RCRA-CESQG	RCRA - Conditionally Exempt Small Quantity Generator
RCRA-NonGen	RCRA - Non Generators
US ENG CONTROLS	Engineering Controls Sites List
US INST CONTROL	Sites with Institutional Controls
ERNS	Emergency Response Notification System
HMIRS	Hazardous Materials Information Reporting System
DOT OPS	Incident and Accident Data
US CDL	Clandestine Drug Labs
US BROWNFIELDS	A Listing of Brownfields Sites
DOD	Department of Defense Sites
FUDS	Formerly Used Defense Sites
LUCIS	Land Use Control Information System
CONSENT	Superfund (CERCLA) Consent Decrees
ROD	Records Of Decision
UMTRA	Uranium Mill Tailings Sites
ODI	Open Dump Inventory
DEBRIS REGION 9	Torres Martinez Reservation Illegal Dump Site Locations
MINES	Mines Master Index File
TRIS	Toxic Chemical Release Inventory System
TSCA	Toxic Substances Control Act
FTTS	FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
HIST FTTS	FIFRA/TSCA Tracking System Administrative Case Listing
SSTS	Section 7 Tracking Systems
ICIS	Integrated Compliance Information System
PADS	PCB Activity Database System
MLTS	Material Licensing Tracking System
RADINFO	Radiation Information Database
FINDS	Facility Index System/Facility Registry System
RAATS	RCRA Administrative Action Tracking System

STATE AND LOCAL RECORDS

HIST Cal-Sites	Historical Calsites Database
CA BOND EXP. PLAN	Bond Expenditure Plan
SCH	School Property Evaluation Program
Toxic Pits	Toxic Pits Cleanup Act Sites
CA WDS	Waste Discharge System
Cortese	"Cortese" Hazardous Waste & Substances Sites List
SWRCY	Recycler Database
LUST	Geotracker's Leaking Underground Fuel Tank Report
CA FID UST	Facility Inventory Database
SLIC	Statewide SLIC Cases
UST	Active UST Facilities
HIST UST	Hazardous Substance Storage Container Database
AST	Aboveground Petroleum Storage Tank Facilities
LIENS	Environmental Liens Listing
SWEEPS UST	SWEEPS UST Listing
CHMIRS	California Hazardous Material Incident Report System
DEED	Deed Restriction Listing
VCP	Voluntary Cleanup Program Properties

EXECUTIVE SUMMARY

DRYCLEANERS ..... Cleaner Facilities
WIP ..... Well Investigation Program Case List
CDL ..... Clandestine Drug Labs
RESPONSE ..... State Response Sites
HAZNET ..... Facility and Manifest Data
AIRS ..... Emissions Inventory Data
HAULERS ..... Registered Waste Tire Haulers Listing

TRIBAL RECORDS

INDIAN RESERV ..... Indian Reservations
INDIAN ODI ..... Report on the Status of Open Dumps on Indian Lands
INDIAN LUST ..... Leaking Underground Storage Tanks on Indian Land
INDIAN UST ..... Underground Storage Tanks on Indian Land

EDR PROPRIETARY RECORDS

Manufactured Gas Plants ... EDR Proprietary Manufactured Gas Plants

SURROUNDING SITES: SEARCH RESULTS

Surrounding sites were identified in the following databases.

Elevations have been determined from the USGS Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified. Sites with an elevation equal to or higher than the target property have been differentiated below from sites with an elevation lower than the target property.
Page numbers and map identification numbers refer to the EDR Radius Map report where detailed data on individual sites can be reviewed.

Sites listed in ***bold italics*** are in multiple databases.

Unmappable (orphan) sites are not considered in the foregoing analysis.

STATE AND LOCAL RECORDS

SWF/LF: The Solid Waste Facilities/Landfill Sites records typically contain an inventory of solid waste disposal facilities or landfills in a particular state. The data come from the Integrated Waste Management Board's Solid Waste Information System (SWIS) database.

A review of the SWF/LF list, as provided by EDR, and dated 03/10/2008 has revealed that there is 1 SWF/LF site within approximately 0.5 miles of the target property.

Lower Elevation	Address	Dist / Dir	Map ID	Page
YREKA MED. VOL. TRANSFER STATI	2420 OBERLIN ROAD	1/4 - 1/2 N	A2	10

WMUDS/SWAT: The Waste Management Unit Database System is used for program tracking and inventory of waste management units. The source is the State Water Resources Control Board.

A review of the WMUDS/SWAT list, as provided by EDR, and dated 04/01/2000 has revealed that there is 1 WMUDS/SWAT site within approximately 0.5 miles of the target property.

EXECUTIVE SUMMARY

Lower Elevation	Address	Dist / Dir	Map ID	Page
CITY OF YREKA DEPARTMENT OF PU	***2420 OBERLIN RD***	***1/4 - 1/2 N***	***A1***	***6***

Notify 65: Notify 65 records contain facility notifications about any release that could impact drinking water and thereby expose the public to a potential health risk. The data come from the State Water Resources Control Board's Proposition 65 database.

A review of the Notify 65 list, as provided by EDR, and dated 10/21/1993 has revealed that there are 4 Notify 65 sites within approximately 1 mile of the target property.

Lower Elevation	Address	Dist / Dir	Map ID	Page
NORCAL PRODUCTS	1512 S. OREGON ST	1/2 - 1 NW	B4	12
NOR CAL PRODUCTS	1512 S. OREGON ST	1/2 - 1 NW	B5	12
NOR-CAL PRODUCTS	1513 SOUTH OREGON ST	1/2 - 1 NW	B6	12
NOR-CAL PRODUCTS	1513 SOUTH OREGON ST	1/2 - 1 NW	B7	13

ENVIROSTOR: The Department of Toxic Substances Control's (DTSC's) Site Mitigation and Brownfields Reuse Program's (SMBRP's) EnviroStor database identifes sites that have known contamination or sites for which there may be reasons to investigate further. The database includes the following site types: Federal Superfund sites (National Priorities List (NPL)); State Response, including Military Facilities and State Superfund; Voluntary Cleanup; and School sites. EnviroStor provides similar information to the information that was available in CalSites, and provides additional site information, including, but not limited to, identification of formerly-contaminated properties that have been released for reuse, properties where environmental deed restrictions have been recorded to prevent inappropriate land uses, and risk characterization information that is used to assess potential impacts to public health and the environment at contaminated sites.

A review of the ENVIROSTOR list, as provided by EDR, and dated 02/26/2008 has revealed that there is 1 ENVIROSTOR site within approximately 1 mile of the target property.

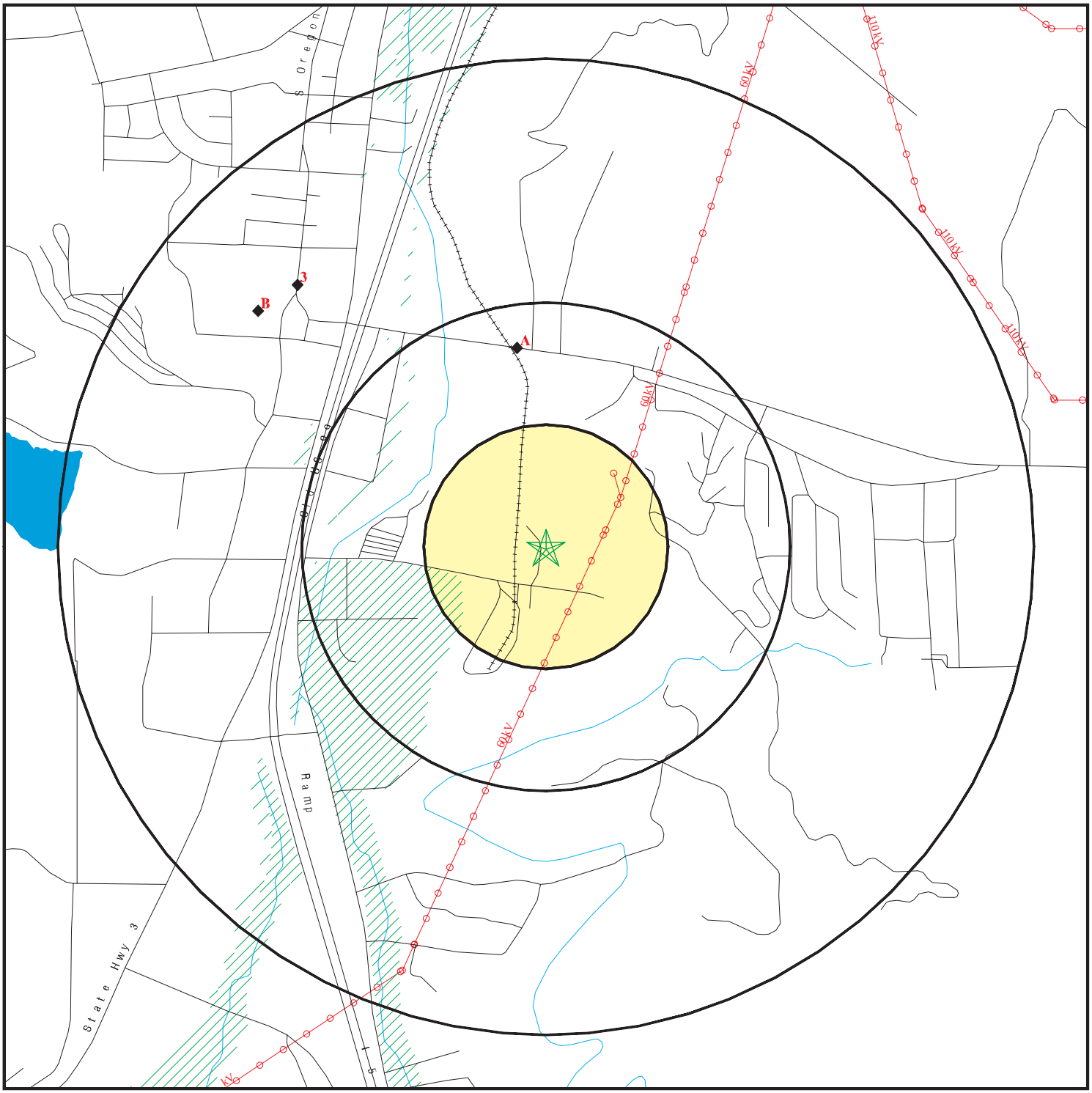
Lower Elevation	Address	Dist / Dir	Map ID	Page
NOR-CAL PRODUCTS COMPANY Facility Status: Refer: RWQCB	1512 SOUTH OREGON STREE	1/2 - 1 NW	3	11

EXECUTIVE SUMMARY

Due to poor or inadequate address information, the following sites were not mapped:

Site Name	Database(s)
USDA - MT. HEBRON WORK CENTER	SWEEPS UST
USFS GUNSIGHT PEAK	LUST, Cortese
SISKIYOU PETROLEUM CARDLOCK	LUST, Cortese
YREKA DRUG LAB	CERC-NFRAP
SHASTA FOREST PRODUCTS	LUST, SLIC
YREKA FIRE TRAINING CENTER	LUST, SLIC
FREEZE, IM	LUST, SLIC
SISKIYOU FOOD MART & SHELL	UST
MT. HEBRON WORK CENTER	HIST UST
CENTRAL SHOP	HIST UST
COUNTY SERVICE STATION	HIST UST
GRASS LAKE STATION	HIST UST
PINE MTN LUMBER COMPANY	SLIC
HI-RIDGE LUMBER COMPANY	ENVIROSTOR

OVERVIEW MAP - 2201538.1s



- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- National Priority List Sites
- Dept. Defense Sites
- Indian Reservations BIA
- Power transmission lines
- Oil & Gas pipelines
- 100-year flood zone
- 500-year flood zone
- Areas of Concern

0 1/4 1/2 1 Miles

N

SITE NAME: Karuk Trust Conveyance ADDRESS: Sharps Road Yreka CA 96097 LAT/LONG: 41.7096 / 122.6322	CLIENT: Karuk Tribe of California CONTACT: Scott Quinn INQUIRY #: 2201538.1s DATE: April 22, 2008 4:25 pm

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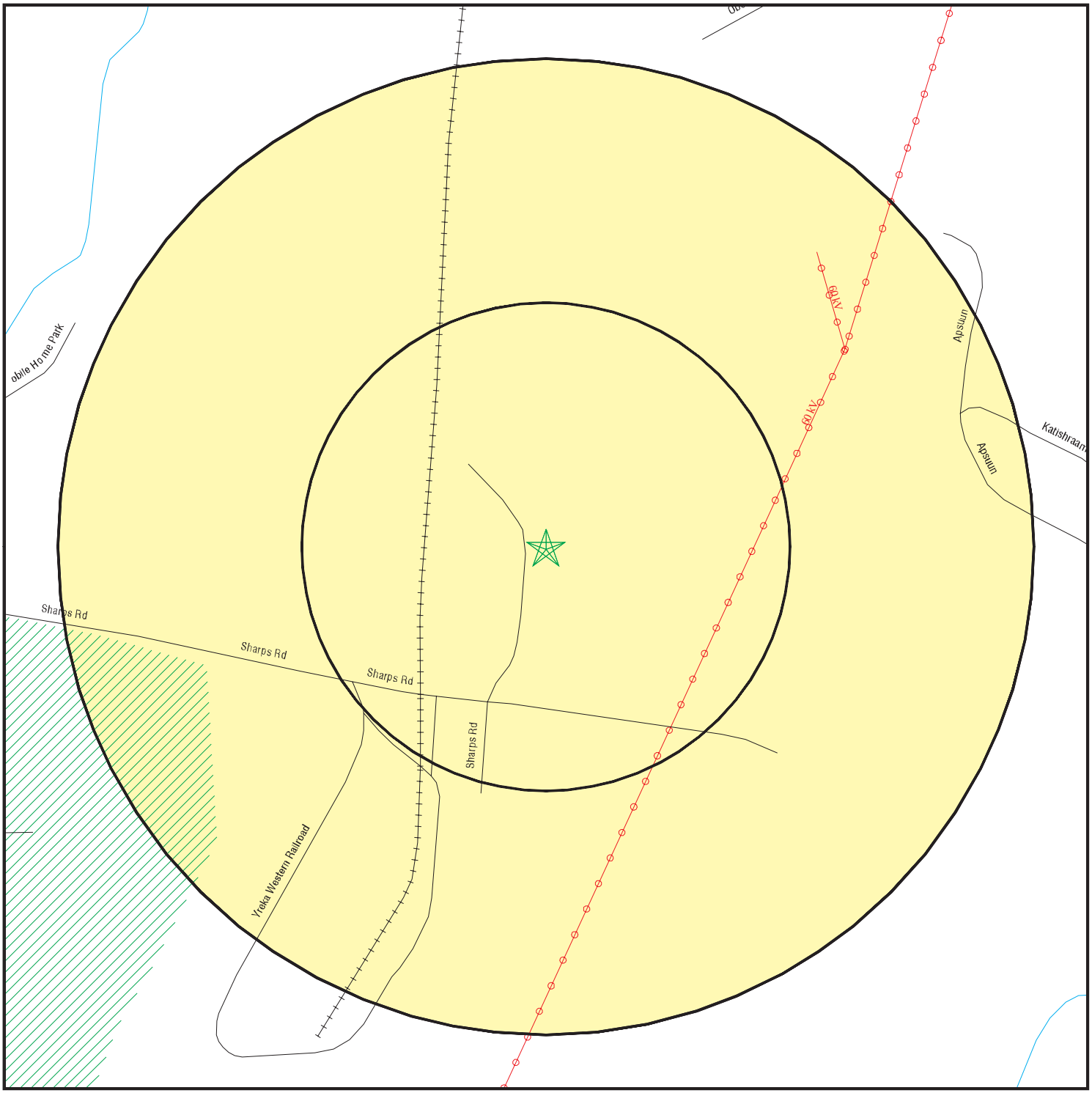
DETAIL MAP - 2201538.1s



Target Property

Sites at elevations higher than or equal to the target property

Sites at elevations lower than the target property

Manufactured Gas Plants

Sensitive Receptors

National Priority List Sites

Dept. Defense Sites

0 1/16 1/8 1/4 Miles

Indian Reservations BIA

Power transmission lines

Oil & Gas pipelines

100-year flood zone

500-year flood zone

Areas of Concern

N

SITE NAME: Karuk Trust Conveyance ADDRESS: Sharps Road Yreka CA 96097 LAT/LONG: 41.7096 / 122.6322	CLIENT: Karuk Tribe of California CONTACT: Scott Quinn INQUIRY #: 2201538.1s DATE: April 22, 2008 4:25 pm

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MAP FINDINGS SUMMARY

Database	Target Property	Search Distance (Miles)	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
FEDERAL RECORDS								
NPL		1.000	0	0	0	0	NR	0
Proposed NPL		1.000	0	0	0	0	NR	0
Delisted NPL		1.000	0	0	0	0	NR	0
NPL LIENS		TP	NR	NR	NR	NR	NR	0
CERCLIS		0.500	0	0	0	NR	NR	0
CERC-NFRAP		0.500	0	0	0	NR	NR	0
LIENS 2		TP	NR	NR	NR	NR	NR	0
CORRACTS		1.000	0	0	0	0	NR	0
RCRA-TSDF		0.500	0	0	0	NR	NR	0
RCRA-LQG		0.250	0	0	NR	NR	NR	0
RCRA-SQG		0.250	0	0	NR	NR	NR	0
RCRA-CESQG		0.250	0	0	NR	NR	NR	0
RCRA-NonGen		TP	NR	NR	NR	NR	NR	0
US ENG CONTROLS		0.500	0	0	0	NR	NR	0
US INST CONTROL		0.500	0	0	0	NR	NR	0
ERNS		TP	NR	NR	NR	NR	NR	0
HMIRS		TP	NR	NR	NR	NR	NR	0
DOT OPS		TP	NR	NR	NR	NR	NR	0
US CDL		TP	NR	NR	NR	NR	NR	0
US BROWNFIELDS		0.500	0	0	0	NR	NR	0
DOD		1.000	0	0	0	0	NR	0
FUDS		1.000	0	0	0	0	NR	0
LUCIS		0.500	0	0	0	NR	NR	0
CONSENT		1.000	0	0	0	0	NR	0
ROD		1.000	0	0	0	0	NR	0
UMTRA		0.500	0	0	0	NR	NR	0
ODI		0.500	0	0	0	NR	NR	0
DEBRIS REGION 9		0.500	0	0	0	NR	NR	0
MINES		0.250	0	0	NR	NR	NR	0
TRIS		TP	NR	NR	NR	NR	NR	0
TSCA		TP	NR	NR	NR	NR	NR	0
FTTS		TP	NR	NR	NR	NR	NR	0
HIST FTTS		TP	NR	NR	NR	NR	NR	0
SSTS		TP	NR	NR	NR	NR	NR	0
ICIS		TP	NR	NR	NR	NR	NR	0
PADS		TP	NR	NR	NR	NR	NR	0
MLTS		TP	NR	NR	NR	NR	NR	0
RADINFO		TP	NR	NR	NR	NR	NR	0
FINDS		TP	NR	NR	NR	NR	NR	0
RAATS		TP	NR	NR	NR	NR	NR	0
STATE AND LOCAL RECORDS								
HIST Cal-Sites		1.000	0	0	0	0	NR	0
CA BOND EXP. PLAN		1.000	0	0	0	0	NR	0
SCH		0.250	0	0	NR	NR	NR	0
Toxic Pits		1.000	0	0	0	0	NR	0
SWF/LF		0.500	0	0	1	NR	NR	1

MAP FINDINGS SUMMARY

Database	Target Property	Search Distance (Miles)	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
CA WDS		TP	NR	NR	NR	NR	NR	0
WMUDS/SWAT		0.500	0	0	1	NR	NR	1
Cortese		0.500	0	0	0	NR	NR	0
SWRCY		0.500	0	0	0	NR	NR	0
LUST		0.500	0	0	0	NR	NR	0
CA FID UST		0.250	0	0	NR	NR	NR	0
SLIC		0.500	0	0	0	NR	NR	0
UST		0.250	0	0	NR	NR	NR	0
HIST UST		0.250	0	0	NR	NR	NR	0
AST		0.250	0	0	NR	NR	NR	0
LIENS		TP	NR	NR	NR	NR	NR	0
SWEEPS UST		0.250	0	0	NR	NR	NR	0
CHMIRS		TP	NR	NR	NR	NR	NR	0
Notify 65		1.000	0	0	0	4	NR	4
DEED		0.500	0	0	0	NR	NR	0
VCP		0.500	0	0	0	NR	NR	0
DRYCLEANERS		0.250	0	0	NR	NR	NR	0
WIP		0.250	0	0	NR	NR	NR	0
CDL		TP	NR	NR	NR	NR	NR	0
RESPONSE		1.000	0	0	0	0	NR	0
HAZNET		TP	NR	NR	NR	NR	NR	0
AIRS		TP	NR	NR	NR	NR	NR	0
HAULERS		TP	NR	NR	NR	NR	NR	0
ENVIROSTOR		1.000	0	0	0	1	NR	1
TRIBAL RECORDS								
INDIAN RESERV		1.000	0	0	0	0	NR	0
INDIAN ODI		0.500	0	0	0	NR	NR	0
INDIAN LUST		0.500	0	0	0	NR	NR	0
INDIAN UST		0.250	0	0	NR	NR	NR	0
EDR PROPRIETARY RECORDS								
Manufactured Gas Plants		1.000	0	0	0	0	NR	0

NOTES:

TP = Target Property

NR = Not Requested at this Search Distance

Sites may be listed in more than one database

A1 North 1/4-1/2 0.411 mi. 2169 ft. | **CITY OF YREKA DEPARTMENT OF PUBLIC WORKS**
2420 OBERLIN RD
YREKA, CA 96097

HAZNET **S103342286**
WMUDS/SWAT **N/A**
CA WDS

Site 1 of 2 in cluster A

Relative: Lower

Actual: 2671 ft.

HAZNET:

Gepaid:	CAL000146063
Contact:	STEVE NEILL/DIR OF PUBLIC WORK
Telephone:	5308412386
Facility Addr2:	Not reported
Mailing Name:	Not reported
Mailing Address:	701 4TH ST
Mailing City,St,Zip:	YREKA, CA 960970000
Gen County:	Siskiyou
TSD EPA ID:	Not reported
TSD County:	Los Angeles
Waste Category:	Aqueous solution with 10% or more total organic residues
Disposal Method:	Not reported
Tons:	0.68
Facility County:	Not reported

Gepaid:	CAL000146063
Contact:	STEVE NEILL/DIR OF PUBLIC WORK
Telephone:	5308412386
Facility Addr2:	Not reported
Mailing Name:	Not reported
Mailing Address:	701 4TH ST
Mailing City,St,Zip:	YREKA, CA 960970000
Gen County:	Siskiyou
TSD EPA ID:	Not reported
TSD County:	Los Angeles
Waste Category:	Off-specification, aged, or surplus inorganics
Disposal Method:	Not reported
Tons:	0.01
Facility County:	Not reported

Gepaid:	CAL000146063
Contact:	STEVE NEILL/DIR OF PUBLIC WORK
Telephone:	5308412386
Facility Addr2:	Not reported
Mailing Name:	Not reported
Mailing Address:	701 4TH ST
Mailing City,St,Zip:	YREKA, CA 960970000
Gen County:	Siskiyou
TSD EPA ID:	Not reported
TSD County:	Los Angeles
Waste Category:	Other inorganic solid waste
Disposal Method:	Treatment, Incineration
Tons:	0.24
Facility County:	Not reported

Gepaid:	CAL000146063
Contact:	STEVE NEILL/DIR OF PUBLIC WORK
Telephone:	5308412386
Facility Addr2:	Not reported
Mailing Name:	Not reported
Mailing Address:	701 4TH ST
Mailing City,St,Zip:	YREKA, CA 960970000

CITY OF YREKA DEPARTMENT OF PUBLIC WORKS (Continued) **S103342286**

Gen County:	Siskiyou
TSD EPA ID:	Not reported
TSD County:	Los Angeles
Waste Category:	Waste oil and mixed oil
Disposal Method:	Treatment, Incineration
Tons:	0.26
Facility County:	Not reported

Gepaid:	CAL000146063
Contact:	STEVE NEILL/DIR OF PUBLIC WORK
Telephone:	5308412386
Facility Addr2:	Not reported
Mailing Name:	Not reported
Mailing Address:	701 4TH ST
Mailing City,St,Zip:	YREKA, CA 960970000
Gen County:	Siskiyou
TSD EPA ID:	Not reported
TSD County:	Los Angeles
Waste Category:	Off-specification, aged, or surplus organics
Disposal Method:	Not reported
Tons:	0.41
Facility County:	Not reported

Click this hyperlink while viewing on your computer to access
3 additional CA_HAZNET: record(s) in the EDR Site Report.

WMUDS/SWAT:

Edit Date:	Not reported
Complexity:	Category B - Any facility having a physical, chemical, or biological waste treatment system (except for septic systems with subsurface disposal), or any Class II or III disposal site, or facilities without treatment systems that are complex, such as marinas with petroleum products, solid wastes, and sewage pump out facilities.
Primary Waste:	Solid Wastes
Primary Waste Type:	Nonhazardous Solid Wastes/Influent or Solid Wastes that contain nonhazardous putrescible and non putrescible solid, semisolid, and liquid wastes (E.G., garbage, trash, refuse, paper, demolition and construction wastes, manure, vegetable or animal solid and semisolid waste).
Secondary Waste:	Not reported
Secondary Waste Type:	Not reported
Base Meridian:	Not reported
NPID:	Not reported
Tonnage:	0
Regional Board ID:	Not reported
Municipal Solid Waste:	True
Superorder:	True
Open To Public:	False
Waste List:	True
Agency Type:	City
Agency Name:	YREKA, CITY OF
Agency Department:	Not reported
Agency Address:	701 FOURTH ST
Agency City,St,Zip:	YREKA CA 96097
Agency Contact:	BOB BLY
Agency Telephone:	9168424386
Land Owner Name:	Not reported

CITY OF YREKA DEPARTMENT OF PUBLIC WORKS (Continued) **S103342286**

Land Owner Address:	Not reported
Land Owner City,St,Zip:	Not reported
Land Owner Contact:	Not reported
Land Owner Phone:	Not reported
Region:	1
Facility Type:	Solid Waste Site-Class III - Landfills for non hazardous solid wastes.
Facility Description:	Not reported
Facility Telephone:	Not reported
SWAT Facility Name:	Not reported
Primary SIC:	4953
Secondary SIC:	Not reported
Comments:	Not reported
Last Facility Editors:	Not reported
Waste Discharge System:	True
Solid Waste Assessment Test Program:	True
Toxic Pits Cleanup Act Program:	False
Resource Conservation Recovery Act:	False
Department of Defence:	False
Solid Waste Assessment Test Program:	Not reported
Threat to Water Quality:	Moderate Threat to Water Quality. A violation could have a major adverse impact on receiving biota, can cause aesthetic impairment to a significant human population, or render unusable a potential domestic or municipal water supply. Awsthetic impairment would include nuisance from a waste treatment facility.
Sub Chapter 15:	True
Regional Board Project Officer:	Not reported
Number of WMUDS at Facility:	1
Section Range:	Not reported
RCRA Facility:	No
Waste Discharge Requirements:	Active - Any facility with a continuous or seasonal discharge that is under Waste Discharge Requirements.
Self-Monitoring Rept. Frequency:	Quarterly Submittal
Waste Discharge System ID:	1A75150OSIS
Solid Waste Information ID:	47-AA-0002

CA WDS:

Facility ID:	1 47I005456
Facility Type:	Other - Does not fall into the category of Municipal/Domestic, Industrial, Agricultural or Solid Waste (Class I, II or III)
Facility Status:	Active - Any facility with a continuous or seasonal discharge that is under Waste Discharge Requirements.
NPDES Number:	CAS000001 The 1st 2 characters designate the state. The remaining 7 are assigned by the Regional Board
Subregion:	1
Facility Telephone:	Not reported
Facility Contact:	ROBERT L. BLY
Agency Name:	YREKA CITY OF
Agency Address:	701 FOURTH ST
Agency City,St,Zip:	YREKA 96097
Agency Contact:	ROBERT L. BLY
Agency Telephone:	Not reported
Agency Type:	City
SIC Code:	4953
SIC Code 2:	Not reported
Primary Waste:	Stormwater Runoff
Primary Waste Type:	Inert/Influent or Solid Wastes that do not contain soluble pollutants or organic wastes and have little adverse impact on water quality.

CITY OF YREKA DEPARTMENT OF PUBLIC WORKS (Continued) **S103342286**

Such wastes could cause turbidity and siltation. Uncontaminated soils, rubble and concrete are examples of this category.

Secondary Waste: Not reported
Secondary Waste Type: Not reported
Design Flow: 0
Baseline Flow: 0
Reclamation: No reclamation requirements associated with this facility.
POTW: The facility is not a POTW.
Treat To Water: Minor Threat to Water Quality. A violation of a regional board order should cause a relatively minor impairment of beneficial uses compared to a major or minor threat. Not: All nurds without a TTWQ will be considered a minor threat to water quality unless coded at a higher Level. A Zero (0) may be used to code those NURDS that are found to represent no threat to water quality.
Complexity: Category C - Facilities having no waste treatment systems, such as cooling water dischargers or thosewho must comply through best management practices, facilities with passive waste treatment and disposal systems, such as septic systems with subsurface disposal, or dischargers having waste storage systems with land disposal such as dairy waste ponds.

Facility ID: Kalamath River 75150OSIS
Facility Type: Solid Waste Site-Class III - Landfills for non hazardous solid wastes.
Facility Status: Active - Any facility with a continuous or seasonal discharge that is under Waste Discharge Requirements.
NPDES Number: Not reported
Subregion: 1
Facility Telephone: Not reported
Facility Contact: BOB BLY
Agency Name: YREKA CITY OF
Agency Address: 701 FOURTH ST
Agency City,St,Zip: YREKA 96097
Agency Contact: ROBERT L. BLY
Agency Telephone: Not reported
Agency Type: City
SIC Code: 4953
SIC Code 2: Not reported
Primary Waste: Solid Wastes
Primary Waste Type: Nonhazardous Solid Wastes/Influent or Solid Wastes that contain nonhazardous putrescible and non putrescible solid, semisolid, and liquid wastes (E.G., garbage, trash, refuse, paper, demolition and construction wastes, manure, vegetable or animal solid and semisolid waste).
Secondary Waste: Not reported
Secondary Waste Type: Not reported
Design Flow: 0
Baseline Flow: 0
Reclamation: No reclamation requirements associated with this facility.
POTW: The facility is not a POTW.
Treat To Water: Moderate Threat to Water Quality. A violation could have a major adverse impact on receiving biota, can cause aesthetic impairment to a significant human population, or render unusable a potential domestic or municipal water supply. Awsthetic impairment would include nuisance from a waste treatment facility.
Complexity: Category B - Any facility having a physical, chemical, or biological waste treatment system (except for septic systems with subsurface disposal), or any Class II or III disposal site, or facilities without

CITY OF YREKA DEPARTMENT OF PUBLIC WORKS (Continued) **S103342286**

treatment systems that are complex, such as marinas with petroleum products, solid wastes, and sewage pump out facilities.

A2 North 1/4-1/2 0.412 mi. 2173 ft. | **YREKA MED. VOL. TRANSFER STATION** | **SWF/LF** | **S108657820**
2420 OBERLIN ROAD | **N/A**
YREKA, CA

Site 2 of 2 in cluster A

Relative: Lower

Actual: 2671 ft.

SWF/LF:

Region:	STATE
Facility ID:	47-AA-0057
Lat/Long:	41.702430 / -122.597800
Owner Name:	County Of Siskiyou Public Works Dept
Owner Telephone:	5308428250
Owner Address:	Not reported
Owner Address2:	P.O. Box 750
Owner City,St,Zip:	Yreka, CA 96097
Operator:	County Of Siskiyou Public Works Dept
Operator Phone:	5308428250
Operator Address:	Not reported
Operator Address2:	P.O. Box 750
Operator City,St,Zip:	Yreka, CA 96097
Operator's Status:	Planned
Permit Date:	Not reported
Permit Status:	Not reported
Permitted Acreage:	24.80
Activity:	Medium Volume Transfer/Proc Fac
Regulation Status:	Proposed
Landuse Name:	Recreational,Open Space - Nonirrigated,Commercial
GIS Source:	Map
Category:	Transfer/Processing
Unit Number:	01
Inspection Frequency:	Monthly
Accepted Waste:	Inert,Mixed municipal
Closure Date:	/ /
Closure Type:	Not reported
Disposal Acreage:	Not reported
Swisnumber:	47-AA-0057
Issue & Observations:	Yreka, CA 96097
Program Type:	Not reported
Permitted Throughput with Units:	100
Actual Throughput with Units:	Tons/day
Permitted Capacity with Units:	35864
Remaining Capacity:	Not reported
Remaining Capacity with Units:	Tons/year

3 NW 1/2-1 0.739 mi. 3902 ft. | **NOR-CAL PRODUCTS COMPANY**
1512 SOUTH OREGON STREET
YREKA, CA 96097 | **ENVIROSTOR** | **S101482521**
N/A

Relative: Lower

Actual: 2668 ft.

ENVIROSTOR:

Site Type:	Historical
Site Type Detailed:	* Historical
Acres:	Not reported
NPL:	NO
Regulatory Agencies:	NONE SPECIFIED
Lead Agency:	NONE SPECIFIED
Program Manager:	Not reported
Supervisor:	Referred - Not Assigned
Division Branch:	Central California
Facility ID:	47240010
Site Code:	Not reported
Assembly:	02
Senate:	04
Special Program:	* Rural County Survey Program
Status:	Refer: RWQCB
Status Date:	1989-12-06 00:00:00
Restricted Use:	NO
Funding:	Not reported
Latitude:	41.7227777777778
Longitude:	-122.641388888889
Alias Name:	47240010
Alias Type:	Envirostor ID Number
APN:	NONE SPECIFIED
APN Description:	Not reported
Comments:	FACILITY IDENTIFIED AND REFERRED BY SURVEILLANCE AND ENFORCEMENT UNIT.SITE SCREENING DONE. SOLVENT CONTAMINATION OF SOILS AND GROUNDWATER. NCRWQCB IS OVERSEEING CLEAN UP. DHS PENDING: NORTH COAST RWQCB.
Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Site Screening
Completed Date:	12/06/89
Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Discovery
Completed Date:	06/24/88
Confirmed:	NONE SPECIFIED
Confirmed Description:	Not reported
Future Area Name:	Not reported
Future Sub Area Name:	Not reported
Future Document Type:	Not reported
Future Due Date:	Not reported
Media Affected:	NONE SPECIFIED
Media Affected Desc:	Not reported
Management Required:	NONE SPECIFIED
Management Required Desc:	Not reported
Potential:	NONE SPECIFIED
Potenital Description:	Not reported
Schedule Area Name:	Not reported
Schedule Sub Area Name:	Not reported
Schedule Document Type:	Not reported
Schedule Due Date:	Not reported

NOR-CAL PRODUCTS COMPANY (Continued) **S101482521**

Schedule Revised Date: Not reported
PastUse: NONE SPECIFIED

B4
NW
1/2-1
0.742 mi.
3919 ft.

NORCAL PRODUCTS **Notify 65** **S100178586**
1512 S. OREGON ST **N/A**
YREKA, CA 95062

Site 1 of 4 in cluster B

Relative:
Lower

Actual:
2674 ft.

Notify 65:
Date Reported: Not reported
Staff Initials: Not reported
Board File Number: Not reported
Facility Type: Not reported
Discharge Date: Not reported
Incident Description: 95062

B5
NW
1/2-1
0.743 mi.
3924 ft.

NOR CAL PRODUCTS **Notify 65** **S100178802**
1512 S. OREGON ST **N/A**
YREKA, CA 95062

Site 2 of 4 in cluster B

Relative:
Lower

Actual:
2675 ft.

Notify 65:
Date Reported: Not reported
Staff Initials: Not reported
Board File Number: Not reported
Facility Type: Not reported
Discharge Date: Not reported
Incident Description: 95062

B6
NW
1/2-1
0.758 mi.
4000 ft.

NOR-CAL PRODUCTS **Notify 65** **S100178724**
1513 SOUTH OREGON ST **N/A**
YREKA, CA 95062

Site 3 of 4 in cluster B

Relative:
Lower

Actual:
2676 ft.

Notify 65:
Date Reported: Not reported
Staff Initials: Not reported
Board File Number: Not reported
Facility Type: Not reported
Discharge Date: Not reported
Incident Description: 95062

B7
NW
1/2-1
0.762 mi.
4023 ft.

NOR-CAL PRODUCTS
1513 SOUTH OREGON ST
YREKA, CA 95062

Site 4 of 4 in cluster B

Notify 65 **S100178739**
N/A

Relative:
Lower

Actual:
2677 ft.

Notify 65:

Date Reported:	Not reported
Staff Initials:	Not reported
Board File Number:	Not reported
Facility Type:	Not reported
Discharge Date:	Not reported
Incident Description:	95062

ORPHAN SUMMARY

City	EDR ID	Site Name	Site Address	Zip	Database(s)
MOUNT HEBRON	S106933868	USDA - MT. HEBRON WORK CENTER	OLD STATE HWY COUNTY RD	96097	SWEEPS UST
MT. HEBRON	U001619940	MT. HEBRON WORK CENTER	OLD STATE HIGHWAY (COUNTY ROAD	96097	HIST UST
YREKA	S101315939	PINE MTN LUMBER COMPANY	HIGHWAY 3	96097	SLIC
YREKA	S101315950	SHASTA FOREST PRODUCTS	HIGHWAY 3	96097	LUST, SLIC
YREKA	U003976551	SISKIYOU FOOD MART & SHELL	1802 HWY 3 / P. O. BOX 378	96097	UST
YREKA	S101315979	YREKA FIRE TRAINING CENTER	HIGHWAY 99, OLD	96097	LUST, SLIC
YREKA	S102440611	USFS GUNSIGHT PEAK	GUNSIGHT RIDGE	96097	LUST, Cortese
YREKA	1003879297	YREKA DRUG LAB	HUMBOLDT NATIONAL FOREST	96097	CERC-NFRAP
YREKA	S103587585	SISKIYOU PETROLEUM CARDLOCK	MILL STREET 1418	96097	LUST, Cortese
YREKA	S101315891	FREEZE, IM	OBERLIN ROAD	96097	LUST, SLIC
YREKA	U001619914	CENTRAL SHOP	1455-C OLD HWY 99 SOUTH	96097	HIST UST
YREKA	U001619917	COUNTY SERVICE STATION	1455-D OLD HWY 99 SOUTH	96097	HIST UST
YREKA	S100714765	HI-RIDGE LUMBER COMPANY	PHILLIDE LANE / YREKA WESTERN RR TRACKS	96097	ENVIROSTOR
YREKA	U001619929	GRASS LAKE STATION	STATE HIGHWAY 97	96097	HIST UST

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

To maintain currency of the following federal and state databases, EDR contacts the appropriate governmental agency on a monthly or quarterly basis, as required.

Number of Days to Update: Provides confirmation that EDR is reporting records that have been updated within 90 days from the date the government agency made the information available to the public.

FEDERAL RECORDS

NPL: National Priority List

National Priorities List (Superfund). The NPL is a subset of CERCLIS and identifies over 1,200 sites for priority cleanup under the Superfund Program. NPL sites may encompass relatively large areas. As such, EDR provides polygon coverage for over 1,000 NPL site boundaries produced by EPA's Environmental Photographic Interpretation Center (EPIC) and regional EPA offices.

Date of Government Version: 01/31/2008
Date Data Arrived at EDR: 02/08/2008
Date Made Active in Reports: 03/17/2008
Number of Days to Update: 38

Source: EPA
Telephone: N/A
Last EDR Contact: 01/28/2008
Next Scheduled EDR Contact: 04/28/2008
Data Release Frequency: Quarterly

NPL Site Boundaries

Sources:

EPA's Environmental Photographic Interpretation Center (EPIC)
Telephone: 202-564-7333

EPA Region 1
Telephone 617-918-1143

EPA Region 3
Telephone 215-814-5418

EPA Region 4
Telephone 404-562-8033

EPA Region 5
Telephone 312-886-6686

EPA Region 10
Telephone 206-553-8665

EPA Region 6
Telephone: 214-655-6659

EPA Region 7
Telephone: 913-551-7247

EPA Region 8
Telephone: 303-312-6774

EPA Region 9
Telephone: 415-947-4246

Proposed NPL: Proposed National Priority List Sites

A site that has been proposed for listing on the National Priorities List through the issuance of a proposed rule in the Federal Register. EPA then accepts public comments on the site, responds to the comments, and places on the NPL those sites that continue to meet the requirements for listing.

Date of Government Version: 01/31/2008
Date Data Arrived at EDR: 02/04/2008
Date Made Active in Reports: 03/17/2008
Number of Days to Update: 42

Source: EPA
Telephone: N/A
Last EDR Contact: 01/28/2008
Next Scheduled EDR Contact: 04/28/2008
Data Release Frequency: Quarterly

DELISTED NPL: National Priority List Deletions

The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes the criteria that the EPA uses to delete sites from the NPL. In accordance with 40 CFR 300.425.(e), sites may be deleted from the NPL where no further response is appropriate.

Date of Government Version: 01/31/2008
Date Data Arrived at EDR: 02/08/2008
Date Made Active in Reports: 03/17/2008
Number of Days to Update: 38

Source: EPA
Telephone: N/A
Last EDR Contact: 01/28/2008
Next Scheduled EDR Contact: 04/28/2008
Data Release Frequency: Quarterly

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

NPL LIENS: Federal Superfund Liens

Federal Superfund Liens. Under the authority granted the USEPA by CERCLA of 1980, the USEPA has the authority to file liens against real property in order to recover remedial action expenditures or when the property owner received notification of potential liability. USEPA compiles a listing of filed notices of Superfund Liens.

Date of Government Version: 10/15/1991
Date Data Arrived at EDR: 02/02/1994
Date Made Active in Reports: 03/30/1994
Number of Days to Update: 56

Source: EPA
Telephone: 202-564-4267
Last EDR Contact: 02/19/2008
Next Scheduled EDR Contact: 05/19/2008
Data Release Frequency: No Update Planned

CERCLIS: Comprehensive Environmental Response, Compensation, and Liability Information System

CERCLIS contains data on potentially hazardous waste sites that have been reported to the USEPA by states, municipalities, private companies and private persons, pursuant to Section 103 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). CERCLIS contains sites which are either proposed to or on the National Priorities List (NPL) and sites which are in the screening and assessment phase for possible inclusion on the NPL.

Date of Government Version: 01/09/2008
Date Data Arrived at EDR: 02/05/2008
Date Made Active in Reports: 02/20/2008
Number of Days to Update: 15

Source: EPA
Telephone: 703-412-9810
Last EDR Contact: 04/18/2008
Next Scheduled EDR Contact: 06/16/2008
Data Release Frequency: Quarterly

CERCLIS-NFRAP: CERCLIS No Further Remedial Action Planned

Archived sites are sites that have been removed and archived from the inventory of CERCLIS sites. Archived status indicates that, to the best of EPA's knowledge, assessment at a site has been completed and that EPA has determined no further steps will be taken to list this site on the National Priorities List (NPL), unless information indicates this decision was not appropriate or other considerations require a recommendation for listing at a later time. This decision does not necessarily mean that there is no hazard associated with a given site; it only means that, based upon available information, the location is not judged to be a potential NPL site.

Date of Government Version: 12/03/2007
Date Data Arrived at EDR: 12/06/2007
Date Made Active in Reports: 02/20/2008
Number of Days to Update: 76

Source: EPA
Telephone: 703-412-9810
Last EDR Contact: 03/17/2008
Next Scheduled EDR Contact: 06/16/2008
Data Release Frequency: Quarterly

LIENS 2: CERCLA Lien Information

A Federal CERCLA ('Superfund') lien can exist by operation of law at any site or property at which EPA has spent Superfund monies. These monies are spent to investigate and address releases and threatened releases of contamination. CERCLIS provides information as to the identity of these sites and properties.

Date of Government Version: 02/08/2008
Date Data Arrived at EDR: 03/07/2008
Date Made Active in Reports: 03/20/2008
Number of Days to Update: 13

Source: Environmental Protection Agency
Telephone: 202-564-6023
Last EDR Contact: 02/15/2008
Next Scheduled EDR Contact: 05/19/2008
Data Release Frequency: Varies

CORRACTS: Corrective Action Report

CORRACTS identifies hazardous waste handlers with RCRA corrective action activity.

Date of Government Version: 12/12/2007
Date Data Arrived at EDR: 12/18/2007
Date Made Active in Reports: 02/20/2008
Number of Days to Update: 64

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 03/03/2008
Next Scheduled EDR Contact: 06/02/2008
Data Release Frequency: Quarterly

RCRA-TSDF: RCRA - Transporters, Storage and Disposal

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Transporters are individuals or entities that move hazardous waste from the generator offsite to a facility that can recycle, treat, store, or dispose of the waste. TSDFs treat, store, or dispose of the waste.

Date of Government Version: 03/06/2008
Date Data Arrived at EDR: 03/06/2008
Date Made Active in Reports: 04/18/2008
Number of Days to Update: 43

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 03/06/2008
Next Scheduled EDR Contact: 05/19/2008
Data Release Frequency: Quarterly

RCRA-LQG: RCRA - Large Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Large quantity generators (LQGs) generate over 1,000 kilograms (kg) of hazardous waste, or over 1 kg of acutely hazardous waste per month.

Date of Government Version: 03/06/2008
Date Data Arrived at EDR: 03/06/2008
Date Made Active in Reports: 04/18/2008
Number of Days to Update: 43

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 03/06/2008
Next Scheduled EDR Contact: 05/19/2008
Data Release Frequency: Quarterly

RCRA-SQG: RCRA - Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Small quantity generators (SQGs) generate between 100 kg and 1,000 kg of hazardous waste per month.

Date of Government Version: 03/06/2008
Date Data Arrived at EDR: 03/06/2008
Date Made Active in Reports: 04/18/2008
Number of Days to Update: 43

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 03/06/2008
Next Scheduled EDR Contact: 05/19/2008
Data Release Frequency: Quarterly

RCRA-CESQG: RCRA - Conditionally Exempt Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Conditionally exempt small quantity generators (CESQGs) generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month.

Date of Government Version: 03/06/2008
Date Data Arrived at EDR: 03/06/2008
Date Made Active in Reports: 04/18/2008
Number of Days to Update: 43

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 03/06/2008
Next Scheduled EDR Contact: 05/19/2008
Data Release Frequency: Varies

RCRA-NonGen: RCRA - Non Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Non-Generators do not presently generate hazardous waste.

Date of Government Version: 03/06/2008
Date Data Arrived at EDR: 03/06/2008
Date Made Active in Reports: 04/18/2008
Number of Days to Update: 43

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 03/06/2008
Next Scheduled EDR Contact: 05/19/2008
Data Release Frequency: Varies

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

US ENG CONTROLS: Engineering Controls Sites List

A listing of sites with engineering controls in place. Engineering controls include various forms of caps, building foundations, liners, and treatment methods to create pathway elimination for regulated substances to enter environmental media or effect human health.

Date of Government Version: 01/18/2008
Date Data Arrived at EDR: 01/31/2008
Date Made Active in Reports: 03/17/2008
Number of Days to Update: 46

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 03/31/2008
Next Scheduled EDR Contact: 06/30/2008
Data Release Frequency: Varies

US INST CONTROL: Sites with Institutional Controls

A listing of sites with institutional controls in place. Institutional controls include administrative measures, such as groundwater use restrictions, construction restrictions, property use restrictions, and post remediation care requirements intended to prevent exposure to contaminants remaining on site. Deed restrictions are generally required as part of the institutional controls.

Date of Government Version: 01/18/2008
Date Data Arrived at EDR: 01/31/2008
Date Made Active in Reports: 03/17/2008
Number of Days to Update: 46

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 03/31/2008
Next Scheduled EDR Contact: 06/30/2008
Data Release Frequency: Varies

ERNS: Emergency Response Notification System

Emergency Response Notification System. ERNS records and stores information on reported releases of oil and hazardous substances.

Date of Government Version: 12/31/2007
Date Data Arrived at EDR: 01/23/2008
Date Made Active in Reports: 03/17/2008
Number of Days to Update: 54

Source: National Response Center, United States Coast Guard
Telephone: 202-267-2180
Last EDR Contact: 04/22/2008
Next Scheduled EDR Contact: 07/21/2008
Data Release Frequency: Annually

HMIRS: Hazardous Materials Information Reporting System

Hazardous Materials Incident Report System. HMIRS contains hazardous material spill incidents reported to DOT.

Date of Government Version: 10/31/2007
Date Data Arrived at EDR: 01/17/2008
Date Made Active in Reports: 03/17/2008
Number of Days to Update: 60

Source: U.S. Department of Transportation
Telephone: 202-366-4555
Last EDR Contact: 04/16/2008
Next Scheduled EDR Contact: 07/14/2008
Data Release Frequency: Annually

DOT OPS: Incident and Accident Data

Department of Transporation, Office of Pipeline Safety Incident and Accident data.

Date of Government Version: 02/14/2008
Date Data Arrived at EDR: 02/27/2008
Date Made Active in Reports: 03/20/2008
Number of Days to Update: 22

Source: Department of Transporation, Office of Pipeline Safety
Telephone: 202-366-4595
Last EDR Contact: 02/27/2008
Next Scheduled EDR Contact: 05/26/2008
Data Release Frequency: Varies

CDL: Clandestine Drug Labs

A listing of clandestine drug lab locations. The U.S. Department of Justice ("the Department") provides this web site as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments.

Date of Government Version: 09/01/2007
Date Data Arrived at EDR: 12/03/2007
Date Made Active in Reports: 12/28/2007
Number of Days to Update: 25

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 03/28/2008
Next Scheduled EDR Contact: 06/23/2008
Data Release Frequency: Quarterly

US BROWNFIELDS: A Listing of Brownfields Sites

Included in the listing are brownfields properties addresses by Cooperative Agreement Recipients and brownfields properties addressed by Targeted Brownfields Assessments. Targeted Brownfields Assessments-EPA's Targeted Brownfields Assessments (TBA) program is designed to help states, tribes, and municipalities--especially those without EPA Brownfields Assessment Demonstration Pilots--minimize the uncertainties of contamination often associated with brownfields. Under the TBA program, EPA provides funding and/or technical assistance for environmental assessments at brownfields sites throughout the country. Targeted Brownfields Assessments supplement and work with other efforts under EPA's Brownfields Initiative to promote cleanup and redevelopment of brownfields. Cooperative Agreement Recipients-States, political subdivisions, territories, and Indian tribes become Brownfields Cleanup Revolving Loan Fund (BCRLF) cooperative agreement recipients when they enter into BCRLF cooperative agreements with the U.S. EPA. EPA selects BCRLF cooperative agreement recipients based on a proposal and application process. BCRLF cooperative agreement recipients must use EPA funds provided through BCRLF cooperative agreement for specified brownfields-related cleanup activities.

Date of Government Version: 01/03/2008
Date Data Arrived at EDR: 01/17/2008
Date Made Active in Reports: 02/20/2008
Number of Days to Update: 34

Source: Environmental Protection Agency
Telephone: 202-566-2777
Last EDR Contact: 04/18/2008
Next Scheduled EDR Contact: 07/14/2008
Data Release Frequency: Semi-Annually

DOD: Department of Defense Sites

This data set consists of federally owned or administered lands, administered by the Department of Defense, that have any area equal to or greater than 640 acres of the United States, Puerto Rico, and the U.S. Virgin Islands.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 11/10/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 62

Source: USGS
Telephone: 703-692-8801
Last EDR Contact: 02/08/2008
Next Scheduled EDR Contact: 05/05/2008
Data Release Frequency: Semi-Annually

FUDS: Formerly Used Defense Sites

The listing includes locations of Formerly Used Defense Sites properties where the US Army Corps of Engineers is actively working or will take necessary cleanup actions.

Date of Government Version: 12/31/2006
Date Data Arrived at EDR: 08/31/2007
Date Made Active in Reports: 10/11/2007
Number of Days to Update: 41

Source: U.S. Army Corps of Engineers
Telephone: 202-528-4285
Last EDR Contact: 04/03/2008
Next Scheduled EDR Contact: 06/30/2008
Data Release Frequency: Varies

LUCIS: Land Use Control Information System

LUCIS contains records of land use control information pertaining to the former Navy Base Realignment and Closure properties.

Date of Government Version: 12/09/2005
Date Data Arrived at EDR: 12/11/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 31

Source: Department of the Navy
Telephone: 843-820-7326
Last EDR Contact: 03/10/2008
Next Scheduled EDR Contact: 06/09/2008
Data Release Frequency: Varies

CONSENT: Superfund (CERCLA) Consent Decrees

Major legal settlements that establish responsibility and standards for cleanup at NPL (Superfund) sites. Released periodically by United States District Courts after settlement by parties to litigation matters.

Date of Government Version: 09/01/2007
Date Data Arrived at EDR: 12/03/2007
Date Made Active in Reports: 12/28/2007
Number of Days to Update: 25

Source: Department of Justice, Consent Decree Library
Telephone: Varies
Last EDR Contact: 04/22/2008
Next Scheduled EDR Contact: 07/21/2008
Data Release Frequency: Varies

ROD: Records Of Decision

Record of Decision. ROD documents mandate a permanent remedy at an NPL (Superfund) site containing technical and health information to aid in the cleanup.

Date of Government Version: 01/14/2008
Date Data Arrived at EDR: 01/22/2008
Date Made Active in Reports: 01/30/2008
Number of Days to Update: 8

Source: EPA
Telephone: 703-416-0223
Last EDR Contact: 03/31/2008
Next Scheduled EDR Contact: 06/30/2008
Data Release Frequency: Annually

UMTRA: Uranium Mill Tailings Sites

Uranium ore was mined by private companies for federal government use in national defense programs. When the mills shut down, large piles of the sand-like material (mill tailings) remain after uranium has been extracted from the ore. Levels of human exposure to radioactive materials from the piles are low; however, in some cases tailings were used as construction materials before the potential health hazards of the tailings were recognized.

Date of Government Version: 07/13/2007
Date Data Arrived at EDR: 12/03/2007
Date Made Active in Reports: 01/24/2008
Number of Days to Update: 52

Source: Department of Energy
Telephone: 505-845-0011
Last EDR Contact: 03/17/2008
Next Scheduled EDR Contact: 06/16/2008
Data Release Frequency: Varies

ODI: Open Dump Inventory

An open dump is defined as a disposal facility that does not comply with one or more of the Part 257 or Part 258 Subtitle D Criteria.

Date of Government Version: 06/30/1985
Date Data Arrived at EDR: 08/09/2004
Date Made Active in Reports: 09/17/2004
Number of Days to Update: 39

Source: Environmental Protection Agency
Telephone: 800-424-9346
Last EDR Contact: 06/09/2004
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

DEBRIS REGION 9: Torres Martinez Reservation Illegal Dump Site Locations

A listing of illegal dump sites location on the Torres Martinez Indian Reservation located in eastern Riverside County and northern Imperial County, California.

Date of Government Version: 12/28/2007
Date Data Arrived at EDR: 12/28/2007
Date Made Active in Reports: 01/24/2008
Number of Days to Update: 27

Source: EPA, Region 9
Telephone: 415-972-3336
Last EDR Contact: 03/24/2008
Next Scheduled EDR Contact: 06/23/2008
Data Release Frequency: Varies

MINES: Mines Master Index File

Contains all mine identification numbers issued for mines active or opened since 1971. The data also includes violation information.

Date of Government Version: 02/07/2008
Date Data Arrived at EDR: 03/26/2008
Date Made Active in Reports: 04/18/2008
Number of Days to Update: 23

Source: Department of Labor, Mine Safety and Health Administration
Telephone: 303-231-5959
Last EDR Contact: 03/26/2008
Next Scheduled EDR Contact: 06/23/2008
Data Release Frequency: Semi-Annually

TRIS: Toxic Chemical Release Inventory System

Toxic Release Inventory System. TRIS identifies facilities which release toxic chemicals to the air, water and land in reportable quantities under SARA Title III Section 313.

Date of Government Version: 12/31/2006
Date Data Arrived at EDR: 02/29/2008
Date Made Active in Reports: 04/18/2008
Number of Days to Update: 49

Source: EPA
Telephone: 202-566-0250
Last EDR Contact: 02/29/2008
Next Scheduled EDR Contact: 06/16/2008
Data Release Frequency: Annually

TSCA: Toxic Substances Control Act

Toxic Substances Control Act. TSCA identifies manufacturers and importers of chemical substances included on the TSCA Chemical Substance Inventory list. It includes data on the production volume of these substances by plant site.

Date of Government Version: 12/31/2002
Date Data Arrived at EDR: 04/14/2006
Date Made Active in Reports: 05/30/2006
Number of Days to Update: 46

Source: EPA
Telephone: 202-260-5521
Last EDR Contact: 04/14/2008
Next Scheduled EDR Contact: 07/14/2008
Data Release Frequency: Every 4 Years

FTTS: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)

FTTS tracks administrative cases and pesticide enforcement actions and compliance activities related to FIFRA, TSCA and EPCRA (Emergency Planning and Community Right-to-Know Act). To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 01/15/2008
Date Data Arrived at EDR: 01/22/2008
Date Made Active in Reports: 01/30/2008
Number of Days to Update: 8

Source: EPA/Office of Prevention, Pesticides and Toxic Substances
Telephone: 202-566-1667
Last EDR Contact: 03/17/2008
Next Scheduled EDR Contact: 06/16/2008
Data Release Frequency: Quarterly

FTTS INSP: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)

A listing of FIFRA/TSCA Tracking System (FTTS) inspections and enforcements.

Date of Government Version: 01/15/2008
Date Data Arrived at EDR: 01/22/2008
Date Made Active in Reports: 01/30/2008
Number of Days to Update: 8

Source: EPA
Telephone: 202-566-1667
Last EDR Contact: 03/17/2008
Next Scheduled EDR Contact: 06/16/2008
Data Release Frequency: Quarterly

HIST FTTS: FIFRA/TSCA Tracking System Administrative Case Listing

A complete administrative case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2007
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

HIST FTTS INSP: FIFRA/TSCA Tracking System Inspection & Enforcement Case Listing

A complete inspection and enforcement case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2008
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

SSTS: Section 7 Tracking Systems

Section 7 of the Federal Insecticide, Fungicide and Rodenticide Act, as amended (92 Stat. 829) requires all registered pesticide-producing establishments to submit a report to the Environmental Protection Agency by March 1st each year. Each establishment must report the types and amounts of pesticides, active ingredients and devices being produced, and those having been produced and sold or distributed in the past year.

Date of Government Version: 12/31/2006
Date Data Arrived at EDR: 03/14/2008
Date Made Active in Reports: 04/18/2008
Number of Days to Update: 35

Source: EPA
Telephone: 202-564-4203
Last EDR Contact: 04/14/2008
Next Scheduled EDR Contact: 07/14/2008
Data Release Frequency: Annually

ICIS: Integrated Compliance Information System

The Integrated Compliance Information System (ICIS) supports the information needs of the national enforcement and compliance program as well as the unique needs of the National Pollutant Discharge Elimination System (NPDES) program.

Date of Government Version: 07/27/2007
Date Data Arrived at EDR: 08/13/2007
Date Made Active in Reports: 10/11/2007
Number of Days to Update: 59

Source: Environmental Protection Agency
Telephone: 202-564-5088
Last EDR Contact: 04/14/2008
Next Scheduled EDR Contact: 07/14/2008
Data Release Frequency: Quarterly

PADS: PCB Activity Database System

PCB Activity Database. PADS Identifies generators, transporters, commercial storers and/or brokers and disposers of PCB's who are required to notify the EPA of such activities.

Date of Government Version: 12/04/2007
Date Data Arrived at EDR: 02/07/2008
Date Made Active in Reports: 03/17/2008
Number of Days to Update: 39

Source: EPA
Telephone: 202-566-0500
Last EDR Contact: 02/07/2008
Next Scheduled EDR Contact: 05/05/2008
Data Release Frequency: Annually

MLTS: Material Licensing Tracking System

MLTS is maintained by the Nuclear Regulatory Commission and contains a list of approximately 8,100 sites which possess or use radioactive materials and which are subject to NRC licensing requirements. To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 01/15/2008
Date Data Arrived at EDR: 02/07/2008
Date Made Active in Reports: 03/17/2008
Number of Days to Update: 39

Source: Nuclear Regulatory Commission
Telephone: 301-415-7169
Last EDR Contact: 03/31/2008
Next Scheduled EDR Contact: 06/30/2008
Data Release Frequency: Quarterly

RADINFO: Radiation Information Database

The Radiation Information Database (RADINFO) contains information about facilities that are regulated by U.S. Environmental Protection Agency (EPA) regulations for radiation and radioactivity.

Date of Government Version: 01/29/2008
Date Data Arrived at EDR: 01/31/2008
Date Made Active in Reports: 03/17/2008
Number of Days to Update: 46

Source: Environmental Protection Agency
Telephone: 202-343-9775
Last EDR Contact: 01/31/2008
Next Scheduled EDR Contact: 04/28/2008
Data Release Frequency: Quarterly

FINDS: Facility Index System/Facility Registry System

Facility Index System. FINDS contains both facility information and 'pointers' to other sources that contain more detail. EDR includes the following FINDS databases in this report: PCS (Permit Compliance System), AIRS (Aerometric Information Retrieval System), DOCKET (Enforcement Docket used to manage and track information on civil judicial enforcement cases for all environmental statutes), FURS (Federal Underground Injection Control), C-DOCKET (Criminal Docket System used to track criminal enforcement actions for all environmental statutes), FFIS (Federal Facilities Information System), STATE (State Environmental Laws and Statutes), and PADS (PCB Activity Data System).

Date of Government Version: 01/04/2008
Date Data Arrived at EDR: 01/10/2008
Date Made Active in Reports: 02/20/2008
Number of Days to Update: 41

Source: EPA
Telephone: (415) 947-8000
Last EDR Contact: 03/31/2008
Next Scheduled EDR Contact: 06/30/2008
Data Release Frequency: Quarterly

RAATS: RCRA Administrative Action Tracking System

RCRA Administration Action Tracking System. RAATS contains records based on enforcement actions issued under RCRA pertaining to major violators and includes administrative and civil actions brought by the EPA. For administration actions after September 30, 1995, data entry in the RAATS database was discontinued. EPA will retain a copy of the database for historical records. It was necessary to terminate RAATS because a decrease in agency resources made it impossible to continue to update the information contained in the database.

Date of Government Version: 04/17/1995
Date Data Arrived at EDR: 07/03/1995
Date Made Active in Reports: 08/07/1995
Number of Days to Update: 35

Source: EPA
Telephone: 202-564-4104
Last EDR Contact: 03/03/2008
Next Scheduled EDR Contact: 06/02/2008
Data Release Frequency: No Update Planned

BRS: Biennial Reporting System

The Biennial Reporting System is a national system administered by the EPA that collects data on the generation and management of hazardous waste. BRS captures detailed data from two groups: Large Quantity Generators (LQG) and Treatment, Storage, and Disposal Facilities.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 03/06/2007
Date Made Active in Reports: 04/13/2007
Number of Days to Update: 38

Source: EPA/NTIS
Telephone: 800-424-9346
Last EDR Contact: 03/13/2008
Next Scheduled EDR Contact: 06/09/2008
Data Release Frequency: Biennially

STATE AND LOCAL RECORDS

HIST CAL-SITES: Calsites Database

The Calsites database contains potential or confirmed hazardous substance release properties. In 1996, California EPA reevaluated and significantly reduced the number of sites in the Calsites database. No longer updated by the state agency. It has been replaced by ENVIROSTOR.

Date of Government Version: 08/08/2005
Date Data Arrived at EDR: 08/03/2006
Date Made Active in Reports: 08/24/2006
Number of Days to Update: 21

Source: Department of Toxic Substance Control
Telephone: 916-323-3400
Last EDR Contact: 02/25/2008
Next Scheduled EDR Contact: 05/26/2008
Data Release Frequency: No Update Planned

CA BOND EXP. PLAN: Bond Expenditure Plan

Department of Health Services developed a site-specific expenditure plan as the basis for an appropriation of Hazardous Substance Cleanup Bond Act funds. It is not updated.

Date of Government Version: 01/01/1989
Date Data Arrived at EDR: 07/27/1994
Date Made Active in Reports: 08/02/1994
Number of Days to Update: 6

Source: Department of Health Services
Telephone: 916-255-2118
Last EDR Contact: 05/31/1994
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

SCH: School Property Evaluation Program

This category contains proposed and existing school sites that are being evaluated by DTSC for possible hazardous materials contamination. In some cases, these properties may be listed in the CalSites category depending on the level of threat to public health and safety or the environment they pose.

Date of Government Version: 02/26/2008
Date Data Arrived at EDR: 02/27/2008
Date Made Active in Reports: 03/27/2008
Number of Days to Update: 29

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 02/27/2008
Next Scheduled EDR Contact: 02/25/2008
Data Release Frequency: Quarterly

TOXIC PITS: Toxic Pits Cleanup Act Sites

Toxic PITS Cleanup Act Sites. TOXIC PITS identifies sites suspected of containing hazardous substances where cleanup has not yet been completed.

Date of Government Version: 07/01/1995
Date Data Arrived at EDR: 08/30/1995
Date Made Active in Reports: 09/26/1995
Number of Days to Update: 27

Source: State Water Resources Control Board
Telephone: 916-227-4364
Last EDR Contact: 02/11/2008
Next Scheduled EDR Contact: 04/28/2008
Data Release Frequency: No Update Planned

SWF/LF (SWIS): Solid Waste Information System

Active, Closed and Inactive Landfills. SWF/LF records typically contain an inve ntory of solid waste disposal facilities or landfills. These may be active or i nactive facilities or open dumps that failed to meet RCRA Section 4004 criteria for solid waste landfills or disposal sites.

Date of Government Version: 03/10/2008
Date Data Arrived at EDR: 03/12/2008
Date Made Active in Reports: 04/14/2008
Number of Days to Update: 33

Source: Integrated Waste Management Board
Telephone: 916-341-6320
Last EDR Contact: 03/12/2008
Next Scheduled EDR Contact: 06/09/2008
Data Release Frequency: Quarterly

WMUDS/SWAT: Waste Management Unit Database

Waste Management Unit Database System. WMUDS is used by the State Water Resources Control Board staff and the Regional Water Quality Control Boards for program tracking and inventory of waste management units. WMUDS is composed of the following databases: Facility Information, Scheduled Inspections Information, Waste Management Unit Information, SWAT Program Information, SWAT Report Summary Information, SWAT Report Summary Data, Chapter 15 (formerly Subchapter 15) Information, Chapter 15 Monitoring Parameters, TPCA Program Information, RCRA Program Information, Closure Information, and Interested Parties Information.

Date of Government Version: 04/01/2000
Date Data Arrived at EDR: 04/10/2000
Date Made Active in Reports: 05/10/2000
Number of Days to Update: 30

Source: State Water Resources Control Board
Telephone: 916-227-4448
Last EDR Contact: 03/03/2008
Next Scheduled EDR Contact: 06/02/2008
Data Release Frequency: Quarterly

CA WDS: Waste Discharge System

Sites which have been issued waste discharge requirements.

Date of Government Version: 06/19/2007
Date Data Arrived at EDR: 06/20/2007
Date Made Active in Reports: 06/29/2007
Number of Days to Update: 9

Source: State Water Resources Control Board
Telephone: 916-341-5227
Last EDR Contact: 03/17/2008
Next Scheduled EDR Contact: 06/16/2008
Data Release Frequency: Quarterly

CORTESE: "Cortese" Hazardous Waste & Substances Sites List

The sites for the list are designated by the State Water Resource Control Board (LUST), the Integrated Waste Board (SWF/LS), and the Department of Toxic Substances Control (Cal-Sites). This listing is no longer updated by the state agency.

Date of Government Version: 04/01/2001
Date Data Arrived at EDR: 05/29/2001
Date Made Active in Reports: 07/26/2001
Number of Days to Update: 58

Source: CAL EPA/Office of Emergency Information
Telephone: 916-323-3400
Last EDR Contact: 04/21/2008
Next Scheduled EDR Contact: 07/21/2008
Data Release Frequency: No Update Planned

SWRCY: Recycler Database
A listing of recycling facilities in California.

Date of Government Version: 01/07/2008
Date Data Arrived at EDR: 01/09/2008
Date Made Active in Reports: 02/14/2008
Number of Days to Update: 36

Source: Department of Conservation
Telephone: 916-323-3836
Last EDR Contact: 04/09/2008
Next Scheduled EDR Contact: 07/07/2008
Data Release Frequency: Quarterly

LUST REG 9: Leaking Underground Storage Tank Report
Orange, Riverside, San Diego counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 03/01/2001
Date Data Arrived at EDR: 04/23/2001
Date Made Active in Reports: 05/21/2001
Number of Days to Update: 28

Source: California Regional Water Quality Control Board San Diego Region (9)
Telephone: 858-637-5595
Last EDR Contact: 04/14/2008
Next Scheduled EDR Contact: 07/14/2008
Data Release Frequency: No Update Planned

LUST REG 8: Leaking Underground Storage Tanks
California Regional Water Quality Control Board Santa Ana Region (8). For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 02/14/2005
Date Data Arrived at EDR: 02/15/2005
Date Made Active in Reports: 03/28/2005
Number of Days to Update: 41

Source: California Regional Water Quality Control Board Santa Ana Region (8)
Telephone: 909-782-4496
Last EDR Contact: 02/05/2008
Next Scheduled EDR Contact: 05/05/2008
Data Release Frequency: Varies

LUST REG 6V: Leaking Underground Storage Tank Case Listing
Leaking Underground Storage Tank locations. Inyo, Kern, Los Angeles, Mono, San Bernardino counties.

Date of Government Version: 06/07/2005
Date Data Arrived at EDR: 06/07/2005
Date Made Active in Reports: 06/29/2005
Number of Days to Update: 22

Source: California Regional Water Quality Control Board Victorville Branch Office (6)
Telephone: 760-241-7365
Last EDR Contact: 03/31/2008
Next Scheduled EDR Contact: 06/30/2008
Data Release Frequency: No Update Planned

LUST REG 6L: Leaking Underground Storage Tank Case Listing
For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 09/09/2003
Date Data Arrived at EDR: 09/10/2003
Date Made Active in Reports: 10/07/2003
Number of Days to Update: 27

Source: California Regional Water Quality Control Board Lahontan Region (6)
Telephone: 530-542-5572
Last EDR Contact: 03/03/2008
Next Scheduled EDR Contact: 06/02/2008
Data Release Frequency: No Update Planned

LUST REG 5: Leaking Underground Storage Tank Database
Leaking Underground Storage Tank locations. Alameda, Alpine, Amador, Butte, Colusa, Contra Costa, Calveras, El Dorado, Fresno, Glenn, Kern, Kings, Lake, Lassen, Madera, Mariposa, Merced, Modoc, Napa, Nevada, Placer, Plumas, Sacramento, San Joaquin, Shasta, Solano, Stanislaus, Sutter, Tehama, Tulare, Tuolumne, Yolo, Yuba counties.

Date of Government Version: 01/01/2008
Date Data Arrived at EDR: 01/23/2008
Date Made Active in Reports: 02/14/2008
Number of Days to Update: 22

Source: California Regional Water Quality Control Board Central Valley Region (5)
Telephone: 916-464-4834
Last EDR Contact: 04/03/2008
Next Scheduled EDR Contact: 06/30/2008
Data Release Frequency: Quarterly

LUST REG 4: Underground Storage Tank Leak List
Los Angeles, Ventura counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 09/07/2004
Date Data Arrived at EDR: 09/07/2004
Date Made Active in Reports: 10/12/2004
Number of Days to Update: 35

Source: California Regional Water Quality Control Board Los Angeles Region (4)
Telephone: 213-576-6710
Last EDR Contact: 03/24/2008
Next Scheduled EDR Contact: 06/23/2008
Data Release Frequency: No Update Planned

LUST REG 3: Leaking Underground Storage Tank Database
Leaking Underground Storage Tank locations. Monterey, San Benito, San Luis Obispo, Santa Barbara, Santa Cruz counties.

Date of Government Version: 05/19/2003
Date Data Arrived at EDR: 05/19/2003
Date Made Active in Reports: 06/02/2003
Number of Days to Update: 14

Source: California Regional Water Quality Control Board Central Coast Region (3)
Telephone: 805-542-4786
Last EDR Contact: 02/11/2008
Next Scheduled EDR Contact: 05/12/2008
Data Release Frequency: No Update Planned

LUST REG 2: Fuel Leak List
Leaking Underground Storage Tank locations. Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, Sonoma counties.

Date of Government Version: 09/30/2004
Date Data Arrived at EDR: 10/20/2004
Date Made Active in Reports: 11/19/2004
Number of Days to Update: 30

Source: California Regional Water Quality Control Board San Francisco Bay Region (2)
Telephone: 510-622-2433
Last EDR Contact: 04/07/2008
Next Scheduled EDR Contact: 07/07/2008
Data Release Frequency: Quarterly

LUST REG 1: Active Toxic Site Investigation
Del Norte, Humboldt, Lake, Mendocino, Modoc, Siskiyou, Sonoma, Trinity counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 02/01/2001
Date Data Arrived at EDR: 02/28/2001
Date Made Active in Reports: 03/29/2001
Number of Days to Update: 29

Source: California Regional Water Quality Control Board North Coast (1)
Telephone: 707-570-3769
Last EDR Contact: 02/19/2008
Next Scheduled EDR Contact: 05/19/2008
Data Release Frequency: No Update Planned

LUST: Geotracker's Leaking Underground Fuel Tank Report
Leaking Underground Storage Tank Incident Reports. LUST records contain an inventory of reported leaking underground storage tank incidents. Not all states maintain these records, and the information stored varies by state. For more information on a particular leaking underground storage tank sites, please contact the appropriate regulatory agency.

Date of Government Version: 01/07/2008
Date Data Arrived at EDR: 01/09/2008
Date Made Active in Reports: 02/14/2008
Number of Days to Update: 36

Source: State Water Resources Control Board
Telephone: see region list
Last EDR Contact: 04/09/2008
Next Scheduled EDR Contact: 07/07/2008
Data Release Frequency: Quarterly

LUST REG 7: Leaking Underground Storage Tank Case Listing
Leaking Underground Storage Tank locations. Imperial, Riverside, San Diego, Santa Barbara counties.

Date of Government Version: 02/26/2004
Date Data Arrived at EDR: 02/26/2004
Date Made Active in Reports: 03/24/2004
Number of Days to Update: 27

Source: California Regional Water Quality Control Board Colorado River Basin Region (7)
Telephone: 760-776-8943
Last EDR Contact: 02/19/2008
Next Scheduled EDR Contact: 05/19/2008
Data Release Frequency: No Update Planned

CA FID UST: Facility Inventory Database
The Facility Inventory Database (FID) contains a historical listing of active and inactive underground storage tank locations from the State Water Resource Control Board. Refer to local/county source for current data.

Date of Government Version: 10/31/1994
Date Data Arrived at EDR: 09/05/1995
Date Made Active in Reports: 09/29/1995
Number of Days to Update: 24

Source: California Environmental Protection Agency
Telephone: 916-341-5851
Last EDR Contact: 12/28/1998
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

SLIC: Statewide SLIC Cases
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 01/07/2008
Date Data Arrived at EDR: 01/09/2008
Date Made Active in Reports: 02/14/2008
Number of Days to Update: 36

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 01/09/2008
Next Scheduled EDR Contact: 07/07/2008
Data Release Frequency: Varies

SLIC REG 1: Active Toxic Site Investigations
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/03/2003
Date Data Arrived at EDR: 04/07/2003
Date Made Active in Reports: 04/25/2003
Number of Days to Update: 18

Source: California Regional Water Quality Control Board, North Coast Region (1)
Telephone: 707-576-2220
Last EDR Contact: 02/19/2008
Next Scheduled EDR Contact: 05/19/2008
Data Release Frequency: No Update Planned

SLIC REG 2: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/30/2004
Date Data Arrived at EDR: 10/20/2004
Date Made Active in Reports: 11/19/2004
Number of Days to Update: 30

Source: Regional Water Quality Control Board San Francisco Bay Region (2)
Telephone: 510-286-0457
Last EDR Contact: 04/07/2008
Next Scheduled EDR Contact: 04/07/2008
Data Release Frequency: Quarterly

SLIC REG 3: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 05/18/2006
Date Data Arrived at EDR: 05/18/2006
Date Made Active in Reports: 06/15/2006
Number of Days to Update: 28

Source: California Regional Water Quality Control Board Central Coast Region (3)
Telephone: 805-549-3147
Last EDR Contact: 02/11/2008
Next Scheduled EDR Contact: 05/12/2008
Data Release Frequency: Semi-Annually

SLIC REG 4: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 11/17/2004
Date Data Arrived at EDR: 11/18/2004
Date Made Active in Reports: 01/04/2005
Number of Days to Update: 47

Source: Region Water Quality Control Board Los Angeles Region (4)
Telephone: 213-576-6600
Last EDR Contact: 04/21/2008
Next Scheduled EDR Contact: 07/21/2008
Data Release Frequency: Varies

SLIC REG 5: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/01/2005
Date Data Arrived at EDR: 04/05/2005
Date Made Active in Reports: 04/21/2005
Number of Days to Update: 16

Source: Regional Water Quality Control Board Central Valley Region (5)
Telephone: 916-464-3291
Last EDR Contact: 03/31/2008
Next Scheduled EDR Contact: 06/30/2008
Data Release Frequency: Semi-Annually

SLIC REG 6V: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 05/24/2005
Date Data Arrived at EDR: 05/25/2005
Date Made Active in Reports: 06/16/2005
Number of Days to Update: 22

Source: Regional Water Quality Control Board, Victorville Branch
Telephone: 619-241-6583
Last EDR Contact: 03/31/2008
Next Scheduled EDR Contact: 06/30/2008
Data Release Frequency: Semi-Annually

SLIC REG 6L: SLIC Sites
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/07/2004
Date Data Arrived at EDR: 09/07/2004
Date Made Active in Reports: 10/12/2004
Number of Days to Update: 35

Source: California Regional Water Quality Control Board, Lahontan Region
Telephone: 530-542-5574
Last EDR Contact: 03/03/2008
Next Scheduled EDR Contact: 06/02/2008
Data Release Frequency: No Update Planned

SLIC REG 7: SLIC List
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 11/24/2004
Date Data Arrived at EDR: 11/29/2004
Date Made Active in Reports: 01/04/2005
Number of Days to Update: 36

Source: California Regional Quality Control Board, Colorado River Basin Region
Telephone: 760-346-7491
Last EDR Contact: 03/03/2008
Next Scheduled EDR Contact: 05/19/2008
Data Release Frequency: No Update Planned

SLIC REG 8: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/03/2008
Date Data Arrived at EDR: 04/03/2008
Date Made Active in Reports: 04/14/2008
Number of Days to Update: 11

Source: California Region Water Quality Control Board Santa Ana Region (8)
Telephone: 951-782-3298
Last EDR Contact: 03/31/2008
Next Scheduled EDR Contact: 06/30/2008
Data Release Frequency: Semi-Annually

SLIC REG 9: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/10/2007
Date Data Arrived at EDR: 09/11/2007
Date Made Active in Reports: 09/28/2007
Number of Days to Update: 17

Source: California Regional Water Quality Control Board San Diego Region (9)
Telephone: 858-467-2980
Last EDR Contact: 02/25/2008
Next Scheduled EDR Contact: 05/26/2008
Data Release Frequency: Annually

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

UST: Active UST Facilities
Active UST facilities gathered from the local regulatory agencies

Date of Government Version: 01/07/2008
Date Data Arrived at EDR: 01/09/2008
Date Made Active in Reports: 02/08/2008
Number of Days to Update: 30

Source: SWRCB
Telephone: 916-480-1028
Last EDR Contact: 04/09/2008
Next Scheduled EDR Contact: 07/07/2008
Data Release Frequency: Semi-Annually

UST MENDOCINO: Mendocino County UST Database
A listing of underground storage tank locations in Mendocino County.

Date of Government Version: 03/24/2008
Date Data Arrived at EDR: 03/25/2008
Date Made Active in Reports: 04/09/2008
Number of Days to Update: 15

Source: Department of Public Health
Telephone: 707-463-4466
Last EDR Contact: 03/24/2008
Next Scheduled EDR Contact: 06/23/2008
Data Release Frequency: Varies

HIST UST: Hazardous Substance Storage Container Database
The Hazardous Substance Storage Container Database is a historical listing of UST sites. Refer to local/county source for current data.

Date of Government Version: 10/15/1990
Date Data Arrived at EDR: 01/25/1991
Date Made Active in Reports: 02/12/1991
Number of Days to Update: 18

Source: State Water Resources Control Board
Telephone: 916-341-5851
Last EDR Contact: 07/26/2001
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

LIENS: Environmental Liens Listing
A listing of property locations with environmental liens for California where DTSC is a lien holder.

Date of Government Version: 02/05/2008
Date Data Arrived at EDR: 02/06/2008
Date Made Active in Reports: 03/14/2008
Number of Days to Update: 37

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 02/05/2008
Next Scheduled EDR Contact: 05/05/2008
Data Release Frequency: Varies

AST: Aboveground Petroleum Storage Tank Facilities
Registered Aboveground Storage Tanks.

Date of Government Version: 11/01/2007
Date Data Arrived at EDR: 11/27/2007
Date Made Active in Reports: 02/14/2008
Number of Days to Update: 79

Source: State Water Resources Control Board
Telephone: 916-341-5712
Last EDR Contact: 01/28/2008
Next Scheduled EDR Contact: 04/28/2008
Data Release Frequency: Quarterly

SWEEPS UST: SWEEPS UST Listing
Statewide Environmental Evaluation and Planning System. This underground storage tank listing was updated and maintained by a company contacted by the SWRCB in the early 1990's. The listing is no longer updated or maintained. The local agency is the contact for more information on a site on the SWEEPS list.

Date of Government Version: 06/01/1994
Date Data Arrived at EDR: 07/07/2005
Date Made Active in Reports: 08/11/2005
Number of Days to Update: 35

Source: State Water Resources Control Board
Telephone: N/A
Last EDR Contact: 06/03/2005
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

CHMIRS: California Hazardous Material Incident Report System
California Hazardous Material Incident Reporting System. CHMIRS contains information on reported hazardous material incidents (accidental releases or spills).

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 02/23/2007
Date Made Active in Reports: 04/06/2007
Number of Days to Update: 42

Source: Office of Emergency Services
Telephone: 916-845-8400
Last EDR Contact: 02/19/2008
Next Scheduled EDR Contact: 05/19/2008
Data Release Frequency: Varies

NOTIFY 65: Proposition 65 Records

Proposition 65 Notification Records. NOTIFY 65 contains facility notifications about any release which could impact drinking water and thereby expose the public to a potential health risk.

Date of Government Version: 10/21/1993
Date Data Arrived at EDR: 11/01/1993
Date Made Active in Reports: 11/19/1993
Number of Days to Update: 18

Source: State Water Resources Control Board
Telephone: 916-445-3846
Last EDR Contact: 04/14/2008
Next Scheduled EDR Contact: 07/14/2008
Data Release Frequency: No Update Planned

DEED: Deed Restriction Listing

Site Mitigation and Brownfields Reuse Program Facility Sites with Deed Restrictions & Hazardous Waste Management Program Facility Sites with Deed / Land Use Restriction. The DTSC Site Mitigation and Brownfields Reuse Program (SMBRP) list includes sites cleaned up under the program's oversight and generally does not include current or former hazardous waste facilities that required a hazardous waste facility permit. The list represents deed restrictions that are active. Some sites have multiple deed restrictions. The DTSC Hazardous Waste Management Program (HWMP) has developed a list of current or former hazardous waste facilities that have a recorded land use restriction at the local county recorder's office. The land use restrictions on this list were required by the DTSC HWMP as a result of the presence of hazardous substances that remain on site after the facility (or part of the facility) has been closed or cleaned up. The types of land use restriction include deed notice, deed restriction, or a land use restriction that binds current and future owners.

Date of Government Version: 04/01/2008
Date Data Arrived at EDR: 04/02/2008
Date Made Active in Reports: 04/14/2008
Number of Days to Update: 12

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 04/02/2008
Next Scheduled EDR Contact: 06/30/2008
Data Release Frequency: Semi-Annually

VCP: Voluntary Cleanup Program Properties

Contains low threat level properties with either confirmed or unconfirmed releases and the project proponents have request that DTSC oversee investigation and/or cleanup activities and have agreed to provide coverage for DTSC's costs.

Date of Government Version: 02/26/2008
Date Data Arrived at EDR: 02/27/2008
Date Made Active in Reports: 03/27/2008
Number of Days to Update: 29

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 02/27/2008
Next Scheduled EDR Contact: 05/26/2008
Data Release Frequency: Quarterly

DRYCLEANERS: Cleaner Facilities

A list of drycleaner related facilities that have EPA ID numbers. These are facilities with certain SIC codes: power laundries, family and commercial; garment pressing and cleaner's agents; linen supply; coin-operated laundries and cleaning; drycleaning plants, except rugs; carpet and upholster cleaning; industrial launderers; laundry and garment services.

Date of Government Version: 07/31/2007
Date Data Arrived at EDR: 07/31/2007
Date Made Active in Reports: 08/09/2007
Number of Days to Update: 9

Source: Department of Toxic Substance Control
Telephone: 916-327-4498
Last EDR Contact: 04/14/2008
Next Scheduled EDR Contact: 06/30/2008
Data Release Frequency: Annually

WIP: Well Investigation Program Case List

Well Investigation Program case in the San Gabriel and San Fernando Valley area.

Date of Government Version: 10/25/2007
Date Data Arrived at EDR: 01/23/2008
Date Made Active in Reports: 02/14/2008
Number of Days to Update: 22

Source: Los Angeles Water Quality Control Board
Telephone: 213-576-6726
Last EDR Contact: 01/23/2008
Next Scheduled EDR Contact: 04/21/2008
Data Release Frequency: Varies

CDL: Clandestine Drug Labs

A listing of drug lab locations. Listing of a location in this database does not indicate that any illegal drug lab materials were or were not present there, and does not constitute a determination that the location either requires or does not require additional cleanup work.

Date of Government Version: 09/30/2007
Date Data Arrived at EDR: 10/15/2007
Date Made Active in Reports: 11/07/2007
Number of Days to Update: 23

Source: Department of Toxic Substances Control
Telephone: 916-255-6504
Last EDR Contact: 04/21/2008
Next Scheduled EDR Contact: 07/21/2008
Data Release Frequency: Varies

RESPONSE: State Response Sites

Identifies confirmed release sites where DTSC is involved in remediation, either in a lead or oversight capacity. These confirmed release sites are generally high-priority and high potential risk.

Date of Government Version: 02/26/2008
Date Data Arrived at EDR: 02/27/2008
Date Made Active in Reports: 03/27/2008
Number of Days to Update: 29

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 02/27/2008
Next Scheduled EDR Contact: 05/26/2008
Data Release Frequency: Quarterly

HAZNET: Facility and Manifest Data

Facility and Manifest Data. The data is extracted from the copies of hazardous waste manifests received each year by the DTSC. The annual volume of manifests is typically 700,000 - 1,000,000 annually, representing approximately 350,000 - 500,000 shipments. Data are from the manifests submitted without correction, and therefore many contain some invalid values for data elements such as generator ID, TSD ID, waste category, and disposal method.

Date of Government Version: 12/31/2006
Date Data Arrived at EDR: 10/04/2007
Date Made Active in Reports: 11/07/2007
Number of Days to Update: 34

Source: California Environmental Protection Agency
Telephone: 916-255-1136
Last EDR Contact: 02/08/2008
Next Scheduled EDR Contact: 05/05/2008
Data Release Frequency: Annually

EMI: Emissions Inventory Data

Toxics and criteria pollutant emissions data collected by the ARB and local air pollution agencies.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 04/17/2007
Date Made Active in Reports: 05/10/2007
Number of Days to Update: 23

Source: California Air Resources Board
Telephone: 916-322-2990
Last EDR Contact: 04/18/2008
Next Scheduled EDR Contact: 07/14/2008
Data Release Frequency: Varies

ENVIROSTOR: EnviroStor Database

The Department of Toxic Substances Control's (DTSC's) Site Mitigation and Brownfields Reuse Program's (SMBRP's) EnviroStor database identifes sites that have known contamination or sites for which there may be reasons to investigate further. The database includes the following site types: Federal Superfund sites (National Priorities List (NPL)); State Response, including Military Facilities and State Superfund; Voluntary Cleanup; and School sites. EnviroStor provides similar information to the information that was available in CalSites, and provides additional site information, including, but not limited to, identification of formerly-contaminated properties that have been released for reuse, properties where environmental deed restrictions have been recorded to prevent inappropriate land uses, and risk characterization information that is used to assess potential impacts to public health and the environment at contaminated sites.

Date of Government Version: 02/26/2008
Date Data Arrived at EDR: 02/27/2008
Date Made Active in Reports: 03/27/2008
Number of Days to Update: 29

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 02/27/2008
Next Scheduled EDR Contact: 05/26/2008
Data Release Frequency: Quarterly

HAULERS: Registered Waste Tire Haulers Listing
A listing of registered waste tire haulers.

Date of Government Version: 02/12/2008
Date Data Arrived at EDR: 02/14/2008
Date Made Active in Reports: 03/14/2008
Number of Days to Update: 29

Source: Integrated Waste Management Board
Telephone: 916-341-6422
Last EDR Contact: 04/14/2008
Next Scheduled EDR Contact: 06/09/2008
Data Release Frequency: Varies

TRIBAL RECORDS

INDIAN RESERV: Indian Reservations
This map layer portrays Indian administered lands of the United States that have any area equal to or greater than 640 acres.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 12/08/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 34

Source: USGS
Telephone: 202-208-3710
Last EDR Contact: 02/08/2008
Next Scheduled EDR Contact: 05/05/2008
Data Release Frequency: Semi-Annually

INDIAN ODI: Report on the Status of Open Dumps on Indian Lands
Location of open dumps on Indian land.

Date of Government Version: 12/31/1998
Date Data Arrived at EDR: 12/03/2007
Date Made Active in Reports: 01/24/2008
Number of Days to Update: 52

Source: Environmental Protection Agency
Telephone: 703-308-8245
Last EDR Contact: 02/25/2008
Next Scheduled EDR Contact: 05/26/2008
Data Release Frequency: Varies

INDIAN LUST R7: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Iowa, Kansas, and Nebraska

Date of Government Version: 06/01/2007
Date Data Arrived at EDR: 06/14/2007
Date Made Active in Reports: 07/05/2007
Number of Days to Update: 21

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 02/15/2008
Next Scheduled EDR Contact: 05/19/2008
Data Release Frequency: Varies

INDIAN LUST R8: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Colorado, Montana, North Dakota, South Dakota, Utah and Wyoming.

Date of Government Version: 02/20/2008
Date Data Arrived at EDR: 03/04/2008
Date Made Active in Reports: 03/17/2008
Number of Days to Update: 13

Source: EPA Region 8
Telephone: 303-312-6271
Last EDR Contact: 02/15/2008
Next Scheduled EDR Contact: 05/19/2008
Data Release Frequency: Quarterly

INDIAN LUST R1: Leaking Underground Storage Tanks on Indian Land
A listing of leaking underground storage tank locations on Indian Land.

Date of Government Version: 03/12/2008
Date Data Arrived at EDR: 03/14/2008
Date Made Active in Reports: 03/20/2008
Number of Days to Update: 6

Source: EPA Region 1
Telephone: 617-918-1313
Last EDR Contact: 02/15/2008
Next Scheduled EDR Contact: 05/19/2008
Data Release Frequency: Varies

INDIAN LUST R6: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in New Mexico and Oklahoma.

Date of Government Version: 02/28/2008
Date Data Arrived at EDR: 02/29/2008
Date Made Active in Reports: 03/17/2008
Number of Days to Update: 17

Source: EPA Region 6
Telephone: 214-665-6597
Last EDR Contact: 02/15/2008
Next Scheduled EDR Contact: 05/19/2008
Data Release Frequency: Varies

INDIAN LUST R9: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Arizona, California, New Mexico and Nevada

Date of Government Version: 02/25/2008
Date Data Arrived at EDR: 02/26/2008
Date Made Active in Reports: 03/17/2008
Number of Days to Update: 20

Source: Environmental Protection Agency
Telephone: 415-972-3372
Last EDR Contact: 02/15/2008
Next Scheduled EDR Contact: 05/19/2008
Data Release Frequency: Quarterly

INDIAN LUST R10: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Alaska, Idaho, Oregon and Washington.

Date of Government Version: 02/21/2008
Date Data Arrived at EDR: 02/26/2008
Date Made Active in Reports: 03/20/2008
Number of Days to Update: 23

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 02/15/2008
Next Scheduled EDR Contact: 05/19/2008
Data Release Frequency: Quarterly

INDIAN LUST R4: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Florida, Mississippi and North Carolina.

Date of Government Version: 09/05/2007
Date Data Arrived at EDR: 10/02/2007
Date Made Active in Reports: 10/11/2007
Number of Days to Update: 9

Source: EPA Region 4
Telephone: 404-562-8677
Last EDR Contact: 02/15/2008
Next Scheduled EDR Contact: 05/19/2008
Data Release Frequency: Semi-Annually

INDIAN UST R1: Underground Storage Tanks on Indian Land
A listing of underground storage tank locations on Indian Land.

Date of Government Version: 03/12/2008
Date Data Arrived at EDR: 03/14/2008
Date Made Active in Reports: 03/20/2008
Number of Days to Update: 6

Source: EPA, Region 1
Telephone: 617-918-1313
Last EDR Contact: 02/15/2008
Next Scheduled EDR Contact: 05/19/2008
Data Release Frequency: Varies

INDIAN UST R6: Underground Storage Tanks on Indian Land
No description is available for this data

Date of Government Version: 02/28/2008
Date Data Arrived at EDR: 02/29/2008
Date Made Active in Reports: 03/17/2008
Number of Days to Update: 17

Source: EPA Region 6
Telephone: 214-665-7591
Last EDR Contact: 02/15/2008
Next Scheduled EDR Contact: 05/19/2008
Data Release Frequency: Semi-Annually

INDIAN UST R7: Underground Storage Tanks on Indian Land
No description is available for this data

Date of Government Version: 06/01/2007
Date Data Arrived at EDR: 06/14/2007
Date Made Active in Reports: 07/05/2007
Number of Days to Update: 21

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 02/15/2008
Next Scheduled EDR Contact: 05/19/2008
Data Release Frequency: Varies

INDIAN UST R9: Underground Storage Tanks on Indian Land
No description is available for this data

Date of Government Version: 02/25/2008
Date Data Arrived at EDR: 02/26/2008
Date Made Active in Reports: 03/20/2008
Number of Days to Update: 23

Source: EPA Region 9
Telephone: 415-972-3368
Last EDR Contact: 02/15/2008
Next Scheduled EDR Contact: 05/19/2008
Data Release Frequency: Quarterly

INDIAN UST R4: Underground Storage Tanks on Indian Land
No description is available for this data

Date of Government Version: 09/05/2007
Date Data Arrived at EDR: 10/02/2007
Date Made Active in Reports: 10/11/2007
Number of Days to Update: 9

Source: EPA Region 4
Telephone: 404-562-9424
Last EDR Contact: 02/15/2008
Next Scheduled EDR Contact: 05/19/2008
Data Release Frequency: Semi-Annually

INDIAN UST R5: Underground Storage Tanks on Indian Land
No description is available for this data

Date of Government Version: 12/21/2007
Date Data Arrived at EDR: 12/21/2007
Date Made Active in Reports: 01/24/2008
Number of Days to Update: 34

Source: EPA Region 5
Telephone: 312-886-6136
Last EDR Contact: 12/21/2007
Next Scheduled EDR Contact: 05/19/2008
Data Release Frequency: Varies

INDIAN UST R10: Underground Storage Tanks on Indian Land
No description is available for this data

Date of Government Version: 02/21/2008
Date Data Arrived at EDR: 02/26/2008
Date Made Active in Reports: 03/20/2008
Number of Days to Update: 23

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 02/15/2008
Next Scheduled EDR Contact: 05/19/2008
Data Release Frequency: Quarterly

INDIAN UST R8: Underground Storage Tanks on Indian Land
No description is available for this data

Date of Government Version: 02/20/2008
Date Data Arrived at EDR: 03/04/2008
Date Made Active in Reports: 03/17/2008
Number of Days to Update: 13

Source: EPA Region 8
Telephone: 303-312-6137
Last EDR Contact: 02/15/2008
Next Scheduled EDR Contact: 05/19/2008
Data Release Frequency: Quarterly

EDR PROPRIETARY RECORDS

Manufactured Gas Plants: EDR Proprietary Manufactured Gas Plants
The EDR Proprietary Manufactured Gas Plant Database includes records of coal gas plants (manufactured gas plants) compiled by EDR's researchers. Manufactured gas sites were used in the United States from the 1800's to 1950's to produce a gas that could be distributed and used as fuel. These plants used whale oil, rosin, coal, or a mixture of coal, oil, and water that also produced a significant amount of waste. Many of the byproducts of the gas production, such as coal tar (oily waste containing volatile and non-volatile chemicals), sludges, oils and other compounds are potentially hazardous to human health and the environment. The byproduct from this process was frequently disposed of directly at the plant site and can remain or spread slowly, serving as a continuous source of soil and groundwater contamination.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

COUNTY RECORDS

ALAMEDA COUNTY:

Contaminated Sites

A listing of contaminated sites overseen by the Toxic Release Program (oil and groundwater contamination from chemical releases and spills) and the Leaking Underground Storage Tank Program (soil and ground water contamination from leaking petroleum USTs).

Date of Government Version: 01/28/2008
Date Data Arrived at EDR: 01/29/2008
Date Made Active in Reports: 02/14/2008
Number of Days to Update: 16

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 04/21/2008
Next Scheduled EDR Contact: 07/21/2008
Data Release Frequency: Semi-Annually

Underground Tanks

Underground storage tank sites located in Alameda county.

Date of Government Version: 01/28/2008
Date Data Arrived at EDR: 01/29/2008
Date Made Active in Reports: 02/08/2008
Number of Days to Update: 10

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 04/21/2008
Next Scheduled EDR Contact: 07/21/2008
Data Release Frequency: Semi-Annually

CONTRA COSTA COUNTY:

Site List

List includes sites from the underground tank, hazardous waste generator and business plan/2185 programs.

Date of Government Version: 03/07/2008
Date Data Arrived at EDR: 03/11/2008
Date Made Active in Reports: 03/27/2008
Number of Days to Update: 16

Source: Contra Costa Health Services Department
Telephone: 925-646-2286
Last EDR Contact: 02/25/2008
Next Scheduled EDR Contact: 05/26/2008
Data Release Frequency: Semi-Annually

FRESNO COUNTY:

CUPA Resources List

Certified Unified Program Agency. CUPA's are responsible for implementing a unified hazardous materials and hazardous waste management regulatory program. The agency provides oversight of businesses that deal with hazardous materials, operate underground storage tanks or aboveground storage tanks.

Date of Government Version: 01/16/2008
Date Data Arrived at EDR: 01/17/2008
Date Made Active in Reports: 02/14/2008
Number of Days to Update: 28

Source: Dept. of Community Health
Telephone: 559-445-3271
Last EDR Contact: 04/18/2008
Next Scheduled EDR Contact: 07/14/2008
Data Release Frequency: Semi-Annually

KERN COUNTY:

Underground Storage Tank Sites & Tank Listing

Kern County Sites and Tanks Listing.

Date of Government Version: 12/17/2007
Date Data Arrived at EDR: 12/18/2007
Date Made Active in Reports: 02/08/2008
Number of Days to Update: 52

Source: Kern County Environment Health Services Department
Telephone: 661-862-8700
Last EDR Contact: 04/16/2008
Next Scheduled EDR Contact: 06/02/2008
Data Release Frequency: Quarterly

LOS ANGELES COUNTY:

San Gabriel Valley Areas of Concern

San Gabriel Valley areas where VOC contamination is at or above the MCL as designated by region 9 EPA office.

Date of Government Version: 12/31/1998
Date Data Arrived at EDR: 07/07/1999
Date Made Active in Reports: N/A
Number of Days to Update: 0

Source: EPA Region 9
Telephone: 415-972-3178
Last EDR Contact: 04/14/2008
Next Scheduled EDR Contact: 07/14/2008
Data Release Frequency: No Update Planned

HMS: Street Number List

Industrial Waste and Underground Storage Tank Sites.

Date of Government Version: 11/29/2007
Date Data Arrived at EDR: 01/22/2008
Date Made Active in Reports: 02/14/2008
Number of Days to Update: 23

Source: Department of Public Works
Telephone: 626-458-3517
Last EDR Contact: 02/11/2008
Next Scheduled EDR Contact: 05/12/2008
Data Release Frequency: Semi-Annually

List of Solid Waste Facilities

Solid Waste Facilities in Los Angeles County.

Date of Government Version: 02/12/2008
Date Data Arrived at EDR: 02/21/2008
Date Made Active in Reports: 03/27/2008
Number of Days to Update: 35

Source: La County Department of Public Works
Telephone: 818-458-5185
Last EDR Contact: 02/14/2008
Next Scheduled EDR Contact: 05/12/2008
Data Release Frequency: Varies

City of Los Angeles Landfills

Landfills owned and maintained by the City of Los Angeles.

Date of Government Version: 03/01/2008
Date Data Arrived at EDR: 03/20/2008
Date Made Active in Reports: 04/14/2008
Number of Days to Update: 25

Source: Engineering & Construction Division
Telephone: 213-473-7869
Last EDR Contact: 03/12/2008
Next Scheduled EDR Contact: 06/09/2008
Data Release Frequency: Varies

Site Mitigation List

Industrial sites that have had some sort of spill or complaint.

Date of Government Version: 05/30/2007
Date Data Arrived at EDR: 07/11/2007
Date Made Active in Reports: 08/09/2007
Number of Days to Update: 29

Source: Community Health Services
Telephone: 323-890-7806
Last EDR Contact: 02/11/2008
Next Scheduled EDR Contact: 05/12/2008
Data Release Frequency: Annually

City of El Segundo Underground Storage Tank

Underground storage tank sites located in El Segundo city.

Date of Government Version: 02/11/2008
Date Data Arrived at EDR: 02/21/2008
Date Made Active in Reports: 03/14/2008
Number of Days to Update: 22

Source: City of El Segundo Fire Department
Telephone: 310-524-2236
Last EDR Contact: 02/11/2008
Next Scheduled EDR Contact: 05/12/2008
Data Release Frequency: Semi-Annually

City of Long Beach Underground Storage Tank

Underground storage tank sites located in the city of Long Beach.

Date of Government Version: 03/28/2003
Date Data Arrived at EDR: 10/23/2003
Date Made Active in Reports: 11/26/2003
Number of Days to Update: 34

Source: City of Long Beach Fire Department
Telephone: 562-570-2563
Last EDR Contact: 02/19/2008
Next Scheduled EDR Contact: 05/19/2008
Data Release Frequency: Annually

City of Torrance Underground Storage Tank
Underground storage tank sites located in the city of Torrance.

Date of Government Version: 02/26/2008
Date Data Arrived at EDR: 02/27/2008
Date Made Active in Reports: 03/14/2008
Number of Days to Update: 16

Source: City of Torrance Fire Department
Telephone: 310-618-2973
Last EDR Contact: 02/25/2008
Next Scheduled EDR Contact: 05/12/2008
Data Release Frequency: Semi-Annually

MARIN COUNTY:

Underground Storage Tank Sites
Currently permitted USTs in Marin County.

Date of Government Version: 02/04/2008
Date Data Arrived at EDR: 02/21/2008
Date Made Active in Reports: 03/14/2008
Number of Days to Update: 22

Source: Public Works Department Waste Management
Telephone: 415-499-6647
Last EDR Contact: 01/28/2008
Next Scheduled EDR Contact: 04/28/2008
Data Release Frequency: Semi-Annually

NAPA COUNTY:

Sites With Reported Contamination
A listing of leaking underground storage tank sites located in Napa county.

Date of Government Version: 01/15/2008
Date Data Arrived at EDR: 01/16/2008
Date Made Active in Reports: 02/14/2008
Number of Days to Update: 29

Source: Napa County Department of Environmental Management
Telephone: 707-253-4269
Last EDR Contact: 04/07/2008
Next Scheduled EDR Contact: 06/23/2008
Data Release Frequency: Semi-Annually

Closed and Operating Underground Storage Tank Sites
Underground storage tank sites located in Napa county.

Date of Government Version: 01/15/2008
Date Data Arrived at EDR: 01/16/2008
Date Made Active in Reports: 02/08/2008
Number of Days to Update: 23

Source: Napa County Department of Environmental Management
Telephone: 707-253-4269
Last EDR Contact: 04/21/2008
Next Scheduled EDR Contact: 06/23/2008
Data Release Frequency: Annually

ORANGE COUNTY:

List of Industrial Site Cleanups
Petroleum and non-petroleum spills.

Date of Government Version: 03/03/2008
Date Data Arrived at EDR: 03/20/2008
Date Made Active in Reports: 04/14/2008
Number of Days to Update: 25

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 03/06/2008
Next Scheduled EDR Contact: 06/02/2008
Data Release Frequency: Annually

List of Underground Storage Tank Cleanups
Orange County Underground Storage Tank Cleanups (LUST).

Date of Government Version: 03/03/2008
Date Data Arrived at EDR: 03/25/2008
Date Made Active in Reports: 04/14/2008
Number of Days to Update: 20

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 03/06/2008
Next Scheduled EDR Contact: 06/02/2008
Data Release Frequency: Quarterly

List of Underground Storage Tank Facilities

Orange County Underground Storage Tank Facilities (UST).

Date of Government Version: 03/03/2008
Date Data Arrived at EDR: 03/18/2008
Date Made Active in Reports: 04/09/2008
Number of Days to Update: 22

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 03/06/2008
Next Scheduled EDR Contact: 06/02/2008
Data Release Frequency: Quarterly

PLACER COUNTY:

Master List of Facilities

List includes aboveground tanks, underground tanks and cleanup sites.

Date of Government Version: 07/23/2007
Date Data Arrived at EDR: 07/23/2007
Date Made Active in Reports: 08/09/2007
Number of Days to Update: 17

Source: Placer County Health and Human Services
Telephone: 530-889-7312
Last EDR Contact: 03/17/2008
Next Scheduled EDR Contact: 06/16/2008
Data Release Frequency: Semi-Annually

RIVERSIDE COUNTY:

Listing of Underground Tank Cleanup Sites

Riverside County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 08/06/2007
Date Data Arrived at EDR: 08/07/2007
Date Made Active in Reports: 09/26/2007
Number of Days to Update: 50

Source: Department of Public Health
Telephone: 951-358-5055
Last EDR Contact: 04/14/2008
Next Scheduled EDR Contact: 07/14/2008
Data Release Frequency: Quarterly

Underground Storage Tank Tank List

Underground storage tank sites located in Riverside county.

Date of Government Version: 08/06/2007
Date Data Arrived at EDR: 08/07/2007
Date Made Active in Reports: 09/24/2007
Number of Days to Update: 48

Source: Health Services Agency
Telephone: 951-358-5055
Last EDR Contact: 04/14/2008
Next Scheduled EDR Contact: 07/14/2008
Data Release Frequency: Quarterly

SACRAMENTO COUNTY:

Contaminated Sites

List of sites where unauthorized releases of potentially hazardous materials have occurred.

Date of Government Version: 02/11/2008
Date Data Arrived at EDR: 02/27/2008
Date Made Active in Reports: 03/14/2008
Number of Days to Update: 16

Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 02/27/2008
Next Scheduled EDR Contact: 04/28/2008
Data Release Frequency: Quarterly

ML - Regulatory Compliance Master List

Any business that has hazardous materials on site - hazardous material storage sites, underground storage tanks, waste generators.

Date of Government Version: 02/11/2008
Date Data Arrived at EDR: 02/27/2008
Date Made Active in Reports: 03/14/2008
Number of Days to Update: 16

Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 02/27/2008
Next Scheduled EDR Contact: 04/28/2008
Data Release Frequency: Quarterly

SAN BERNARDINO COUNTY:

Hazardous Material Permits

This listing includes underground storage tanks, medical waste handlers/generators, hazardous materials handlers, hazardous waste generators, and waste oil generators/handlers.

Date of Government Version: 03/18/2008
Date Data Arrived at EDR: 03/19/2008
Date Made Active in Reports: 04/14/2008
Number of Days to Update: 26

Source: San Bernardino County Fire Department Hazardous Materials Division
Telephone: 909-387-3041
Last EDR Contact: 03/03/2008
Next Scheduled EDR Contact: 12/03/2007
Data Release Frequency: Quarterly

SAN DIEGO COUNTY:

Hazardous Materials Management Division Database

The database includes: HE58 - This report contains the business name, site address, business phone number, establishment 'H' permit number, type of permit, and the business status. HE17 - In addition to providing the same information provided in the HE58 listing, HE17 provides inspection dates, violations received by the establishment, hazardous waste generated, the quantity, method of storage, treatment/disposal of waste and the hauler, and information on underground storage tanks. Unauthorized Release List - Includes a summary of environmental contamination cases in San Diego County (underground tank cases, non-tank cases, groundwater contamination, and soil contamination are included.)

Date of Government Version: 05/16/2005
Date Data Arrived at EDR: 05/18/2005
Date Made Active in Reports: 06/16/2005
Number of Days to Update: 29

Source: Hazardous Materials Management Division
Telephone: 619-338-2268
Last EDR Contact: 04/02/2008
Next Scheduled EDR Contact: 06/30/2008
Data Release Frequency: Quarterly

Solid Waste Facilities

San Diego County Solid Waste Facilities.

Date of Government Version: 08/01/2007
Date Data Arrived at EDR: 02/05/2008
Date Made Active in Reports: 02/14/2008
Number of Days to Update: 9

Source: Department of Health Services
Telephone: 619-338-2209
Last EDR Contact: 02/19/2008
Next Scheduled EDR Contact: 05/19/2008
Data Release Frequency: Varies

Environmental Case Listing

The listing contains all underground tank release cases and projects pertaining to properties contaminated with hazardous substances that are actively under review by the Site Assessment and Mitigation Program.

Date of Government Version: 11/28/2007
Date Data Arrived at EDR: 03/13/2008
Date Made Active in Reports: 04/14/2008
Number of Days to Update: 32

Source: San Diego County Department of Environmental Health
Telephone: 619-338-2371
Last EDR Contact: 04/02/2008
Next Scheduled EDR Contact: 06/30/2008
Data Release Frequency: Varies

SAN FRANCISCO COUNTY:

Local Oversite Facilities

A listing of leaking underground storage tank sites located in San Francisco county.

Date of Government Version: 03/03/2008
Date Data Arrived at EDR: 03/04/2008
Date Made Active in Reports: 03/14/2008
Number of Days to Update: 10

Source: Department Of Public Health San Francisco County
Telephone: 415-252-3920
Last EDR Contact: 03/03/2008
Next Scheduled EDR Contact: 06/02/2008
Data Release Frequency: Quarterly

Underground Storage Tank Information

Underground storage tank sites located in San Francisco county.

Date of Government Version: 03/03/2008
Date Data Arrived at EDR: 03/04/2008
Date Made Active in Reports: 03/14/2008
Number of Days to Update: 10

Source: Department of Public Health
Telephone: 415-252-3920
Last EDR Contact: 03/03/2008
Next Scheduled EDR Contact: 06/02/2008
Data Release Frequency: Quarterly

SAN JOAQUIN COUNTY:

San Joaquin Co. UST

A listing of underground storage tank locations in San Joaquin county.

Date of Government Version: 02/01/2008
Date Data Arrived at EDR: 02/26/2008
Date Made Active in Reports: 03/14/2008
Number of Days to Update: 17

Source: Environmental Health Department
Telephone: N/A
Last EDR Contact: 04/14/2008
Next Scheduled EDR Contact: 07/14/2008
Data Release Frequency: Semi-Annually

SAN MATEO COUNTY:

Business Inventory

List includes Hazardous Materials Business Plan, hazardous waste generators, and underground storage tanks.

Date of Government Version: 01/31/2008
Date Data Arrived at EDR: 02/01/2008
Date Made Active in Reports: 02/14/2008
Number of Days to Update: 13

Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 04/07/2008
Next Scheduled EDR Contact: 07/07/2008
Data Release Frequency: Annually

Fuel Leak List

A listing of leaking underground storage tank sites located in San Mateo county.

Date of Government Version: 01/09/2008
Date Data Arrived at EDR: 01/11/2008
Date Made Active in Reports: 02/14/2008
Number of Days to Update: 34

Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 04/07/2008
Next Scheduled EDR Contact: 07/07/2008
Data Release Frequency: Semi-Annually

SANTA CLARA COUNTY:

HIST LUST - Fuel Leak Site Activity Report

A listing of open and closed leaking underground storage tanks. This listing is no longer updated by the county. Leaking underground storage tanks are now handled by the Department of Environmental Health.

Date of Government Version: 03/29/2005
Date Data Arrived at EDR: 03/30/2005
Date Made Active in Reports: 04/21/2005
Number of Days to Update: 22

Source: Santa Clara Valley Water District
Telephone: 408-265-2600
Last EDR Contact: 03/24/2008
Next Scheduled EDR Contact: 06/23/2008
Data Release Frequency: No Update Planned

LOP Listing

A listing of leaking underground storage tanks located in Santa Clara county.

Date of Government Version: 02/01/2008
Date Data Arrived at EDR: 02/05/2008
Date Made Active in Reports: 02/14/2008
Number of Days to Update: 9

Source: Department of Environmental Health
Telephone: 408-918-3417
Last EDR Contact: 04/14/2008
Next Scheduled EDR Contact: 06/23/2008
Data Release Frequency: Varies

Hazardous Material Facilities

Hazardous material facilities, including underground storage tank sites.

Date of Government Version: 03/04/2008
Date Data Arrived at EDR: 03/04/2008
Date Made Active in Reports: 03/14/2008
Number of Days to Update: 10

Source: City of San Jose Fire Department
Telephone: 408-277-4659
Last EDR Contact: 03/03/2008
Next Scheduled EDR Contact: 06/02/2008
Data Release Frequency: Annually

SOLANO COUNTY:

Leaking Underground Storage Tanks

A listing of leaking underground storage tank sites located in Solano county.

Date of Government Version: 09/24/2007
Date Data Arrived at EDR: 10/23/2007
Date Made Active in Reports: 11/07/2007
Number of Days to Update: 15

Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 03/24/2008
Next Scheduled EDR Contact: 06/23/2008
Data Release Frequency: Quarterly

Underground Storage Tanks

Underground storage tank sites located in Solano county.

Date of Government Version: 01/07/2008
Date Data Arrived at EDR: 01/30/2008
Date Made Active in Reports: 02/08/2008
Number of Days to Update: 9

Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 03/24/2008
Next Scheduled EDR Contact: 06/23/2008
Data Release Frequency: Quarterly

SONOMA COUNTY:

Leaking Underground Storage Tank Sites

A listing of leaking underground storage tank sites located in Sonoma county.

Date of Government Version: 01/22/2008
Date Data Arrived at EDR: 01/22/2008
Date Made Active in Reports: 02/14/2008
Number of Days to Update: 23

Source: Department of Health Services
Telephone: 707-565-6565
Last EDR Contact: 04/21/2008
Next Scheduled EDR Contact: 07/21/2008
Data Release Frequency: Quarterly

SUTTER COUNTY:

Underground Storage Tanks

Underground storage tank sites located in Sutter county.

Date of Government Version: 05/04/2007
Date Data Arrived at EDR: 05/04/2007
Date Made Active in Reports: 05/24/2007
Number of Days to Update: 20

Source: Sutter County Department of Agriculture
Telephone: 530-822-7500
Last EDR Contact: 03/31/2008
Next Scheduled EDR Contact: 06/30/2008
Data Release Frequency: Semi-Annually

VENTURA COUNTY:

Business Plan, Hazardous Waste Producers, and Operating Underground Tanks

The BWT list indicates by site address whether the Environmental Health Division has Business Plan (B), Waste Producer (W), and/or Underground Tank (T) information.

Date of Government Version: 02/27/2008
Date Data Arrived at EDR: 03/25/2008
Date Made Active in Reports: 04/14/2008
Number of Days to Update: 20

Source: Ventura County Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 03/12/2008
Next Scheduled EDR Contact: 06/09/2008
Data Release Frequency: Quarterly

Inventory of Illegal Abandoned and Inactive Sites

Ventura County Inventory of Closed, Illegal Abandoned, and Inactive Sites.

Date of Government Version: 08/01/2007
Date Data Arrived at EDR: 08/29/2007
Date Made Active in Reports: 09/26/2007
Number of Days to Update: 28

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 02/19/2008
Next Scheduled EDR Contact: 05/19/2008
Data Release Frequency: Annually

Listing of Underground Tank Cleanup Sites

Ventura County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 02/27/2008
Date Data Arrived at EDR: 03/25/2008
Date Made Active in Reports: 04/14/2008
Number of Days to Update: 20

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 03/12/2008
Next Scheduled EDR Contact: 06/09/2008
Data Release Frequency: Quarterly

Underground Tank Closed Sites List

Ventura County Operating Underground Storage Tank Sites (UST)/Underground Tank Closed Sites List.

Date of Government Version: 12/26/2007
Date Data Arrived at EDR: 01/09/2008
Date Made Active in Reports: 02/08/2008
Number of Days to Update: 30

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 04/09/2008
Next Scheduled EDR Contact: 07/07/2008
Data Release Frequency: Quarterly

YOLO COUNTY:

Underground Storage Tank Comprehensive Facility Report

Underground storage tank sites located in Yolo county.

Date of Government Version: 01/29/2008
Date Data Arrived at EDR: 02/20/2008
Date Made Active in Reports: 03/14/2008
Number of Days to Update: 23

Source: Yolo County Department of Health
Telephone: 530-666-8646
Last EDR Contact: 04/14/2008
Next Scheduled EDR Contact: 07/14/2008
Data Release Frequency: Annually

OTHER DATABASE(S)

Depending on the geographic area covered by this report, the data provided in these specialty databases may or may not be complete. For example, the existence of wetlands information data in a specific report does not mean that all wetlands in the area covered by the report are included. Moreover, the absence of any reported wetlands information does not necessarily mean that wetlands do not exist in the area covered by the report.

CT MANIFEST: Hazardous Waste Manifest Data

Facility and manifest data. Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a tsd facility.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 06/15/2007
Date Made Active in Reports: 08/20/2007
Number of Days to Update: 66

Source: Department of Environmental Protection
Telephone: 860-424-3375
Last EDR Contact: 03/14/2008
Next Scheduled EDR Contact: 06/09/2008
Data Release Frequency: Annually

NJ MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 09/30/2007
Date Data Arrived at EDR: 12/04/2007
Date Made Active in Reports: 12/31/2007
Number of Days to Update: 27

Source: Department of Environmental Protection
Telephone: N/A
Last EDR Contact: 04/03/2008
Next Scheduled EDR Contact: 06/30/2008
Data Release Frequency: Annually

NY MANIFEST: Facility and Manifest Data
Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a TSD facility.

Date of Government Version: 02/15/2008
Date Data Arrived at EDR: 02/28/2008
Date Made Active in Reports: 04/09/2008
Number of Days to Update: 41

Source: Department of Environmental Conservation
Telephone: 518-402-8651
Last EDR Contact: 02/28/2008
Next Scheduled EDR Contact: 05/26/2008
Data Release Frequency: Annually

PA MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2006
Date Data Arrived at EDR: 12/21/2007
Date Made Active in Reports: 01/10/2008
Number of Days to Update: 20

Source: Department of Environmental Protection
Telephone: N/A
Last EDR Contact: 03/10/2008
Next Scheduled EDR Contact: 06/09/2008
Data Release Frequency: Annually

RI MANIFEST: Manifest information
Hazardous waste manifest information

Date of Government Version: 10/01/2007
Date Data Arrived at EDR: 11/09/2007
Date Made Active in Reports: 01/15/2008
Number of Days to Update: 67

Source: Department of Environmental Management
Telephone: 401-222-2797
Last EDR Contact: 03/17/2008
Next Scheduled EDR Contact: 06/16/2008
Data Release Frequency: Annually

WI MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2006
Date Data Arrived at EDR: 04/27/2007
Date Made Active in Reports: 06/08/2007
Number of Days to Update: 42

Source: Department of Natural Resources
Telephone: N/A
Last EDR Contact: 04/07/2008
Next Scheduled EDR Contact: 07/07/2008
Data Release Frequency: Annually

Oil/Gas Pipelines: This data was obtained by EDR from the USGS in 1994. It is referred to by USGS as GeoData Digital Line Graphs from 1:100,000-Scale Maps. It was extracted from the transportation category including some oil, but primarily gas pipelines.

Electric Power Transmission Line Data
Source: PennWell Corporation
Telephone: (800) 823-6277
This map includes information copyrighted by PennWell Corporation. This information is provided on a best effort basis and PennWell Corporation does not guarantee its accuracy nor warrant its fitness for any particular purpose. Such information has been reprinted with the permission of PennWell.

Sensitive Receptors: There are individuals deemed sensitive receptors due to their fragile immune systems and special sensitivity to environmental discharges. These sensitive receptors typically include the elderly, the sick, and children. While the location of all sensitive receptors cannot be determined, EDR indicates those buildings and facilities - schools, daycares, hospitals, medical centers, and nursing homes - where individuals who are sensitive receptors are likely to be located.

AHA Hospitals:
Source: American Hospital Association, Inc.
Telephone: 312-280-5991
The database includes a listing of hospitals based on the American Hospital Association's annual survey of hospitals.

Medical Centers: Provider of Services Listing
Source: Centers for Medicare & Medicaid Services
Telephone: 410-786-3000
A listing of hospitals with Medicare provider number, produced by Centers of Medicare & Medicaid Services, a federal agency within the U.S. Department of Health and Human Services.

Nursing Homes
Source: National Institutes of Health
Telephone: 301-594-6248
Information on Medicare and Medicaid certified nursing homes in the United States.

Public Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on elementary and secondary public education in the United States. It is a comprehensive, annual, national statistical database of all public elementary and secondary schools and school districts, which contains data that are comparable across all states.

Private Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on private school locations in the United States.

Daycare Centers: Licensed Facilities
Source: Department of Social Services
Telephone: 916-657-4041

Flood Zone Data: This data, available in select counties across the country, was obtained by EDR in 1999 from the Federal Emergency Management Agency (FEMA). Data depicts 100-year and 500-year flood zones as defined by FEMA.

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002 and 2005 from the U.S. Fish and Wildlife Service.

STREET AND ADDRESS INFORMATION

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GEOCHECK ®- PHYSICAL SETTING SOURCE ADDENDUM

TARGET PROPERTY ADDRESS

KARUK TRUST CONVEYANCE
SHARPS ROAD
YREKA, CA 96097

TARGET PROPERTY COORDINATES

Latitude (North):	41.70960 - 41˚ 42' 34.6''
Longitude (West):	122.6322 - 122˚ 37' 55.9''
Universal Tranverse Mercator:	Zone 10
UTM X (Meters):	530599.3
UTM Y (Meters):	4617386.5
Elevation:	2702 ft. above sea level

USGS TOPOGRAPHIC MAP

Target Property Map:	41122-F6 YREKA, CA
Most Recent Revision:	1984
East Map:	41122-F5 MONTAGUE, CA
Most Recent Revision:	1984

EDR's GeoCheck Physical Setting Source Addendum is provided to assist the environmental professional in forming an opinion about the impact of potential contaminant migration.

Assessment of the impact of contaminant migration generally has two principle investigative components:

1. Groundwater flow direction, and
2. Groundwater flow velocity.

Groundwater flow direction may be impacted by surface topography, hydrology, hydrogeology, characteristics of the soil, and nearby wells. Groundwater flow velocity is generally impacted by the nature of the geologic strata.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW DIRECTION INFORMATION

Groundwater flow direction for a particular site is best determined by a qualified environmental professional using site-specific well data. If such data is not reasonably ascertainable, it may be necessary to rely on other sources of information, such as surface topographic information, hydrologic information, hydrogeologic data collected on nearby properties, and regional groundwater flow information (from deep aquifers).

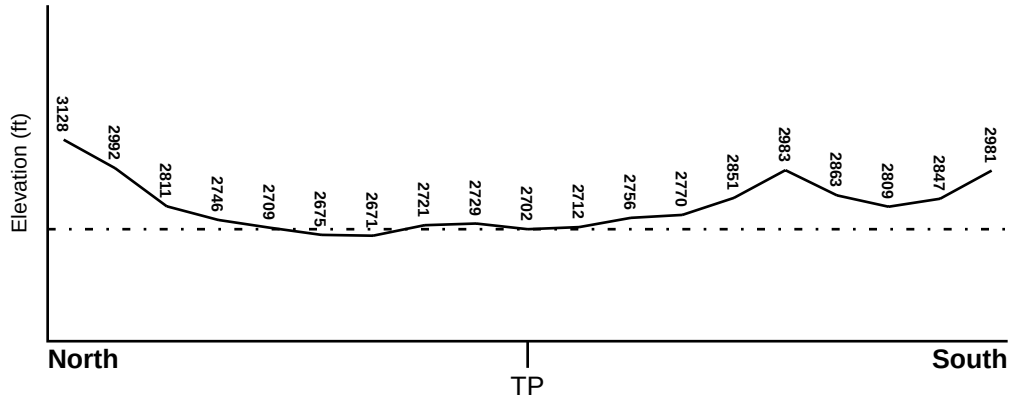
TOPOGRAPHIC INFORMATION

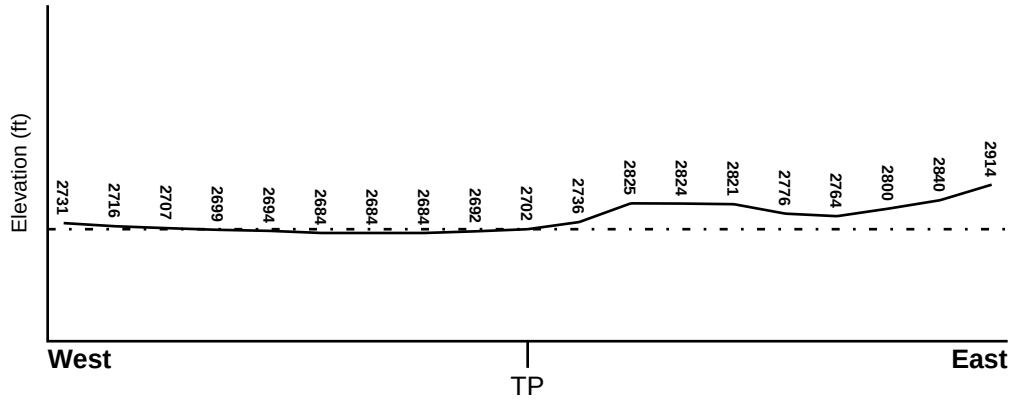
Surface topography may be indicative of the direction of surficial groundwater flow. This information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

TARGET PROPERTY TOPOGRAPHY

General Topographic Gradient: General WNW

SURROUNDING TOPOGRAPHY: ELEVATION PROFILES





Target Property Elevation: 2702 ft.

0 1/2 1 Miles

Source: Topography has been determined from the USGS 7.5' Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

HYDROLOGIC INFORMATION

Surface water can act as a hydrologic barrier to groundwater flow. Such hydrologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Refer to the Physical Setting Source Map following this summary for hydrologic information (major waterways and bodies of water).

FEMA FLOOD ZONE

Target Property County	FEMA Flood Electronic Data
SISKIYOU, CA	YES - refer to the Overview Map and Detail Map

Flood Plain Panel at Target Property:	0603670003B
Additional Panels in search area:	0603670001B 0603620606B 0603620608B

NATIONAL WETLAND INVENTORY

NWI Quad at Target Property	NWI Electronic Data Coverage
YREKA	Not Available

HYDROGEOLOGIC INFORMATION

Hydrogeologic information obtained by installation of wells on a specific site can often be an indicator of groundwater flow direction in the immediate area. Such hydrogeologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Site-Specific Hydrogeological Data*:

Search Radius:	1.25 miles
Status:	Not found

AQUIFLOW®

Search Radius: 1.000 Mile.

EDR has developed the AQUIFLOW Information System to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted by environmental professionals to regulatory authorities at select sites and has extracted the date of the report, groundwater flow direction as determined hydrogeologically, and the depth to water table.

MAP ID	LOCATION FROM TP	GENERAL DIRECTION GROUNDWATER FLOW
Not Reported		

* ©1996 Site−specific hydrogeological data gathered by CERCLIS Alerts, Inc., Bainbridge Island, WA. All rights reserved. All of the information and opinions presented are those of the cited EPA report(s), which were completed under a Comprehensive Environmental Response Compensation and Liability Information System (CERCLIS) investigation.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW VELOCITY INFORMATION

Groundwater flow velocity information for a particular site is best determined by a qualified environmental professional using site specific geologic and soil strata data. If such data are not reasonably ascertainable, it may be necessary to rely on other sources of information, including geologic age identification, rock stratigraphic unit and soil characteristics data collected on nearby properties and regional soil information. In general, contaminant plumes move more quickly through sandy-gravelly types of soils than silty-clayey types of soils.

GEOLOGIC INFORMATION IN GENERAL AREA OF TARGET PROPERTY

Geologic information can be used by the environmental professional in forming an opinion about the relative speed at which contaminant migration may be occurring.

ROCK STRATIGRAPHIC UNIT

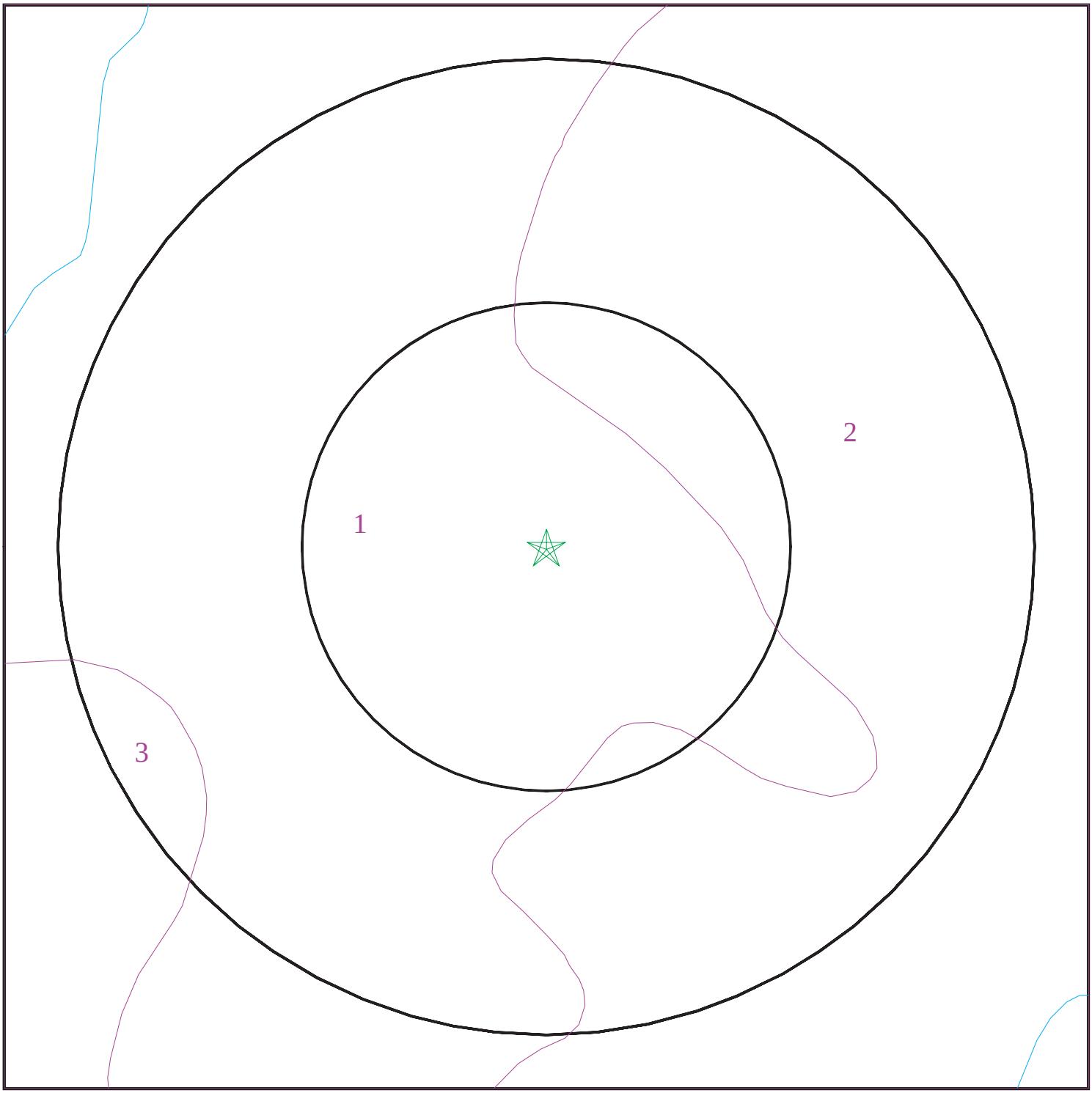
Era:	Mesozoic
System:	Cretaceous
Series:	Upper Cretaceous
Code:	uK *(decoded above as Era, System & Series)*

GEOLOGIC AGE IDENTIFICATION

Category: Stratified Sequence

Geologic Age and Rock Stratigraphic Unit Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - a digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

SSURGO SOIL MAP - 2201538.1s



Target Property
SSURGO Soil
Water

0 1/16 1/8 1/4 Miles

N

SITE NAME: Karuk Trust Conveyance ADDRESS: Sharps Road Yreka CA 96097 LAT/LONG: 41.7096 / 122.6322	CLIENT: Karuk Tribe of California CONTACT: Scott Quinn INQUIRY #: 2201538.1s DATE: April 22, 2008 4:25 pm

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GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

DOMINANT SOIL COMPOSITION IN GENERAL AREA OF TARGET PROPERTY

The U.S. Department of Agriculture's (USDA) Soil Conservation Service (SCS) leads the National Cooperative Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. The following information is based on Soil Conservation Service SSURGO data.

Soil Map ID: 1

Soil Component Name: DUMPS

Soil Surface Texture: fragmental material

Hydrologic Group: Not reported

Soil Drainage Class: Excessively drained

Hydric Status: Partially hydric

Corrosion Potential - Uncoated Steel: Not Reported

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	59 inches	fragmental material	Not reported	Not reported	Max: Min:	Max: Min:

Soil Map ID: 2

Soil Component Name: DUZEL

Soil Surface Texture: gravelly loam

Hydrologic Group: Class C - Slow infiltration rates. Soils with layers impeding downward movement of water, or soils with moderately fine or fine textures.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Moderate

Depth to Bedrock Min: > 36 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	12 inches	gravelly loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	Not reported	Max: Min:	Max: Min:
2	12 inches	29 inches	gravelly loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	Not reported	Max: Min:	Max: Min:
3	29 inches	38 inches	very gravelly loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	Not reported	Max: Min:	Max: Min:
4	38 inches	42 inches	weathered bedrock	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	Not reported	Max: Min:	Max: Min:

Soil Map ID: 3

Soil Component Name: STONER

Soil Surface Texture: gravelly sandy loam

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Well drained

Hydric Status: Partially hydric

Corrosion Potential - Uncoated Steel: Moderate

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	11 inches	gravelly sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Gravels, Gravels with fines, Silty Gravel	Max: 14 Min: 4	Max: 6.5 Min: 5.6
2	11 inches	35 inches	gravelly sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Gravels, Gravels with fines, Silty Gravel	Max: 14 Min: 4	Max: 6.5 Min: 5.6
3	35 inches	59 inches	very gravelly loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Gravels, Gravels with fines, Silty Gravel	Max: 14 Min: 4	Max: 6.5 Min: 5.6

LOCAL / REGIONAL WATER AGENCY RECORDS

EDR Local/Regional Water Agency records provide water well information to assist the environmental professional in assessing sources that may impact ground water flow direction, and in forming an opinion about the impact of contaminant migration on nearby drinking water wells.

WELL SEARCH DISTANCE INFORMATION

DATABASE	SEARCH DISTANCE (miles)
Federal USGS	1.000
Federal FRDS PWS	Nearest PWS within 1 mile
State Database	1.000

FEDERAL USGS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
A1	USGS3238469	1/4 - 1/2 Mile NW
A2	USGS3238468	1/4 - 1/2 Mile NW

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

FEDERAL USGS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
3	USGS3238471	1/4 - 1/2 Mile NE
4	USGS3238456	1/2 - 1 Mile SW
5	USGS3238466	1/2 - 1 Mile East
6	USGS3238457	1/2 - 1 Mile WSW

FEDERAL FRDS PUBLIC WATER SUPPLY SYSTEM INFORMATION

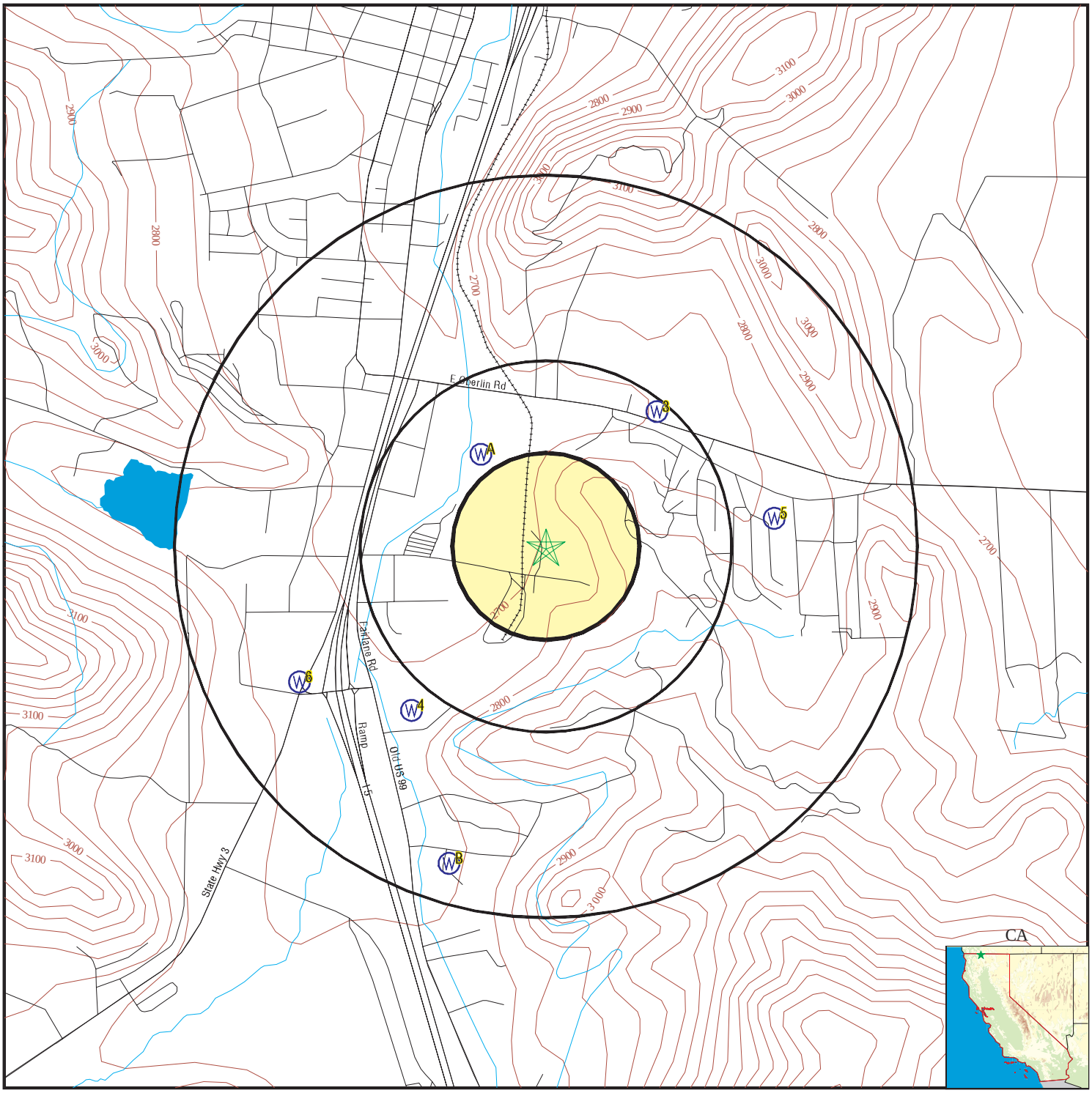
MAP ID	WELL ID	LOCATION FROM TP
No PWS System Found		

Note: PWS System location is not always the same as well location.

STATE DATABASE WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
B7	19992	1/2 - 1 Mile SSW
B8	19991	1/2 - 1 Mile SSW

PHYSICAL SETTING SOURCE MAP - 2201538.1s



County Boundary
Major Roads
Contour Lines
Earthquake Fault Lines
Earthquake epicenter, Richter 5 or greater
Water Wells
Public Water Supply Wells
Cluster of Multiple Icons

0 1/4 1/2 1 Miles

Groundwater Flow Direction
GI Indeterminate Groundwater Flow at Location
GV Groundwater Flow Varies at Location
HD Closest Hydrogeological Data
Oil, gas or related wells

N

SITE NAME: Karuk Trust Conveyance ADDRESS: Sharps Road Yreka CA 96097 LAT/LONG: 41.7096 / 122.6322	CLIENT: Karuk Tribe of California CONTACT: Scott Quinn INQUIRY #: 2201538.1s DATE: April 22, 2008 4:25 pm

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Map ID Direction Distance Elevation	Database	EDR ID Number
A1 **NW** **1/4 - 1/2 Mile** **Lower**	**FED USGS**	**USGS3238469**

Agency cd:	USGS	Site no:	414248122380402
Site name:	045N007W27R002M		
Latitude:	414248		
Longitude:	1223804	Dec lat:	41.71319669
Dec lon:	-122.63558188	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	093
Country:	US	Land net:	SWSESES27 T45N R07W M
Location map:	YREKA	Map scale:	62500
Altitude:	2655.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	50		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	Shasta. California. Area = 791 sq.mi.		
Topographic:	Valley flat		
Site type:	Ground-water other than Spring	Date construction:	19450926
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	53	Hole depth:	101
Source of depth data:	reporting agency (generally USGS)		
Project number:	Not Reported		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

A2 **NW** **1/4 - 1/2 Mile** **Lower**	**FED USGS**	**USGS3238468**

Agency cd:	USGS	Site no:	414248122380401
Site name:	045N007W27R001M		
Latitude:	414248		
Longitude:	1223804	Dec lat:	41.71319669
Dec lon:	-122.63558188	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	093
Country:	US	Land net:	SWSESES27 T45N R07W M
Location map:	YREKA	Map scale:	62500

Altitude:	2655.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	50		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	Shasta. California. Area = 791 sq.mi.		
Topographic:	Valley flat		
Site type:	Ground-water other than Spring	Date construction:	19450909
Date inventoried:	19481209	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	109	Hole depth:	159
Source of depth data:	reporting agency (generally USGS)		
Project number:	Not Reported		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1954-08-01	Ground water data end date:	1954-08-01
Ground water data count:	1		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1954-08-01	8.00	

3
NE
1/4 - 1/2 Mile
Higher

FED USGS USGS3238471

Agency cd:	USGS	Site no:	414254122373101
Site name:	045N007W26P001M		
Latitude:	414254		
Longitude:	1223731	Dec lat:	41.71486351
Dec lon:	-122.62641492	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	093
Country:	US	Land net:	NWSESWS26 T45N R07W M
Location map:	YREKA	Map scale:	62500
Altitude:	2690.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	50		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	Shasta. California. Area = 791 sq.mi.		
Topographic:	Valley flat		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	19540615	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	57
Source of depth data:	reporting agency (generally USGS)		
Project number:	Not Reported		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00

Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1954-06-01	Ground water data end date:	1954-06-01
Ground water data count:	1		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1954-06-01	6.00	

4
SW
1/2 - 1 Mile
Lower

FED USGS **USGS3238456**

Agency cd:	USGS	Site no:	414212122381701
Site name:	045N007W34K001M		
Latitude:	414212		
Longitude:	1223817	Dec lat:	41.70319676
Dec lon:	-122.63919307	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	093
Country:	US	Land net:	SWNWSES34 T45N R07W M
Location map:	YREKA	Map scale:	62500
Altitude:	2701.00		
Altitude method:	Level or other surveying method		
Altitude accuracy:	.1		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	Shasta. California. Area = 791 sq.mi.		
Topographic:	Valley flat		
Site type:	Ground-water other than Spring	Date construction:	19530601
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	138	Hole depth:	140
Source of depth data:	reporting agency (generally USGS)		
Project number:	Not Reported		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

5
East
1/2 - 1 Mile
Higher

FED USGS **USGS3238466**

Agency cd:	USGS	Site no:	414239122370901
Site name:	045N007W35B001M		
Latitude:	414239		
Longitude:	1223709	Dec lat:	41.71069702
Dec lon:	-122.6203036	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	093
Country:	US	Land net:	SWNWNES35 T45N R07W M
Location map:	YREKA	Map scale:	62500
Altitude:	2765.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	50		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	Shasta. California. Area = 791 sq.mi.		
Topographic:	Valley flat		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	19540615	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	38
Source of depth data:	reporting agency (generally USGS)		
Project number:	Not Reported		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1954-06-01	Ground water data end date:	1954-06-01
Ground water data count:	1		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1954-06-01	4.00	

6
WSW
1/2 - 1 Mile
Higher

FED USGS **USGS3238457**

Agency cd:	USGS	Site no:	414216122383801
Site name:	045N007W34L001M		
Latitude:	414216		
Longitude:	1223838	Dec lat:	41.70430774
Dec lon:	-122.6450266	Coor meth:	M
Coor accr:	U	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	093
Country:	US	Land net:	Not Reported
Location map:	YREKA	Map scale:	62500
Altitude:	Not Reported		
Altitude method:	Not Reported		
Altitude accuracy:	10		
Altitude datum:	Not Reported		
Hydrologic:	Shasta. California. Area = 791 sq.mi.		
Topographic:	Valley flat		
Site type:	Ground-water other than Spring	Date construction:	1880
Date inventoried:	Not Reported	Mean greenwich time offset:	PST

Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	167	Hole depth:	Not Reported
Source of depth data:	other government (other than USGS)		
Project number:	Not Reported		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

B7
SSW **CA WELLS** **19992**
1/2 - 1 Mile
Higher

Water System Information:

Prime Station Code:	44N/07W-03B02 M	User ID:	ATT
FRDS Number:	4700528002	County:	Siskiyou
District Number:	01	Station Type:	WELL/AMBNT/MUN/INTAKE
Water Type:	Well/Groundwater	Well Status:	Active Raw
Source Lat/Long:	414151.0 1223810.0	Precision:	1,000 Feet (10 Seconds)
Source Name:	WELL 02		
System Number:	4700528		
System Name:	Siskiyou Co. Rollings Hills MWC		
Organization That Operates System:			
	PO BOX 954		
	YREKA, CA 96097		
Pop Served:	300	Connections:	96
Area Served:	Not Reported		

B8
SSW **CA WELLS** **19991**
1/2 - 1 Mile
Higher

Water System Information:

Prime Station Code:	44N/07W-03B01 M	User ID:	ATT
FRDS Number:	4700528001	County:	Siskiyou
District Number:	01	Station Type:	WELL/AMBANT/MUN/INTAKE
Water Type:	Well/Groundwater	Well Status:	Active Raw
Source Lat/Long:	414150.0 1223810.0	Precision:	1,000 Feet (10 Seconds)
Source Name:	WELL 01		
System Number:	4700528		
System Name:	Siskiyou Co. Rollings Hills MWC		
Organization That Operates System:			
	PO BOX 954		
	YREKA, CA 96097		
Pop Served:	300	Connections:	96
Area Served:	Not Reported		
Sample Collected:	05/12/2004 00:00:00	Findings:	513 US
Chemical:	SPECIFIC CONDUCTANCE		
Sample Collected:	05/12/2004 00:00:00	Findings:	7.41
Chemical:	PH, LABORATORY		

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Sample Collected:	05/12/2004 00:00:00	Findings:	233 MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	05/12/2004 00:00:00	Findings:	284 MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	05/12/2004 00:00:00	Findings:	217 MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	05/12/2004 00:00:00	Findings:	65.9 MG/L
Chemical:	CALCIUM		
Sample Collected:	05/12/2004 00:00:00	Findings:	8.62 MG/L
Chemical:	MAGNESIUM		
Sample Collected:	05/12/2004 00:00:00	Findings:	7.58 MG/L
Chemical:	SODIUM		
Sample Collected:	05/12/2004 00:00:00	Findings:	.5 MG/L
Chemical:	POTASSIUM		
Sample Collected:	05/12/2004 00:00:00	Findings:	5.89 MG/L
Chemical:	CHLORIDE		
Sample Collected:	05/12/2004 00:00:00	Findings:	301 MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	05/12/2004 00:00:00	Findings:	9 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	05/12/2004 00:00:00	Findings:	.25 NTU
Chemical:	TURBIDITY, LABORATORY		
Sample Collected:	05/12/2004 00:00:00	Findings:	9.9 UG/L
Chemical:	CHROMIUM (TOTAL CR-CRVI SCREEN)		
Sample Collected:	01/16/2007 00:00:00	Findings:	7.8 MG/L
Chemical:	NITRATE (AS NO3)		

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS
RADON

AREA RADON INFORMATION

State Database: CA Radon

Radon Test Results

Zip	Total Sites	> 4 Pci/L	Pct. > 4 Pci/L
96097	7	0	0.00

Federal EPA Radon Zone for SISKIYOU County: 3

Note: Zone 1 indoor average level > 4 pCi/L.
: Zone 2 indoor average level >= 2 pCi/L and <= 4 pCi/L.
: Zone 3 indoor average level < 2 pCi/L.

Federal Area Radon Information for Zip Code: 96097

Number of sites tested: 2

Area	Average Activity	% <4 pCi/L	% 4-20 pCi/L	% >20 pCi/L
Living Area - 1st Floor	0.700 pCi/L	100%	0%	0%
Living Area - 2nd Floor	Not Reported	Not Reported	Not Reported	Not Reported
Basement	Not Reported	Not Reported	Not Reported	Not Reported

PHYSICAL SETTING SOURCE RECORDS SEARCHED

TOPOGRAPHIC INFORMATION

USGS 7.5' Digital Elevation Model (DEM)
Source: United States Geologic Survey
EDR acquired the USGS 7.5' Digital Elevation Model in 2002 and updated it in 2006. The 7.5 minute DEM corresponds to the USGS 1:24,000- and 1:25,000-scale topographic quadrangle maps. The DEM provides elevation data with consistent elevation units and projection.

HYDROLOGIC INFORMATION

Flood Zone Data: This data, available in select counties across the country, was obtained by EDR in 1999 from the Federal Emergency Management Agency (FEMA). Data depicts 100-year and 500-year flood zones as defined by FEMA.

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002 and 2005 from the U.S. Fish and Wildlife Service.

HYDROGEOLOGIC INFORMATION

AQUIFLOW[R] Information System
Source: EDR proprietary database of groundwater flow information
EDR has developed the AQUIFLOW Information System (AIS) to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted to regulatory authorities at select sites and has extracted the date of the report, hydrogeologically determined groundwater flow direction and depth to water table information.

GEOLOGIC INFORMATION

Geologic Age and Rock Stratigraphic Unit
Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - A digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

STATSGO: State Soil Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Services
The U.S. Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS) leads the national Conservation Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. Soil maps for STATSGO are compiled by generalizing more detailed (SSURGO) soil survey maps.

SSURGO: Soil Survey Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Services (NRCS)
Telephone: 800-672-5559
SSURGO is the most detailed level of mapping done by the Natural Resources Conservation Services, mapping scales generally range from 1:12,000 to 1:63,360. Field mapping methods using national standards are used to construct the soil maps in the Soil Survey Geographic (SSURGO) database. SSURGO digitizing duplicates the original soil survey maps. This level of mapping is designed for use by landowners, townships and county natural resource planning and management.

LOCAL / REGIONAL WATER AGENCY RECORDS

FEDERAL WATER WELLS

PWS: Public Water Systems
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Public Water System data from the Federal Reporting Data System. A PWS is any water system which provides water to at least 25 people for at least 60 days annually. PWSs provide water from wells, rivers and other sources.

PWS ENF: Public Water Systems Violation and Enforcement Data
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Violation and Enforcement data for Public Water Systems from the Safe Drinking Water Information System (SDWIS) after August 1995. Prior to August 1995, the data came from the Federal Reporting Data System (FRDS).

USGS Water Wells: USGS National Water Inventory System (NWIS)
This database contains descriptive information on sites where the USGS collects or has collected data on surface water and/or groundwater. The groundwater data includes information on wells, springs, and other sources of groundwater.

STATE RECORDS

Water Well Database
Source: Department of Water Resources
Telephone: 916-651-9648

California Drinking Water Quality Database
Source: Department of Health Services
Telephone: 916-324-2319
The database includes all drinking water compliance and special studies monitoring for the state of California since 1984. It consists of over 3,200,000 individual analyses along with well and water system information.

OTHER STATE DATABASE INFORMATION

California Oil and Gas Well Locations
Source: Department of Conservation
Telephone: 916-323-1779

RADON

State Database: CA Radon
Source: Department of Health Services
Telephone: 916-324-2208
Radon Database for California

Area Radon Information
Source: USGS
Telephone: 703-356-4020
The National Radon Database has been developed by the U.S. Environmental Protection Agency (USEPA) and is a compilation of the EPA/State Residential Radon Survey and the National Residential Radon Survey. The study covers the years 1986 - 1992. Where necessary data has been supplemented by information collected at private sources such as universities and research institutions.

EPA Radon Zones
Source: EPA
Telephone: 703-356-4020
Sections 307 & 309 of IRAA directed EPA to list and identify areas of U.S. with the potential for elevated indoor radon levels.

OTHER

Airport Landing Facilities: Private and public use landing facilities
Source: Federal Aviation Administration, 800-457-6656

Epicenters: World earthquake epicenters, Richter 5 or greater
Source: Department of Commerce, National Oceanic and Atmospheric Administration

California Earthquake Fault Lines: The fault lines displayed on EDR's Topographic map are digitized quaternary fault lines, prepared in 1975 by the United State Geological Survey. Additional information (also from 1975) regarding activity at specific fault lines comes from California's Preliminary Fault Activity Map prepared by the California Division of Mines and Geology.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

STREET AND ADDRESS INFORMATION

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APPENDIX H

WATER AND WASTEWATER TECHNICAL STUDY

Water and Wastewater Technical Study

for the

Karuk Tribe Casino and Hotel Development

Sharps Road, Yreka, California

Prepared for:

The Karuk Tribe of California &

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Job No. 13049-C

July 3, 2013

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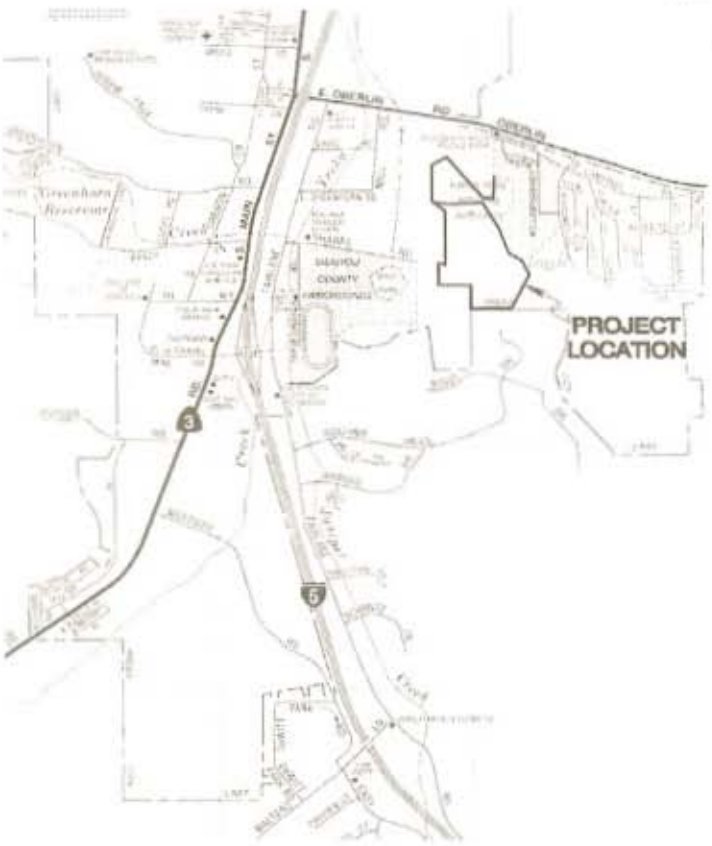
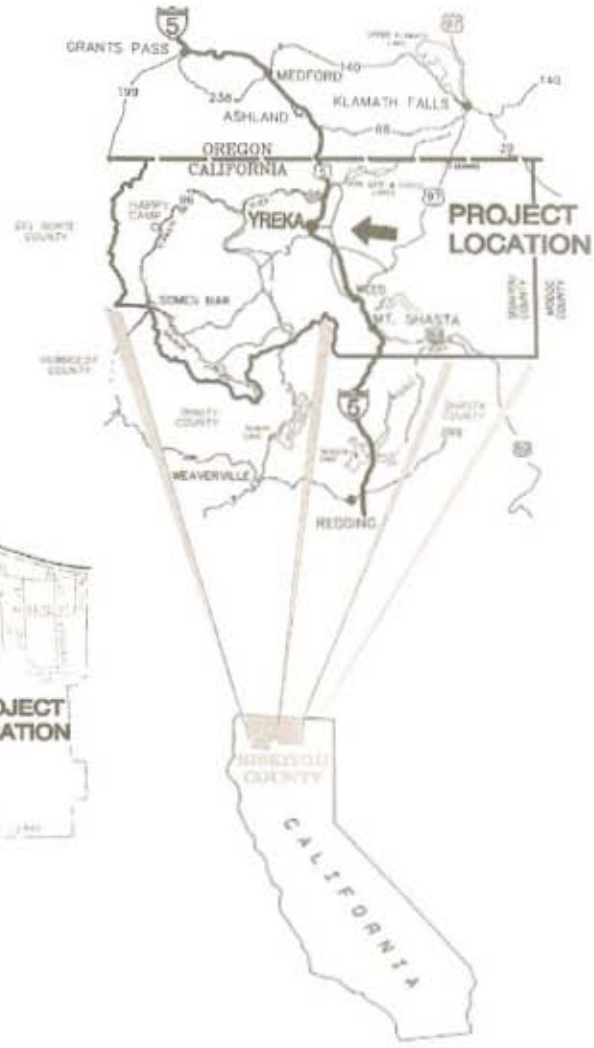




VICINITY MAP

PROJECT LOCATION

SECTION 1: INTRODUCTION

The purpose of this report is to review the proposed Karuk Tribe Casino/Hotel Development and make recommendations regarding domestic water supply and wastewater disposal for the project.

1.1 Project Description

The Karuk Tribe (Tribe) proposes to develop a Class III Gaming Complex and Hotel in phases (Proposed Project). Under Phase I, the Tribe would develop an approximately 36,000 square foot facility to accommodate 500 gaming machines and 8 table games. Phase I includes development of a 100 seat restaurant and on-site parking. Additional parking (223 stalls) would be developed on the tribally-owned parcel south of the gaming parcel with access to the project site provided from Sharps Road. Phase II would include the addition of approximately 20,000 square-feet to the gaming complex to add 300 gaming machines, 8 table games, 2,000 square feet of new restaurant space, and associated support facilities. In addition, the Tribe would develop a 48,000 square-foot hotel with 80 rooms to support the gaming establishment. The total square footage of the facility would increase by approximately 68,000 square feet under Phase II. The parking located on tribally-owned fee lands would be increased by 500 parking stalls to accommodate 723 vehicles.

1.2 Site Location

The site is located in Sections 26 & 35, Township 45 North, Range 7 West, MDM, Siskiyou County, California. The property is also located within City of Yreka, east of Interstate 5, just north of the south Yreka Interstate 5 interchange at the west end of Sharps Road. The property assessor's parcel numbers are as follows:

APN 062-061-040 (Trust Parcel – Owner: Karuk Tribe Trust USA)

APN 062-051-380 (Tebbe or Fee Parcel - Owner: Karuk Tribe of California)

The undeveloped northerly 12 acres of the Trust parcel, which was previously approved for gaming, shall be utilized for this project. A portion of the Tebbe or fee parcel shall be used for parking and storm water detention facilities.

SECTION 2: DOMESTIC WATER SUPPLY

This section outlines estimates for required domestic water supply for the proposed casino/hotel development.

2.1 Water Supply Requirements

Water supply for the proposed project development is divided into two categories. The first of which is potable water used to operate the restaurant, casino, and hotel. The second category is the fire flow requirement for the project.

Potable Water Supply Requirements

Group West Companies, PLLC provided estimated water usage for the development based on past experience with similar gaming/hotel facilities. Estimates of potable water supply for the project are indicated below in **Table 2-1**.

Table 2-1: Estimated Potable Water Supply Requirements

Project Phase	Low End Average Daily Demand	High End Average Daily Demand
Phase I	20,000 GPD	30,000 GPD
Phase II	30,000 GPD	40,000 GPD

An independent check of these estimated flow ranges was made based historical usage data for similar use category water usage records as follows:

Phase I:

Restaurant	50 gpd/seat	x	100 seats	=	5,000 gpd
Casino	15 pgd/seat	x	550 seats	=	8,250 gpd
Irrigation	39,000 SF	x	0.1 gal/SF	=	3,900 gpd
Total Estimated Water Demand				=	17,150 gpd

Phase II:

Restaurant	50 gpd/seat	x	200 seats	=	10,000 gpd
Casino	15 pgd/seat	x	900 seats	=	13,500 gpd
Hotel	80 units	x	70 gpd/unit	=	5,600 gpd
Irrigation	72,000 SF	x	0.1 gal/SF	=	7,200 gpd
Total Estimated Water Demand				=	36,300 gpd

Independent flow calculations fell within the range provided by Group West Companies, PLLC. Estimated Water Supply ranges provided in Table 2-1 are recommended for project water demand requirements. These estimates are preliminary and shall be used for development planning only.

Fire Flow Water Requirements

Fire flow requirements are typically set by local fire officials of the given fire protection district. In this case the project is located inside the City of Yreka and most likely will be serviced by the City of Yreka Fire Department.

2010 California Fire Code

The 2010 California Fire Code Table B105.1 outlines fire flow and duration requirements based on construction type and building square footage. Exception 1 to these fire flow requirements states that the fire flow can be reduced up to 75% for buildings containing automatic sprinkler systems, however the flow shall not be reduced to less than 1,500 GPM.

Both Phase I and Phase II are going to be designed to be Type II-A construction. Phase I is planned to have 36,200 square feet of building. Phase II is planned to have 106,000 square feet of building. In both cases the 75% reduction pushes the flow requirement to below 1,500 GPM, so the fire flow for both cases is the minimum 1,500 GPM. See Table 2-2 for required 2010 California Fire Code fire flow and storage requirements.

Table 2-2: Summary of 2010 California Fire Code Minimum Fire Flow Requirements

Project Phase	Building Area	Fire Flow	Flow Duration	Required Storage
Phase I	32,000 SF	1,500 GPM	2 Hours	180,000 Gallons
Phase II	106,000 SF	1,500 GPM	4 Hours	360,000 Gallons

The National Fire Protection Association - NFPA Standard 1142, 2007 Edition also outlines fire flow requirements which could give differing fire flows and storage, however for the purposes of this study the 2010 CFC values shall be used for estimating fire flow and storage requirements.

2.2 Municipal Water Supply Connection

The Karuk Tribe of California has historically worked in conjunction with the City of Yreka to provide water supply for many developments within the City of Yreka, large and small. Previously, water system facilities were installed and paid for by the Tribe and adopted by the City of Yreka for operation and maintenance. It is most likely that water supply and fire storage for this new development will be supplied by the City of Yreka under some sort of mutual agreement. The City has a schedule of impact fees which will pertain to the water supply for the project. Currently, City of Yreka water facilities are located on all sides of the site. We have reviewed two primary options for connection to the system as follows:

Option 1 - Connection to the existing 8" PVC water main located in Apsuun just east of the project location

Option 2 - Connection to the existing 10" AC water main located at the end of Sharps Road

See Attachment A for connection option layouts.

A detailed hydraulics analysis shall be done to ensure adequate flow volume and pressures are available for the selected connection option.

The source for the City of Yreka municipal water supply is surface water piped from Fall Creek. The water is transported through a 24" diameter pipe approximately 23 miles to Yreka. The raw water is filtered and chlorinated at the Fall Creek Treatment plant located on Ager Road prior to entering the distribution system. According to the Yreka General Plan, the system ranges from 1.0 million gallon per day (MGPD) during the winter months to 6.0 MGPD during summer months. The system is capable of up to 15 CFS flows or 10.5 MGPD. The City's system is operating at approximately 57% capacity during summer months.

Flows for the Phase I Casino/Hotel development are estimated to be approximately 0.3% to 0.5% based on summer consumption 2% to 3% of the City consumption based on winter consumption. Estimated flows for the Phase II range 0.5% to 0.67% of summer consumption to 3% to 4% of winter consumption. Based on these General Plan consumption values, the City

appears to have adequate water supply available for the project. The project proponent would provide mitigation for impact to the system by payment of scheduled impact fees and possible looping of water lines through the subject property to increase circulation in that portion of the system if deemed necessary by the City.

It is anticipated that required fire flow volumes indicated in Table 2-2 above can be made available via the welded steel water storage reservoir constructed as a part of the Karuk Tribe's agreement with the City for the housing development just east of the proposed project. The Tribe constructed a 750,000 gallon tank as a part of the housing development and there may be adequate fire storage availability in that existing tank for this casino/hotel development.

2.2 Groundwater Supply

An onsite well or groundwater source is the alternative to municipal water supply. The City of Yreka is located in the Shasta Valley Groundwater Basin (DWR Basin 1-4). DWR Bulletin 118-3 has an overview of the complexity of the region due to its network of volcanic recharge/storage areas. These physical features make it difficult to estimate possible groundwater supplies for the subject property.

In the event a groundwater source is to be developed for water supply for the proposed project volumes required are as follows:

Phase II: Estimated Average Daily Consumption 40,000 gpd = 40,000 / 60 / 24 = 27.8 gpm

A well yield of approximately 28 gallons per minute 24 hours a day 365 days a week is required as a firm source for this option. A redundant source should also be developed in the case of well failure. Fire flow requirements for a groundwater source shall be provided by onsite storage sized per Table 2-2 above.

2.3 Recommendations

It is recommended that a municipal water connection to the City of Yreka water system be negotiated to supply water for the proposed development. A municipal connection will eliminate the need to construct, operate & maintain a water system and an onsite water storage reservoir while providing a good solid source of water for development of the project.

If it is determined that a municipal water source is not feasible, the Karuk Tribe should hire a groundwater specialist to pursue development of a groundwater source near or on the property. In this event a private water system shall be developed with a well with a 28 gpm capacity. Additionally, a water storage reservoir with a volume of 400,000 gallons shall be constructed to provide peak use and fire flow volumes.

SECTION 3.0 WASTEWATER TREATMENT & DISPOSAL

This section outlines estimates for required wastewater flows, options for collection and treatment for the proposed casino/hotel development.

3.1 Wastewater Flows

Average wastewater generation rates are based on values provided by Group West Companies, PLLC for similar type developments and checked using historical data as outlined in Section 2.1 of this report. The estimates taken for water supply have been used and lowered due to the landscape water component of the water supply estimate. **Table 3-1** below is a summary of estimated wastewater flow requirements for the proposed casino/hotel development.

Table 3-1: Estimated Wastewater Flow Requirements

Project Phase	Average Daily Flow (gpd)	Peak Day Flow (gpd)
Phase I	16,000 gpd to 26,000 gpd	32,000 gpd to 52,000 gpd
Phase II	23,000 gpd to 33,000 gpd	46,000 gpd to 66,000 gpd

Note: gpd = Gallons per Day

Peak flows are estimated at 2 times the average daily flows based on historic data for similar type facilities. These flow estimates are preliminary and should be used for planning only. More detailed estimates shall be determined during design and development of the project.

3.2 Municipal Sanitary Sewer Connection

The Karuk Tribe of California has historically worked in conjunction with the City of Yreka to provide sanitary sewer connections for many developments within the City of Yreka. Previously, sanitary sewer system facilities were installed and paid for by the Tribe and adopted by the City of Yreka for operation and maintenance. It is most likely sanitary sewer service for this new development will be supplied by the City of Yreka under some sort of mutual agreement. The City has a schedule of impact fees which will pertain to sanitary sewer connection for the project. Currently, City of Yreka sanitary sewer facilities are located on all sides of the site. We have reviewed two primary options for connection to the system as follows:

Option 1 - Connection to the existing 8" sanitary sewer main located in Sharps Road

Option 2 - Connection to the existing 8" sanitary sewer main located in Campbell Ave

See Attachment B for connection option layouts.

A detailed hydraulics analysis shall be done to ensure adequate flow capacity is available for the selected connection option.

The City of Yreka wastewater treatment facility is located at the north end of town between Highway 263 & Yreka Creek. The facility is designed to accommodate 1.3 million gallons per day (mgd) of average dry weather flow per the City of Yreka General Plan. Current average dry weather flow ranges between 0.7 to 0.9 mgd. The treatment plant is currently operating at approximately 53% to 69% capacity as outlined in the General Plan.

Flows for the Phase I Casino/Hotel development are estimated to be approximately 2% to 3% based on average dry weather flows. Estimated flows for the Phase II range 3% to 4% based on average dry weather flows. Based on these General Plan flow values, the City appears to have adequate available sewer treatment plant capacity for project demands. The project proponent would provide mitigation for impact to the system by payment of scheduled impact fees.

3.3 Recommendations

It is recommended that a municipal sanitary sewer connection to the City of Yreka sanitary sewer system be negotiated for the proposed development.

Morgan D. Eastlick, RCE 62963

Bray & Associates
Civil Engineering & Land Surveying

REGISTERED PROFESSIONAL ENGINEER
MORGAN D EASTLICK
No. 62963
CIVIL
STATE OF CALIFORNIA

10-15-13

REFFERENCES:

City of Yreka, General Plan 2002 - 2012
Adopted December 18, 2003

City of Yreka, 2010-11 Urban Water Management Plan
Adopted June 16, 2011

City of Yreka Municipal Code

2010 California Fire Code

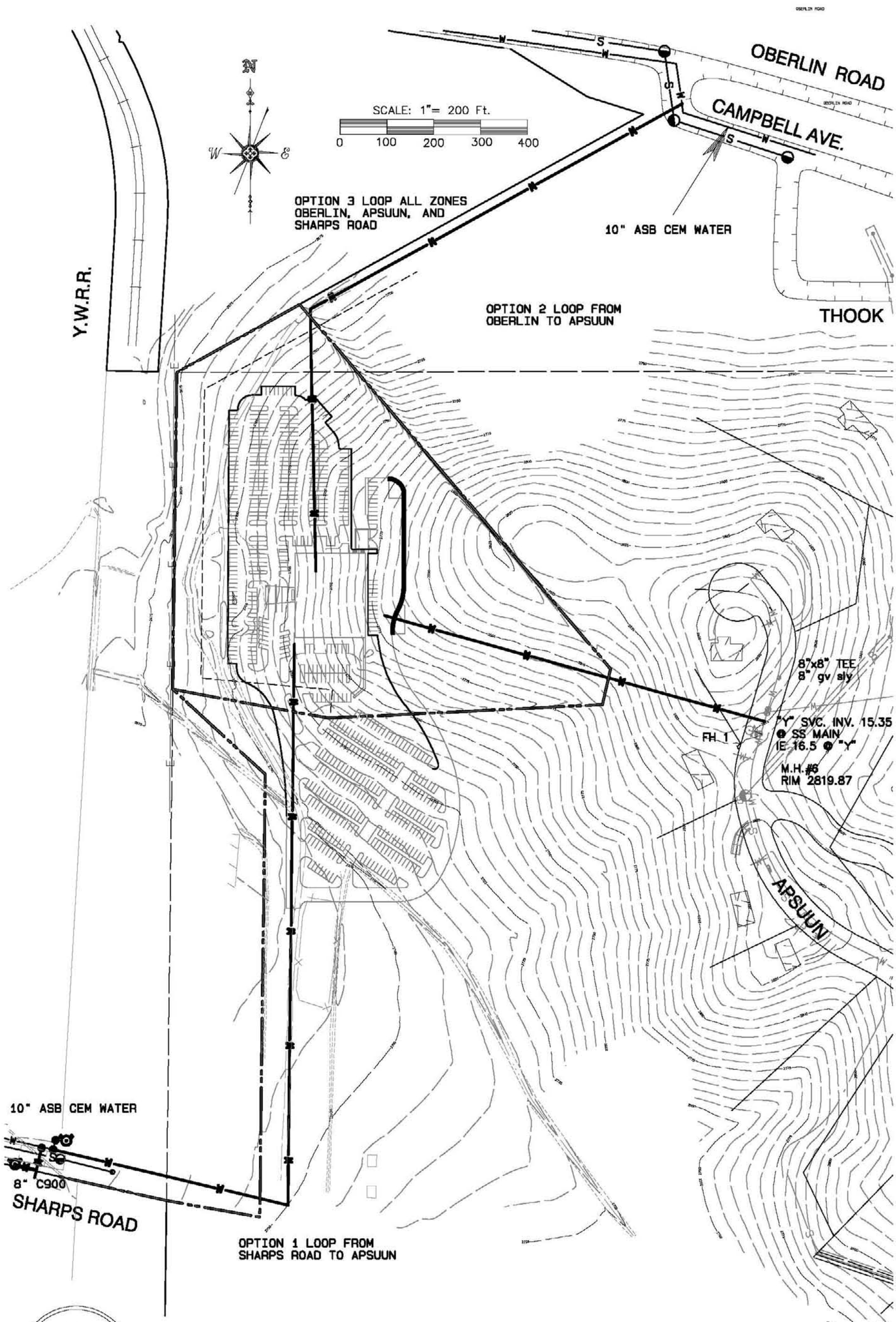
National Fire Protection Association Standard 1142
2007 Edition

Viessman, Warren Jr. and Hammer, Mark J. Water Supply and Pollution Control, Fourth Edition, New York: Harper Collins Publishers, Inc., 1985.

Chow, Ven Te et.al. , Wastewater Engineering, Treatment, Disposal, Reuse, Second Edition, McGraw-Hill, Inc., 1979.

ATTACAHMENT A

MUNICIPAL WATER CONNECTION OPTIONS



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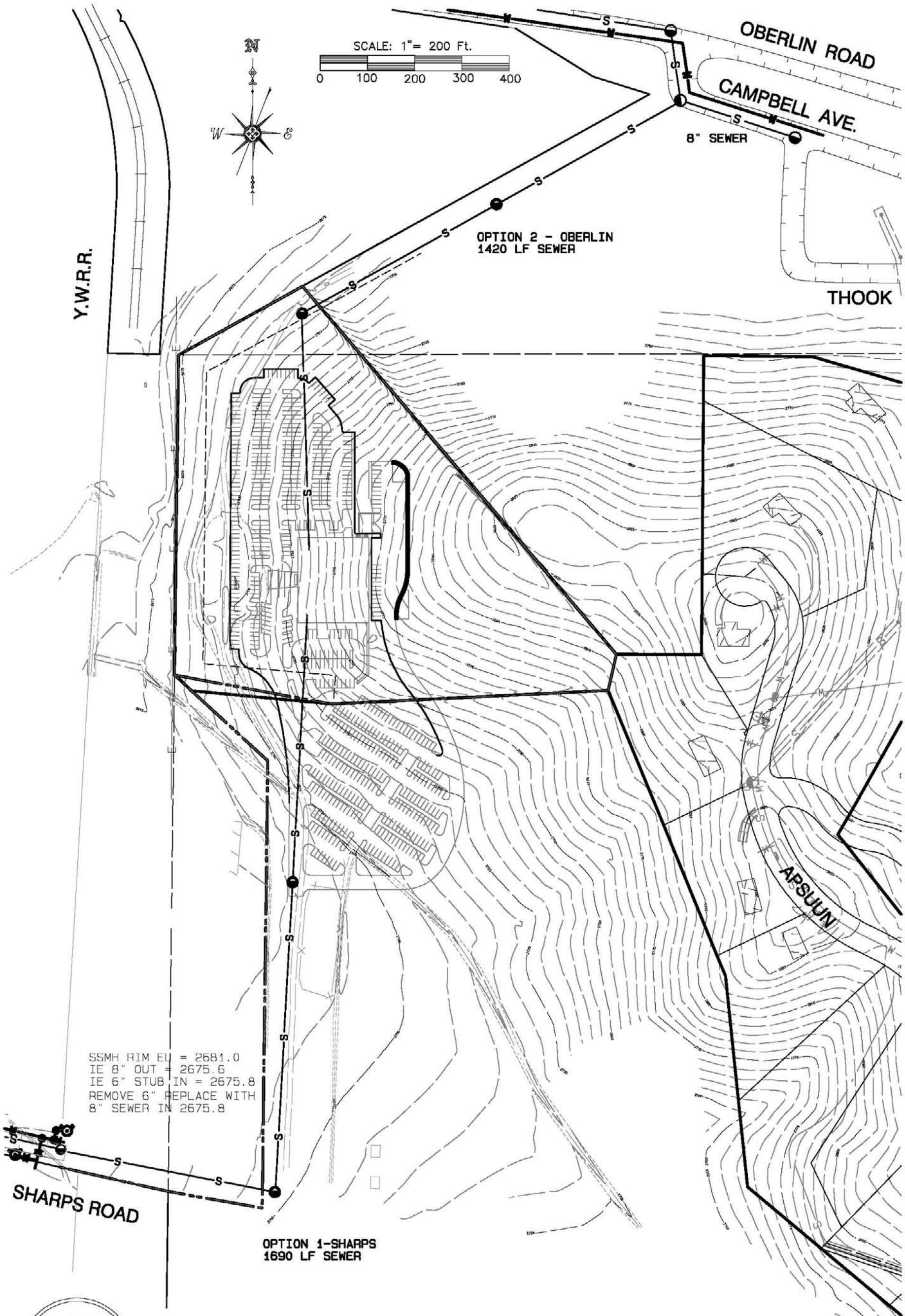
MUNICIPAL WATER CONNECTION OPTIONS
KARUK TRIBE GAMING IMPROVEMENTS

YREKA CALIFORNIA
SISKIYOU COUNTY ---- CALIFORNIA

SCALE: 1" = 200'
CLIENT FILE #13049-A
DATE: June, 2013
SHEET 1 OF 1

ATTACHMENT B

MUNICIPAL SANITARY SEWER CONNECTION OPTIONS



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MUNICIPAL SEWER CONNECTION OPTIONS
KARUK TRIBE GAMING IMPROVEMENTS

YREKA CALIFORNIA
SISKIYOU COUNTY ---- CALIFORNIA

SCALE: 1" = 200'
CLIENT FILE #13049-C
DATE: JULY, 2013
SHEET 1 OF 1

APPENDIX I

LIST OF SPECIAL STATUS SPECIES

REGIONALLY OCCURRING FEDERAL AND STATE LISTED SPECIES

SCIENTIFIC NAME COMMON NAME	FEDERAL/ STATE/ CNPS STATUS	DISTRIBUTION	HABITAT REQUIREMENTS	PERIOD OF IDENTIFICATION	POTENTIAL TO OCCUR
Plants					
Balsamorhiza lanata Wooly balsamroot	--/--/1B	Known only from the area of Shasta and Scott valleys in Siskiyou and Trinity counties (CNPS, 2013).	Perennial herb found in rocky and/or volcanic cismontane woodlands from 800 to 1,895 meters (CNPS, 2013).	April-June	Yes. See text.
Calochortus greenei Greene's mariposa lily	--/--/1B	Known to occur in Modoc and Siskiyou counties (CNPS, 2013).	Perennial bulbiferous herb found in volcanic cismontane and pinyon and juniper woodlands; meadows and seeps; and montane coniferous forests from 1,035 to 1,890 meters (CNPS, 2013).	June-August	Yes. See text.
Calochortus monanthus Single-flowered mariposa lily	--/--/1A	Known only from the type collection (in 1876) along the Shasta River, Siskiyou County, now mostly converted to agriculture (CNPS, 2013).	Perennial bulbiferous herb found in meadows and seeps from 745 to 800 meters (CNPS, 2013).	June	No. The Subject Property does not provide habitat for this species.
Calochortus persistens Siskiyou mariposa lily	FC/CR/1B	Known to occur in Siskiyou County (CNPS, 2013).	Perennial bulbiferous herb found in rocky, acidic lower montane and North Coast coniferous forests from 1,000 to 1,860 meters (CNPS, 2013).	June-July	No. The Subject Property does not provide habitat for this species.
Chaenactis suffrutescens Shasta chaenactis	--/--/1B	Known to occur in Siskiyou and Trinity counties (CNPS, 2013).	Perennial herb found in sandy, serpentinite lower montane and upper montane coniferous forests from 760 to 2,800 meters (CNPS, 2013).	May-September	No. The Subject Property does not provide habitat for this species.
Cirsium ciliolatum Ashland thistle	--/CE/2	Known to occur in Siskiyou County (CNPS, 2013).	Perennial herb found in cismontane woodlands and valley and foothill grasslands from 800 to 1,400 meters (CNPS, 2013).	June-August	Yes. See text.
Eriogonum umbellatum var. *lautum* Scott Valley buckwheat	--/--/1B	Known only from Scott Valley, Siskiyou County (CNPS, 2013).	Perennial herb found in sandy to gravelly flats of cismontane woodlands and lower montane coniferous forests from 800 to 900 meters (CNPS, 2013).	July-September	No. The subject property occurs outside of the known geographic range for this species.
Eriogonum ursinum var. *erubescens* Blushing wild buckwheat	--/--/1B	Known to occur in Shasta, Siskiyou, and Trinity counties (CNPS, 2013).	Perennial herb found in rocky, scree, and talus substrate in chaparral (montane) and lower montane coniferous forests from 1,000 to 2,075 meters (CNPS, 2013).	June-September	No. The Subject Property does not provide habitat for this species.
Galium serpenticum ssp. *scotticum*	--/--/1B	Known to occur in Siskiyou and Trinity counties (CNPS, 2013).	Perennial herb found in lower montane coniferous forests (serpentinite) from 1,000 to	May-August	No. The Subject Property does not

SCIENTIFIC NAME COMMON NAME	FEDERAL/ STATE/ CNPS STATUS	DISTRIBUTION	HABITAT REQUIREMENTS	PERIOD OF IDENTIFICATION	POTENTIAL TO OCCUR
Scott Mountain bedstraw			2,075 meters (CNPS, 2013).		provide habitat for this species.
Horkelia hendersonii Henderson's horkelia	--/--/1B	Known in CA from only one occurrence; Siskiyou County (CNPS, 2013).	Perennial herb found in upper montane coniferous forests, which are sometimes granitic, from 2,000 to 2,300 meters (CNPS, 2013).	June-August	No. The Subject Property does not provide habitat for this species.
Hymenoxys lemmonii Alkali hymenoxys	--/--/2	Known to occur in Modoc, Plumas, Sierra, and Siskiyou counties (CNPS, 2013).	Perennial herb found in Great Basin scrub, lower montane coniferous forests and meadows and seeps, which are sometimes subalkaline, from 240 to 1,000 meters (CNPS, 2013).	June-August	No. The Subject Property does not provide habitat for this species.
Lomatium martindalei Coast Range lomatium	--/--/2	Known to occur in Del Norte and Siskiyou counties (CNPS, 2013).	Perennial herb found in coastal bluff scrub, lower montane coniferous forests and meadows and seeps from 240 to 3,000 meters (CNPS, 2013).	May-August	No. The Subject Property does not provide habitat for this species.
Lomatium peckianum Peck's lomatium	--/--/2	Known to occur in Siskiyou County (CNPS, 2013).	Perennial herb found in volcanic substrate in chaparral, cismontane woodland, and pinyon and juniper woodlands; and lower montane coniferous forests from 700 to 1,800 meters (CNPS, 2013).	April-June	Yes. See text.
Minuartia howellii Howell's sandwort	--/--/1B	Known to occur in Del Norte and Siskiyou counties (CNPS, 2013).	Perennial herb found in serpentinite, xeric areas within chaparral and lower montane coniferous forests from 550 to 1,000 meters (CNPS, 2013).	April-July	No. The Subject Property does not provide habitat for this species.
Opuntia fragilis Brittle prickly-pear	--/--/2	Known in California from only one occurrence in Owl's Head in the Shasta Valley, Siskiyou County (CNPS, 2013).	Perennial stem succulent found in pinyon and juniper woodlands, which are occasionally volcanic (CNPS, 2013).	April-July	No. The subject property occurs outside of the known geographic range for this species.
Orthocarpus pachystachyus Shasta orthocarpus	--/--/1B	Known to occur in Siskiyou County (CNPS, 2013).	Annual herb found in Great Basin scrub, meadows and seeps, and valley and foothill grassland from 840 to 850 meters (CNPS, 2013).	May	Yes. See text.
Phacelia cookei Cooke's phacelia	--/--/1B	Known to occur in Siskiyou County (CNPS, 2013).	Annual herb found in sandy, volcanic Great Basin scrub and lower montane coniferous forests from 1,095 to 1,700 meters (CNPS, 2013).	June-July	No. The Subject Property does not provide habitat for this species.
Phacelia greenei Scott Valley phacelia	--/--/1B	Known to occur in Siskiyou and Trinity counties (CNPS, 2013).	Annual herb found in serpentinite closed-cone, lower montane, subalpine, and upper montane coniferous forests from 800 to 2,440 meters	April-June	No. The Subject Property does not provide habitat for this

SCIENTIFIC NAME COMMON NAME	FEDERAL/ STATE/ CNPS STATUS	DISTRIBUTION	HABITAT REQUIREMENTS	PERIOD OF IDENTIFICATION	POTENTIAL TO OCCUR
			(CNPS, 2013).		species.
Phlox hirsuta Yreka phlox	FE/CE/1B	Known to occur in Siskiyou County (CNPS, 2013).	Perennial herb found in serpentinite, talus substrate within lower montane and upper montane coniferous forests from 820 to 1,500 meters (CNPS, 2013).	April-June	No. The Subject Property does not provide habitat for this species.
Polemonium carneum Oregon polemonium	--/--/2	Known to occur in Alameda, Del Norte, Humboldt, Marin, San Francisco, Siskiyou, San Mateo, and Sonoma counties in California and Oregon and Washington states (CNPS, 2013).	Found in coastal prairie, coastal scrub, and lower montane coniferous forests from 0 to 1,830 meters (CNPS, 2013).	April-September	No. The Subject Property does not provide habitat for this species.
Scirpus pendulus Pendulous bulrush	--/--/2	Known to occur in Siskiyou County (CNPS, 2013).	Perennial rhizomatous herb found in meadows and seeps, which are sometimes mesic, and marshes and swamps, which are sometimes assorted freshwater, from 800 to 1,000 meters (CNPS, 2013).	June-August	No. The Subject Property does not provide habitat for this species.
Animals					
Invertebrates					
Branchinecta lynchi Vernal pool fairy shrimp	FT/--/--	Known from Alameda, Butte, Calaveras, Colusa, Contra Costa, El Dorado, Fresno, Glenn, Kings, Madera, Merced, Monterey, Napa, Placer, Riverside, Sacramento, San Benito, San Joaquin, San Luis Obispo, Santa Barbara, Shasta, Solano, Stanislaus, Sutter, Tehama, Tulare, Tuolumne, Ventura, Yolo, and Yuba counties in California and in southern Oregon (NatureServe, 2012).	Found commonly in a small swale earth slump or basalt-flow depression basin with grassy or muddy bottom in unplowed grassland from 10 to 290 meters in the Central Valley and up to 1,159 meters in the South Coast Mountains Region (Eriksen and Belk, 1999).	Wet season: December to May (adults) Dry season: June to November (cysts)	No. The Subject Property does not provide habitat for this species.
Fishes					
Oncorhynchus kisutch S. Oregon/N. California coho salmon	FT/--/--	This ESU is found from Cape Blanco in Oregon to the Mattole River.	Spawning occurs in heads of riffles or tails of pools with beds of loose gravel (< 15 cm average diameter) and deep pools, undercut banks, or logs nearby.	Consult Agency	No. The Subject Property does not provide habitat for this species.
Reptiles					
Emys marmorata	--/SSC/--	Known throughout California west	Found in permanent ponds, lakes, streams,	All year	No. The Subject

SCIENTIFIC NAME COMMON NAME	FEDERAL/ STATE/ CNPS STATUS	DISTRIBUTION	HABITAT REQUIREMENTS	PERIOD OF IDENTIFICATION	POTENTIAL TO OCCUR
Western pond turtle		of the Sierra-Cascade crest. Absent from desert regions except along the Mohave River and its tributaries (Stebbins, 2003).	irrigation ditches, permanent pools and along intermittent streams. Requires aquatic habitats with suitable basking sites. Nest sites most often characterized as having gentle slopes less than 15 percent with little vegetation or sandy banks. Found from 0 to 1,430 meters (Stebbins, 2003).		Property does not provide habitat for this species.
Birds					
Accipiter gentilis Northern goshawk	--/CSC/--	Occurs throughout high elevation areas throughout North America. Known from the Sierras and northern California counties.	Found in forested areas with cleared openings for foraging.	All year	Yes. See text.
Aquila chrysaetos Golden eagle	--/FP/--	Known to occur in Alameda, Colusa, Contra Costa, El Dorado, Fresno, Humboldt, Kern, Lake, Lassen, Los Angeles, Madera, Merced, Modoc, Mono, Monterey, Napa, Orange, Riverside, Sacramento, San Bernardino, San Diego, San Joaquin, San Luis Obispo, Santa Clara, Siskiyou, Solano, Stanislaus, Trinity, Tulare, and Ventura counties.	Generally open country, in prairies, arctic and alpine tundra, open wooded country, and barren areas, especially in hilly or mountainous regions.	February-March	Yes. See text.
Buteo swainsoni Swainson's hawk	--/CT/--	In California, breeds in the Central valley, Klamath Basin, Northeastern Plateau, Lassen County, and Mojave Desert. Very limited breeding reported from Lanfair valley, Owens valley, Fish Lake valley, Antelope Valley, and in eastern San Luis Obispo County (NatureServe, 2012).	Breeds in stands with few trees in juniper-sage flats, riparian areas, and in oak savannah. Requires adjacent suitable foraging areas such as grasslands, alfalfa, or grain fields supporting rodent populations (NatureServe, 2012).	March–October	No. The Subject Property does not provide habitat for this species.
Coccyzus americanus Western yellow-billed cuckoo	FC/CE/--	Occurs at isolated sites in Sacramento Valley in northern California and along Kern and Colorado River systems in Southern California.	Frequents valley foothill and desert riparian habitats. Inhabits open woodlands with clearings, and riparian habitats with dense understory foliage along slow-moving drainages, backwaters, or seeps. Prefers dense willows for roosting, but will use adjacent orchard in the Sacramento Valley.	June-August	No. The Subject Property occurs outside of the geographic range for this species.

SCIENTIFIC NAME COMMON NAME	FEDERAL/ STATE/ CNPS STATUS	DISTRIBUTION	HABITAT REQUIREMENTS	PERIOD OF IDENTIFICATION	POTENTIAL TO OCCUR
Grus canadensis tabida Greater sandhill crane	--/CT/--	Nest in flooded meadows and Marshes in the Great Basin and s. Cascade Mountains in California and Oregon (Cornell Lab of Ornithology, 2013).	Nesting habitat includes open meadows with scattered stands of hard-stemmed bulrush, cattails, and broad-fruited burred. Feed in irrigated pastureland, milo, wheat, barley, rice, and corn fields as well as saltgrass flats during winter (Cornell Lab of Ornithology, 2013).	Summer	No. The Subject Property does not provide habitat for this species.
Haliaeetus leucocephalus Bald eagle	--/CE/--	Known commonly within the northwest (Cornell Lab of Ornithology, 2013).	Breeds in forested areas near large bodies of water. Winters in coastal areas, along large rivers, and large unfrozen lakes (Cornell Lab of Ornithology, 2013).	All Year	No. The Subject Property does not provide habitat for this species.
Riparia riparia Bank swallow	--/CT/--	In California, primarily nests from Siskyou, Shasta, and Lassen counties, south along the Sacramento River to Yolo County. Also nests locally across much of state.	Found primarily in riparian and other lowland habitats west of the deserts during the spring-fall period. In summer, restricted to riparian, lacustrine, and coastal areas with vertical banks, bluffs, and cliffs with fine-textured or sandy soils, into which it digs nesting holes.	April-July	No. The Subject Property does not provide habitat for this species.
Strix occidentalis caurina Northern spotted owl	FT/--/--	Geographic range extends from British Colombia to northwestern California south to San Francisco. The breeding range includes the Cascade Range, North Coast Ranges, and the Sierra Nevada. Some breeding populations also occur in the Transverse Ranges and Peninsular Ranges.	Resides in mixed conifer, redwood, and Douglas-fir habitats, from sea level up to approximately 2,300 meters. Prefers old-growth forests, but use of managed (previously logged) lands is not uncommon. Owls do not appear to use logged habitat until approximately 60 years after logging unless some larger trees or snags remain after logging. Nesting habitat is a tree or snag cavity, or the broken top of a large tree. Requires a nearby, permanent source of water. Forages in any forest habitat with sufficient prey (e.g. flying squirrels, mice, and voles).	All Year	No. The Subject Property does not provide habitat for this species.
Mammals					
Martes pennanti fisher – West Coast DPS	FC/CSC/--	Distributed along the Sierra Nevada, Cascades, and Klammath mountains and in a few areas in the north Coast Ranges.	Found in intermediate to dense mature stands of trees (coniferous forests) and deciduous riparian habitats with a high percent canopy closure. Utilizes cavities in large trees, snags, logs, rock areas, or shelters provided by slash or brush piles.	All Year	No. The Subject Property does not provide habitat for this species.

SCIENTIFIC NAME COMMON NAME	FEDERAL/ STATE/ CNPS STATUS	DISTRIBUTION	HABITAT REQUIREMENTS	PERIOD OF IDENTIFICATION	POTENTIAL TO OCCUR
Canis lupis Gray wolf	FE/--/--	Found south of Canada only in northern Mexico, a few areas in the Rocky Mountains (northwestern Montana, reintroduction sites in Wyoming and Idaho), northwestern Great Lakes region (northeastern third of Minnesota, northern Wisconsin, Michigan Upper Peninsula), and Cascade Mountains of northern Washington (NatureServe, 2012).	Found in Alpine, desert, conifer, hardwood, mixed grassland/herbaceous forest, savanna, shrubland/chaparral, and tundra (NatureServe, 2012).	All Year	No. The Subject Property does not provide habitat for this species.
Taxidea taxus American badger	--/CSC/--	Known throughout most of California except in the northern North Coast (Ahlborn, 2005).	Found in the drier open stages of most shrub, forest, and herbaceous habitats with friable soils. Badgers are generally associated with treeless regions, prairies, parklands, and cold desert areas. Cultivated lands have been reported to provide little usable habitat for this species (Ahlborn, 2005).	All Year	No. The Subject Property does not provide habitat for this species.

STATUS CODES
FEDERAL: United States Fish and Wildlife Service
FE Federally Endangered
FT Federally Threatened
FC Federal Candidate for Listing

STATE: California Department of Fish and Game
CE California Listed Endangered
CR California Listed Rare
CT California Listed Threatened
CSC California Species of Concern
CFP California Fully-Protected

CNPS: California Native Plant Society
List 1A Plants Presumed Extinct in California
List 1B Plants Rare, Threatened, or Endangered in California and Elsewhere
List 2 Plants Rare, Threatened, or Endangered in California, But More Common Elsewhere

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Listed/Proposed Threatened and Endangered Species for the MONTAGUE Quad (Candidates Included)

April 29, 2013

Document Number: *882923340-11334*

TYPE	SCIENTIFIC NAME	COMMON NAME	CATEGORY	CRITICAL HABITAT
Plants				
	Phlox hirsuta	Yreka phlox	E	N
Invertebrates				
	Branchinecta lynchi	vernal pool fairy shrimp	T	Y
Fish				
*	*Oncorhynchus kisutch*	S. OR/N. CA coho salmon	T	Y
Birds				
	Coccyzus americanus	Western yellow-billed cuckoo	C	N
	Strix occidentalis caurina	northern spotted owl	T	Y
Mammals				
	Canis lupus	gray wolf	E	Y
	Martes pennanti	fisher, West Coast DPS	C	N

KEY:

(PE) Proposed Endangered	Proposed in the Federal Register as being in danger of extinction
(PT) Proposed Threatened	Proposed as likely to become endangered within the foreseeable future
(E) Endangered	Listed in the Federal Register as being in danger of extinction
(T) Threatened	Listed as likely to become endangered within the foreseeable future
(C) Candidate	Candidate which may become a proposed species
Critical Habitat	Y = Designated, P = Proposed, N = None Designated
*	Denotes a species Listed by the National Marine Fisheries Service

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Listed/Proposed Threatened and Endangered Species for the YREKA Quad (Candidates Included)

April 29, 2013

Document Number: *755244168-1151*

TYPE	SCIENTIFIC NAME	COMMON NAME	CATEGORY	CRITICAL HABITAT
Plants				
	Calochortus persistens	Siskiyou mariposa lily	C	N
	Phlox hirsuta	Yreka phlox	E	N
Invertebrates				
	Branchinecta lynchi	vernal pool fairy shrimp	T	Y
Fish				
*	*Oncorhynchus kisutch*	S. OR/N. CA coho salmon	T	Y
Birds				
	Coccyzus americanus	Western yellow-billed cuckoo	C	N
	Strix occidentalis caurina	northern spotted owl	T	Y
Mammals				
	Martes pennanti	fisher, West Coast DPS	C	N

KEY:

(PE) Proposed Endangered	Proposed in the Federal Register as being in danger of extinction
(PT) Proposed Threatened	Proposed as likely to become endangered within the foreseeable future
(E) Endangered	Listed in the Federal Register as being in danger of extinction
(T) Threatened	Listed as likely to become endangered within the foreseeable future
(C) Candidate	Candidate which may become a proposed species
Critical Habitat	Y = Designated, P = Proposed, N = None Designated
*	Denotes a species Listed by the National Marine Fisheries Service

Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Accipiter gentilis northern goshawk	ABNKC12060	None	None	G5	S3	SSC
Aquila chrysaetos golden eagle	ABNKC22010	None	None	G5	S3	FP
Ardea herodias great blue heron	ABNGA04010	None	None	G5	S4	
Balsamorhiza lanata woolly balsamroot	PDAST11047	None	None	G3	S3	1B.2
Buteo swainsoni Swainson's hawk	ABNKC19070	None	Threatened	G5	S2	
Calochortus greenei Greene's mariposa-lily	PMLIL0D0H0	None	None	G3	S3	1B.2
Calochortus monanthus single-flowered mariposa-lily	PMLIL0D0W0	None	None	GH	SH	1A
Calochortus persistens Siskiyou mariposa-lily	PMLIL0D140	Candidate	Rare	G2	S2.2	1B.2
Chaenactis suffrutescens Shasta chaenactis	PDAST200H0	None	None	G3	S3	1B.3
Cirsium ciliolatum Ashland thistle	PDAST2E0P0	None	Endangered	G3	S1	2.1
Emys marmorata western pond turtle	ARAAD02030	None	None	G3G4	S3	SSC
Eriogonum ursinum var. erubescens blushing wild buckwheat	PDPGN08632	None	None	G3G4T2	S2.3	1B.3
Falco mexicanus prairie falcon	ABNKD06090	None	None	G5	S3	WL
Galium serpenticum ssp. scotticum Scott Mountain bedstraw	PDRUB0N1Y6	None	None	G4G5T2	S2.2	1B.2
Grus canadensis tabida greater sandhill crane	ABNMK01014	None	Threatened	G5T4	S2	FP
Haliaeetus leucocephalus bald eagle	ABNKC10010	Delisted	Endangered	G5	S2	FP
Hydroporus leechi Leech's skyline diving beetle	IICOL55040	None	None	G1?	S1?	
Hymenoxys lemmonii alkali hymenoxys	PDAST530C0	None	None	G3?	S2	2.2
Klamath Spring Stream Klamath Spring Stream	CARB2325CA	None	None	GNR	SNR	
Larus californicus California gull	ABNNM03110	None	None	G5	S2	WL
Limnanthes floccosa ssp. floccosa woolly meadowfoam	PDLIM02043	None	None	G4T4	S3.2	4.2

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Lomatium peckianum Peck's lomatium	PDAPI1B1G0	None	None	G4	S1	2.2
Margaritifera falcata western pearlshell	IMBIV27020	None	None	G4	S2S3	
Martes pennanti fisher - West Coast DPS	AMAJF01021	Candidate	None	G5	S2S3	SSC
Minuartia howellii Howell's sandwort	PDCAR0G0F0	None	None	G4	S2	1B.3
Monadenia chaceana Siskiyou shoulderband	IMGASC7150	None	None	G2	S2	
Opuntia fragilis brittle prickly-pear	PDCAC0D0H0	None	None	G4G5	SH	2.1
Orthocarpus pachystachyus Shasta orthocarpus	PDSCR1H0L0	None	None	G1	S1	1B.1
Phacelia greenei Scott Valley phacelia	PDHYD0C1V0	None	None	G2	S2.2	1B.2
Phlox hirsuta Yreka phlox	PDPLM0D100	Endangered	Endangered	G1	S1	1B.2
Pisidium ultramontanum fingernail clam	IMBIV51220	None	None	G1	S1	
Polemonium carneum Oregon polemonium	PDPLM0E050	None	None	G4	S1	2.2
Riparia riparia bank swallow	ABPAU08010	None	Threatened	G5	S2S3	
Scirpus pendulus pendulous bulrush	PMCYP0Q160	None	None	G5	S1	2.2
Taxidea taxus American badger	AMAJF04010	None	None	G5	S4	SSC

Record Count: 35

CNPS California Native Plant Soci Inventory of Rare and Endangered Plants

Plant List

25 matches found. *Click on scientific name for details*

Search Criteria

Found in 9 Quads around 41122F5

Scientific Name	Common Name	Family	Lifeform	Rare Plant Rank	State Rank	Global Rank
Allium siskiyouense	Siskiyou onion	Alliaceae	perennial bulbiferous herb	4.3	S3.3?	G4
Androsace elongata ssp. acuta	California androsace	Primulaceae	annual herb	4.2	S3.2?	G5?T3T4
Balsamorhiza lanata	woolly balsamroot	Asteraceae	perennial herb	1B.2	S3	G3
Calochortus greenei	Greene's mariposa lily	Liliaceae	perennial bulbiferous herb	1B.2	S3	G3
Calochortus monanthus	single-flowered mariposa lily	Liliaceae	perennial bulbiferous herb	1A	SH	GH
Calochortus persistens	Siskiyou mariposa lily	Liliaceae	perennial bulbiferous herb	1B.2	S2.2	G2
Chaenactis suffrutescens	Shasta chaenactis	Asteraceae	perennial herb	1B.3	S3	G3
Cirsium ciliolatum	Ashland thistle	Asteraceae	perennial herb	2.1	S1	G3
Eriogonum ursinum var. erubescens	blushing wild buckwheat	Polygonaceae	perennial herb	1B.3	S2.3	G3G4T2
Galium serpenticum ssp. scotticum	Scott Mountain bedstraw	Rubiaceae	perennial herb	1B.2	S2.2	G4G5T2
Hymenoxys lemmonii	alkali hymenoxys	Asteraceae	perennial herb	2.2	S2	G3?
Lewisia cotyledon var. howellii	Howell's lewisia	Montiaceae	perennial herb	3.2	S3?	G4T4Q
Limnanthes floccosa ssp. floccosa	woolly meadowfoam	Limnanthaceae	annual herb	4.2	S3.2	G4T4
Lomatium martindalei	Coast Range lomatium	Apiaceae	perennial herb	2.3	S2.3	G5
Lomatium peckianum	Peck's lomatium	Apiaceae	perennial herb	2.2	S1	G4
Opuntia fragilis	brittle prickly-pear	Cactaceae	perennial stem succulent	2.1	SH	G4G5
Orthocarpus pachystachyus	Shasta orthocarpus	Orobanchaceae	annual herb	1B.1	S1	G1
Phacelia cookei	Cooke's phacelia	Boraginaceae	annual herb	1B.1	S1	G1
Phacelia greenei	Scott Valley phacelia	Boraginaceae	annual herb	1B.2	S2.2	G2
Phlox hirsuta	Yreka phlox	Polemoniaceae	perennial herb	1B.2	S1	G1
Polemonium carneum	Oregon polemonium	Polemoniaceae	perennial herb	2.2	S1	G4
Scirpus pendulus	pendulous bulrush	Cyperaceae	perennial rhizomatous herb	2.2	S1	G5
Sedum laxum ssp. flavidum	pale yellow stonecrop	Crassulaceae	perennial herb	4.3	S3.3	G5T3Q

Trifolium siskiyouense	Siskiyou clover	Fabaceae	perennial herb	3.2	S2.2	G3G4Q
Triteleia crocea var. crocea	yellow triteleia	Themidaceae	perennial bulbiferous herb	4.3	S3.3	G4T4

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Plant List

27 matches found. *Click on scientific name for details*

Search Criteria

Found in 9 Quads around 41122F6

Scientific Name	Common Name	Family	Lifeform	Rare Plant Rank	State Rank	Global Rank
Allium siskiyouense	Siskiyou onion	Alliaceae	perennial bulbiferous herb	4.3	S3.3?	G4
Androsace elongata ssp. acuta	California androsace	Primulaceae	annual herb	4.2	S3.2?	G5?T3T4
Arabis oregana	Oregon rockcress	Brassicaceae	perennial herb	4.3	S3.3?	G3G4Q
Balsamorhiza lanata	woolly balsamroot	Asteraceae	perennial herb	1B.2	S3	G3
Calochortus greenei	Greene's mariposa lily	Liliaceae	perennial bulbiferous herb	1B.2	S3	G3
Calochortus monanthus	single-flowered mariposa lily	Liliaceae	perennial bulbiferous herb	1A	SH	GH
Calochortus persistens	Siskiyou mariposa lily	Liliaceae	perennial bulbiferous herb	1B.2	S2.2	G2
Chaenactis suffrutescens	Shasta chaenactis	Asteraceae	perennial herb	1B.3	S3	G3
Cirsium ciliolatum	Ashland thistle	Asteraceae	perennial herb	2.1	S1	G3
Eriogonum umbellatum var. lautum	Scott Valley buckwheat	Polygonaceae	perennial herb	1B.1	S1	G5T1
Eriogonum ursinum var. erubescens	blushing wild buckwheat	Polygonaceae	perennial herb	1B.3	S2.3	G3G4T2
Galium serpenticum ssp. scotticum	Scott Mountain bedstraw	Rubiaceae	perennial herb	1B.2	S2.2	G4G5T2
Horkelia hendersonii	Henderson's horkelia	Rosaceae	perennial herb	1B.1	S1	G1
Hymenoxys lemmonii	alkali hymenoxys	Asteraceae	perennial herb	2.2	S2	G3?
Lewisia cotyledon var. howellii	Howell's lewisia	Montiaceae	perennial herb	3.2	S3?	G4T4Q
Limnanthes floccosa ssp. floccosa	woolly meadowfoam	Limnanthaceae	annual herb	4.2	S3.2	G4T4
Lomatium martindalei	Coast Range lomatium	Apiaceae	perennial herb	2.3	S2.3	G5
Lomatium peckianum	Peck's lomatium	Apiaceae	perennial herb	2.2	S1	G4
Minuartia howellii	Howell's sandwort	Caryophyllaceae	perennial herb	1B.3	S2	G4
Orthocarpus pachystachyus	Shasta orthocarpus	Orobanchaceae	annual herb	1B.1	S1	G1
Phacelia greenei	Scott Valley phacelia	Boraginaceae	annual herb	1B.2	S2.2	G2
Phlox hirsuta	Yreka phlox	Polemoniaceae	perennial herb	1B.2	S1	G1
Polemonium carneum	Oregon polemonium	Polemoniaceae	perennial herb	2.2	S1	G4

Scirpus pendulus	pendulous bulrush	Cyperaceae	perennial rhizomatous herb	2.2	S1	G5
Sedum laxum ssp. flavidum	pale yellow stonecrop	Crassulaceae	perennial herb	4.3	S3.3	G5T3Q
Trifolium siskiyouense	Siskiyou clover	Fabaceae	perennial herb	3.2	S2.2	G3G4Q
Triteleia crocea var. crocea	yellow triteleia	Themidaceae	perennial bulbiferous herb	4.3	S3.3	G4T4

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